Site Plan Review Application submitted by Kim Thomas, Dewitt Tilton Group on behalf of Brian Orr for PIN # 7-0906-02-002 (8191 Old Highway 21) for a Specific Development Site Plan to allow a Truck Shop in a P-C-2 (Planned Community Business) Zoning District

Issue/Item: Site Plan Review Application submitted by Kim Thomas, Dewitt Tilton Group on behalf of Brian Orr for PIN # 7-0906-02-002 (8191 Old Highway 21) for a Specific Development Site Plan to allow a Truck Shop in a P-C-2 (Planned Community Business) Zoning District

Background: The subject property is currently vacant property. There are no buildings or structures on the subject property. This property was rezoned to P-C-2 during the November 18, 2021 Regular City Council Meeting.

Facts and Findings: The site plan consist of a truck retail shop associated parking, utilities, drainage and infrastructure improvements. This project will be served by a private well and septic system. This application is under review by City Engineers, T.R. Long Engineering. This project complies with the 2021-2041 City of Port Wentworth Comprehensive Plan.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, May 9, 2022 at 6:30 PM. **/ UPDATE: THE PLANNING COMMISSION VOTED UNANIMOUSLY TO APPROVE THE APPLICATION WITH THE CONDITION THAT ALL ENGINEER COMMENTS BE ADDRESSED.**

ATTACHMENTS:

- 8191 OLD HWY 21 PW TRUCK SHOP S-SITE PLAN MAY 2022 - Application (PDF)
- 8191 OLD HWY 21 PW TRUCK SHOP S-SITE PLAN MAY 2022 - Timeline (DOCX)
- Planning Commission Minutes May 9, 2022 DRAFT (PDF)

220207

RECEIVED
APR 06 2022
BY: MBE

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application

Site Plan Application is required for all new construction in a "P" or "MPO" zone as defined in the Zoning Ordinance of the City of Port Wentworth.

Site Plan Type (*Check One*): ☐ General / Concept ☑ Specific Development

Site Plan Address: 8191 OLD HIGHWAY 21

PIN #(s): 70906 02002

Zoning: P-C-2 Estimated Cost of Construction: $ 1,232,935

Type of Construction: Single Builing

Project Name: Rice Hope Shop

Applicant's Name: Kim Thomas - Dewitt Tilton Group

Mailing Address: 119 Canal St Suite 119 Pooler, GA 31322

Phone #: 912-777-3404 Email: kim@dewitttiltongroup.com

Owner's Name (If Different form Applicant): Brian Orr

Mailing Address: 204 Wiley Bottom Road Savannah, GA 31411

Phone #: 912-429-0596 Email: brianporr@hotmail.com

I hereby acknowledge that the above information is true and correct.

Kim Thomas
Applicant's Signature

3/23/22
Date

Owner's Signature (If Different form Applicant)

3/23/22
Date

Please see page 2 for required submittal checklist

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application Submittal Checklist

Documentation below is required for a complete submittal.

- ☑ Signed and Completed Application
- ☑ 3 Full size sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☑ 15 half size (11" X 17") sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☐ 2 copies of hydrology reports (if applicable)
- ☑ Names, mailing address, and PIN number of all property owners within 250 feet of all property lines
- ☑ 1 8 ½" X 11" of site plan civil drawings or concept plan (depending on type of site plan)
- ☑ PDF of entire submittal on a flash drive or download link ONLY (NO CD'S)
- ☑ Other Engineering details or reports may be required once submittal has been received
- ☑ Site plan review fee check
    - No Land Disturbance- $206.00 Site Plan Fee + $50.00 Admin Fee = Total $256.00
    - With Land Disturbance - $836.00 Site Plan Fee + $50.00 Admin Fee = Total $886.00

Additional Fee Statement: If engineer review cost to the City exceeds the site plan review fee that is paid at the time of initial application submittal, you may be required to pay additional review cost.

I have read and agree to the above additional fee statement

Kimi Thomas
Applicant's Signature

3/23/22
Date

CITY OF PORT WENTWORTH
(912) 964-4379

REC#: 00350560 4/11/2022 9:47 AM
OPER: ME TERM: 011
REF#: CK 4628

TRAN: 112.0000 BLDG PERMIT
220207 886.00CR
ORR, BRIAN
8191 OLD HIGHWAY 21
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM

Project: Rice Hope Shop Orr Truck Yard
8191 Old Highway 21
70906 02002

NEIGHBORS

FOSTER BENJAMIN
8177 OLD HIGHWAY 21 SAVANNAH GA 31407
70906 02007

THE CLAUDE M KICKLIGHTER REVOCABLE TRUST& ELIZABETH E KICKLIGHTER REVOCABLE TRUst
1606 CRESTWOOD LANE MC LEAN VA 22101
96 MOORE DR 70906 02001A

WINBURN J RANDALL III
8210 HIGHWAY 21 PORT WENTWORTH GA 31407
70906 02001

BUCK ISLAND, LLC AND BEP LAND INVESTORS, LLC
100 LAKESIDE BLVD PORT WENTWORTH GA 31407
70906 04064

Project Timeline

Project Number: 220207

Project Name: PW Truck Shop

Applicant / Engineer: Kim Thomas Dewitt Tilton / Maupin Engineering

Owner: Brian Orr

City Review Engineer: TR Long

- 4/6/2022 – application received; missing PDF
- 4/8/2022 – sent email to Kim Thomas letting her know we were missing the PDF.
- 4/11/2022 – received PDF. Processed and sent files to TR Long for review.
- 5/2/2022 – Sent email to TR Long for review update.
- 5/9/2022 – Planning Commission voted unanimously to approve the application with the condition that all engineer comments be addressed
- 5/9/2022 – received 1st comment letter from TR Long
- 5/10/2022 – sent comment letter to Jay Maupin & Kim Thomas.

114 North Commerce Street
Hinesville, Georgia 31313
(912) 368-5664 Office
(912) 368-7206 Fax

T R LONG ENGINEERING, P.C.

1000 Towne Center Blvd.
Suite 304
Pooler, Georgia 31322
(912) 355-1046

May 9, 2022

Mr. Brian Harvey
City of Port Wentworth
7224 Georgia Highway 21
Port Wentworth, Georgia 31407

Re: 8191 Old Highway 21 PW Truck Shop Site Plan
Highway 21 at O'Leary Road
Port Wentworth, Georgia

Dear Mr. Harvey,

T. R. Long Engineering, P.C. has reviewed the specific development plan entitled "PW Truck Shop", prepared by Maupin Engineering dated April 1, 2022, and stamped by Jay A. Maupin. Our review comments are marked on the attached files:

1. 8191 OLD HWY 21 PW TRUCK SHOP S-SITE PLAN - Site Plan 4.1.22 -TRL review May 2022.pdf.
2. 8191 OLD HWY 21 PW TRUCK SHOP S-SITE PLAN- Hydro 4.6.22 - TRL Review May 2022.pdf

Should you have any questions, comments, or need any additional information, please contact us.

Sincerely,

Trent R. Long, P.E.

GENERAL CONSTRUCTION NOTES:

ALL CONSTRUCTION SHALL BE IN CONFORMANCE TO THE CURRENT PORT WENTWORTH DESIGN STANDARDS, SPECIFICATIONS AND DETAILS OR AS OTHERWISE ISSUED FOR THIS PROJECT. WHERE ANY CONFLICT EXISTS BETWEEN THESE PLANS AND/OR SPECIFICATIONS AND/OR CONSTRUCTION DETAILS AND THE PORT WENTWORTH STANDARDS, SPECIFICATIONS, DETAILS AND DEVELOPMENT ORDINANCE(S), THE PORT WENTWORTH STANDARDS SHALL PREVAIL.

1. LAYOUT TO BE CONTROLLED BY EXISTING BENCHMARK.
2. DIMENSIONS TO CURB AND GUTTER ARE TO FACE OF CURB.
3. DIMENSIONS TO WALK ARE TO FACE OF WALK.
4. DIMENSIONS TO BUILDING ARE TO FACE OF BUILDING.
5. DIMENSIONS TO STRIPING IS TO CENTERLINE OF STRIPING.
6. ALL ANGLES ARE 90° UNLESS OTHERWISE NOTED.
7. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
8. BLUE METAL REFLECTIVE SIGN AT LEAST 12" IN WIDTH AND 18" IN LENGTH AND ERECTED AT 7' ABOVE GRADE IN SUCH MANNER SO AS TO BE CLEARLY VISIBLE TO THE PARKING VEHICLE. THE SIGN SHALL HAVE PRINTED IN WHITE LETTERS NOT LESS THAN ONE INCH IN HEIGHT ON THREE SEPARATE LINES AND CENTERED THE FOLLOWING WORDS: "PERMIT PARKING ONLY", "TOW-AWAY ZONE" AND "MAXIMUM FINE $500.00". SUCH SIGNS SHALL ALSO DISPLAY THE SYMBOL FOR HANDICAP ACCESSIBILITY CENTERED BETWEEN THE SECOND AND THIRD LINES. VAN ACCESSIBLE SPACE SHALL HAVE ADDITIONAL SIGN WITH THE FOLLOWING WORDS: :VAN ACCESSIBLE".
9. TRAFFIC CONTROL DEVICES SHALL BE USED ON ALL WORK ON THIS PROJECT IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" CURRENT EDITION. THE COST TO COMPLY SHALL BE INCLUDED IN THE OVERALL COST OF THE PROJECT.
10. REFERENCE SURVEYS:
    - 10.1. BOUNDARY & TOPOGRAPHIC SURVEY - PREPARED BY ATLAS SURVEYING (10/2021).
    - 10.2. VERTICAL DATUM: NAVD88 HORIZONTAL DATUM: NAD83
    - 10.3. PROJECT IS ON STATE PLANE COORDINATES.
    - 10.4. MAUPIN ENGINEERING, INC. DOES NOT ACCEPT ANY RESPONSIBILITY FOR ACCURACY OF PROVIDED SURVEY INFORMATION.
    - 10.5. ONLY ABOVE GROUND, READILY VISIBLE STRUCTURES, UTILITIES AND SURFACE PAINT MARKINGS WERE LOCATED FOR THIS SURVEY. THIS SURVEYOR MAKES NO WARRANTY OR GUARANTEE AS TO THE LOCATION, EXISTENCE, OR NON-EXISTENCE OF ANY BELOWGROUND, NON-VISIBLE UTILITIES OR STRUCTURES. CONTRACTOR SHALL FIELD VERIFY LOCATION, TYPE, SIZE, MATERIAL AND GENERAL CONDITION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
11. ALL GRADED EARTH NOT OTHERWISE STABILIZED WITH BUILDING, PAVEMENT OR VEGETATION SHALL BE GRASSED OR SODDED.
12. OWNER SHALL ACCEPT MAINTENANCE OF THE STORM DRAINAGE SYSTEM, INCLUDING ROOF DRAIN CONNECTIONS, WITHIN THE LIMITS OF THE PROPERTY. PORT WENTWORTH WILL NOT MAINTAIN THE STORM DRAINAGE SYSTEM WITHIN THE PROPERTY. THIS SITE IS DESIGNED TO DISCHARGE STORM WATER RUNOFF INTO THE APPROVED MASTER DRAINAGE CONVEYANCE AND DETENTION SYSTEM.
13. DITCHES, ALL DRAINAGE STRUCTURES, ORIFICES AND PAVEMENT ELEVATIONS SHALL BE SURVEYED FOR "AS-BUILT" DRAWINGS ALONG WITH THE WATER AND SANITARY SEWER SERVICES.
14. ADJUST EXISTING MANHOLE FRAMES, GRATES AND VALVE BOXES TO GRADE AS NEEDED.
15. ALL STORM DRAIN PIPE JOINTS SHALL BE WRAPPED WITH FILTER FABRIC.
16. MATCH EXISTING PAVEMENT GRADE ELEVATIONS WHERE CONNECTING TO EXISTING PAVEMENT.
17. FILL BENEATH BUILDINGS SHALL BE COMPACTED IN ACCORDANCE WITH BUILDING STRUCTURAL SPECIFICATIONS.
18. CONTRACTOR TO FIELD VERIFY DURING CONSTRUCTION ANY EXISTENCE OF SUB-SURFACE DEBRIS OR ORGANIC MATERIAL. ANY SUB-SURFACE DEBRIS OR ORGANIC MATERIAL FOUND SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 2' BELOW GRADED AGGREGATE BASE IN PAVEMENT AREAS AND 2' BELOW BOTTOM OF FOOTINGS FOR BUILDINGS (CONTRACTOR SHALL CONSULT WITH BUILDING STRUCTURAL ENGINEER FOR ANY WORK BENEATH OR ADJACENT TO BUILDING AND/OR ABOVE OR BELOW GRADE STRUCTURES). IF EXCESSIVE DEBRIS OR ORGANIC MATERIAL IS FOUND, ENGINEER SHALL BE CONTACTED FOR INSPECTION. REMOVAL OF INSPECTED MATERIAL SHALL BE DIRECTED BY THE ENGINEER.
19. ALL EROSION AND SEDIMENT CONTROL DEVICES (BMPS) SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE DISTURBANCE OF THE LAND AND SHALL REMAIN FUNCTIONAL AND BE MAINTAINED BY CONTRACTOR UNTIL THE CONTRIBUTING DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH THE GOVERNING NPDES GENERAL PERMIT.
20. IF A RIGHT-OF-WAY ENCROACHMENT PERMIT MUST BE OBTAINED, AND IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN SUCH PERMIT.
21. THE PORT WENTWORTH INSPECTIONS DEPARTMENT RESERVES THE RIGHT TO ACCESS PROPERTY TO INSPECT STORM WATER FACILITIES AT ANY TIME.
22. CHLORINATED, DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORM WATER SYSTEM.
23. TRAFFIC CONTROL AND FLOW SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION.
24. A MINIMUM SEPARATION OF 10 FEET SHALL BE MAINTAINED BETWEEN ALL INSTALLED OR RELOCATED UTILITIES AND LARGE AND MEDIUM TREES.
25. ANY AND ALL STREET LIGHTING, LANDSCAPE, SIDEWALK AND ACCESSIBILITY REQUIREMENTS TO BE PERFORMED, DESIGNED AND/OR CONSTRUCTED SHALL BE COORDINATED WITH CIVIL ENGINEER.
26. CONTRACTOR SHALL REFER TO ARCHITECTURAL AND/OR MECHANICAL, ELECTRICAL AND PLUMBING PLANS FOR THE ROOF DRAIN SYSTEM. COLLECTION AND DISCHARGE SHALL BE COORDINATED WITH CIVIL ENGINEER.
27. SITE CIVIL PLANS SHALL TERMINATE 5' FROM BUILDING FACE UNLESS OTHERWISE NOTED. CONTINUATION OF WATER, SANITARY SEWER AND STORM DRAINAGE LATERALS SHALL BE COORDINATED WITH BUILDING CONTRACTOR IN ACCORDANCE WITH ARCHITECTURAL AND/OR MECHANICAL, ELECTRICAL AND PLUMBING PLANS.
28. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE APPROPRIATE JURISDICTIONS APPROVED CONSTRUCTION SPECIFICATIONS AND DETAILS.
29. THE OWNER, OWNER'S REPRESENTATIVES, PORT WENTWORTH AND OTHER REGULATORY AGENCIES SHALL HAVE THE RIGHT TO ACCESS THE SITE AT ANY TIME FOR PURPOSES OF OBSERVING WORK PERFORMED.
30. ALL UTILITIES ARE SHOWN AS APPROXIMATE ON THE PLANS AND SHOULD BE FIELD VERIFIED BY THE CONTRACTOR. SOME UTILITIES AND SERVICE LINE LOCATIONS ARE UNKNOWN AND NOT SHOWN ON THE PLANS. THIS DOES NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY TO PROTECT EXISTING UNDERGROUND FACILITIES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID UTILITY LOCATE TICKET FROM THE GEORGIA UTILITIES PROTECTION CENTER (811/ 800-282-7411), AND COORDINATION WITH OTHER SUCH LOCAL UTILITIES AS MAY BE REQUIRED.
31. THE CONTRACTOR WILL PROTECT ALL TREES NOTED TO REMAIN WITHIN AND ADJACENT TO THE CONSTRUCTION ZONE. ANY UNAUTHORIZED REMOVAL OF TREES NOTED TO REMAIN WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REESTABLISH TO THE SATISFACTION OF THE ENGINEER.
32. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL BORROW MATERIAL NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT. ALL BORROW MATERIAL SHALL BE CLEAN AND FREE OF DEBRIS AND ORGANIC MATERIAL AND SUFFICIENT TO COMPACT TO A MINIMUM BEARING CAPACITY OF 2,500PSF OR AS OTHERWISE SPECIFIED.
33. ALL ITEMS CLEARED OR DEMOLISHED FROM THE SITE, INCLUDING SPOIL MATERIAL TO BE REMOVED FOR OFF-SITE DISPOSAL, ARE THE PROPERTY OF THE CONTRACTOR UNLESS THEY ARE TO BE REUSED ON THE SITE OR OTHERWISE NOTED. NO BURYING OR BURNING OF DEBRIS WILL BE ALLOWED ON THIS SITE.
34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING BEST MANAGEMENT PRACTICES (BMP'S) ON THE SITE AT ALL TIMES IN ACCORDANCE WITH THESE PLANS AND THE "MANUAL FOR EROSION AND SEDIMENT CONTROL OF GEORGIA".

GENERAL DEVELOPMENT NOTES:

1. PIN: 70906 02002
   ADDRESS: 8191 OLD HWY. 21
   PORT WENTWORTH, GEORGIA
2. CONSTRUCTION EXIT LOCATION
   N: 32.236470°
   W: 81.193608°
3. TOTAL LAND ACREAGE = 3.93(±) AC
   TOTAL DISTURBED ACREAGE = 4.1(±) AC

   PRE DEVELOPMENT
   TOTAL GREEN SPACE = 171,316 (±) 100(%)
   PAVED AREA = 0 (±) 0 (%)
   BUILDING COVERAGE AREA = 0 (±) 0 (%)

   POST DEVELOPMENT
   TOTAL GREEN SPACE = 112,096(±) 66(%)
   PAVED AREA = 51,000(±) 29(%)
   BUILDING COVERAGE AREA = 8,220(±) 05(%)
4. EXISTING USE OF PROPERTY : VACANT
   PROPOSED USE OF PROPERTY : TRUCK REPAIR SHOP

   PRESENT SITE ZONING : P-C-2
5. PROPERTY IS LOCATED IN ZONE X, NOT A SPECIAL FLOOD HAZARD AREA AS DETERMINED BY FEMA FLOOD INSURANCE RATE MAP # 13051C0030G, DATED 08/16/2018
6. THE SITE IS SERVED BY WELL AND SEPTIC SEWER SYSTEM.
7. PARKING SPACE CALCULATIONS:

   REQUIRED: 1 SPACE PER 400SF OF SHOP/GARAGE SPACE +1 STALL PER EMPLOYEE = **19 STALLS**
   PROVIDED: **20 STALLS PROVIDED**
8. SITE LIGHTING PLAN TO BE PROVIDED SEPARATELY

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER GUY A. MAUPIN

LEVEL II E&S CERT: #21051 EXP: 12/1/2024

UTILITIES PROTECTION CENTER

Dig Safely. CALL 811

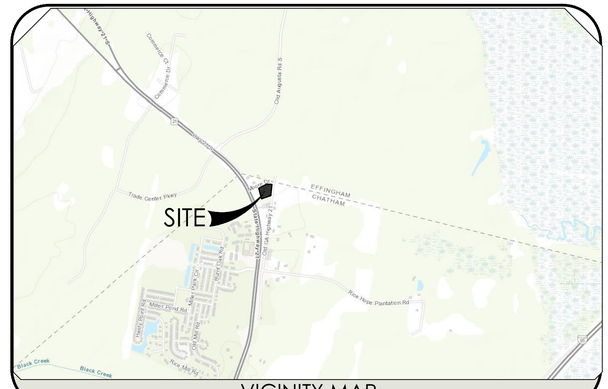
CONTRACTOR IS REQUIRED TO CALL AT LEAST 3 DAYS PRIOR TO START OF CONSTRUCTION

PW TRUCK SHOP
Specific Development Plan

MEI Proj #673-21-35 Plan Date: 4/1/22

PREPARED FOR:

DEWITT TILTON GROUP
KIM THOMAS
119 CANAL STREET SUITE 106
POOLER, GEORGIA 31322
912-777-3404
kim@dewitttiltongroup.com



VICINITY MAP

MAUPIN tm engineering
114 WEST 42nd STREET SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

SHEET INDEX

C.0	COVER - NOTES
C.1	STAMPED SURVEY
C.2	DEMOLITION PLAN
C.3	STAKING PLAN
C.4	UTILITY PLAN
C.5	GRADING PLAN
C.6	LANDSCAPING PLAN
C.E1	EROSION CONTROL PLAN - INITIAL
C.E2	EROSION CONTROL PLAN - INTERMEDIATE
C.E3	EROSION CONTROL PLAN -FINAL
C.D1-D3	DETAILS

REVISIONS		
NO.	DATE	DESCRIPTION

THIS SET IS RELEASED FOR PERMITTING 4/1/22

NOT FOR PRICING

©COPYRIGHT 2022 Maupin Engineering, Inc.

128.22-SDP- Orr Truck Stop.dwg

Type: PLAT
Recorded: 9/6/2021 11:33:00 AM
Fee Amt: $10.00 Page 1 of 1
Chatham, Ga. Clerk Superior Court
Tammie Mosley Clerk Superior Court

Participant ID: 5131489047

BK 53 PG 125

THIS BLOCK RESERVED FOR THE CLERK OF SUPERIOR COURT

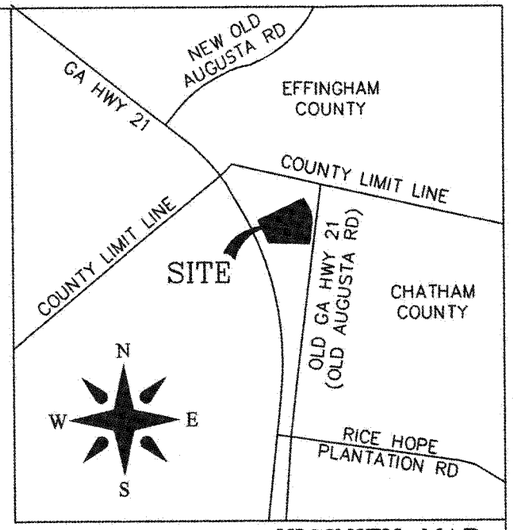
GRID NORTH
EAST ZONE - NAD 83

1/2" IPF
3X3" CMF
5/8" IRF
COUNTY ROAD 50' R/W
515.33'
N65°18'57"E
S31°34'14"E
92.61'
5/8" IRS
5/8" IRF
ARC=146.72'
C2
OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)
S6°38'33"W
230.53'
5/8" IRF
3X3" CMF
5.45'
412.32'
N88°23'02"W
417.77'
5/8" IRS
5/8" IRS
GA HWY NO. 21
110' R/W
ARC=244.59'
C1
FORMER PROPERTY LINE
50' SEPCO POWER LINE R/W
(CENTERED ON POWER LINE)

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

LOT 1C RICE HOPE
3.933 AC
171,316 SF

BENJAMIN FOSTER
PIN: 70906 02007



VICINITY MAP
N.T.S.

ERROR OF CLOSURE:
FIELD: 1/212,618
ANGULAR ERROR OF 2" PER ANGLE POINT AND ADJUSTED BY COMPASS METHOD
PLAT CLOSURE 1/158,418
EQUIPMENT: TOPCON GTS236W TOTAL STATION; SINGLE PRISM

REFERENCES:
1. PRB 32P, PAGE 91
2. PRB 3P, PAGE 58
3. PRB 8P, PAGE 34
4. SMB 2S, PAGE 81

LEGEND
- ● IRF-IRON ROD FOUND
- ● IPF-IRON PIPE FOUND
- ■ CMF-CONCRETE MONUMENT FOUND
- ○ IRS-IRON ROD SET

NOTES:
1. THE TOTAL AREA IS 3.933 ACRES.
2. THIS RECOMBINATION CREATES ONE LOT.
3. CURRENT ZONING: R-A
4. THE HORIZONTAL DATUM IS BASED ON REFERENCE #1.
5. ACCORDING TO F.I.R.M. MAP NO. 13051C0030G EFFECTIVE DATE 8/16/2018, THE PARCELS SHOWN HEREON LIES IN ZONE X, NOT A SPECIAL FLOOD HAZARD AREA.
6. THE HORIZONTAL DATUM IS BASED ON GRID NORTH, GEORGIA EAST ZONE, NAD 83.

THE PROPERTY HEREON LIES COMPLETELY WITHIN A JURISDICTION WHICH DOES NOT REVIEW OR APPROVE ANY PLATS OR THIS TYPE OF PLAT PRIOR TO RECORDING. RECORDATION OF THIS PLAT DOES NOT IMPLY APPROVAL OF ANY LOCAL JURISDICTION, AVAILABILITY OF PERMITS, COMPLIANCE WITH LOCAL REGULATIONS OR REQUIREMENTS, OR SUITABILITY FOR ANY USE OR PURPOSE OF THE LAND. FURTHERMORE, THE UNDERSIGNED LAND SURVEYOR CERTIFIES THAT THIS PLAT COMPLIES WITH THE MINIMUM TECHNICAL STANDARDS FOR PROPERTY SURVEYS IN GEORGIA AS SET FORTH IN THE RULES AND REGULATIONS OF THE GEORGIA BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS AND AS SET FORTH IN O.C.G.A. SECTION 15-6-67.

GEORGIA REGISTERED NO. 1882 LAND SURVEYOR VINCENT HELMLY

VINCENT HELMLY NO. 1882 DATE

CURVE TABLE				
CURVE #	LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	244.59'	2949.45'	N25°03'04"W	244.52'
C2	146.72'	220.00'	S12°27'50"E	144.02'

0' 60' 120' 180'
SCALE: 1"=60'

LOT 1C RICE HOPE

BEING A RECOMBINATION OF TWO PORTIONS OF LOT 1, RICE HOPE PLANTATION

8TH G.M. DISTRICT, PORT WENTWORTH, CHATHAM COUNTY, GEORGIA

PARENT ADDRESSES: 8187 & 8191 OLD HIGHWAY 21
PARENT PINS: 70906 02002 & 70906 02008
Surveyed For: FIELDSTONE LAND GROUP, LLC

Vincent Helmly
129-A BURTON ROAD
SAVANNAH, GEORGIA 31405
(912) 429-9395
FIELD SURVEY DATE : 8/29/2021
DATE : 9/1/2021 JOB No. 21-247

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

LIMITS OF DISTURBANCE

MOORE ROAD
(COUNTY 50' R/W)

GEORGIA HIGHWAY NO. 21
110' R/W

EXISTING WELL
TO REMAIN

CLEAN OUT EXISTING
CULVERT PIPE
SAID TO BE IN THIS AREA

LOT 1C RICE HOPE
3.933 AC
171,316 SF

FORMER LOT LINE
S84°28'26"E
498.53'

N65°18'57"E
515.33'

S56°39'57"W
230.53'

N88°23'02"W
417.77'

S 92°51'
110.71'

S 5°45'
123.99'

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

LIMITS OF DISTURBANCE

CLEAN OUT DITCH TO
OUTFALL

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS

NO.	DATE	DESCRIPTION

MAUPIN engineering
114 WEST 42nd STREET • OFFICE PHONE (912) 235 - 2915
SAVANNAH, GA 31401 • GENERAL@MAUPINENGINEERING.COM

DEMOLITION PLAN

PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER W. A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED
FOR
PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

15 0 30
SCALE: 1" = 30'

SHEET NO.
C.2
673-21-35
PROJECT NO.

I:\26.22 SOP-Ort Truck Stop.dwg

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

MOORE ROAD
(COUNTY 50' R/W)

ASPHALT

GEORGIA HIGHWAY NO. 21 110' R/W

EDGE OF ASPHALT

CONCRETE APRON IN CITY ROW

30" STOP SIGN (R1-1)

EARTHEN ROAD

R20'

R20'

N65°18'57"E 515.33'

ARC=84.25'
C2

ARC=160.33'
C1

16'

32'

18' SLIDE GATE

53'

53'

35'

20'

32'

5'

57'

124.92'

UNMARKED EMPLOYEE STALLS

S31°34'14"E 92.61'

CONCRETE

66.17'

63.83'

10'

LIGHT DUTY PAVEMENT

9' (TYPICAL)

R5' (TYP.)

R25'

20'

40'

65'

57'

90'

10'

18' SLIDE GATE

WHAT ACTIVITIES TAKE PLACE IN THE SEPCO POWER LINE R/W? IS A SEPCO PERMIT REQUIRED?

50' SEPCO (CENTERED ON POWER LINE R/W LINE)

ASPHALT MILLINGS

LOT 1C RICE HOPE
3.933 AC
171,316 SF

HEAVY DUTY PAVEMENT

GREEN SPACE

107'

ASPHALT MILLINGS

ARC=146.72'
C3

6' CHAINLINK FENCE WITH OPTIONAL 3 STRAND TOP WIRE

30'

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

EARTHEN ROAD

S5°38'53"W 230.53'

119.82'

110.71'

25'

417.77'

412.32'
N88°23'02"W

BENJAMIN FOSTER
PIN: 70906 02007

8" OAK

18" OAK

5.45'

3X3" CMF

5/8" IRF

1/2" IRF

3X3" CMF

GWP

LP

PP

OHL

DS

MB

MAUPIN engineering tm
114 WEST 42nd STREET • OFFICE PHONE (912) 235 - 2915
SAVANNAH, GA 31401 • GENERAL@MAUPINENGINEERING.COM

REVISIONS

NO.	DATE	DESCRIPTION

STAKING PLAN

PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER TIMOTHY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

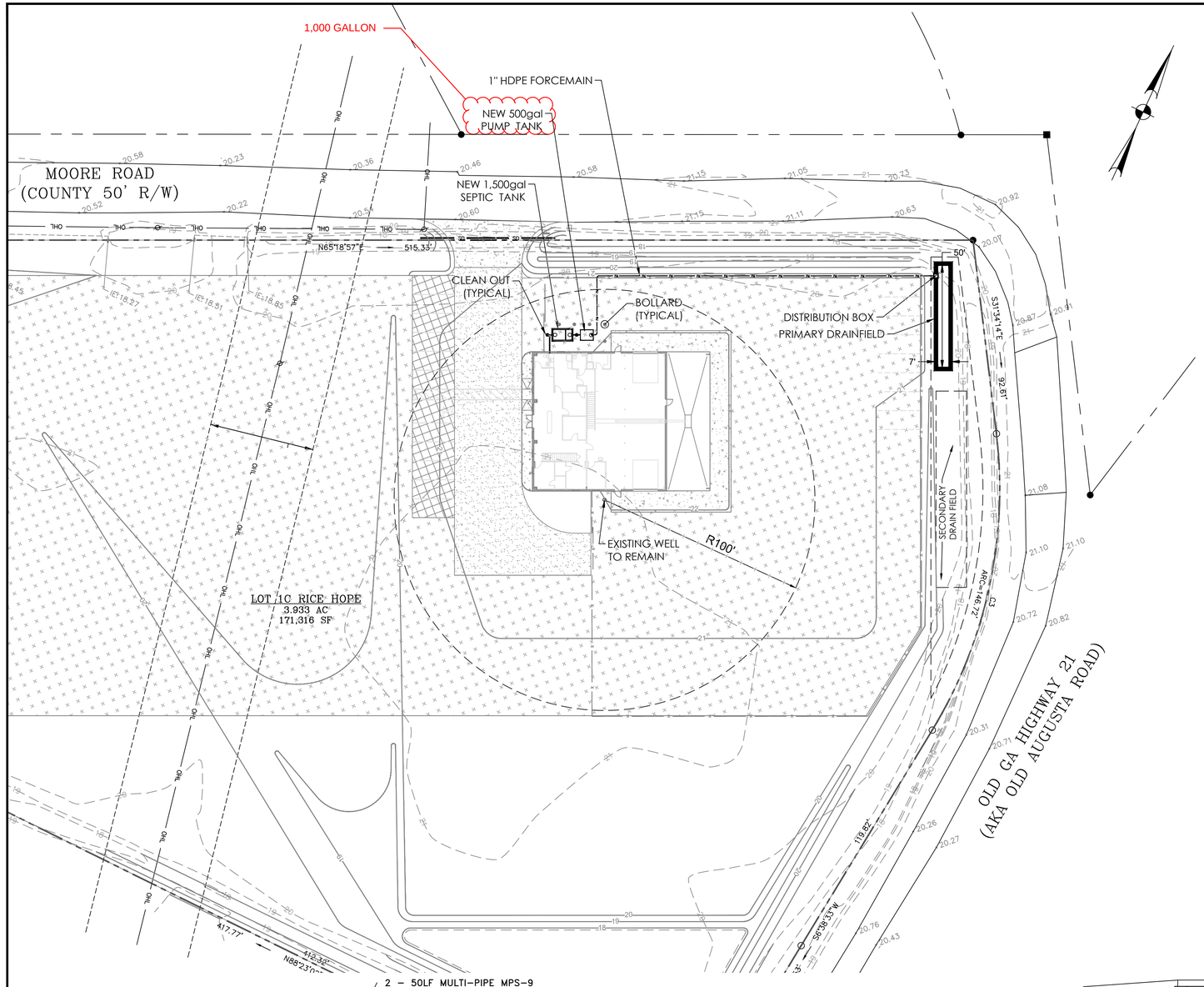
1.5 0 30
SCALE: 1" = 30'

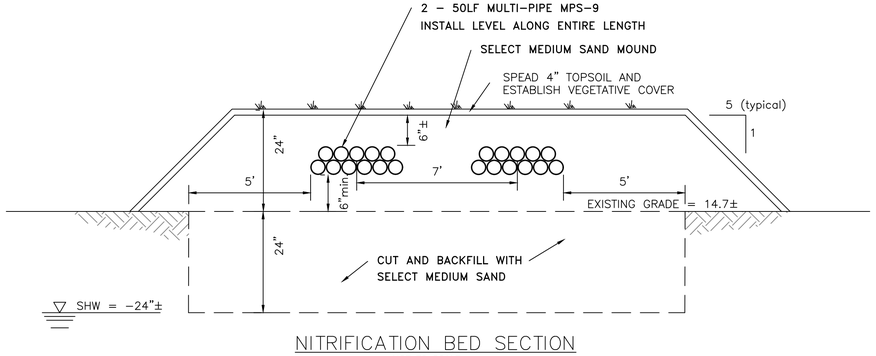
SHEET NO.
C.3

673-21-35
PROJECT NO.

©COPYRIGHT 2022 Maupin Engineering, Inc.

1.28.22 SDP- Ort Truck Stop.dwg





NITRIFICATION BED SECTION

NOT TO SCALE

ABSORPTION FIELD SIZING:

BASED UPON BEST, INC. REPORT DATED ????
ABSORPTION RATE, T = 20MIN/IN

PROPOSED USE: TRUCK REPAIR (10 EMPLOYEES)

FLOW RATE (TABLE JT-1)
WORKERS COMMERCIAL = 25GDP/ EMPLOYEE

OF EMPLOYEES = 10 * 2 FACTOR OF SAFETY = 20

FLOW RATE, Q = 500GPD

(T^0.5/5) * Q / 3ft = LF REQUIRED

(20^0.5/5) * 500GPD / 3ft = 149lf

33% REDUCTION FOR USE OF MULTI-PIPE = 149lf * 0.67 = 100lf REQUIRED

114LF PROVIDED

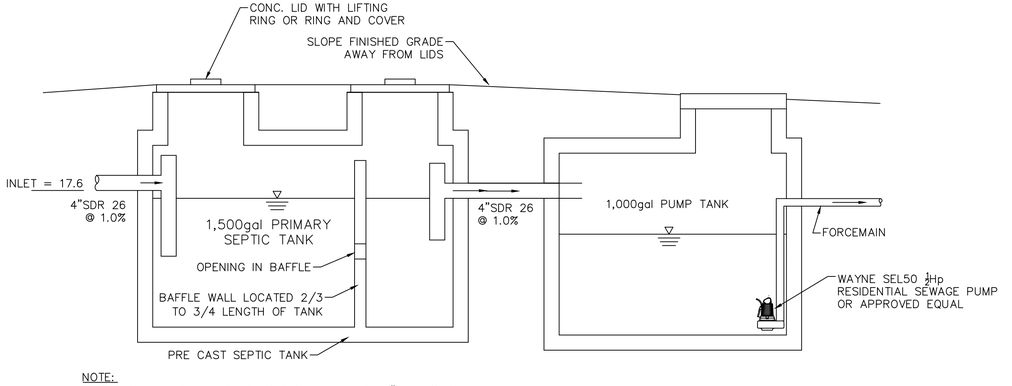
NOTE: NO EQUIPMENT WASH WATER IS ALLOWED IN THE SEPTIC SYSTEM.

1. PIN: 70906-02002
2. ADDRESS: 8191 Old Hwy 21, Port Wentworth, Ga 31407
3. High Ground: 0.5ac ±

I CERTIFY THIS ON-SITE SEWAGE MANAGEMENT SYSTEM MEETS THE MINIMUM DESIGN REQUIREMENTS ESTABLISHED BY THE DEPARTMENT OF COMMUNITY HEALTH. I HAVE MADE A SITE VISIT TO VERIFY THE SYSTEM CAN BE INSTALLED AS DESIGNED IN ACCORDANCE WITH THESE REGULATIONS.

JAY MAUPIN, P.E.

APPROVAL OF THE WATER WELL AND SEPTIC SYSTEM IS REQUIRED BY THE CHATHAM COUNTY HEALTH DEPARTMENT.



NOTE:
1. SEPTIC TANK SHALL BE PLACED ON A MIN. OF 4" #57 STONE

SEPTIC PROFILE

NOT TO SCALE

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS		
NO.	DATE	DESCRIPTION

MAUPIN engineering
114 WEST 42nd STREET • SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

UTILITY PLAN

PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER JAY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS: RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022

CHK'D: JAM DATE

SCALE: 1" = 30'

SHEET NO. C.4

PROJECT NO. 673-21-35

1.26.22 SDP-Grn truck Stop.dwg

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

REMOVE EXISTING DRIVEWAY PIPES AND RESTORE ROADSIDE DITCH

WHAT IS THE PURPOSE OF THE 19' FLAT SPOT/BERM SHOWN?

REGRADE ROADSIDE DITCH

MOORE ROAD
(COUNTY 50' R/W)

ASPHALT

EARTHEN ROAD

PLEASE CONSIDER DIRECTING THIS STORM WATER TO THE POND. DUE TO THE PROXIMITY OF THE MAINTENANCE ACTIVITY, THIS WATER SHOULD GO THROUGH THE POND.

GEORGIA HIGHWAY NO. 21
110' R/W

EDGE OF ASPHALT

PLEASE CONSIDER A FEW EXTRA SPOT ELEVATIONS ALONG RIDGE (HIGH POINT)

50' SERVICED POWER R/W (CENTERED ON POWER LINE)

LOT 1C RICE HOPE
3.933 AC
171,316 SF

FFE = 22.20

CONCRETE

REGRADE ROADSIDE DITCH AND MOVE INTO RIGHT OF WAY

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

EXISTING CONTOUR LABELS ARE MISSING

EXTEND DITCH CLEANING TO FRONT PROPERTY LINE. DIRECT DITCH AND STORM WATER TO POND.

BENJAMIN FOSTER
PIN: 70906 02007

CALL OUT PROPOSED DITCH GRADES. DIRECT WATER INTO POND

LABEL CONTOUR LINES

WEIR WALL SEE DETAIL

WILL TREES BE RETAINED? IF SO CALL FOR TREE PROTECTION. IF NOT, CALL FOR DEMOLITION.

SHOW EXISTING CONDITIONS AND PROPOSED GRADES TO OUTFALL TO DEMONSTRATE POSITIVE FLOW FROM POND TO OUTFALL DITCH.

Designer's Certification Statement

I, Jay Maupin, am a professional engineer registered in the State of Georgia, and am familiar with the requirements of PORT WENTWORTH Stormwater Management Ordinance, PORT WENTWORTH's Local Design Manual, PORT WENTWORTH's Flood Protection Ordinance, PORT WENTWORTH's Subdivision Ordinance, PORT WENTWORTH's Erosion and Sediment Control Ordinance, hydraulic engineering principles, and low impact design/green infrastructure design practices.

The attached design plans, Stormwater Management Report, and Stormwater Management Operations and Maintenance Plan for the site development known as PW TRUCK SHOP located at 8191 OLD HWY. 21, PORT WENTWORTH, GEORGIA are designed in compliance with the Local Design Manual of PORT WENTWORTH, PORT WENTWORTH's Stormwater Management Ordinance, PORT WENTWORTH's Flood Protection Ordinance, PORT WENTWORTH's Subdivision Ordinance, and PORT WENTWORTH's Erosion and Sediment Control Ordinance.

Further, when constructed according to the design plans, and operated according to the facility Stormwater Operations and Maintenance Plan, the facility will function in compliance with the Local Design Manual of PORT WENTWORTH's, PORT WENTWORTH's Stormwater Management Ordinance, PORT WENTWORTH's Flood Protection Ordinance, PORT WENTWORTH's Subdivision Ordinance, and PORT WENTWORTH's Erosion and Sediment Control Ordinance.

Name: Jay Maupin, PE
Address: 114 W. 42nd St.
City, State, Zip: Savannah, GA 31401
Daytime Telephone Number: 912-235-2915
Email Address: jay@maupinengineering.com
Cell Phone Number: 912-667-7757

(signature) Date 4/4/22 Seal

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER JAY A. MAUPIN

DOWNSTREAM SIDE

FOOTING
6" ORIFICE
WEIR WALL

UPSTREAM SIDE (POND)

PLAN

23'
72"
TOP OF WALL EL: 20.10
EL: 19.05
3:1 SLOPE
POND INVERT EL: 17.70
6" DIAMETER
FOOTING
6" #57 STONE MIN.

ELEVATION

OUTFALL CONTROL STRUCTURE
NOT TO SCALE

NOTE: STRUCTURAL DESIGN BY OTHERS

REVISIONS		
NO.	DATE	DESCRIPTION

MAUPIN engineering
114 WEST 42nd STREET • OFFICE PHONE (912) 235 - 2915
SAVANNAH, GA 31401 • GENERAL@MAUPINENGINEERING.COM

GRADING PLAN
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER JAY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

SCALE: 1" = 30'

SHEET NO.
C.5
673-21-35
PROJECT NO.

©COPYRIGHT 2022 Maupin Engineering, Inc.

1.26.22 SDP-Om Truck Shop.dwg

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

MOORE ROAD
(COUNTY 50' R/W)

ASPHALT

EARTHEN ROAD

GEORGIA HIGHWAY NO. 21
110' R/W

EDGE OF ASPHALT

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

CONCRETE

LOT 1C RICE HOPE
3.933 AC
171,316 SF

50' GEORGIA POWER LINE R/W
(CENTERED ON POWER LINES)

BENJAMIN FOSTER
PIN: 70906 02007

6-TD
1-UP
6-UP
8-TD

N65°18'57"E 515.33'
S31°34'14"E 92.61'
ARC=84.25'
ARC=160.33'
ARC=148.72'
417.77'
N15°38'
N88°23'02"W
TTD 71'
230.53'
S6°56'33"W
139.82'
S07°07'E 123.89'

18" RCP
18" CMP

PLANTING SCHEDULE

ITEM	SCIENTIFIC NAME	COMMON NAME	QTY	SIZE	SPACING
UP	ULMUS PARVIFOLIA	DRAKE ELM	7	2.5" CALIPER	AS SHOWN
TD	TAXODIUM DISTICHUM	BALD CYPRESS	14	2.5" CALIPER	AS SHOWN

TOTAL 21

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS

NO.	DATE	DESCRIPTION

MAUPIN tm
engineering
114 WEST 42nd STREET • SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

LANDSCAPING PLAN
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER AMY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

SCALE: 1" = 30'

SHEET NO.
C.6

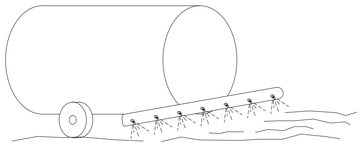
PROJECT NO.
673-21-35

1.26.22 SDP Grn Truck Stop.dwg

INITIAL PHASE NOTES:

1. INSTALL THE CONSTRUCTION ENTRANCE AND THE CONCRETE WASHOUT AREA.
2. CONTROL SILT WITH INSTALLATION OF SEDIMENT BARRIERS, SILT FENCE, CHECKDAM HAYBALES 50 FEET ON CENTER, DUST CONTROL, TEMPORARY SEEDING, AND TEMPORARY SEDIMENT TRAPS

USGS QUAD - CHATHAM COUNTY - PORT WENTWORTH



CONTRACTOR SHALL EMPLOY THE FOLLOWING TEMPORARY METHODS TO LIMIT THE SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES:

*TEMPORARY METHODS:
- -MULCHES
- -SPRAY ON ADHESIVES
- -TILLING
- -IRRIGATION
- -BARRIERS
- -CALCIUM CHLORIDE

*PERMANENT METHODS
- -PERMANENT VEGETATION
- -TOPSOIL
- -STONE COVER

*CHEMICAL CONTROL

ADHESIVE ADHESIVE	WATER DILUTION	TYPE OF NOZZLE	APPLICATION RATE (GAL/AC)
ANIOIC ASPHALT EMULSION	7:1	SPRAY	1200
LATEX EMULSION	12 1/2:1	FINE SPRAY	235
RESIN-IN-WATER EMULSION	4:1	FINE SPRAY	300

DUST CONTROL ON DISTURBED AREAS Du

CALL FOR SWEEPING AND CLEANING OF EXISTING PAVED ROAD IN ALL PHASES OF THE EROSION CONTROL PLAN.

MOVE LIMITS OF DISTURBANCE TO EDGE OF ROAD FOR DITCH CLEANING.

BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

LIMITS OF DISTURBANCE

MOORE ROAD
(COUNTY 50' R/W)

GEORGIA HIGHWAY NO. 21
110' R/W

EDGE OF ASPHALT

N32.236470°
W81.193608°

Sd4-C

EARTHEN ROAD

EMERGENCY OUTFALL

OJ(ocilla complex)

Pl(pelham loamy)

CONCRETE

EARTHEN ROAD

LOT 1C RICE HOPE
3.933 AC
171,316 SF

50' SEPCO POWER LINE R/W (CENTERED ON POWER LINE)

N65°18'57"E 515.27'

S84°28'26"E 498.53'

N88°23'02"W 417.77'

S5°36'33"W 230.53'

N7°07'E 123.59'

(CWA) CONCRETE WASHOUT AREA

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

LIMITS OF DISTURBANCE

Sd1-NS

CD-HB

Sd4-C

SAMPLING / OUTFALL LOCATION

EMERGENCY OUTFALL

BENJAMIN FOSTER
PIN: 70906 02007

DU
DS1
DS2

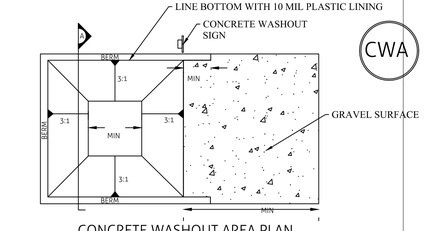
Ds1

MULCHING & STRAWING RATES

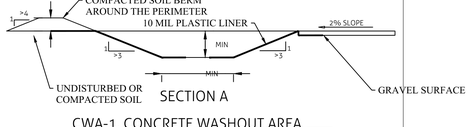
MATERIAL	RATE	DEPTH
STRAW OR HAY	–	2" to 4"
WOOD CHIPS, SAWDUST, BARK	–	2" to 3"

NOTES
1. APPLY DRY STRAW HAY OR MULCH UNIFORMLY BY HAND OR BY MECHANICAL EQUIPMENT.
2. PRESS THE STRAW/HAY INTO THE SOIL IMMEDIATELY AFTER APPLICATION.
3. ANCHOR WOOD USING APPROPRIATE SIZED NETTING.

CONCRETE WASHOUT AREA (CWA)



CONCRETE WASHOUT AREA PLAN



SECTION A

CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MINIMUM THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 1' DEEP. THE BASE SHOULD BE LINED WITH 10'MIL PLASTIC LINING.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMPS.
8. USE EXCAVATED MATERIAL FOR THE PERIMETER BERM CONSTRUCTION.

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS

NO.	DATE	DESCRIPTION

MAUPIN engineering
114 WEST 42nd STREET • OFFICE PHONE (912) 235 - 2915
SAVANNAH, GA 31401 • GENERAL@MAUPINENGINEERING.COM

SEDIMENT AND EROSION CONTROL PLAN - INITIAL
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER JAY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

20 0 40
SCALE: 1" = 40'

SHEET NO.
C.e1
673-21-35
PROJECT NO.

1.26.22 SDP-Ort truck Stop.dwg

SEEDING RATES FOR TEMPORARY & PERMANENT COVER

Ds2
Ds3

MONTH	TEMPORARY COVER	RATES PER ACRE
MARCH–JUNE	COMMON BERMUDA (HULLED)	10 lbs.
	WEEPING LOVEGRASS	4 lbs.
APRIL–AUGUST	BROWN TOP MILLET	40 lbs.
	SUDANGRASS	60 lbs.
	PEARL MILLET	50 lbs.
SEPT.–FEBRUARY	RYE (MOST WINTER HARDY)	3 BU
	RYEGRASS	40 lbs.
	BARLEY	3 BU
	WHEAT	3 BU

MONTH	PERMANENT COVER	RATES PER ACRE
MARCH–JUNE	COMMON BERMUDA (HULLED)	10 lbs.
	WEEPING LOVEGRASS	4 lbs.
JULY–AUGUST	COMMON BURMUDA (HULLED) & BROWN TOP MILLET	10 lbs. 10 lbs.
	COMMON BURMUDA (HULLED) & WEEPING LOVEGRASS	6 lbs. 2 lbs.
	COMMON BURMUDA (HULLED) & PENSACOLA BAHIA & BROWN TOP MILLET	6 lbs. 30 lbs. 10 lbs.
	PENSACOLA BAHIA & BROWN TOP MILLET	60 lbs. 10 lbs.
	PENSACOLA BAHIA & WEEPING LOVEGRASS & BROWNTOP MILLET	30 lbs. 2 lbs. 10 lbs.
	WEEPING LOVEGRASS & BROWN TOP MILLET	4 lbs. 10 lbs.

NOTES
1. CENTIPEDE SOD CAN BE USED AS PERMANENT COVER ANYTIME EXCEPT JUNE THROUGH OCTOBER.
2. LISTED IN ORDER OF PREFERENCE.
3. ALL PERMANENT GRASS PLANTINGS SHALL BE MULCHED.

Ds2–Ds4 NOTES:

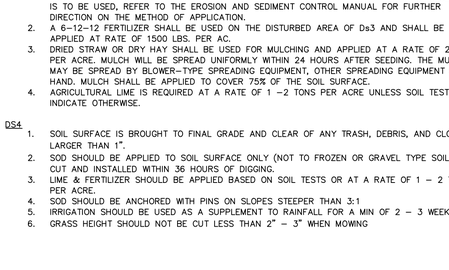
Ds2
1. A TEMPORARY GRASSING OF ANNUAL RYEGRASS SHALL BE APPLIED AT A RATE OF 40 LBS PER ACRE TO DISTURBED AREAS WITHIN 14 DAYS OF DISTURBANCE. THE PROPOSED ANNUAL RYEGRASS SHALL BE APPLIED DURING THE MONTHS OF SEPTEMBER THRU DECEMBER.
2. A 6–12–12 FERTILIZER SHALL BE USED ON THE DISTURBED AREA OF Ds2 AND SHALL BE APPLIED AT A RATE OF 1500 LBS. PER AC.
3. AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE.

Ds3
1. A PERMANENT GRASSING OF UNHULLED COMMON BERMUDA SHALL BE APPLIED AT A RATE OF 10 LBS. PER ACRE DURING THE MONTHS OF SEPTEMBER THRU FEBRUARY. IF A HYDRAULIC SEEDER IS TO BE USED, REFER TO THE EROSION AND SEDIMENT CONTROL MANUAL FOR FURTHER DIRECTION ON THE METHOD OF APPLICATION.
2. A 6–12–12 FERTILIZER SHALL BE USED ON THE DISTURBED AREA OF Ds3 AND SHALL BE APPLIED AT RATE OF 1500 LBS. PER AC.
3. DRIED STRAW OR DRY HAY SHALL BE USED FOR MULCHING AND APPLIED AT A RATE OF 2 TONS PER ACRE. MULCH WILL BE SPREAD UNIFORMLY WITHIN 24 HOURS AFTER SEEDING. THE MULCH MAY BE SPREAD BY BLOWER–TYPE SPREADING EQUIPMENT, OTHER SPREADING EQUIPMENT OR BY HAND. MULCH SHALL BE APPLIED TO COVER 75% OF THE SOIL SURFACE.
4. AGRICULTURAL LIME IS REQUIRED AT A RATE OF 1 –2 TONS PER ACRE UNLESS SOIL TESTS INDICATE OTHERWISE.

DS4
1. SOIL SURFACE IS BROUGHT TO FINAL GRADE AND CLEAR OF ANY TRASH, DEBRIS, AND CLODS LARGER THAN 1".
2. SOD SHOULD BE APPLIED TO SOIL SURFACE ONLY (NOT TO FROZEN OR GRAVEL TYPE SOILS). CUT AND INSTALLED WITHIN 36 HOURS OF DIGGING.
3. LIME & FERTILIZER SHOULD BE APPLIED BASED ON SOIL TESTS OR AT A RATE OF 1 – 2 TONS PER ACRE.
4. SOD SHOULD BE ANCHORED WITH PINS ON SLOPES STEEPER THAN 3:1
5. IRRIGATION SHOULD BE USED AS A SUPPLEMENT TO RAINFALL FOR A MIN OF 2 – 3 WEEKS
6. GRASS HEIGHT SHOULD NOT BE CUT LESS THAN 2" – 3" WHEN MOWING

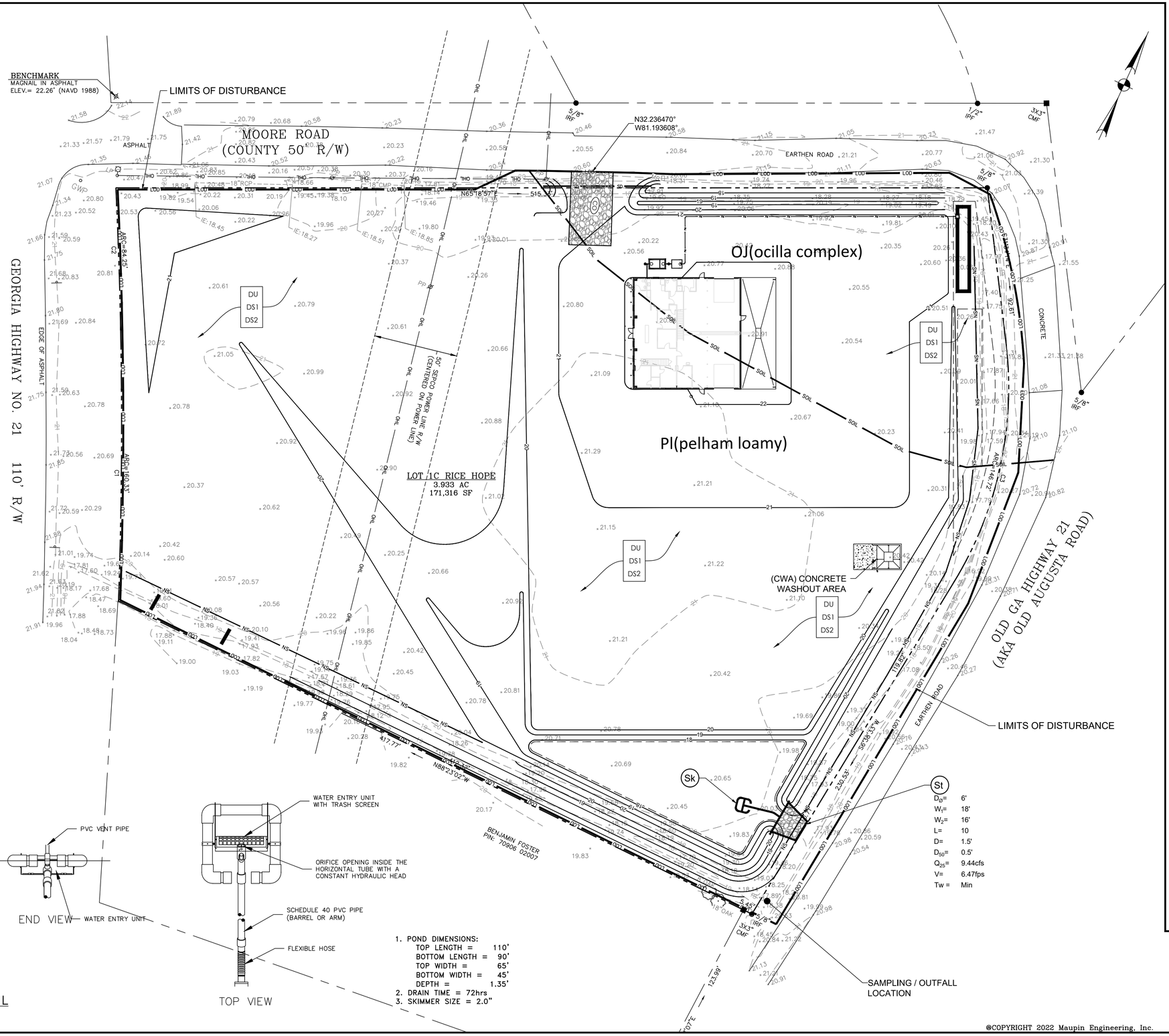
INTERMEDIATE PHASE NOTES:

1. MAINTAIN ALL TEMPORARY BMPs AS SHOWN IN INITIAL PHASE.
2. CONTINUE TO USE TEMPORARY SEEDING AND DUST CONTROL. PERMANENT SEEDING CAN BE APPLIED TO AREAS WHICH WILL RECEIVE SODDING IN THE FINAL PHASE.
3. ADD SKIMMER TO WEIR WALL AND ADD RIP RAP TO OUTLET OF WEIR WALL BEING INSTALLED.



SKIMMER DETAIL
NTS

1. POND DIMENSIONS:
   TOP LENGTH = 110'
   BOTTOM LENGTH = 90'
   TOP WIDTH = 65'
   BOTTOM WIDTH = 45'
   DEPTH = 1.35'
2. DRAIN TIME = 72hrs
3. SKIMMER SIZE = 2.0"



©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS		
NO.	DATE	DESCRIPTION

MAUPIN tm
engineering
114 WEST 42nd STREET • SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

SEDIMENT AND EROSION CONTROL PLAN - INTERMEDIATE
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER MAY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

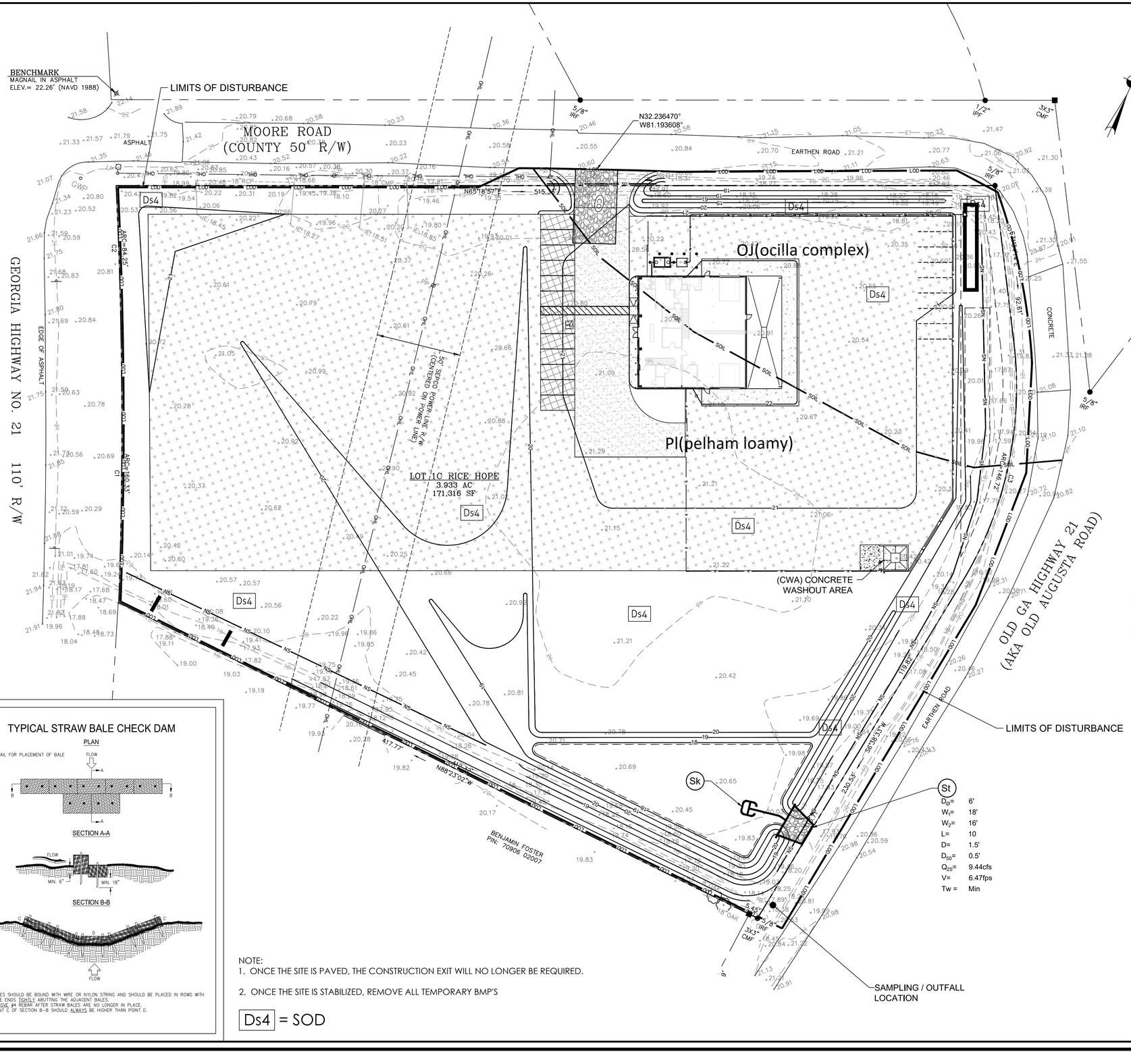
DRWN: TRW 1-26-2022
CHK'D: JAM DATE

15 0 30
SCALE: 1" = 30'

SHEET NO.
C.e2

673-21-35
PROJECT NO.

1.26.22 SWPPP Dirt Truck Stop.dwg

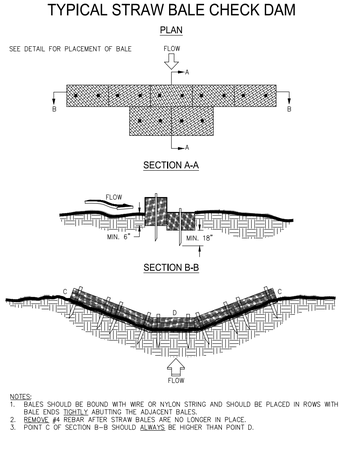


NOTE:
1. ONCE THE SITE IS PAVED, THE CONSTRUCTION EXIT WILL NO LONGER BE REQUIRED.

2. ONCE THE SITE IS STABILIZED, REMOVE ALL TEMPORARY BMP'S

Ds4 = SOD

TYPICAL STRAW BALE CHECK DAM



NOTES:
1. BALES SHOULD BE BOUND WITH WIRE OR NYLON STRING AND SHOULD BE PLACED IN ROWS WITH BALE ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. REMOVE #4 REBAR AFTER STRAW BALES ARE NO LONGER IN PLACE.
3. POINT C OF SECTION B-B SHOULD ALWAYS BE HIGHER THAN POINT D.

SOD COVER

Ds4

GRASS	TEMPORARY VARIETIES	RESOURCE AREA	GROWING SEASON
BERMUDA	COMMON TIFWAY TIFGREEN TIFLAWN	M-L, P, C P, C P, C P, C	WARM WEATHER
CENTIPEDE	--	P, C	WARM WEATHER
ST. AUGUSTINE	COMMON BITTERBLUE RALEIGH	C	WARM WEATHER

NOTES:
1. STAGER ALL JOINTS
2. ANCHOR WITH PINS ON SLOPES STEEPER THAN 3:1
3. IRRIGATE SOD IMMEDIATELY AFTER INSTALLATION
4. RE-SOD AREAS WHERE AN ADEQUATE STAND IS NOT OBTAINED.
5. LIME SHOULD BE APPLIED BE APPLIED BASED ON SOIL TEST OR AT A RATE OF 1-2 TONS/ AC.
6. 10-10-10 FERTILIZER SHALL BE APPLIED TO THE SOIL PRIOR TO SOD PLACEMENT AT A RATE OF 1000lbs/AC DURING THE FALL.

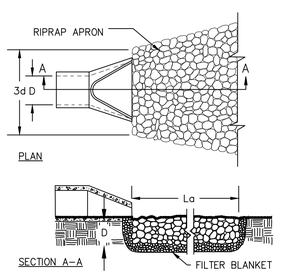
FERTILIZER REQUIREMENTS FOR SOD

GRASS	PLANTING YEAR	FERTILIZER (N-P-K)	RATE lbs/ac	NITROGEN lbs/ac
COOL SEASON GRASSES	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500 1000 400	50-100 - 30
WARM SEASON GRASSES	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500 800 400	50-100 50-100 30

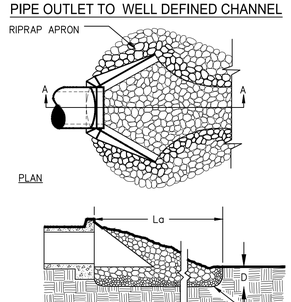
St RIPRAP OUTLET PROTECTION

PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL

NOTES:
1. La IS THE LENGTH OF THE RIPRAP APRON.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESSTHAN 6".
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.



PIPE OUTLET TO WELL DEFINED CHANNEL



©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS NO.	DATE	DESCRIPTION

MAUPIN engineering tm
114 WEST 42nd STREET • SAVANNAH, GA 31401
OFFICE PHONE (912) 235-2915
GENERAL@MAUPINENGINEERING.COM

SEDIMENT AND EROSION CONTROL PLAN - FINAL
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER MY A. MAUPIN

CERT.#21051 EXP: 12/1/2024

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

15 0 30
SCALE: 1" = 30'

SHEET NO.
C.e3

673-21-35
PROJECT NO.

1.26.22 SWPP Off Truck Stop.dwg

ES&PC ITEM#

THIS PLAN WAS PREPARED AS REQUIRED BY NPDES GENERAL PERMIT NO. GAR 100001. THESE PLAN SHEETS AND ALL REQUIREMENTS OF THE GENERAL PERMIT AS WELL AS LOCAL, STATE, AND FEDERAL REGULATIONS OR LAWS APPLY REGARDLESS OF SPECIFIC INCLUSION IN THIS PLAN.

OWNER/DEVELOPER (PRIMARY PERMITTEE) WILL OVERSEE SITE CONSTRUCTION LOCATED ON THE PROPERTY SITUATED IN THE UNINCORPORATED PORT WENTWORTH. PIN: 70906 02002

THE DESIGNER WAS NOT KNOWLEDGEABLE OF ANY SECONDARY PERMITTEES AT THE TIME OF PRODUCTION OF THE DRAWINGS.

2 DESIGN PROFESSIONAL'S CREDENTIALS:

ENGINEER'S NAME (PRINTED):	JAY MAUPIN, PE
GEORGIA PE NUMBER:	23758
GSWCC LEVEL II CERTIFICATION NUMBER:	21051
CERTIFICATION NUMBER EXPIRATION DATE:	12/1/2024

4

24 HOUR CONTACT
KIM THOMAS
912-777-3404

5 PRIMARY PERMITEE:

KIM THOMAS
119 CANAL STREET SUITE 106
POOLER, GEORGIA 31322
o:912-777-3404
KIM@DEWITTTILTONGROUP.COM

6 THE TOTAL PARCEL AREA IS 3.93(±) ACRES. THE DISTURBED AREA IS 4.1(±)ACRES.

7 CONSTRUCTION EXIT LOCATION
N: 32.236470°
W: 81.193608°

9 THE SITE OF THIS PROJECT IS CURRENTLY A VACANT COMMERCIAL DEVELOPMENT .
THE SITE OF THIS PROJECT IS INTENDED TO BE DEVELOPED AS A TRUCK REPAIR SHOP.

11 NAME OF RECEIVING WATERS

ON-SITE DETENTION ==> ABERCORN CREEK ==> SAVANNAH RIVER

THE FINAL RECEIVING WATERS SUPPORTS WARM WATER FISHERIES. THIS PROJECT DEVELOPMENT WILL NOT HAVE POST-DEVELOPMENT RUN-OFF THAT WILL AFFECT THE NEIGHBORING AREAS.

12 I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY SUPERVISION.

Jay Maupin _____ 4/4/22_____
Jay Maupin Date

13 I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OF THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR100001.

Jay Maupin _____ _4/4/22_____
Jay Maupin Date

14 THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMP'S WITHIN 7 DAYS AFTER INSTALLATION.

15 NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS.

17 AMENDMENTS / REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

18 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

19 THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.

20 EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

21 ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

24 CONCRETE TRUCK WASHING - NO CONCRETE TRUCKS WILL BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ONSITE. CONCRETE WASHDOWN OF TOOLS, CONCRETE MIXER CHUTES, HOPPERS AND THE REAR OF THE VEHICLES AT THE SITE MUST BE DONE AT THE CONCRETE WASHOUT AREA (CWA) AS SHOWN ON PLANS. WASHOUT OF THE DRUM AT THE CONSTRUCTION SITE IS STRICTLY PROHIBITED.

25 PETROLEUM-BASED PRODUCTS - CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS, AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ONSITE VEHICLE AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATER, NATURAL DRAINS, AND STORMWATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS, AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS.
PAINTS/FINISHES/SOLVENTS - ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORMWATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

FERTILIZER/HERBICIDE - THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS.

BUILDING MATERIALS - NO BUILDING OR CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIALS WILL BE DISPOSED OF IN PROPER WASTE DISPOSAL PROCEDURES.

SPILL CLEANUP AND CONTROL PRACTICES

LOCAL, STATE, AND MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND PROCEDURES WILL BE MADE AVAILABLE TO SITE PERSONNEL. MATERIAL AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREAS. TYPICAL MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST, AND PROPERLY LABELED PLASTIC AND METAL WASTE CONTAINERS. SPILL PREVENTION PRACTICES AND PROCEDURES WILL BE REVIEWED AFTER A SPILL AND ADJUSTED AS NECESSARY TO PREVENT FUTURE SPILLS. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. ALL SPILLS WILL BE REPORTED AS REQUIRED BY LOCAL, STATE, AND FEDERAL REGULATIONS. FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802.

FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802. FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS. FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED AND LOCAL AGENCIES CONTACTED AS REQUIRED.

THE CONTRACTOR SHALL NOTIFY THE LICENSED PROFESSIONAL WHO PREPARED WITH PLAN IF MORE THAN 1,320 GALLONS OF PETROLEUM IS STORED ONSITE (THIS INCLUDES CAPACITIES OF EQUIPMENT) OR IF ANY ONE PIECE OF EQUIPMENT HAS A CAPACITY GREATER THAN 660 GALLONS. THE CONTRACTOR WILL NEED A SPILL PREVENTION CONTAINMENT AND COUNTERMEASURES PLAN PREPARED BY THAT LICENSED PROFESSIONAL.

ES&PC ITEM#

26 UPON COMPLETION OF THIS PROJECT, THE CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES EXCEPT THE PERMANENT GRASSING AND RIP RAP IN AREAS OF HIGH VELOCITY DISCHARGE.

27 FOR BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS PRESENT ON THE SITE, THE CONTRACTOR SHALL PROVIDE COVER (E.G. PLASTIC SHEETING, TEMPORARY ROOFS) TO MINIMIZE THE EXPOSURE OF THESE PRODUCTS TO PRECIPITATION AND TO STORMWATER, OR A SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THESE AREAS.

28 POLLUTANTS FROM THE SITE CONSTRUCTION WILL BE TREATED BY THE THE TEMPORARY SEDIMENT POND AND THE DETENTION POND INSTALLED DURING CONSTRUCTION

30 INSPECTIONS

(1). EACH DAY WHEN ANY TYPE OF CONSTRUCTION ACTIVITY HAS TAKEN PLACE AT A PRIMARY PERMITTEE'S SITE, CERTIFIED PERSONNEL PROVIDED BY THE PRIMARY PERMITTEE SHALL INSPECT:
(A) ALL AREAS AT THE PRIMARY PERMITTEE'S SITE WHERE PETROLEUM PRODUCTS ARE STORED, USED, OR HANDLED FOR SPILLS AND LEAKS FROM VEHICLES AND EQUIPMENT AND
(B) ALL LOCATIONS AT THE PRIMARY PERMITTEE'S SITE WHERE VEHICLES ENTER OR EXIT THE SITE FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING.
THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

(2). MEASURE AND RECORD RAINFALL WITHIN DISTURBED AREAS OF THE SITE THAT HAVE NOT MET FINAL STABILIZATION ONCE EVERY 24 HOURS EXCEPT ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY AND NON-WORKING FEDERAL HOLIDAY. THE DATA COLLECTED FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY. MEASUREMENT OF RAINFALL MAY BE SUSPENDED IF ALL AREAS OF THE SITE HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION.

(3). CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT THE FOLLOWING AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES RAINFALL OR GREATER (UNLESS SUCH STORM ENDS AFTER 5:00 PM ON ANY FRIDAY OR ON ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY OR ANY NON-WORKING FEDERAL HOLIDAY IN WHICH CASE THE INSPECTION SHALL BE COMPLETED BY THE END OF THE NEXT BUSINESS DAY AND/OR WORKING DAY, WHICHEVER OCCURS FIRST]:
(A) DISTURBED AREAS OF THE PRIMARY PERMITTEE'S CONSTRUCTION SITE;
(B) AREAS USED BY THE PRIMARY PERMITTEE FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION; AND
(C) STRUCTURAL CONTROL MEASURES. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN APPLICABLE TO THE PRIMARY PERMITTEE'S SITE SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY.
WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S). FOR AREAS OF A SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION, THE PERMITTEE MUST COMPLY WITH PART IV.D.4.A.(4). THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

(4). CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT AT LEAST ONCE PER MONTH DURING THE TERM OF THIS PERMIT (I.E., UNTIL A NOTICE OF TERMINATION HAS BEEN SUBMITTED) THE AREAS OF THE SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION. THESE AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM AND THE RECEIVING WATER(S). EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S).

(5). BASED ON THE RESULTS OF EACH INSPECTION, THE SITE DESCRIPTION AND THE POLLUTION PREVENTION AND CONTROL MEASURES IDENTIFIED IN THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, THE PLAN SHALL BE REVISED AS APPROPRIATE NOT LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION. IMPLEMENTATION OF SUCH CHANGES SHALL BE MADE AS SOON AS PRACTICAL BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION.

(6). A REPORT OF EACH INSPECTION THAT INCLUDES THE NAME(S) OF CERTIFIED PERSONNEL MAKING EACH INSPECTION, THE DATE(S) OF EACH INSPECTION, CONSTRUCTION PHASE (I.E., INITIAL, INTERMEDIATE OR FINAL), MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, AND ACTIONS TAKEN IN ACCORDANCE WITH PART IV.D.4.A.(5). OF THE PERMIT SHALL BE MADE AND RETAINED AT THE SITE OR BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION UNTIL THE ENTIRE SITE OR THAT PORTION OF A CONSTRUCTION SITE THAT HAS BEEN PHASED HAS UNDERGONE FINAL STABILIZATION AND A NOTICE OF TERMINATION IS SUBMITTED TO EPD. SUCH REPORTS SHALL BE READILY AVAILABLE BY END OF THE SECOND BUSINESS DAY AND/OR WORKING DAY AND SHALL IDENTIFY ALL INCIDENTS OF BEST MANAGEMENT PRACTICES THAT HAVE NOT BEEN PROPERLY INSTALLED AND/OR MAINTAINED AS DESCRIBED IN THE PLAN. WHERE THE REPORT DOES NOT IDENTIFY ANY INCIDENTS, THE INSPECTION REPORT SHALL CONTAIN A CERTIFICATION THAT THE BEST MANAGEMENT PRACTICES ARE IN COMPLIANCE WITH THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART V.G.2. OF THIS PERMIT.

SAMPLING FREQUENCY.

31

(1). THE PRIMARY PERMITTEE MUST SAMPLE IN ACCORDANCE WITH THE PLAN AT LEAST ONCE FOR EACH RAINFALL EVENT DESCRIBED BELOW. FOR A QUALIFYING EVENT, THE PERMITTEE SHALL SAMPLE AT THE BEGINNING OF ANY STORMWATER DISCHARGE TO A MONITORED RECEIVING WATER AND/OR FROM A MONITORED OUTFALL LOCATION WITHIN IN FORTY-FIVE (45) MINUTES OR AS SOON AS POSSIBLE.

(2). HOWEVER, WHERE MANUAL AND AUTOMATIC SAMPLING ARE IMPOSSIBLE (AS DEFINED IN THIS PERMIT), OR ARE BEYOND THE PERMITTEE'S CONTROL, THE PERMITTEE SHALL TAKE SAMPLES AS SOON AS POSSIBLE, BUT IN NO CASE MORE THAN TWELVE (12) HOURS AFTER THE BEGINNING OF THE STORMWATER DISCHARGE.

(3). SAMPLING BY THE PERMITTEE SHALL OCCUR FOR THE FOLLOWING QUALIFYING EVENTS:

(A). FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORMWATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THIS PERMIT AFTER ALL CLEARING AND GRUBBING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO COMPLETION OF MASS GRADING OPERATIONS, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATION;

(B). IN ADDITION TO (A) ABOVE, FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORMWATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THIS PERMIT EITHER 90 DAYS AFTER THE FIRST SAMPLING EVENT OR AFTER ALL MASS GRADING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO SUBMITTAL OF A NOT, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATION, WHICHEVER COMES FIRST;

(C). AT THE TIME OF SAMPLING PERFORMED PURSUANT TO (A) AND (B) ABOVE, IF BMPS IN ANY AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL ARE NOT PROPERLY DESIGNED, INSTALLED AND MAINTAINED, CORRECTIVE ACTION SHALL BE DEFINED AND IMPLEMENTED WITHIN TWO (2) BUSINESS DAYS, AND TURBIDITY SAMPLES SHALL BE TAKEN FROM DISCHARGES FROM THAT AREA OF THE SITE FOR EACH SUBSEQUENT RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH DURING NORMAL BUSINESS HOURS* UNTIL THE SELECTED TURBIDITY STANDARD IS ATTAINED, OR UNTIL POST-STORM EVENT INSPECTIONS DETERMINE THAT BMPS ARE PROPERLY DESIGNED, INSTALLED AND MAINTAINED;

(D). WHERE SAMPLING PURSUANT TO (A), (B) OR (C) ABOVE IS REQUIRED BUT NOT POSSIBLE (OR NOT REQUIRED BECAUSE THERE WAS NO DISCHARGE), THE PERMITTEE, IN ACCORDANCE WITH PART IV.D.4.A.(6), MUST INCLUDE A WRITTEN JUSTIFICATION IN THE INSPECTION REPORT OF WHY SAMPLING WAS NOT PERFORMED. PROVIDING THIS JUSTIFICATION DOES NOT RELIEVE THE PERMITTEE OF ANY SUBSEQUENT SAMPLING OBLIGATIONS UNDER (A), (B) OR (C) ABOVE; AND

(E). EXISTING CONSTRUCTION ACTIVITIES, I.E., THOSE THAT ARE OCCURRING ON OR BEFORE THE EFFECTIVE DATE OF THIS PERMIT, THAT HAVE MET THE SAMPLING REQUIRED BY (A) ABOVE SHALL SAMPLE IN ACCORDANCE WITH (B). THOSE EXISTING CONSTRUCTION ACTIVITIES THAT HAVE MET THE SAMPLING REQUIRED BY (B) ABOVE SHALL NOT BE REQUIRED TO CONDUCT ADDITIONAL SAMPLING OTHER THAN AS REQUIRED BY (C) ABOVE.

*NOTE THAT THE PERMITTEE MAY CHOOSE TO MEET THE REQUIREMENTS OF (A) AND (B) ABOVE BY COLLECTING TURBIDITY SAMPLES FROM ANY RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH AND ALLOWS FOR SAMPLING AT ANY TIME OF THE DAY OR WEEK.

ES&PC ITEM#

REPORTING.

1. THE APPLICABLE PERMITTEES ARE REQUIRED TO SUBMIT THE SAMPLING RESULTS TO THE EPD AT THE ADDRESS SHOWN IN PART II.C. BY THE FIFTEENTH DAY OF THE MONTH FOLLOWING THE REPORTING PERIOD. REPORTING PERIODS ARE MONTHS DURING WHICH SAMPLES ARE TAKEN IN ACCORDANCE WITH THIS PERMIT. SAMPLING RESULTS SHALL BE IN A CLEARLY LEGIBLE FORMAT. UPON WRITTEN NOTIFICATION, EPD MAY REQUIRE THE APPLICABLE PERMITTEE TO SUBMIT THE SAMPLING RESULTS ON A MORE FREQUENT BASIS. SAMPLING AND ANALYSIS OF ANY STORMWATER DISCHARGE(S) OR THE RECEIVING WATER(S) BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED IN A SIMILAR MANNER TO THE EPD. THE SAMPLING REPORTS MUST BE SIGNED IN ACCORDANCE WITH PART V.G.2. SAMPLING REPORTS MUST BE SUBMITTED TO EPD USING THE ELECTRONIC SUBMITTAL SERVICE PROVIDED BY EPD. SAMPLING REPORTS MUST BE SUBMITTED TO EPD UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

2. ALL SAMPLING REPORTS SHALL INCLUDE THE FOLLOWING INFORMATION:

a. THE RAINFALL AMOUNT, DATE, EXACT PLACE AND TIME OF SAMPLING OR MEASUREMENTS;
b. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE SAMPLING AND MEASUREMENTS;
c. THE DATE(S) ANALYSES WERE PERFORMED;
d. THE TIME(S) ANALYSES WERE INITIATED;
e. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE ANALYSES;
f. REFERENCES AND WRITTEN PROCEDURES, WHEN AVAILABLE, FOR THE ANALYTICAL TECHNIQUES OR METHODS USED;
g. THE RESULTS OF SUCH ANALYSES, INCLUDING THE BENCH SHEETS, INSTRUMENT READOUTS, COMPUTER DISKS OR TAPES, ETC., USED TO DETERMINE THESE RESULTS;
h. RESULTS WHICH EXCEED 1000 NTU SHALL BE REPORTED AS "EXCEEDS 1000 NTU;" AND
i. CERTIFICATION STATEMENT THAT SAMPLING WAS CONDUCTED AS PER THE PLAN.

3. ALL WRITTEN CORRESPONDENCE REQUIRED BY THIS PERMIT SHALL BE SUBMITTED BY RETURN RECEIPT CERTIFIED MAIL (OR SIMILAR SERVICE) TO THE APPROPRIATE DISTRICT OFFICE OF THE EPD ACCORDING TO THE SCHEDULE IN APPENDIX A OF THIS PERMIT. THE PERMITTEE SHALL RETAIN A COPY OF THE PROOF OF SUBMITTAL AT THE CONSTRUCTION SITE OR THE PROOF OF SUBMITTAL SHALL BE READILY AVAILABLE AT A DESIGNATED LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

32 RETENTION RECORDS

1. THE PRIMARY PERMITTEE SHALL RETAIN THE FOLLOWING RECORDS AT THE CONSTRUCTION SITE OR THE RECORDS SHALL BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI:

a. A COPY OF ALL NOTICES OF INTENT SUBMITTED TO EPD;
b. A COPY OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN REQUIRED BY THIS PERMIT;
c. THE DESIGN PROFESSIONAL'S REPORT OF THE RESULTS OF THE INSPECTION CONDUCTED IN ACCORDANCE WITH PART IV.A.5. OF THIS PERMIT;
d. A COPY OF ALL SAMPLING INFORMATION, RESULTS, AND REPORTS REQUIRED BY THIS PERMIT;
e. A COPY OF ALL INSPECTION REPORTS GENERATED IN ACCORDANCE WITH PART IV.D.4.A. OF THIS PERMIT;
f. A COPY OF ALL VIOLATION SUMMARIES AND VIOLATION SUMMARY REPORTS GENERATED IN ACCORDANCE WITH PART III.D.2. OF THIS PERMIT; AND
g. DAILY RAINFALL INFORMATION COLLECTED IN ACCORDANCE WITH PART IV.D.4.A.(2). OF THIS PERMIT.

2. COPIES OF ALL NOTICES OF INTENT, NOTICES OF TERMINATION, INSPECTION REPORTS, SAMPLING REPORTS (INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS AND ALL ORIGINAL STRIP CHART RECORDINGS FOR CONTINUOUS MONITORING INSTRUMENTATION) OR OTHER REPORTS REQUESTED BY THE EPD, EROSION, SEDIMENTATION AND POLLUTION CONTROL PLANS, RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THIS PERMIT AND ALL OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED BY THE PERMITTEE WHO EITHER PRODUCED OR USED IT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE DATE THAT THE NOT IS SUBMITTED IN ACCORDANCE WITH PART VI. OF THIS PERMIT. THESE RECORDS MUST BE MAINTAINED AT THE PERMITTEE'S PRIMARY PLACE OF BUSINESS OR AT A DESIGNATED ALTERNATIVE LOCATION ONCE THE CONSTRUCTION ACTIVITY HAS CEASED AT THE PERMITTED SITE. THIS PERIOD MAY BE EXTENDED BY REQUEST OF THE EPD AT ANY TIME UPON WRITTEN NOTIFICATION TO THE PERMITTEE

33 SAMPLING REQUIREMENTS SHALL INCLUDE THE FOLLOWING:

(1). A USGS TOPOGRAPHIC MAP, A TOPOGRAPHIC MAP OR A DRAWING (REFERRED TO AS A TOPOGRAPHIC MAP) THAT IS A SCALE EQUAL TO OR MORE DETAILED THAN A 1:24000 MAP SHOWING THE LOCATION OF THE SITE OR THE STAND ALONE CONSTRUCTION; (A) THE LOCATION OF ALL PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES AS SHOWN ON A USGS TOPOGRAPHIC MAP, AND ALL OTHER PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES LOCATED DURING MANDATORY FIELD VERIFICATION, INTO WHICH THE STORMWATER IS DISCHARGED AND (B) THE RECEIVING WATER AND/OR OUTFALL SAMPLING LOCATIONS. WHEN THE PERMITTEE HAS CHOSEN TO USE A USGS TOPOGRAPHIC MAP AND THE RECEIVING WATER(S) IS NOT SHOWN ON THE USGS TOPOGRAPHIC MAP, THE LOCATION OF THE RECEIVING WATER(S) MUST BE HAND-DRAWN ON THE USGS TOPOGRAPHIC MAP FROM WHERE THE STORMWATER(S) ENTERS THE RECEIVING WATER(S) TO THE POINT WHERE THE RECEIVING WATER(S) COMBINES WITH THE FIRST BLUE LINE STREAM SHOWN ON THE USGS TOPOGRAPHIC MAP;

(2). A WRITTEN NARRATIVE OF SITE SPECIFIC ANALYTICAL METHODS USED TO COLLECT, HANDLE AND ANALYZE THE SAMPLES INCLUDING QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES. THIS NARRATIVE MUST INCLUDE PRECISE SAMPLING METHODOLOGY FOR EACH SAMPLING LOCATION;

(3). WHEN THE PERMITTEE HAS DETERMINED THAT SOME OR ALL OUTFALLS WILL BE SAMPLED, A RATIONALE MUST BE INCLUDED ON THE PLAN FOR THE NTU LIMIT(S) SELECTED FROM APPENDIX B. THIS RATIONALE MUST INCLUDE THE SIZE OF THE CONSTRUCTION SITE, THE CALCULATION OF THE SIZE OF THE SURFACE WATER DRAINAGE AREA, AND THE TYPE OF RECEIVING WATER(S) (I.E., TROUT STREAM OR SUPPORTING WARM WATER FISHERIES); AND

(4). ANY ADDITIONAL INFORMATION EPD DETERMINES NECESSARY TO BE PART OF THE PLAN. EPD WILL PROVIDE WRITTEN NOTICE TO THE PERMITTEE OF THE INFORMATION NECESSARY AND THE TIME LINE FOR SUBMITTAL.SAMPLE TYPE.

ALL SAMPLING SHALL BE COLLECTED BY "GRAB SAMPLES" AND THE ANALYSIS OF THESE SAMPLES MUST BE CONDUCTED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 (UNLESS OTHER TEST PROCEDURES HAVE BEEN APPROVED); THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-B-92-001" AND GUIDANCE DOCUMENTS THAT MAY BE PREPARED BY THE EPD.

(1). SAMPLE CONTAINERS SHOULD BE LABELED PRIOR TO COLLECTING THE SAMPLES.

(2). SAMPLES SHOULD BE WELL MIXED BEFORE TRANSFERRING TO A SECONDARY CONTAINER.

(3). LARGE MOUTH, WELL CLEANED AND RINSED GLASS OR PLASTIC JARS SHOULD BE USED FOR COLLECTING SAMPLES. THE JARS SHOULD BE CLEANED THOROUGHLY TO AVOID CONTAMINATION.

(4). MANUAL, AUTOMATIC OR RISING STAGE SAMPLING MAY BE UTILIZED. SAMPLES REQUIRED BY THIS PERMIT SHOULD BE ANALYZED IMMEDIATELY, BUT IN NO CASE LATER THAN 48 HOURS AFTER COLLECTION. HOWEVER, SAMPLES FROM AUTOMATIC SAMPLERS MUST BE COLLECTED NO LATER THAN THE NEXT BUSINESS DAY AFTER THEIR ACCUMULATION, UNLESS FLOW THROUGH AUTOMATED ANALYSIS IS UTILIZED. IF AUTOMATIC SAMPLING IS UTILIZED AND THE AUTOMATIC SAMPLER IS NOT ACTIVATED DURING THE QUALIFYING EVENT, THE PERMITTEE MUST UTILIZE MANUAL SAMPLING OR RISING STAGE SAMPLING DURING THE NEXT QUALIFYING EVENT. DILUTION OF SAMPLES IS NOT REQUIRED. SAMPLES MAY BE ANALYZED DIRECTLY WITH A PROPERLY CALIBRATED TURBIDIMETER. SAMPLES ARE NOT REQUIRED TO BE COOLED.

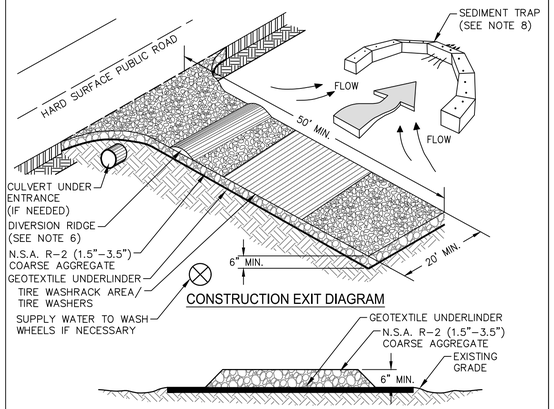
(5). SAMPLING AND ANALYSIS OF THE RECEIVING WATER(S) OR OUTFALLS BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED TO EPD AS SPECIFIED IN PART IV.E.

ES&PC ITEM#

SAMPLING POINTS.

(1). FOR CONSTRUCTION ACTIVITIES THE PRIMARY PERMITTEE MUST SAMPLE ALL RECEIVING WATER(S), OR ALL OUTFALL(S), OR A COMBINATION OF RECEIVING WATER(S) AND OUTFALL(S). SAMPLES TAKEN FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY AND REPRESENTATIVE OF THE WATER QUALITY OF THE RECEIVING WATER(S) AND/OR

CRUSHED STONE CONSTRUCTION EXIT



CONSTRUCTION EXIT DIAGRAM

CONSTRUCTION EXIT - SECTION VIEW

NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

SOD MAINTENANCE AND INSTALLATION

SOD LAYOUT AND PREPARATION

LAY SOD IN A STAGGERED PATTERN. BUTT THE STRIPS TIGHTLY AGAINST EACH OTHER. DO NOT LEAVE SPACES AND DO NOT OVERLAP. A SHARPENED MASON'S TROWEL IS A HANDY TOOL FOR TUCKING DOWN THE ENDS AND TRIMMING PIECES.

BUTTING: ANGLED ENDS CAUSED BY THE AUTOMATIC SOD CUTTER MUST BE MATCHED CORRECTLY.

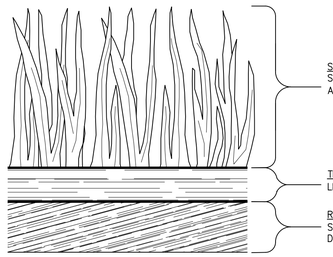
DIRECTIONS FOR INITIAL MAINTENANCE

Step 1. ROLL SOD IMMEDIATELY TO ACHIEVE FIRM CONTACT WITH THE SOIL

Step 2. WATER TO A DEPTH OF 4" AS NEEDED. WATER WELL AS SOON AS THE SOD IS LAID.

Step 3. MOW WHEN THE SOD IS ESTABLISHED -- IN 2-3 WEEKS. SET THE MOWER HIGH (2"-3").

APPEARANCE OF GOOD SOD



SHOOTS OR GRASS BLADES: GRASS SHOULD BE GREEN AND HEALTHY, MOWED AT A 2"-3" CUTTING HEIGHT.

THATCH: GRASS CLIPPINGS AND DEAD LEAVES (UP TO 1/2" THICK).

ROOT ZONE: SOIL AND ROOTS. SHOULD BE 1/2"-3/4" THICK WITH DENSE ROOT MAT FOR STRENGTH.

UNIFORM CODING SYSTEM

FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

GEORGIA SOIL AND WATER CONSERVATION COMMISSION

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM			A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT		Co (LABEL)	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION		Cr (LABEL)	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL			A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below, or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNDRAIN STRUCTURE		Dn1 (LABEL)	A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2 (LABEL)	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE		Gr (LABEL)	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainageways.
Re	RETAINING WALL		Re (LABEL)	A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING		Rt (LABEL)	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER		(INDICATE TYPE)	A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN		Sd3 (LABEL)	A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SKIMMER		Sk (LABEL)	A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
Spb	SEEP BERM		Spb (LABEL)	Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.

STRUCTURAL PRACTICES

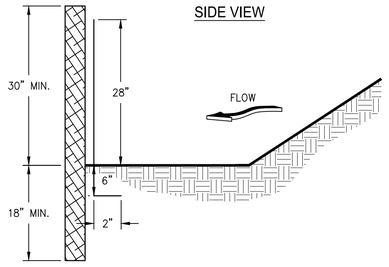
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING		Sr (LABEL)	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		Su	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN		Tc	A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Tp	TOPSOILING		Tp (SHOW STRIPING AND STORAGE AREAS)	The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION		(DENOTE TREE CENTERS)	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL			Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

VEGETATIVE PRACTICES

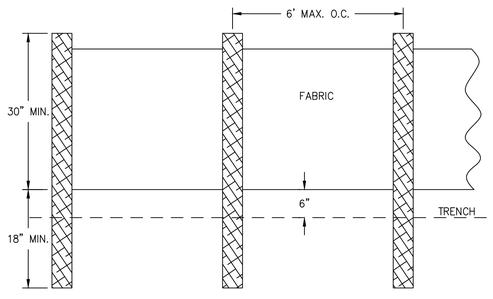
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf (LABEL)	Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded, artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedlings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS		Fl-Co	Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)		Sb	The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKIFIERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

Sd1-NS SILT FENCE - TYPE NON-SENSITIVE

SIDE VIEW



FRONT VIEW

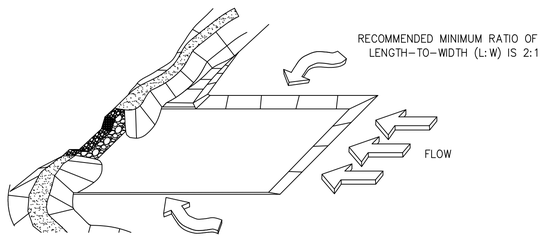


NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

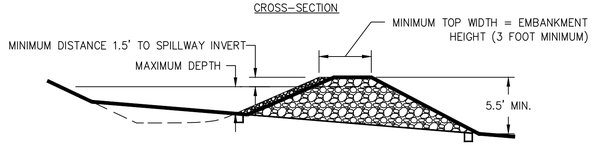
Sd4-C TEMPORARY SEDIMENT TRAP

COURTESY OF CITY OF KNOXVILLE BMP EROSION AND SEDIMENT

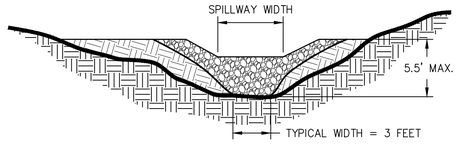
ROCK OUTLET



CROSS-SECTION



PROFILE THROUGH EMBANKMENT



REVISIONS

NO.	DATE	DESCRIPTION

MAUPIN tm engineering
114 WEST 42nd STREET SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

EROSION CONTROL DETAILS
PW TRUCK SHOP

LEVEL II E&S

GEORGIA REGISTERED No. 25758 PROFESSIONAL ENGINEER JAY A. MAUPIN

CERT.#21051 EXP:12/1/2024

STATUS: RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

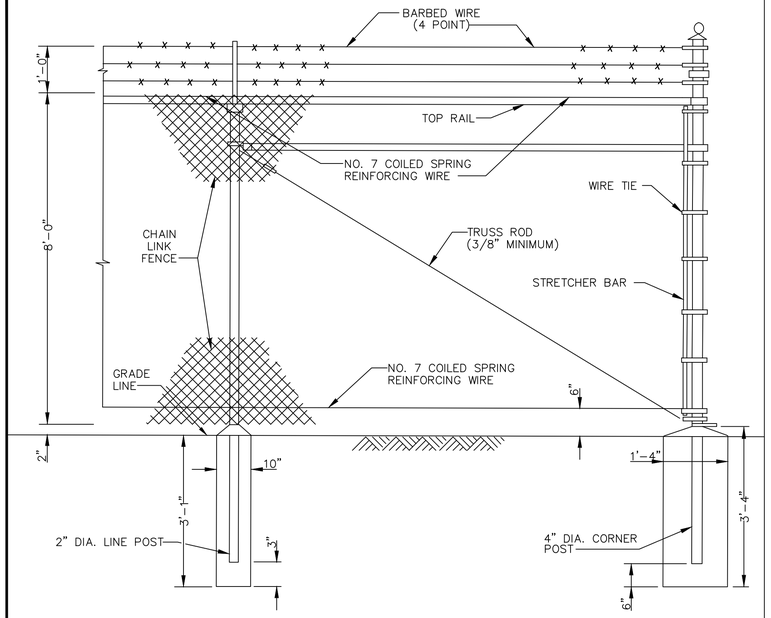
NOT TO SCALE

SHEET NO. C.d2

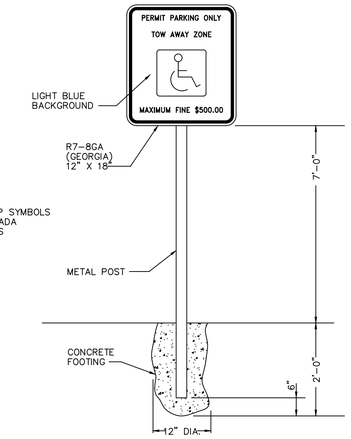
673-21-35 PROJECT NO.

©COPYRIGHT 2022 Maupin Engineering, Inc.

1.26.22 SDP- Orr Truck Stop.dwg

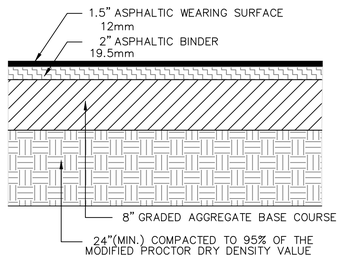


CHAINLINK FENCE
NOT TO SCALE

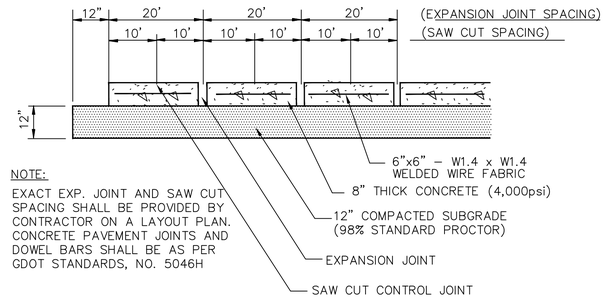


NOTE:
ALL HANDICAP SYMBOLS SHALL MEET ADA REQUIREMENTS

HANDICAPPED PARKING SIGN
NOT TO SCALE

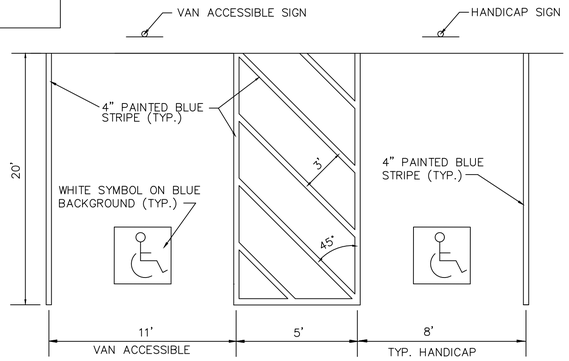


ASPHALT PAVEMENT CROSS-SECTION
HEAVY DUTY
NOT TO SCALE



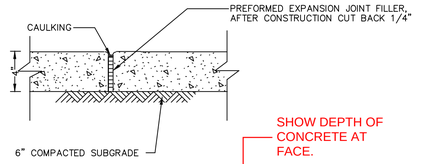
NOTE:
EXACT EXP. JOINT AND SAW CUT SPACING SHALL BE PROVIDED BY CONTRACTOR ON A LAYOUT PLAN. CONCRETE PAVEMENT JOINTS AND DOWEL BARS SHALL BE AS PER GDOT STANDARDS, NO. 5046H

CONCRETE PAVEMENT SECTION
NOT TO SCALE

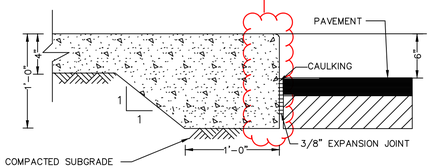


TYPICAL 90° HANDICAPPED PARKING STALLS
NOT TO SCALE

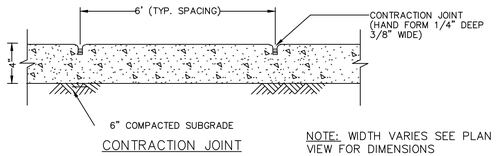
NOTE:
1. ALL HANDICAPPED STALLS SHALL BE PAINTED LIGHT BLUE.
2. LAYOUT AS PER FEDERAL REGISTER RULES AND REGULATIONS



TYP. EXPANSION JOINT



ADJACENT TO PAVEMENT

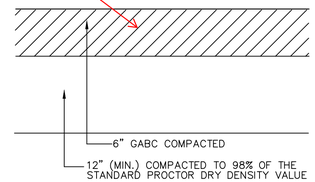


CONTRACTION JOINT

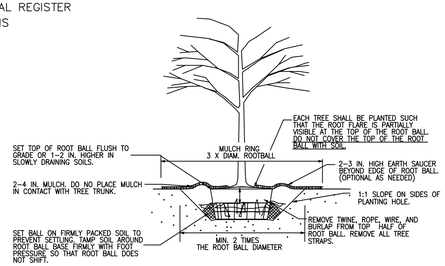
NOTE: WIDTH VARIES SEE PLAN VIEW FOR DIMENSIONS

SIDEWALK SECTIONS
NOT TO SCALE

IS THIS THE TYPICAL SECTION FOR ASPHALT MILLINGS?

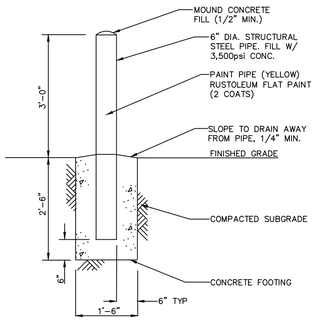


GRAVEL PAVEMENT CROSS-SECTION
NOT TO SCALE

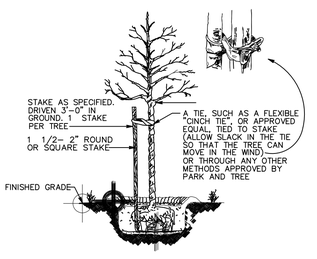


NOTES
1. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN. ALL PRUNING SHALL CONFORM TO ANSI A300 STANDARDS. IMPROPERLY PRUNED TREES MAY BE REJECTED BY THE CITY.
2. STAKE TREES ONLY WHEN NECESSARY. SEE CITY TREE STAKING DETAILS.

Tree Planting
NTS



BOLLARD
NOT TO SCALE



NOTES
1. STAKE TREES ONLY WHEN NECESSARY. STAKES SHALL BE REMOVED 6 MONTHS AFTER PLANTING.
2. OTHER ALTERNATE STAKING METHODS MAY BE USED UPON APPROVAL BY PARK AND TREE.

Tree Staking
NTS

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS NO.	DATE	DESCRIPTION

MAUPIN engineering tm
114 WEST 42nd STREET
SAVANNAH, GA 31401
OFFICE PHONE (912) 235-2915
GENERAL@MAUPINENGINEERING.COM

CONSTRUCTION DETAILS
PW TRUCK SHOP

GEORGIA REGISTERED No. 23758 PROFESSIONAL ENGINEER AMY A. MAUPIN

STATUS:
RELEASED FOR PERMITTING

DRWN: TRW 1-26-2022
CHK'D: JAM DATE

NOT TO SCALE

SHEET NO.
C.d3
673-21-35
PROJECT NO.

1.26.22 SDP- Dirt Truck Stop.dwg

Stormwater Management Plan
4/6/22

MAUPIN engineering

Port Wentworth Truck Shop
8191 Old Hwy 21
Port Wentworth, GA 31407

Prepared for:

DeWitt Tilton Group
119 Canal Street, Suite 106
Pooler, Ga 31322
912-777-3404

114 West 42nd Street
Savannah, Georgia 31401

o: 912.235.2915
ww.maupinengineering.com

Project Narrative:

The proposed project is to convert an existing platted commercial lot from its current vacant state to an 8,200sf+/- truck shop and associated improvements. The current lot is vacant and grassed without any trees on the lot.

Vicinity Map:

VICINITY MAP

Address:

8191 Old Hwy 21
Port Wentworth, GA 31407

Legal Description:

Lot 1C – Rice Hope
SMBook 53 page 125 – 3.933 ac

Natural Resources Inventory:

Existing topography:	Shown
Natural drainage features:	Shown (ditch on East side of site in Old Hwy 21 Right-of-way)
Perennial / Intermittent Streams:	None
Wetlands:	None
Riparian Buffers:	None
Floodplains:	None
Steep Slopes:	None
Soil Types:	Shown – HSG B
Groundwater Recharge Areas:	None
Areas with High Groundwater:	None
Conservation Areas:	None
Stands of Trees and or Vegetation:	None

April 6, 2022

City of Port Wentworth
Planning and Zoning Department
305 South Coastal Highway
Port Wentworth, GA 31407

RE: Port Wentworth Truck Shop
8191 Old Hwy 21
Owner Certification

I, [redacted] am the owner of Property Number 7-0906-02-002, 8191 Old Hwy 21, the future location of Port Wentworth Truck Shop. Please let this letter serve as verification that I certify all land disturbing and development activities that will take place on the aforementioned property shall be in accordance with the approved stormwater management design plan.

Sincerely,

Port Wentworth Truck Shop

Stormwater System Operation and Maintenance Plan

The stormwater treatment facilities will be maintained by the owner or their assigned heirs after construction is completed. The facility management staff will perform the inspections indicated below and retain a log on-site of the inspections performed. The building maintenance budget will include monies set aside for inspections and maintenance program for the stormwater system. Long-term operation and maintenance for the individual stormwater management entities is presented below.

Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. Inspect all slopes after major storms and any identified deficiencies will be corrected.

Ditches, Swales and other Open Stormwater Channels:
Inspect twice per year (preferably in Spring and Fall) to ensure they are working in their intended fashion and that they are free of sediment and debris. Remove any obstructions to flow, including accumulated sediments and debris and vegetated growth. Repair any erosion of the ditch lining. Vegetated ditches will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have dislodged. Correct any erosion of the channel's bottom or sideslopes. Ditches will be inspected after major storms and any identified deficiencies will be corrected.

This document shall be reviewed by the property owner on an annual basis for determining of the need for additional stormwater inspection and maintenance procedures.

Owner

National Flood Hazard Layer FIRMette

FEMA

81°11'55"W 32°14'25"N

81°11'17"W 32°13'54"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/29/2022 at 12:41 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bryan and Chatham Counties, Georgia

Orr Tract Truck Shop

March 29, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface.....2
How Soil Surveys Are Made.....5
Soil Map.....8
Soil Map.....9
Legend.....10
Map Unit Legend.....11
Map Unit Descriptions.....11
Bryan and Chatham Counties, Georgia.....13
Oj—Ocilla complex.....13
Pl—Pelham loamy sand, 0 to 2 percent slopes, frequently flooded.....14
References.....16

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bryan and Chatham Counties, Georgia
Survey Area Data: Version 16, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 4, 2021—Jan 18, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Oj	Ocilla complex	0.7	16.6%
Pl	Pelham loamy sand, 0 to 2 percent slopes, frequently flooded	3.4	83.4%
Totals for Area of Interest		**4.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bryan and Chatham Counties, Georgia

Oj—Ocilla complex

Map Unit Setting

National map unit symbol: 46gt
Elevation: 10 to 450 feet
Mean annual precipitation: 44 to 52 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 290 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ocilla and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ocilla

Setting

Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Marine deposits

Typical profile

H1 - 0 to 28 inches: loamy fine sand
H2 - 28 to 59 inches: sandy clay loam
H3 - 59 to 67 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: R153AY001GA - Loamy Rise, Moderately Wet
Hydric soil rating: No

Minor Components

Ellabelle

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Pelham

Percent of map unit: 2 percent
Landform: Depressions, flats
Landform position (three-dimensional): Dip
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Pl—Pelham loamy sand, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2tg59
Elevation: 0 to 300 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 54 to 78 degrees F
Frost-free period: 209 to 317 days
Farmland classification: Not prime farmland

Map Unit Composition

Pelham, frequently flooded, and similar soils: 95 percent
Minor components: 4 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pelham, Frequently Flooded

Setting

Landform: Drainageways, depressions, flatwoods
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Parent material: Sandy and loamy marine deposits

Typical profile

A - 0 to 6 inches: loamy sand
Eg - 6 to 33 inches: loamy sand
Btg1 - 33 to 41 inches: sandy loam
Btg2 - 41 to 66 inches: sandy clay loam
Cg - 66 to 80 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Surrency, frequently ponded

Percent of map unit: 2 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Other vegetative classification: Sandy over loamy soils on stream terraces, flood plains, or in depressions (G153AA245FL)
Hydric soil rating: Yes

Rains

Percent of map unit: 1 percent
Landform: Flatwoods
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Linear
Hydric soil rating: Yes

Pickney, frequently ponded

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

BYPASS BASIN 1

BYPASS BASIN 2

BYPASS BASIN 3

BASIN 1

BASIN 2

ROOF

PAVEMENT

ASPHALT MILLINGS

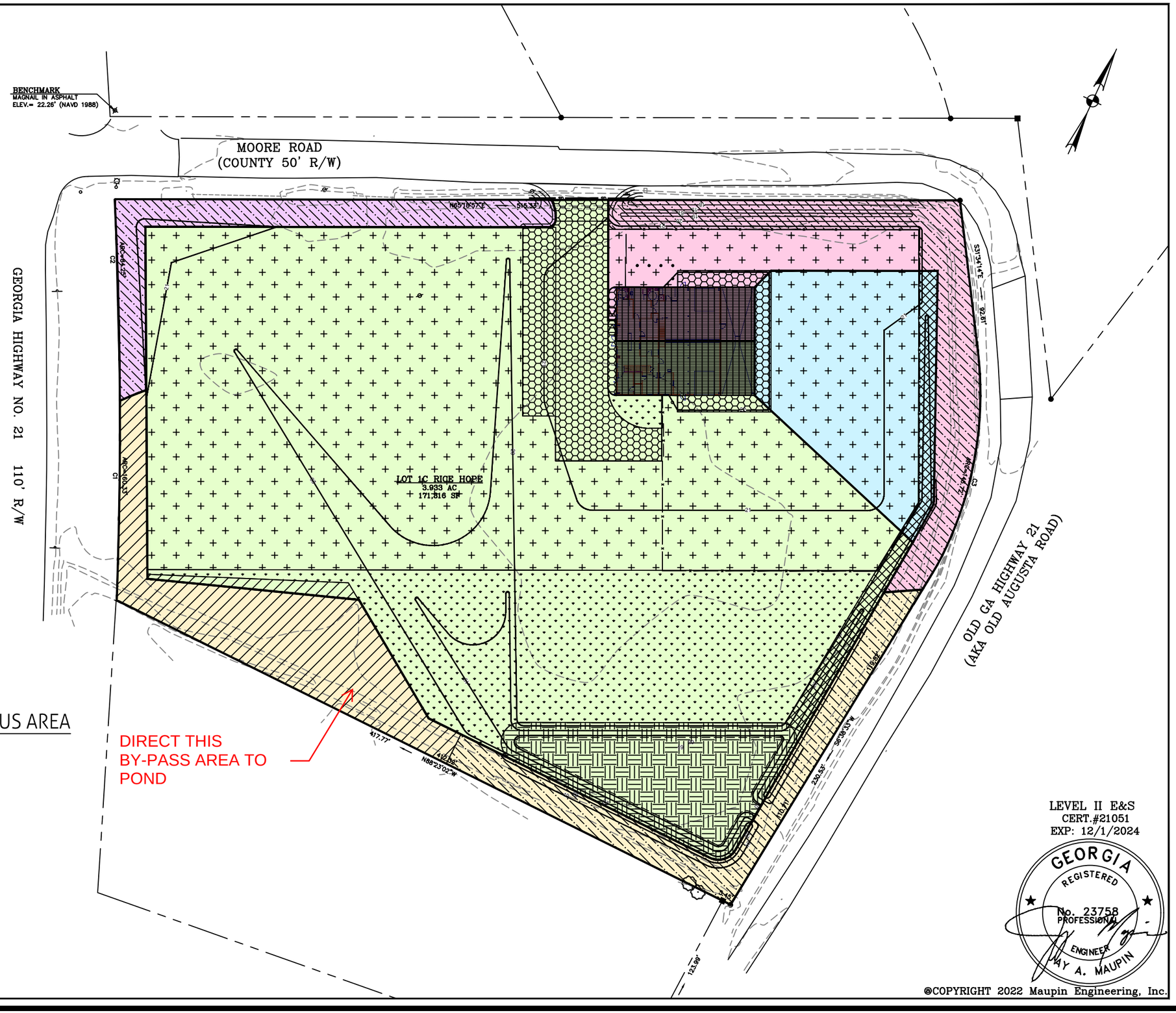
PERVIOUS AREA

UNDISTURBED PERVIOUS AREA

GRASS CHANNEL 1

GRASS CHANNEL 2

DETENTION POND



LEVEL II E&S
CERT.#21051
EXP: 12/1/2024

GEORGIA
REGISTERED
No. 23758
PROFESSIONAL
ENGINEER
JAY A. MAUPIN

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS

NO.	DATE	DESCRIPTION

SHEET NO. CSS
PROJECT NO. 673-21-35

60 0 30

SCALE: 1" = 60'
DRWN: BPM 3/29/2022
CHK'D: JAM DATE

CSS EXHIBIT

PW TRUCK SHOP

MAUPIN tm engineering
114 WEST 42nd STREET SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

1:26:22 SDP- ORR TRUCK STOP-DWG

Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised December 2013

Site Data

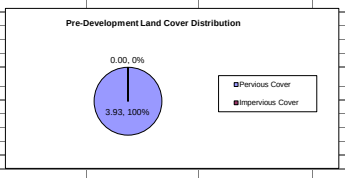
Site Name:

	data input cells
	calculation cells
	constant values

Step 1: Enter Site Information

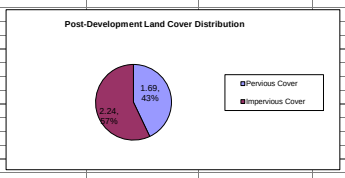
Pre-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	3.93	0.00	0.00	3.93
Impervious Cover	0.00	0.00	0.00	0.00	0.00
				Total	3.93

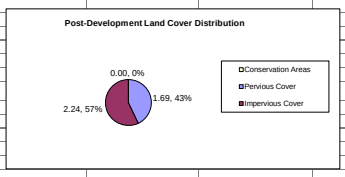


Post-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	1.69	0.00	0.00	1.69
Impervious Cover	0.00	2.24	0.00	0.00	2.24
				Total	3.93



Runoff Reduction Rainfall Event (inches)	1.2
Post-Development Site Imperviousness (%)	57%
Post-Development Site Runoff Coefficient, Rv	0.56
Target Runoff Reduction Volume, RRv (acre-feet)	0.22
Target Runoff Reduction Volume, RRv (cubic feet)	9,638

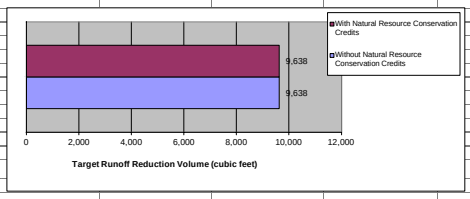


Step 2: Apply Better Site Planning Techniques

Natural Resource Conservation Credits	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Primary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Secondary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Total (acres)					0.00

Target Runoff Reduction Volume with Natural Resource Conservation Credits, RRv

Target Runoff Reduction Volume, RRv (acre-feet)	0.22
Target Runoff Reduction Volume, RRv (cubic feet)	9,638



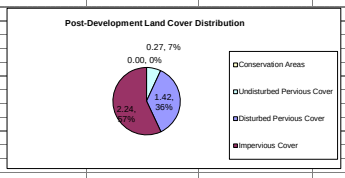
Step 3: Apply Better Site Design Techniques

Reduced Clearing and Grading Credits

	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Undisturbed Pervious Cover (Acres)	0.0	0.3	0.0	0.0	0.27

Revised Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.27	0.00	0.00	0.27
Disturbed Pervious Cover	0.00	1.42	0.00	0.00	1.42
Impervious Cover	0.00	2.24	0.00	0.00	2.24
				Total	3.93

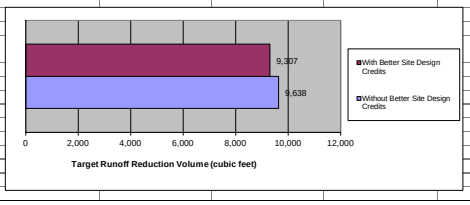


Restoration of Disturbed Pervious Surfaces

Soil Restoration (Acres)	0.0
Site Reforestation/Vegetation (Acres)	0.0
Soil Restoration w/ Site Reforestation/Revegetation (Acres)	0.0

Target Runoff Reduction Volume After Application of Better Site Design Credits, RRv

Target Runoff Reduction Volume, RRv (acre-feet)	0.21
Target Runoff Reduction Volume, RRv (cubic feet)	9,307



Note: Remainder of Better Site Design Techniques are considered to be "self-crediting."

UPDATE CALCULATIONS FOR REDIRECTED FLOWS PER COMMENTS.

Coastal Stormwater Supplement Site Planning & Design Worksheet

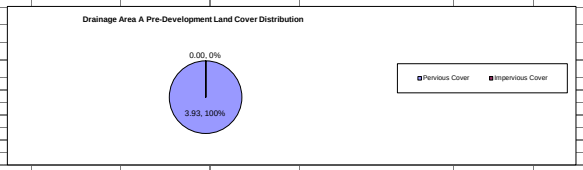
Revised December 2013

Drainage Area A

Drainage Area Information

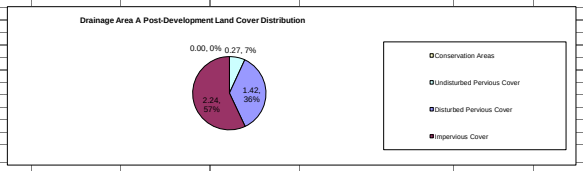
Drainage Area A Pre-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	3.93	0.00	0.00	3.93
Impervious Cover	0.00	0.00	0.00	0.00	0.00
				Total	3.93



Drainage Area A Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.27	0.00	0.00	0.27
Disturbed Pervious Cover	0.00	1.42	0.00	0.00	1.42
Impervious Cover	0.00	2.24	0.00	0.00	2.24
				Total	3.93



Low Impact Development Practices

Alternatives to Impervious Surfaces

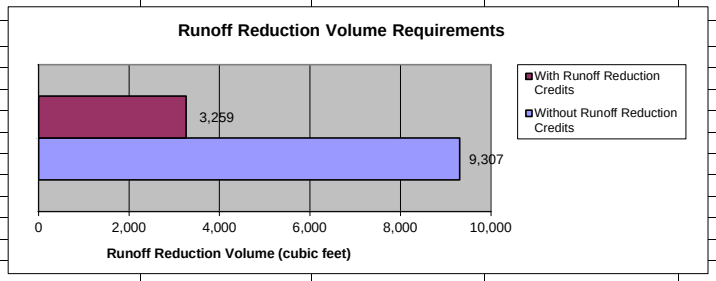
Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
"Receiving" Low Impact Development Practices															
Grass Channel, A/B or Amended Soils 1	0.32	0.28	1167.4	25% of volume received by the practice	0.0	1167.4	0.0	1167.4	N/A	N/A	291.9	875.6	291.9	875.6	Stormwater Pond, Wetland, or Wet Swale 1
Grass Channel, A/B or Amended Soils 2	0.69	0.19	895.2	25% of volume received by the practice	3886.4	4781.5	5.9	901.0	N/A	N/A	1195.4	3586.2	901.0	0.0	No Downstream Practice
Undisturbed Pervious Area, A/B Soils 1	0.27	0.00	58.8	90% of volume received by the practice	0.0	58.8	0.0	58.8	N/A	N/A	52.9	5.9	52.9	5.9	Grass Channel, A/B or Amended Soils 2
Vegetated Filter Strip, A/B or Amended Soils 1	2.65	1.77	7512.4	60% of volume received by the practice	0.0	7512.4	0.0	7512.4	N/A	N/A	4507.4	3004.9	4507.4	3004.9	Stormwater Pond, Wetland, or Wet Swale 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Treatment Only Practices															
Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	None	3880.5	3880.5	3880.5	3880.5	Volume in Wet Pool and Extended Detention	17515.0	0.0	3880.5	3880.5	0.0	Grass Channel, A/B or Amended Soils 2
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**3.93**	**2.24**									**6047.6**		**9633.7**		

Coastal Stormwater Supplement Site Planning & Design Worksheet

Revised December 2013

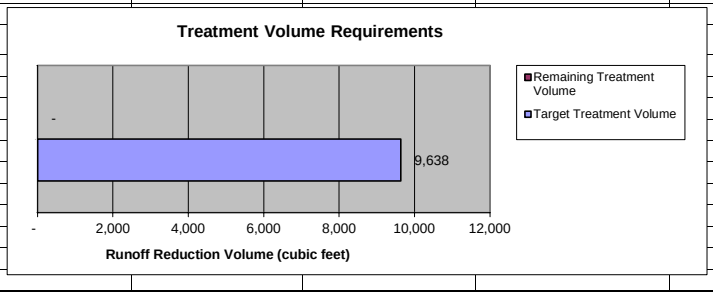
Stormwater Runoff Reduction Summary

Target Runoff Reduction and Treatment Volume, RRv (cubic feet)	9,638
Total Adjustment to Runoff Reduction Volume, RRv (cubic feet)	6,379
Percentage of Target Runoff Reduction Volume Achieved	66%
Runoff Reduction Volume Achieved (in)	0.79
Runoff Reduction Volume Remaining (cubic feet)	3,259



Note: If any of the target runoff reduction volume cannot be reduced on the development site, due to site characteristics or constraints, it should be intercepted and treated in one or more stormwater management practices that: (1) provide for at least an 80 percent reduction in TSS loads; and (2) reduce nitrogen and bacteria loads to the maximum extent practical.

Treatment Volume Achieved (cubic feet)	9,965
Treatment Volume Remaining (cubic feet)	-



BENCHMARK
MAGNAIL IN ASPHALT
ELEV.= 22.26' (NAVD 1988)

MOORE ROAD
(COUNTY 50' R/W)

GEORGIA HIGHWAY NO. 21 110' R/W

Pre-Development Basin 1
2.16 AC

Pre-Development Basin
1.77 AC

LOT 1C RICE HOPE
3.933 AC
171,316 SF

N65°18'57"E 515.33'
S37°54'13"E 92.61'
S36°38'33"W 230.53'
110.21'
N88°23'02"W 417.77'
412.39'
123.86'
S07°07'E
5.45'
ARC=84.25'
ARC=180.33'
ARC=149.72'

OLD GA HIGHWAY 21
(AKA OLD AUGUSTA ROAD)

LEVEL II E&S
CERT.#21051
EXP: 12/1/2024

GEORGIA
REGISTERED
No. 23758
PROFESSIONAL
ENGINEER
WAY A. MAUPIN

©COPYRIGHT 2022 Maupin Engineering, Inc.

REVISIONS
NO. | DATE | DESCRIPTION

SHEET NO. 1 of 2
PROJECT NO. 673-21-35

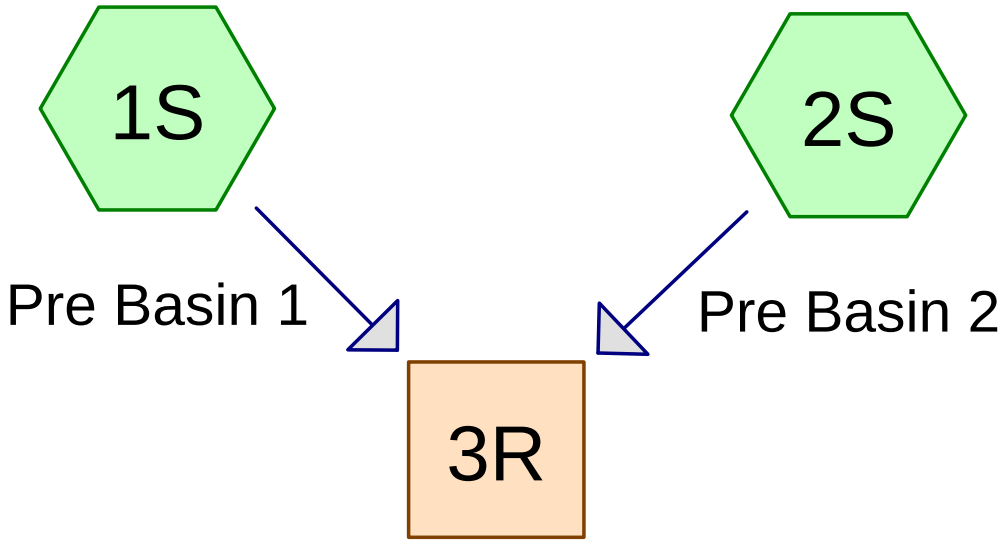
60 0 30
SCALE: 1" = 60'
DRWN: BPM 3/29/2022
CH'K'D: JAM DATE

PRE-DEVELOPMENT BASINS
PW TRUCK SHOP

MAUPIN tm engineering
114 WEST 42ND STREET • OFFICE PHONE (912) 235 - 2915
SAVANNAH, GA 31401 • GENERAL@MAUPINENGINEERING.COM

1:26:22 SDP- GRR TRUCK STOP.DWG

UPDATE HYDROCAD FOR REDIRECTED FLOWS PER COMMENTS.



Pre Combined

Subcat Reach Pond Link

Routing Diagram for Orr Track Pre
Prepared by {enter your company name here}, Printed 4/6/2022
HydroCAD® 10.10-4b s/n 03510 © 2020 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "pre hydro analysis.hcp"

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	3.60	2
2	5-Year	Type III 24-hr		Default	24.00	1	4.80	2
3	10-Year	Type III 24-hr		Default	24.00	1	7.00	2
4	25-Year	Type III 24-hr		Default	24.00	1	8.00	2
5	50-Year	Type III 24-hr		Default	24.00	1	9.00	2
6	100-Year	Type III 24-hr		Default	24.00	1	9.84	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.930	61	>75% Grass cover, Good, HSG B (1S, 2S)
3.930	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.930	HSG B	1S, 2S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.930		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	3.930	0.000	0.000	0.000	3.930	>75% Grass cover, Good	1S, 2S
0.000	**3.930**	**0.000**	**0.000**	**0.000**	**3.930**	**TOTAL AREA**	

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>0.54"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=0.89 cfs 0.098 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>0.54"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=0.73 cfs 0.080 af

Reach 3R: Pre Combined Inflow=1.62 cfs 0.178 af
Outflow=1.62 cfs 0.178 af

Total Runoff Area = 3.930 ac Runoff Volume = 0.178 af Average Runoff Depth = 0.54"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

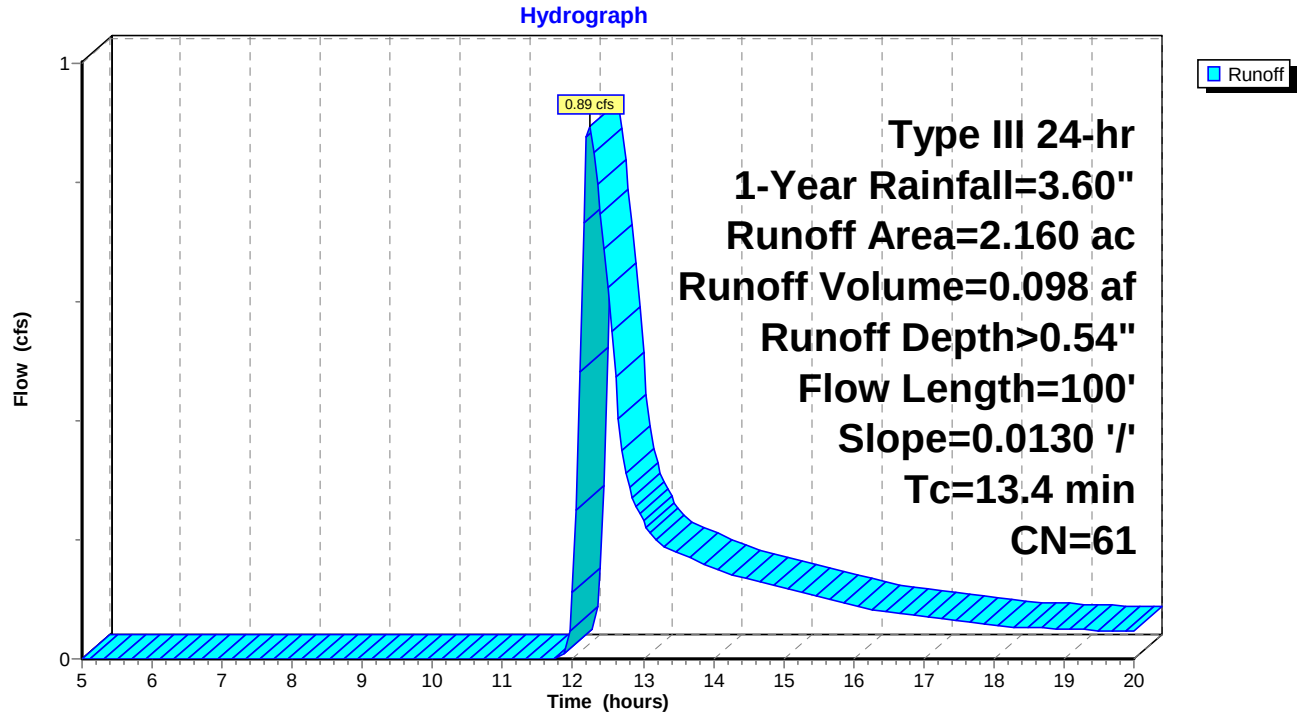
Runoff = 0.89 cfs @ 12.24 hrs, Volume= 0.098 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

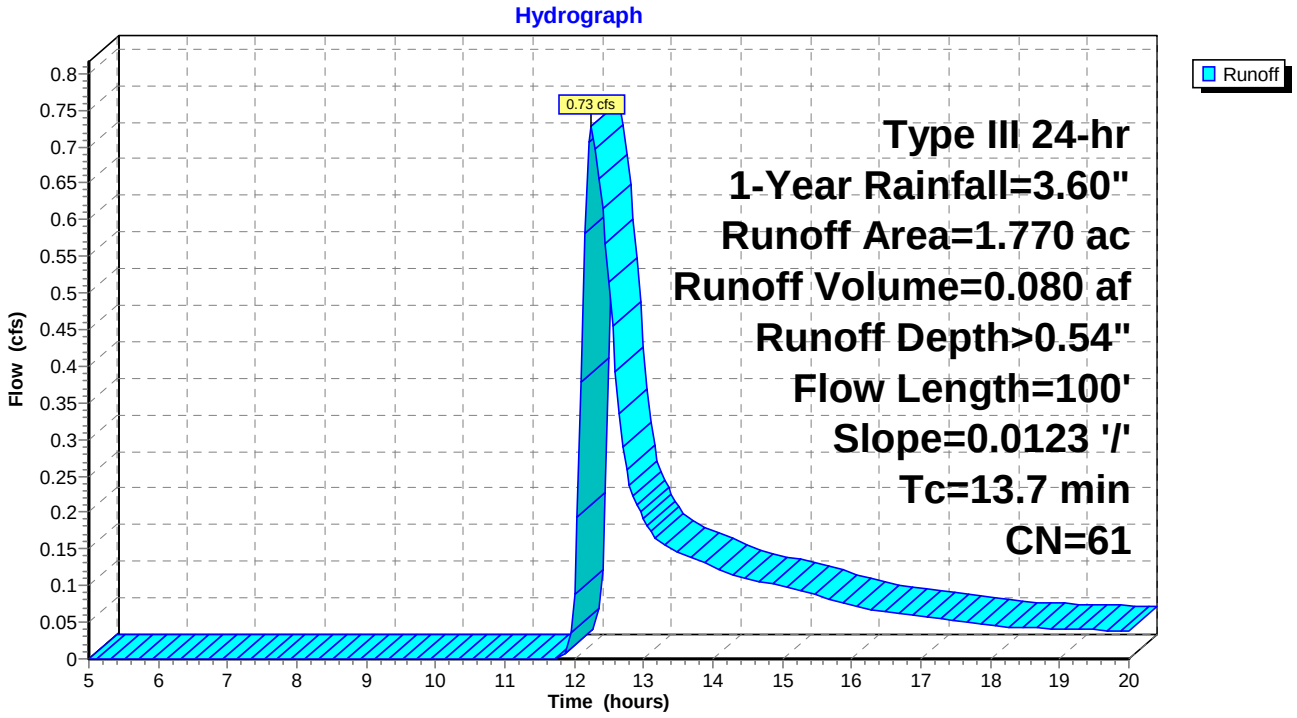
Runoff = 0.73 cfs @ 12.25 hrs, Volume= 0.080 af, Depth> 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



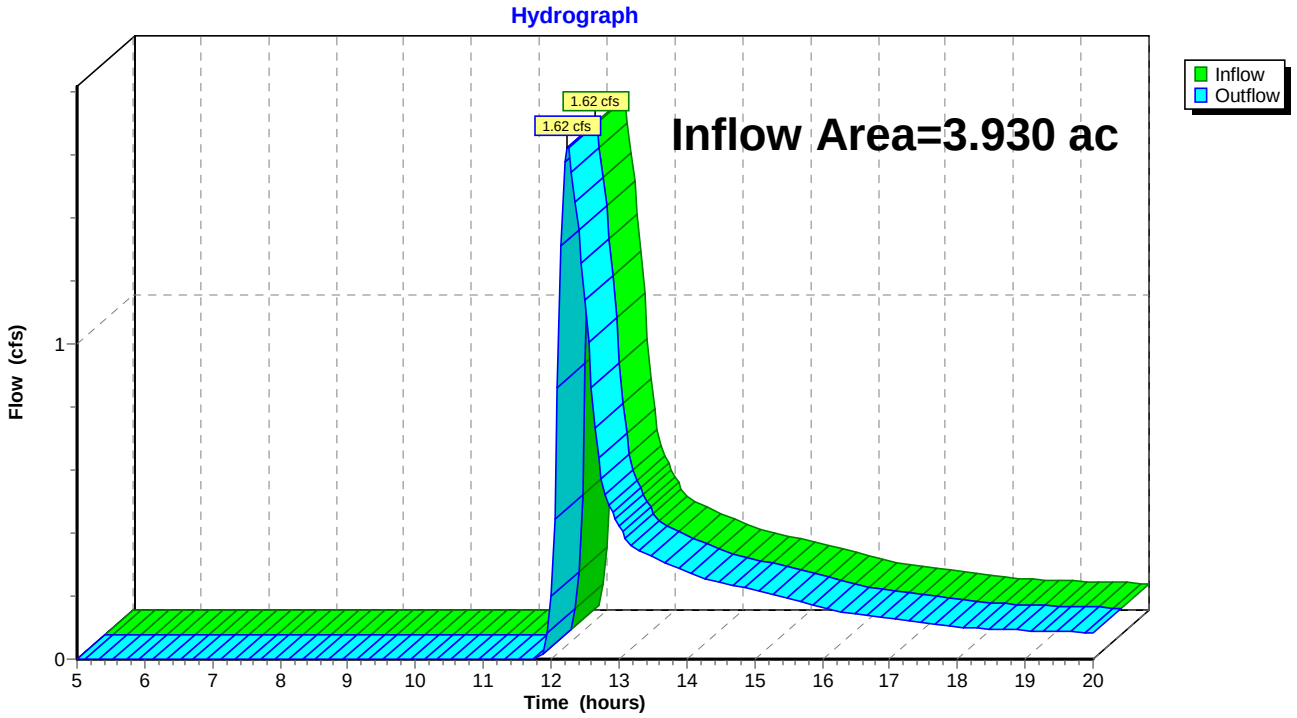
Summary for Reach 3R: Pre Combined

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 0.54" for 1-Year event
Inflow = 1.62 cfs @ 12.24 hrs, Volume= 0.178 af
Outflow = 1.62 cfs @ 12.24 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=2.21 cfs 0.203 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>1.13"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=1.80 cfs 0.166 af

Reach 3R: Pre Combined Inflow=4.01 cfs 0.369 af
Outflow=4.01 cfs 0.369 af

Total Runoff Area = 3.930 ac Runoff Volume = 0.369 af Average Runoff Depth = 1.13"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

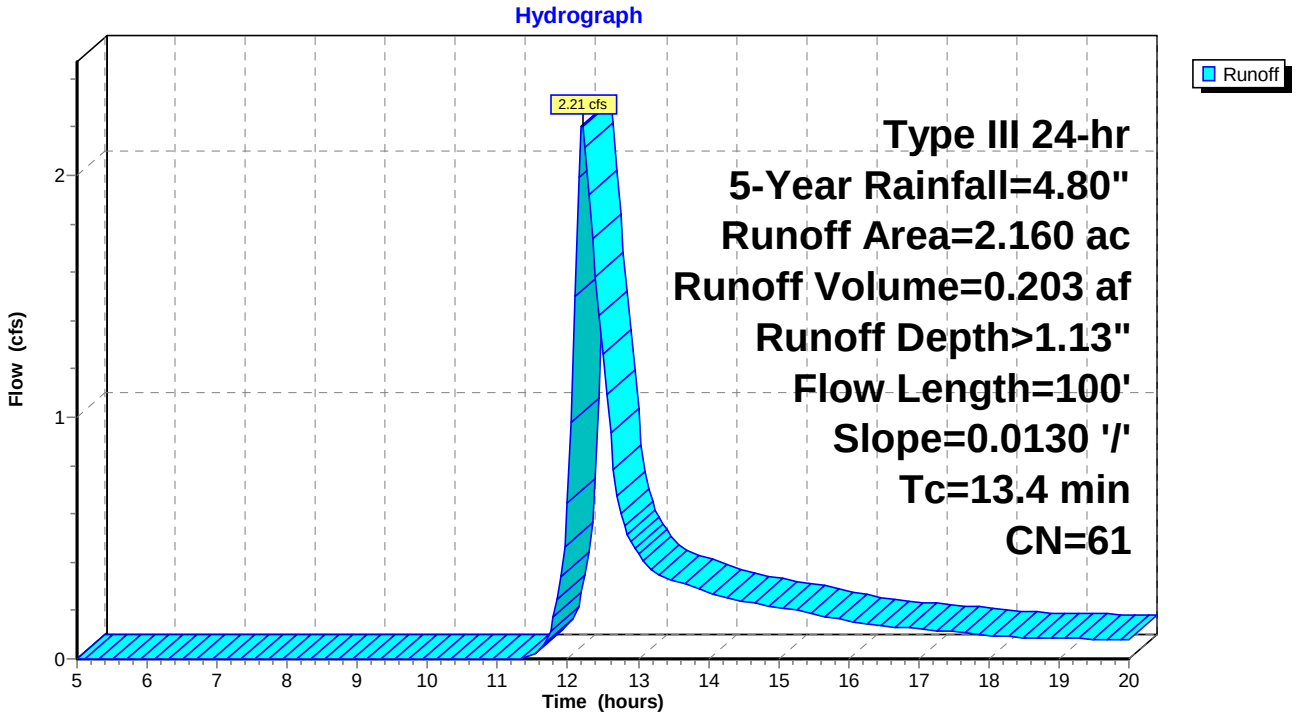
Runoff = 2.21 cfs @ 12.21 hrs, Volume= 0.203 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

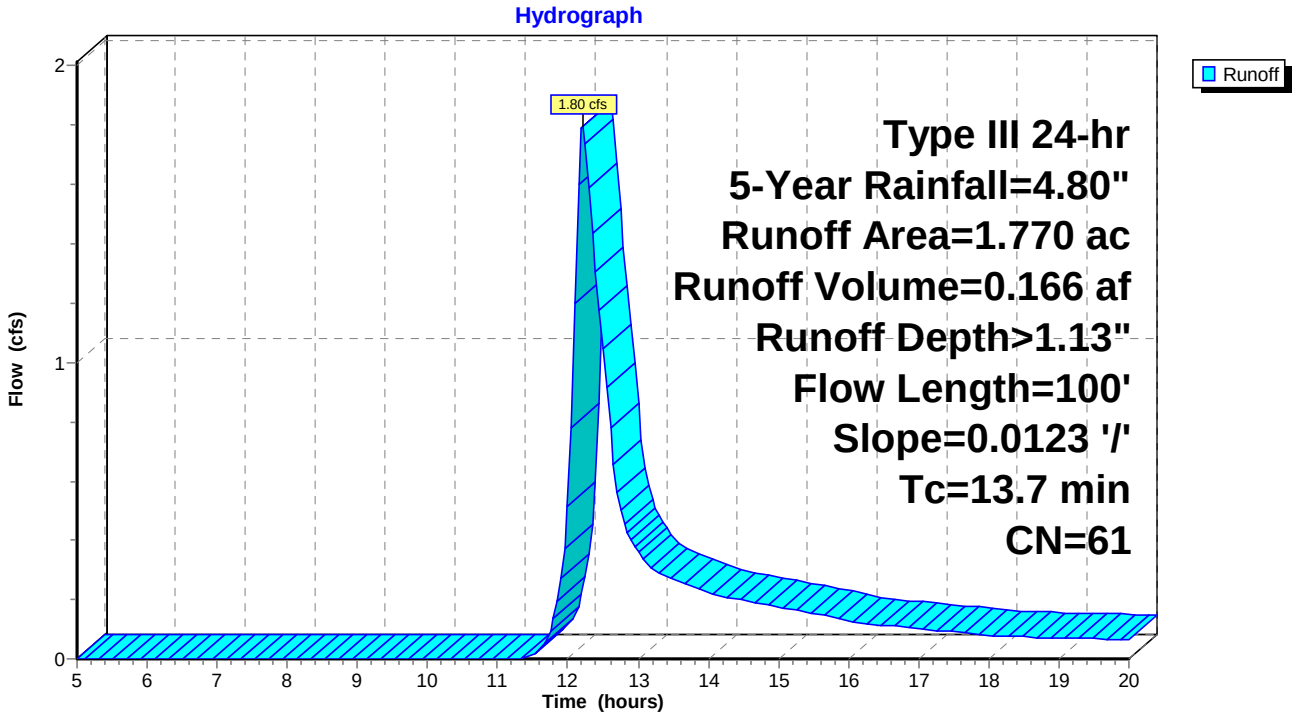
Runoff = 1.80 cfs @ 12.21 hrs, Volume= 0.166 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



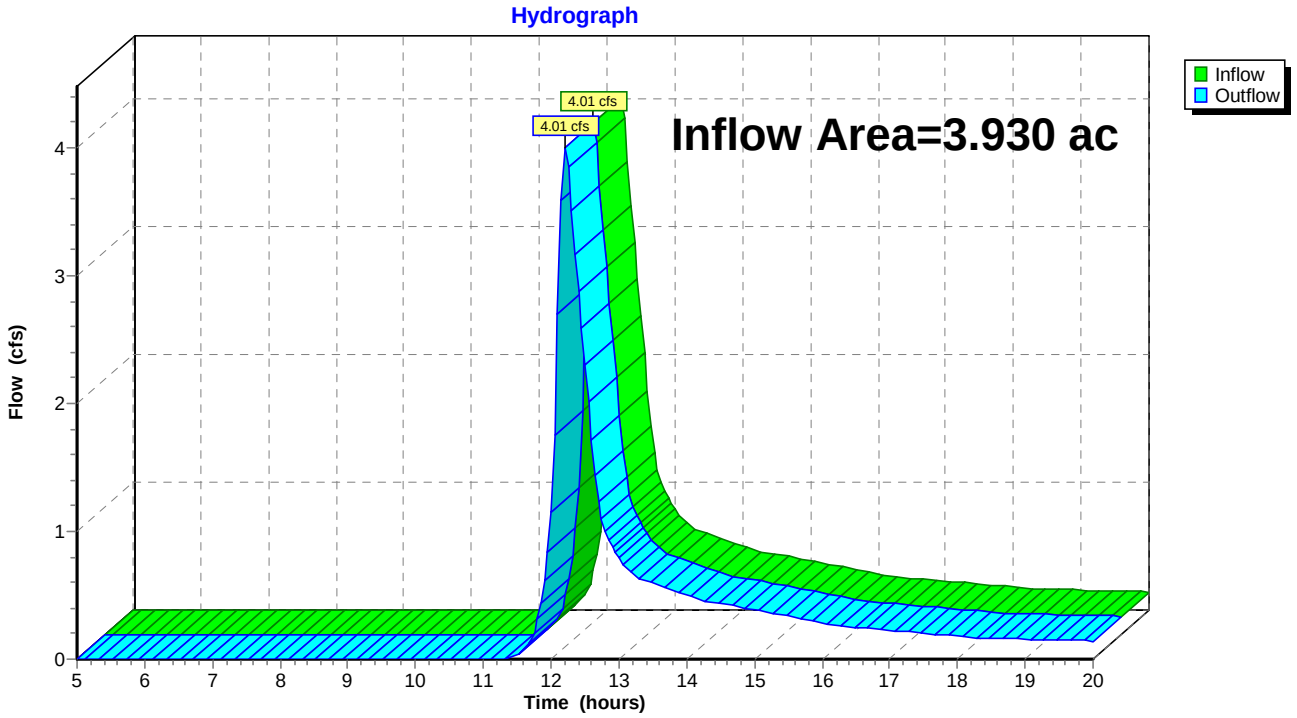
Summary for Reach 3R: Pre Combined

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 1.13" for 5-Year event
Inflow = 4.01 cfs @ 12.21 hrs, Volume= 0.369 af
Outflow = 4.01 cfs @ 12.21 hrs, Volume= 0.369 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>2.48"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=5.21 cfs 0.446 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>2.47"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=4.24 cfs 0.365 af

Reach 3R: Pre Combined Inflow=9.44 cfs 0.811 af
Outflow=9.44 cfs 0.811 af

Total Runoff Area = 3.930 ac Runoff Volume = 0.811 af Average Runoff Depth = 2.47"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

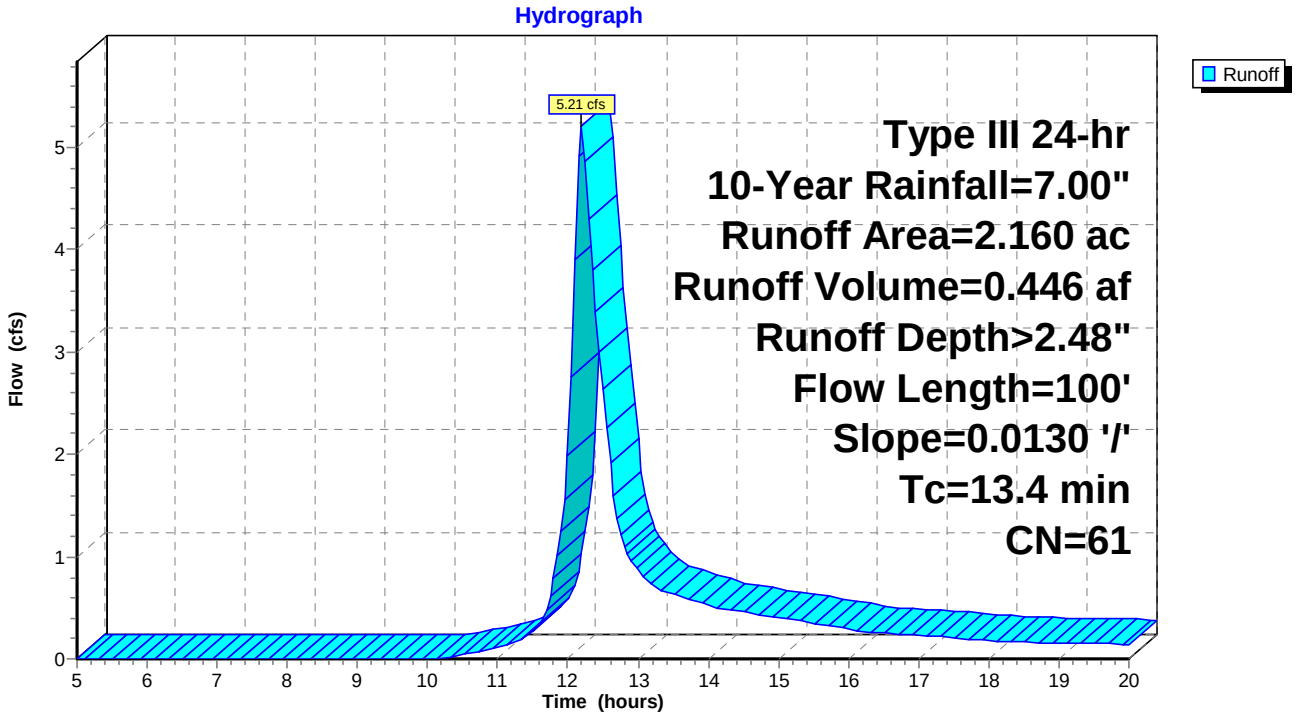
Runoff = 5.21 cfs @ 12.20 hrs, Volume= 0.446 af, Depth> 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

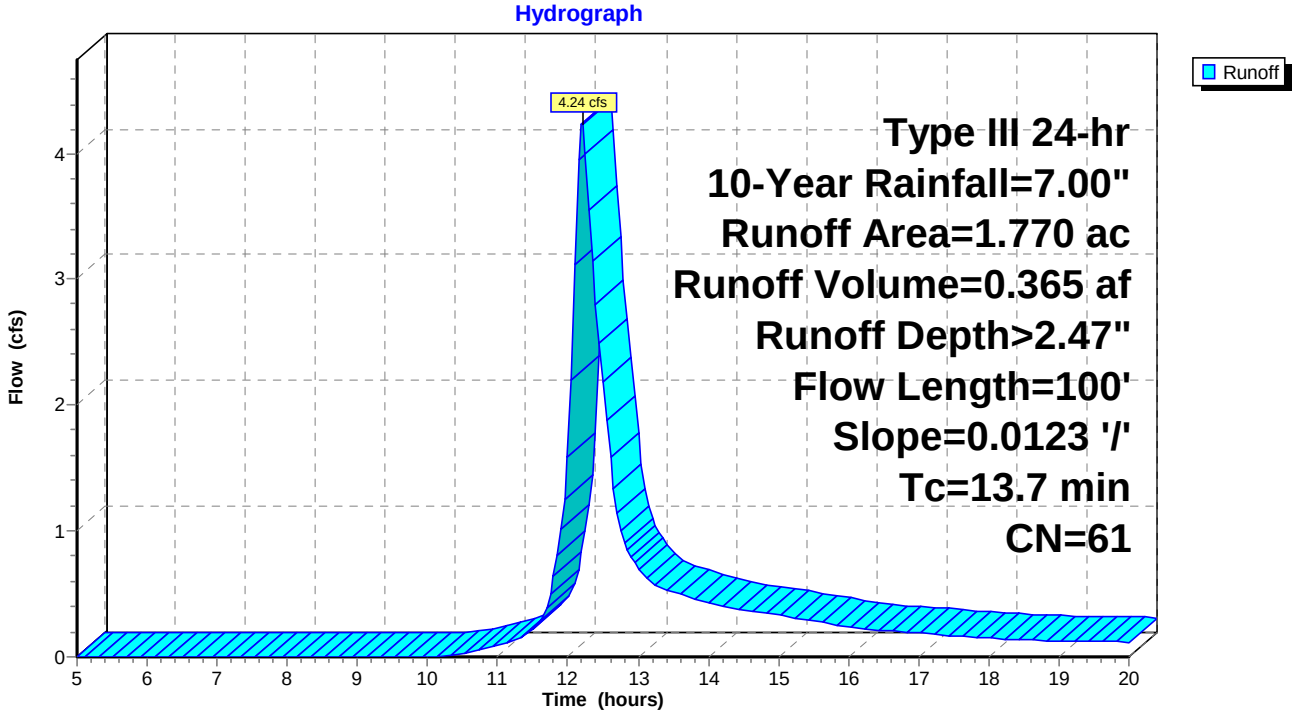
Runoff = 4.24 cfs @ 12.20 hrs, Volume= 0.365 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



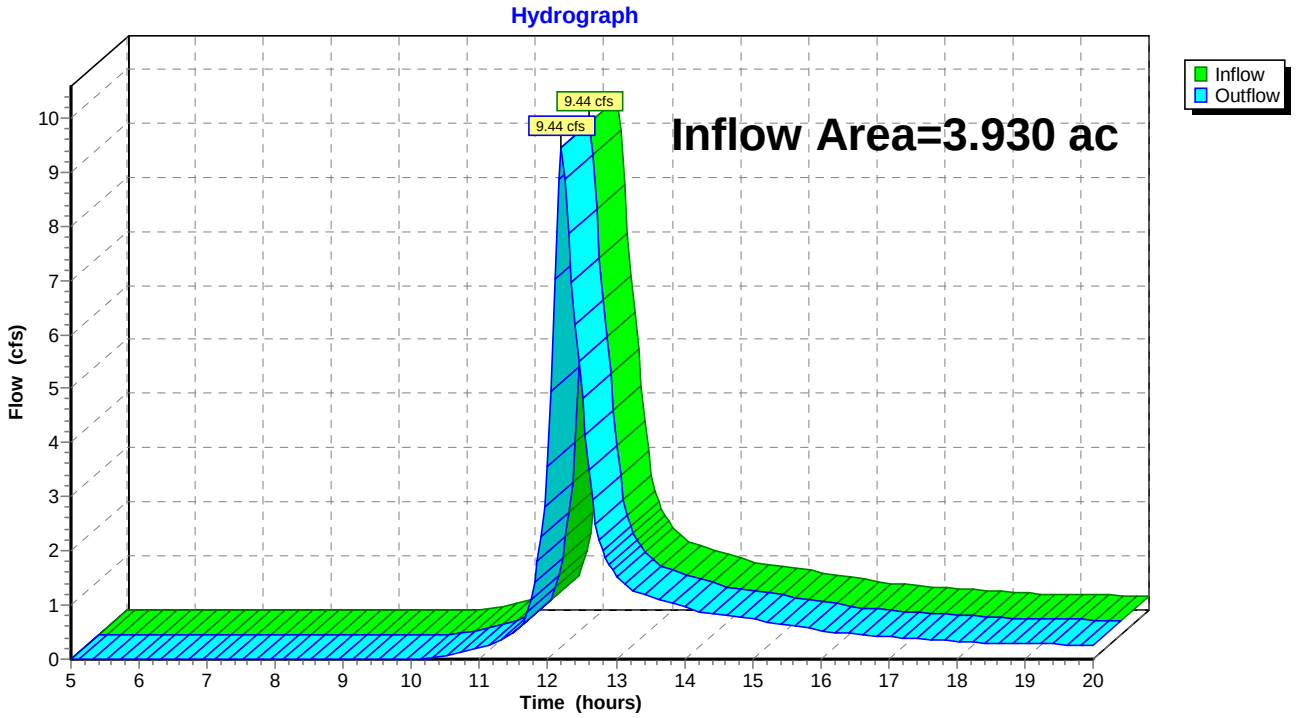
Summary for Reach 3R: Pre Combined

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 2.47" for 10-Year event
Inflow = 9.44 cfs @ 12.20 hrs, Volume= 0.811 af
Outflow = 9.44 cfs @ 12.20 hrs, Volume= 0.811 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>3.17"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=6.73 cfs 0.571 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>3.17"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=5.48 cfs 0.468 af

Reach 3R: Pre Combined Inflow=12.20 cfs 1.038 af
Outflow=12.20 cfs 1.038 af

Total Runoff Area = 3.930 ac Runoff Volume = 1.038 af Average Runoff Depth = 3.17"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

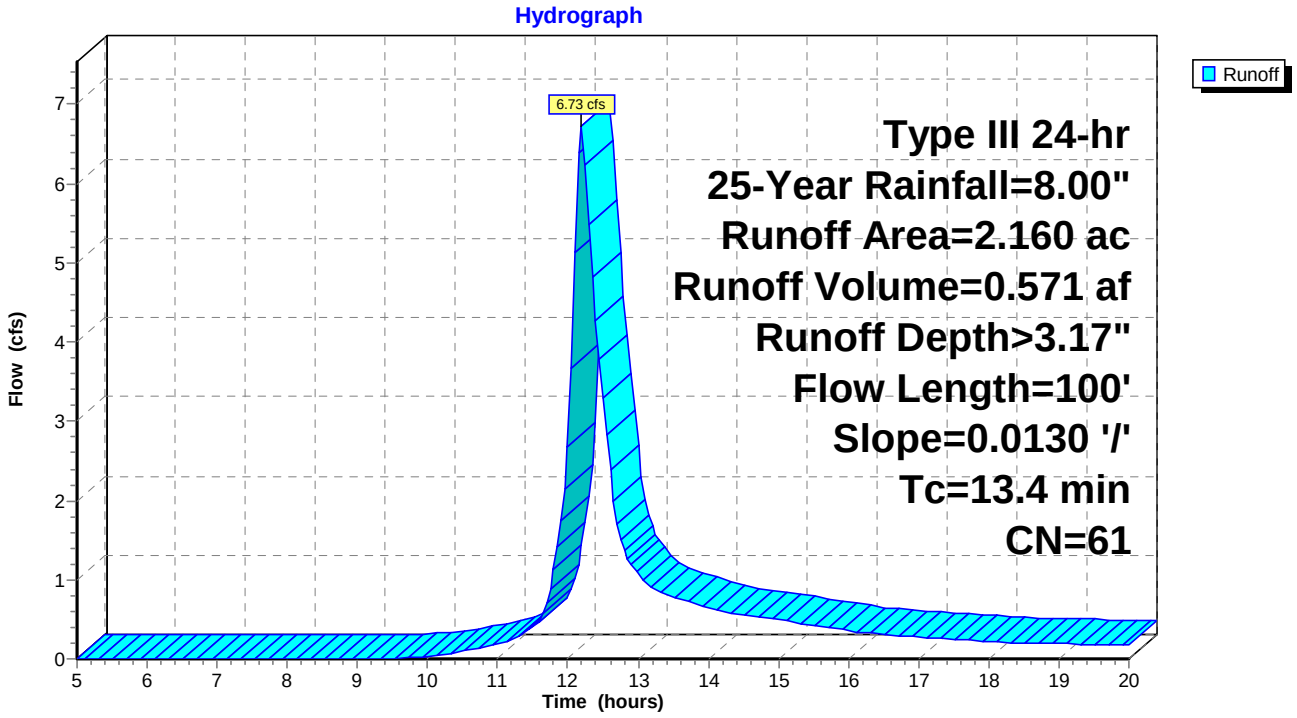
Runoff = 6.73 cfs @ 12.20 hrs, Volume= 0.571 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

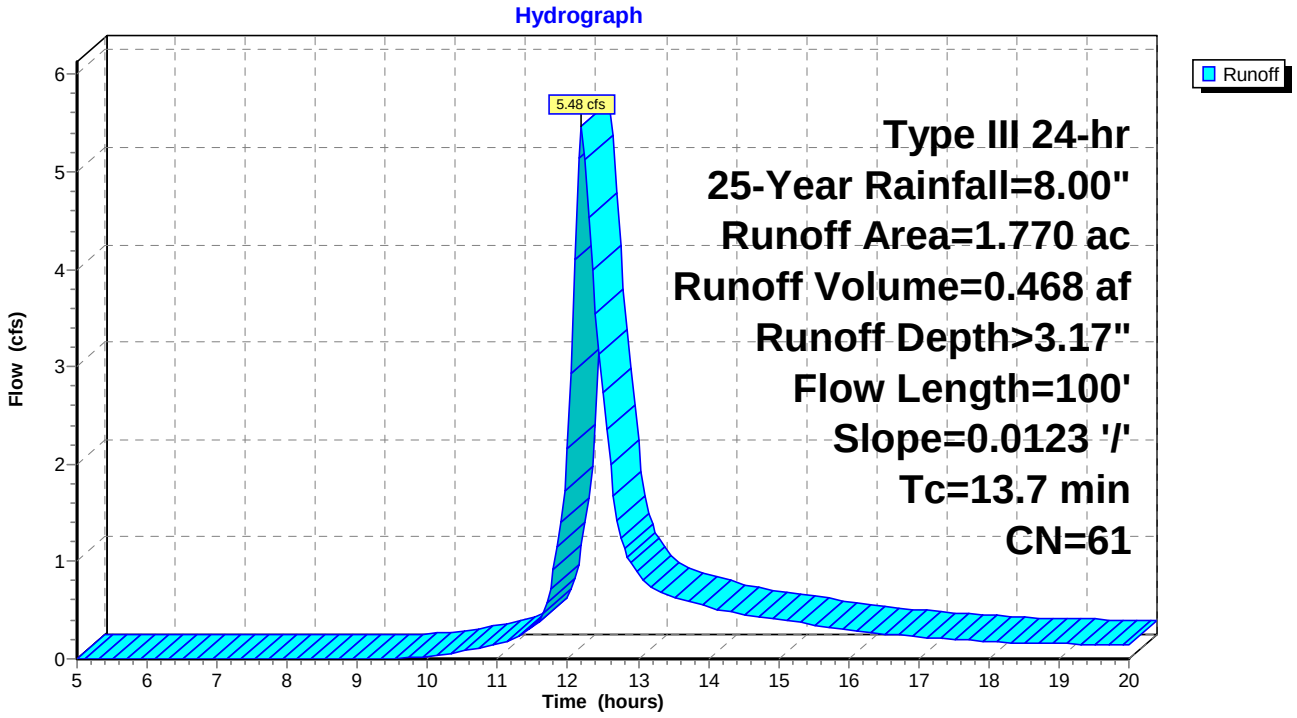
Runoff = 5.48 cfs @ 12.20 hrs, Volume= 0.468 af, Depth> 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



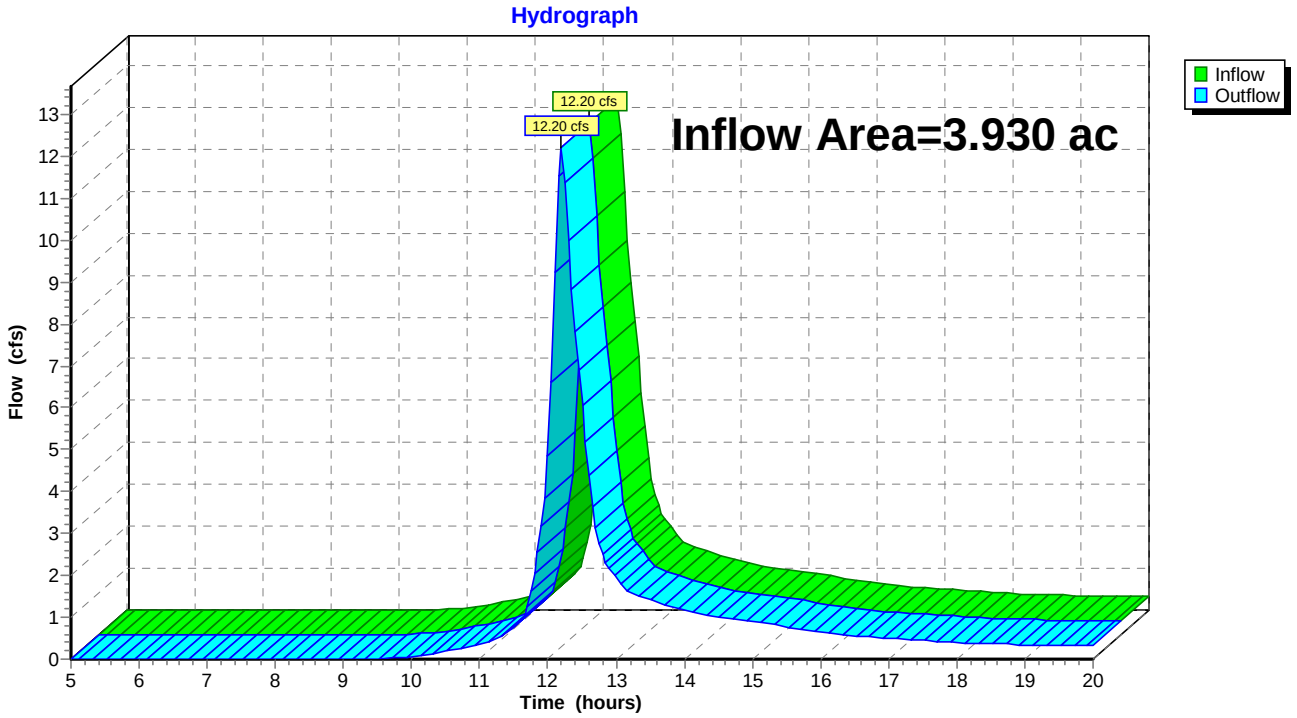
Summary for Reach 3R: Pre Combined

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 3.17" for 25-Year event
Inflow = 12.20 cfs @ 12.20 hrs, Volume= 1.038 af
Outflow = 12.20 cfs @ 12.20 hrs, Volume= 1.038 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>3.90"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=8.31 cfs 0.702 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>3.90"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=6.77 cfs 0.575 af

Reach 3R: Pre Combined Inflow=15.08 cfs 1.278 af
Outflow=15.08 cfs 1.278 af

Total Runoff Area = 3.930 ac Runoff Volume = 1.278 af Average Runoff Depth = 3.90"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

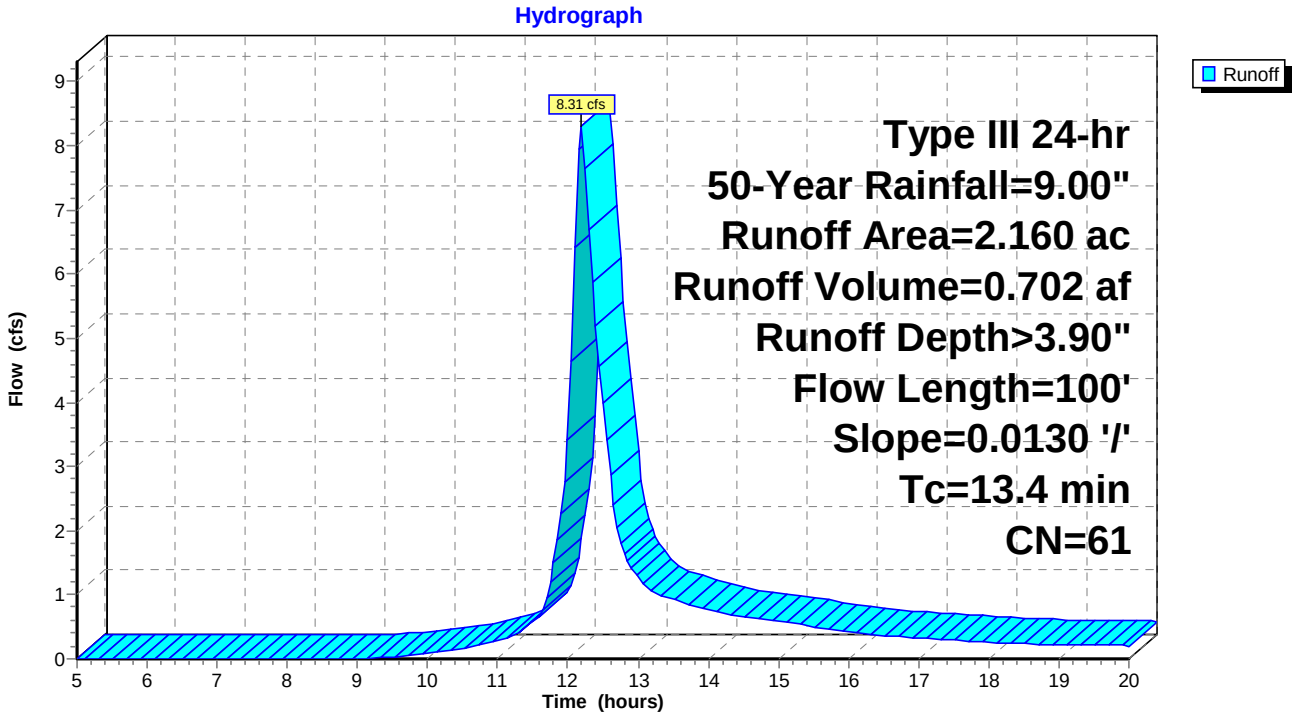
Runoff = 8.31 cfs @ 12.19 hrs, Volume= 0.702 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

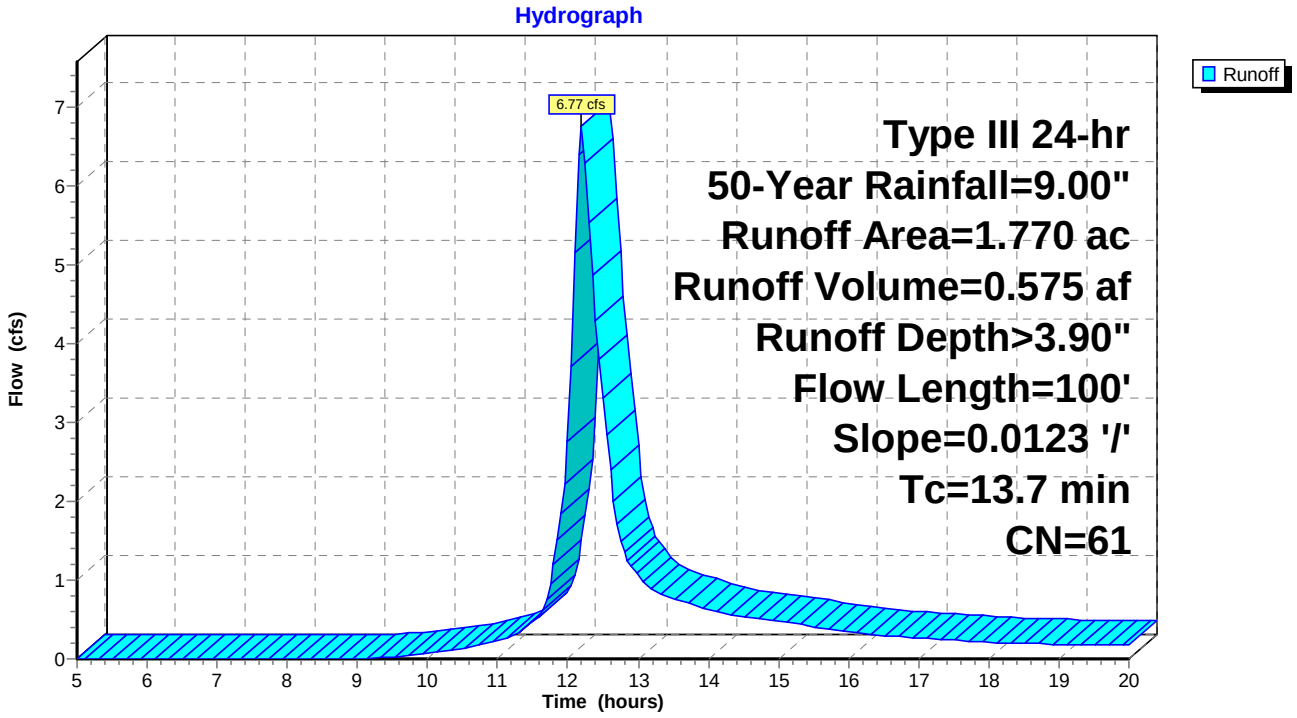
Runoff = 6.77 cfs @ 12.20 hrs, Volume= 0.575 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



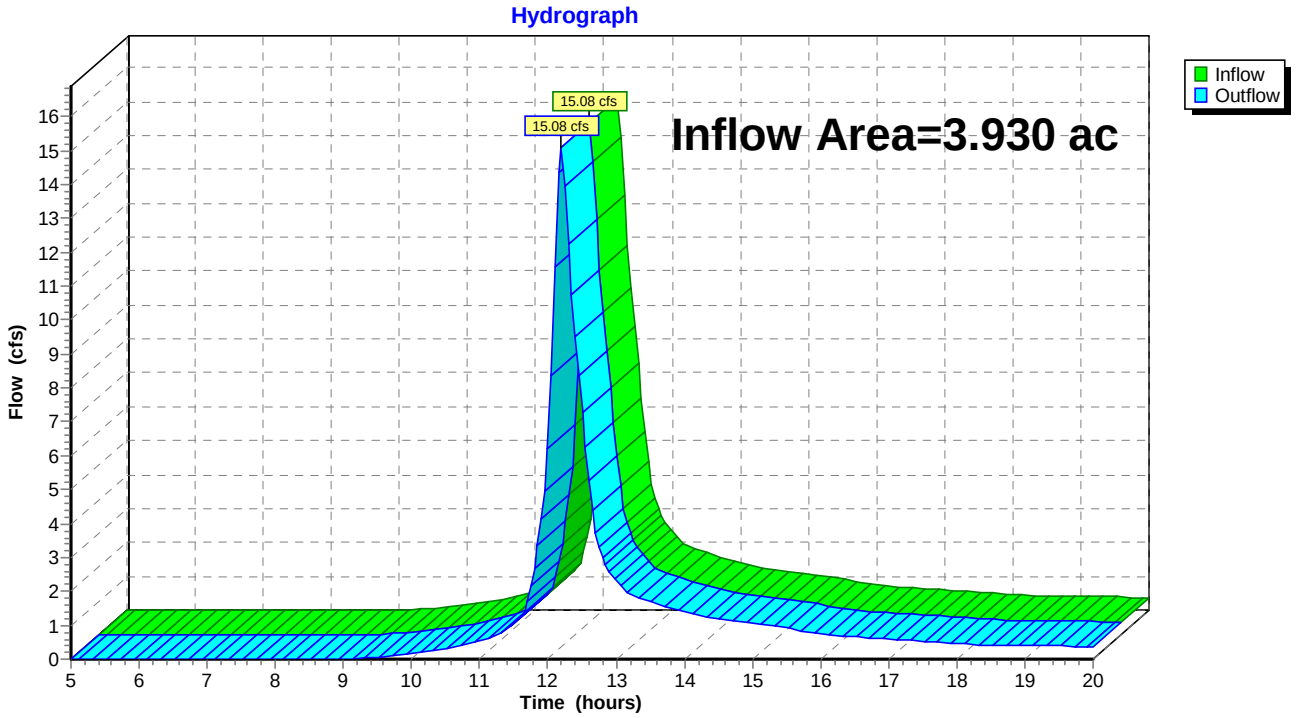
Summary for Reach 3R: Pre Combined

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 3.90" for 50-Year event
Inflow = 15.08 cfs @ 12.19 hrs, Volume= 1.278 af
Outflow = 15.08 cfs @ 12.19 hrs, Volume= 1.278 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Pre Basin 1 Runoff Area=2.160 ac 0.00% Impervious Runoff Depth>4.54"
Flow Length=100' Slope=0.0130 '/' Tc=13.4 min CN=61 Runoff=9.68 cfs 0.817 af

Subcatchment 2S: Pre Basin 2 Runoff Area=1.770 ac 0.00% Impervious Runoff Depth>4.54"
Flow Length=100' Slope=0.0123 '/' Tc=13.7 min CN=61 Runoff=7.88 cfs 0.669 af

Reach 3R: Pre Combined Inflow=17.56 cfs 1.486 af
Outflow=17.56 cfs 1.486 af

Total Runoff Area = 3.930 ac Runoff Volume = 1.486 af Average Runoff Depth = 4.54"
100.00% Pervious = 3.930 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Pre Basin 1

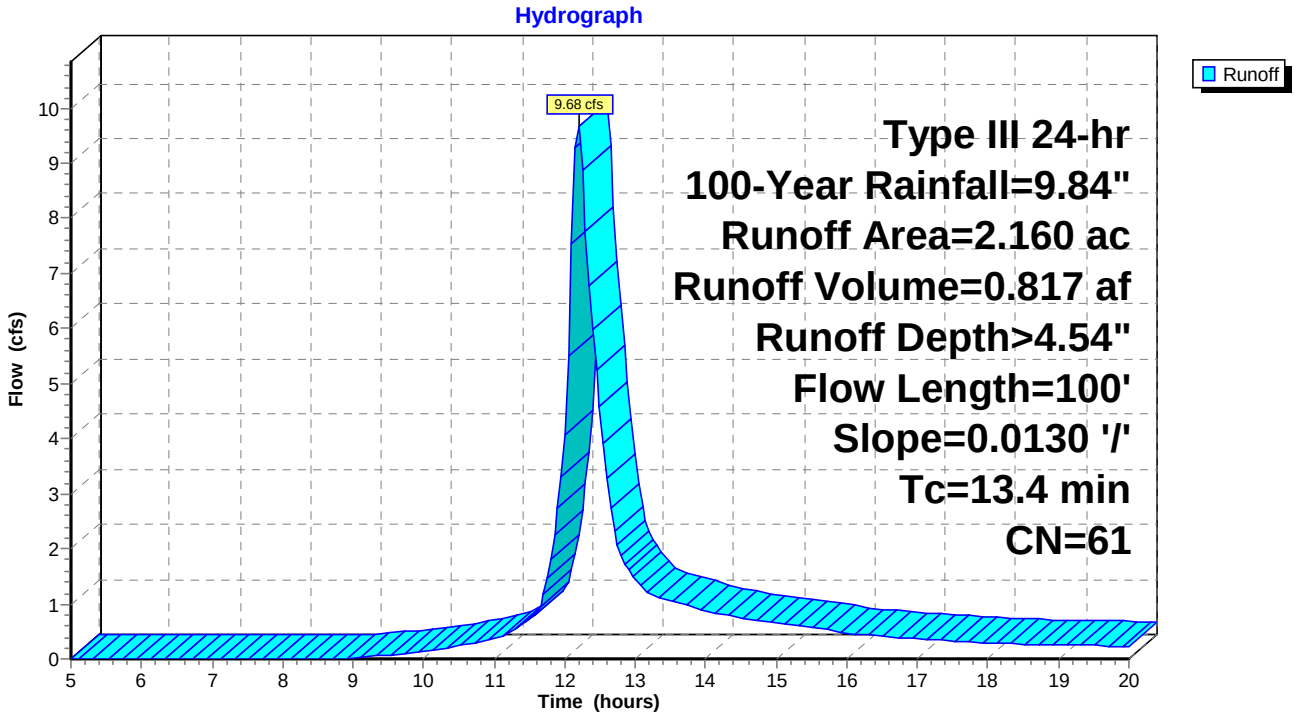
Runoff = 9.68 cfs @ 12.19 hrs, Volume= 0.817 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

Area (ac)	CN	Description
2.160	61	>75% Grass cover, Good, HSG B
2.160		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0130	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 1S: Pre Basin 1



Summary for Subcatchment 2S: Pre Basin 2

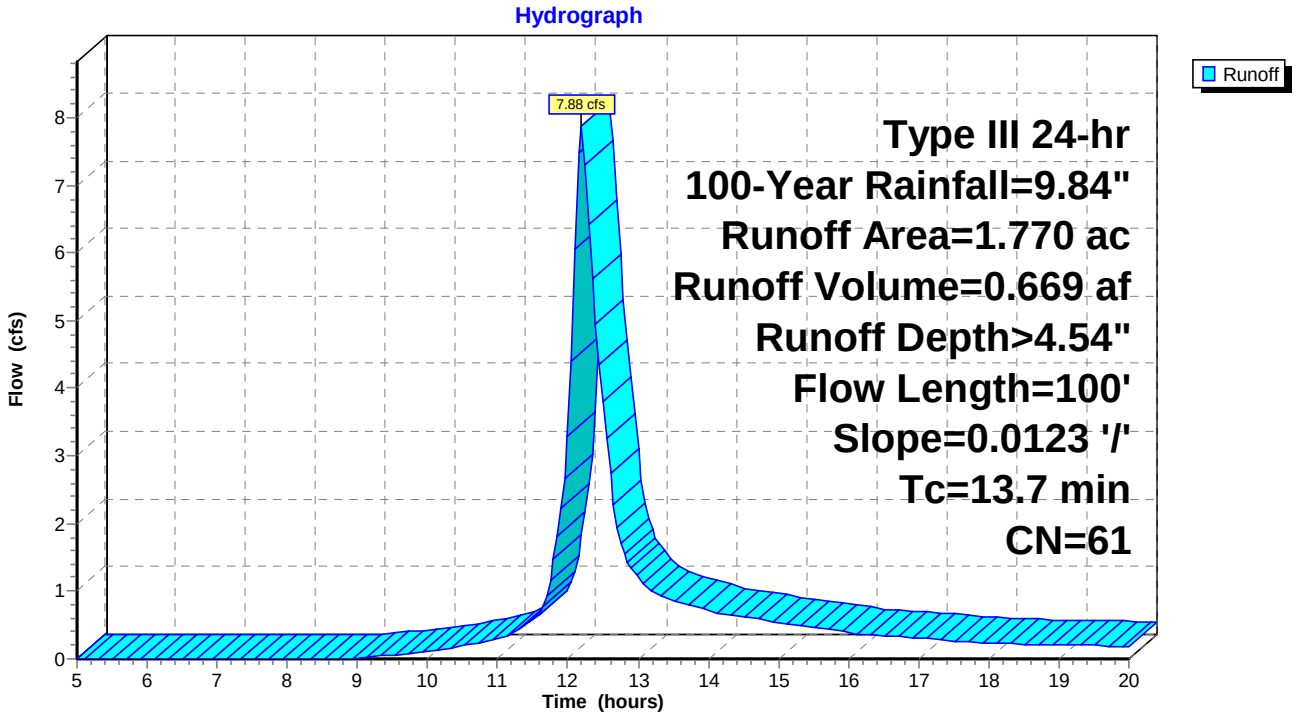
Runoff = 7.88 cfs @ 12.20 hrs, Volume= 0.669 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

Area (ac)	CN	Description
1.770	61	>75% Grass cover, Good, HSG B
1.770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0123	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.42"

Subcatchment 2S: Pre Basin 2



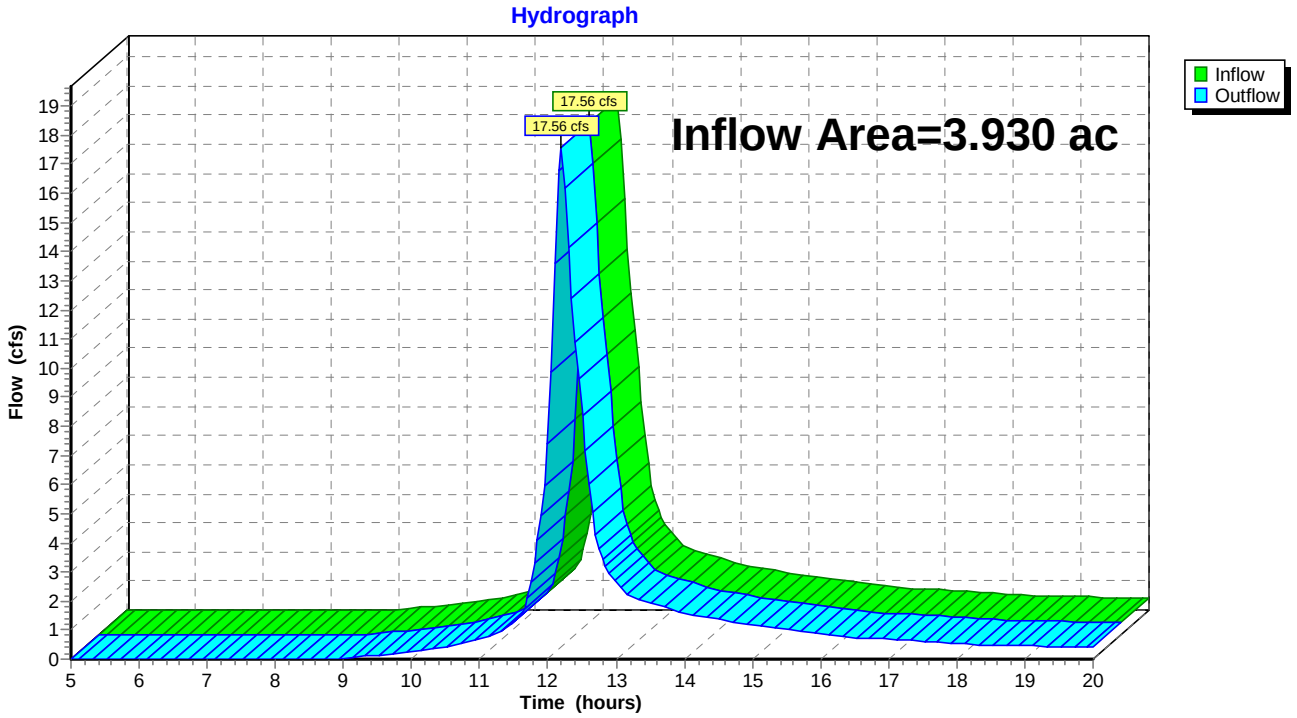
Summary for Reach 3R: Pre Combined

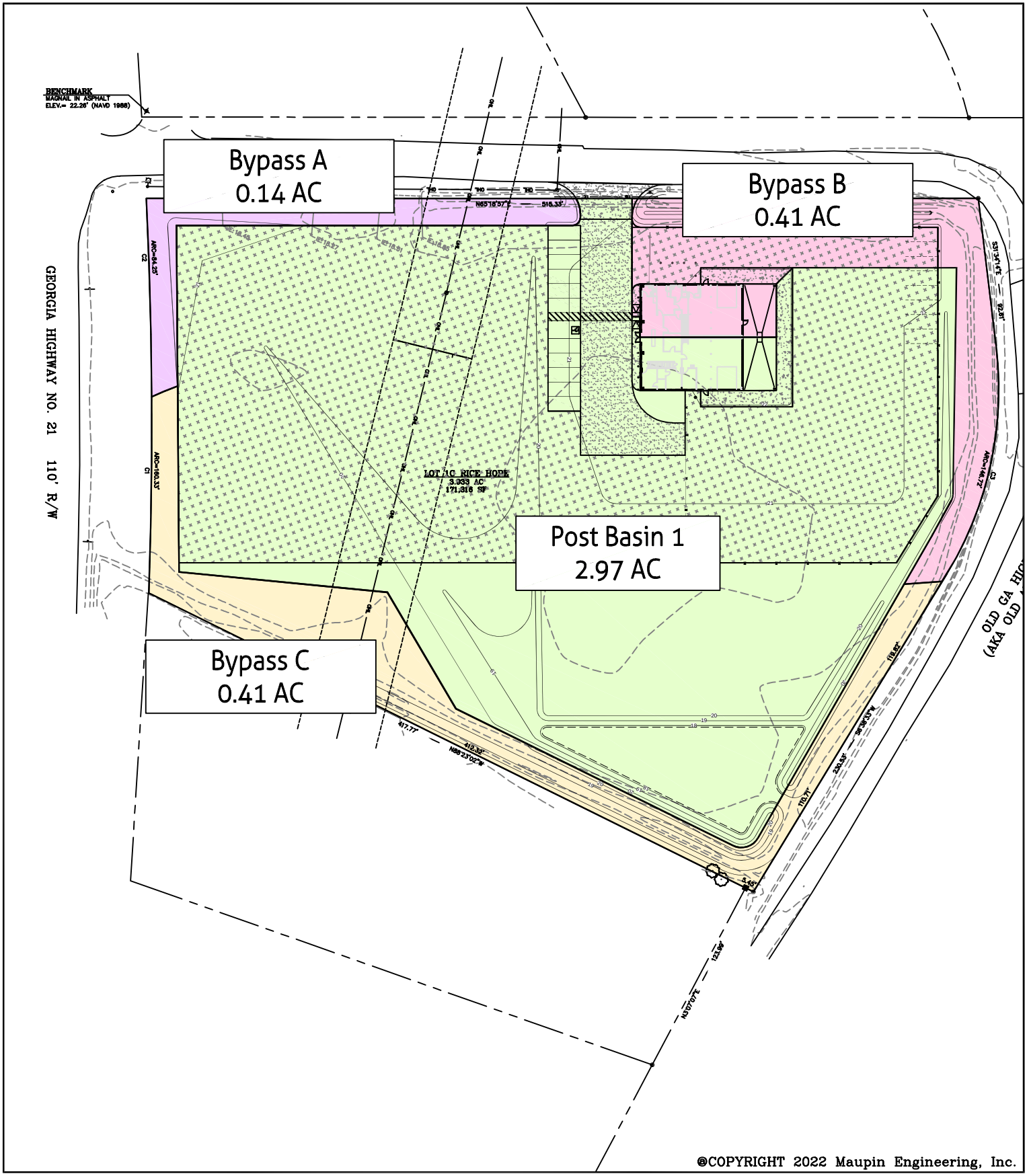
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.930 ac, 0.00% Impervious, Inflow Depth > 4.54" for 100-Year event
Inflow = 17.56 cfs @ 12.19 hrs, Volume= 1.486 af
Outflow = 17.56 cfs @ 12.19 hrs, Volume= 1.486 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 3R: Pre Combined





©COPYRIGHT 2022 Maupin Engineering, Inc.

MAUPIN engineering tm
114 WEST 42nd STREET
SAVANNAH, GA 31401
OFFICE PHONE (912) 235 - 2915
GENERAL@MAUPINENGINEERING.COM

POST EXHIBIT

PW TRUCK SHOP

40 0 80

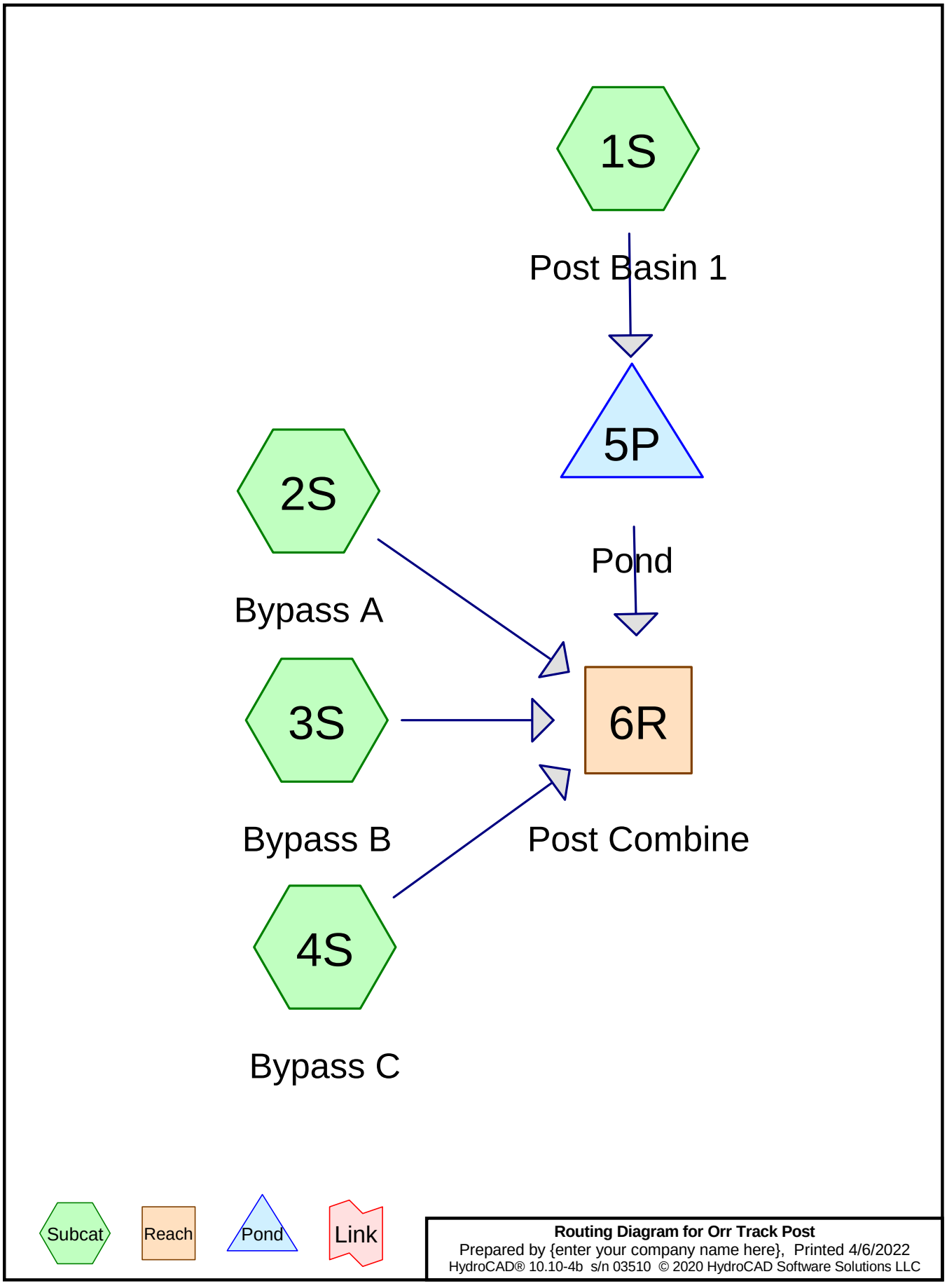
SCALE: 1" = 80'

DRWN: TRW 1-26-2022

CHK'D: JAM DATE

SHEET NO.
1 of 1
673-21-35
PROJECT NO.

1.26.22 SDP- ORR TRUCK STOP.DWG



Routing Diagram for Orr Track Post
Prepared by {enter your company name here}, Printed 4/6/2022
HydroCAD® 10.10-4b s/n 03510 © 2020 HydroCAD Software Solutions LLC

Project Notes

Rainfall events imported from "pre hydro analysis.hcp"

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	3.60	2
2	5-Year	Type III 24-hr		Default	24.00	1	4.80	2
3	10-Year	Type III 24-hr		Default	24.00	1	7.00	2
4	25-Year	Type III 24-hr		Default	24.00	1	8.00	2
5	50-Year	Type III 24-hr		Default	24.00	1	9.00	2
6	100-Year	Type III 24-hr		Default	24.00	1	9.84	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.645	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S)
0.119	85	Gravel roads, HSG B (3S)
1.817	91	Gravel, HSG B (1S)
0.219	98	Paved parking, HSG B (1S, 3S)
0.127	98	Roofs, HSG B (1S, 3S)
3.927	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.927	HSG B	1S, 2S, 3S, 4S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.927		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.645	0.000	0.000	0.000	1.645	>75% Grass cover, Good	1S, 2S, 3S, 4S
0.000	1.817	0.000	0.000	0.000	1.817	Gravel	1S
0.000	0.119	0.000	0.000	0.000	0.119	Gravel roads	3S
0.000	0.219	0.000	0.000	0.000	0.219	Paved parking	1S, 3S
0.000	0.127	0.000	0.000	0.000	0.127	Roofs	1S, 3S
0.000	**3.927**	**0.000**	**0.000**	**0.000**	**3.927**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=1.94"
Tc=10.0 min CN=83 Runoff=5.84 cfs 0.481 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=0.62"
Tc=5.0 min CN=61 Runoff=0.08 cfs 0.007 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=1.37"
Tc=5.0 min CN=75 Runoff=0.64 cfs 0.047 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=0.62"
Tc=5.0 min CN=61 Runoff=0.23 cfs 0.021 af

Reach 6R: Post Combine Inflow=1.54 cfs 0.548 af
Outflow=1.54 cfs 0.548 af

Pond 5P: Pond Peak Elev=18.94' Storage=9,031 cf Inflow=5.84 cfs 0.481 af
Outflow=0.94 cfs 0.473 af

Total Runoff Area = 3.927 ac Runoff Volume = 0.556 af Average Runoff Depth = 1.70"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

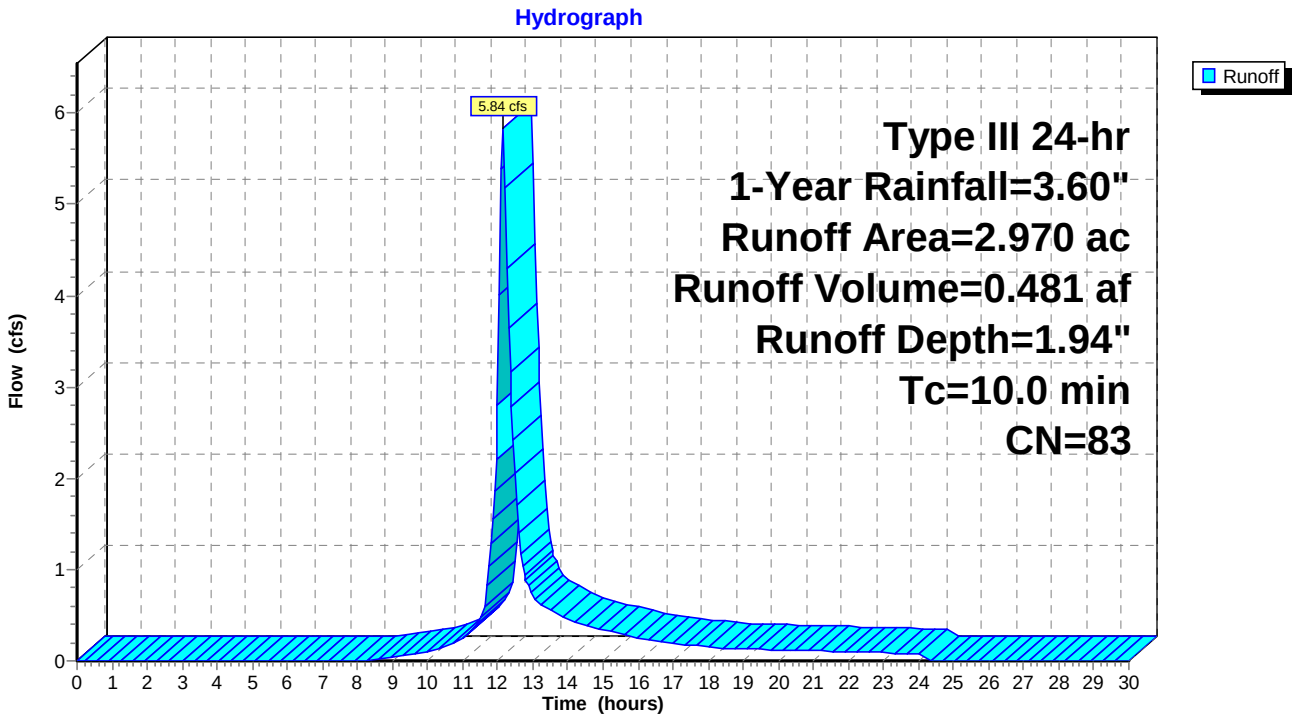
Runoff = 5.84 cfs @ 12.14 hrs, Volume= 0.481 af, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

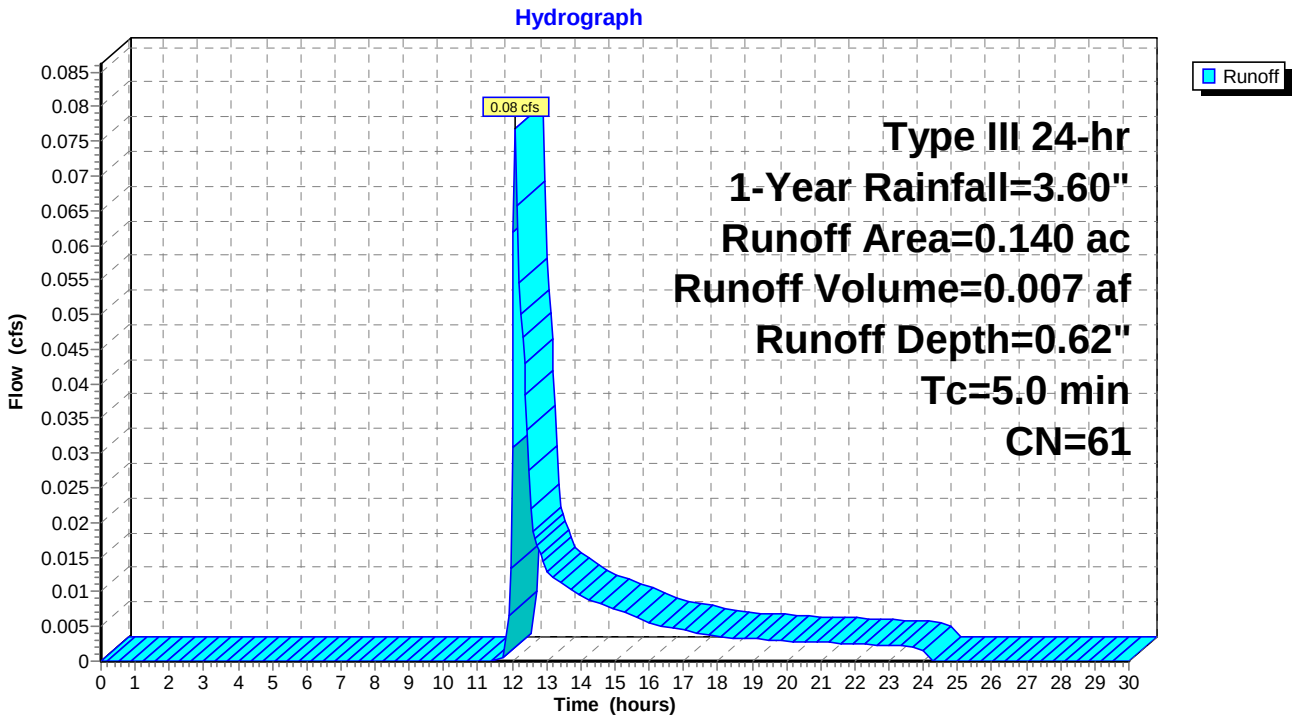
Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.007 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

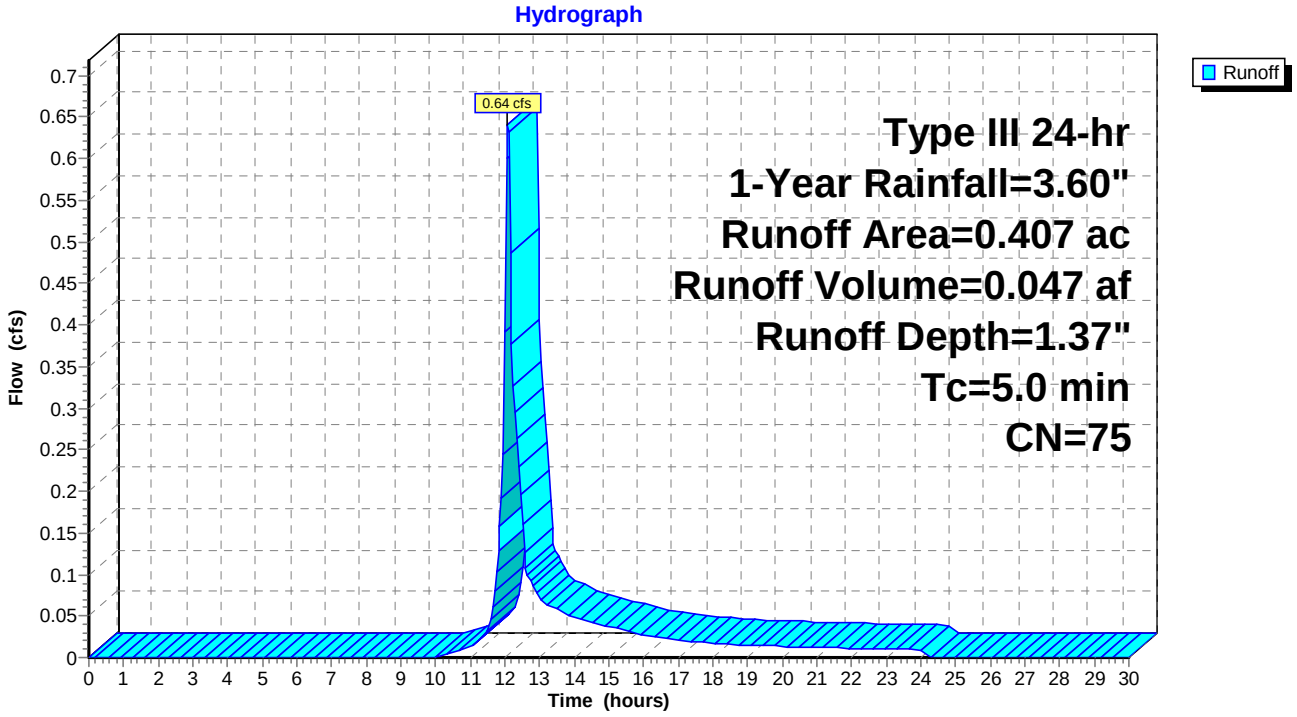
Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

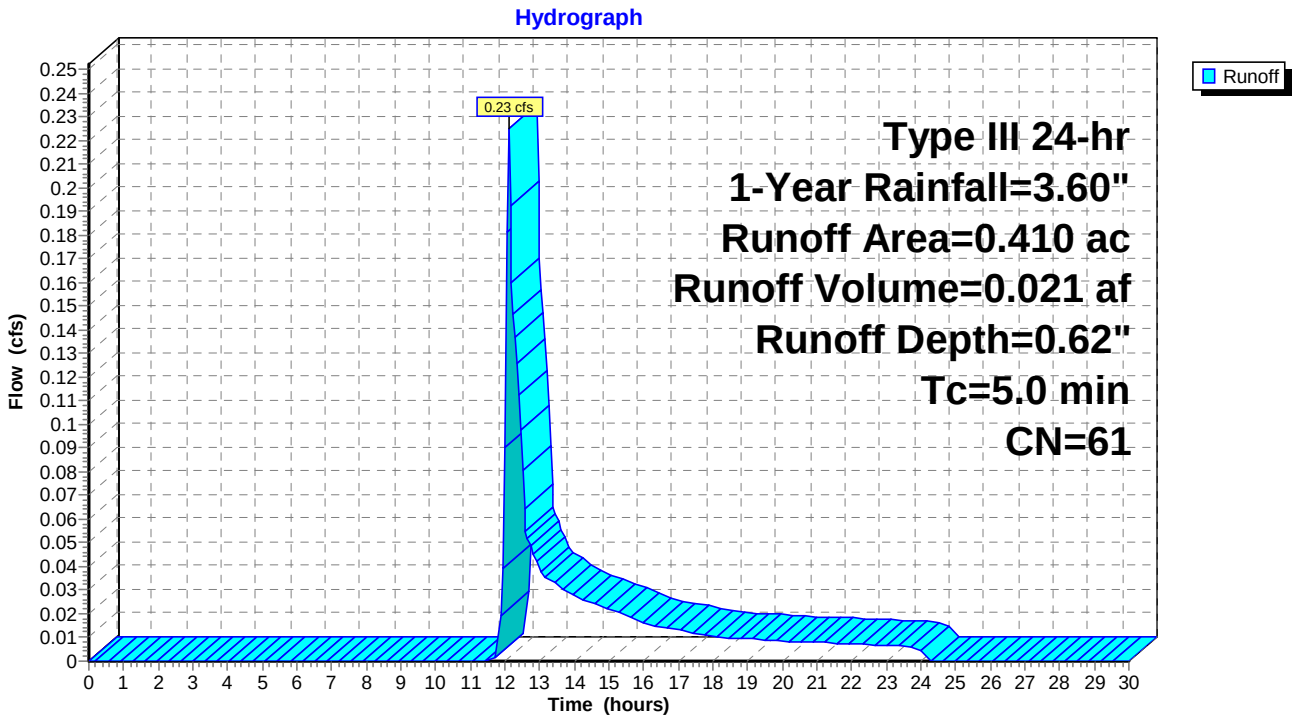
Runoff = 0.23 cfs @ 12.10 hrs, Volume= 0.021 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=3.60"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



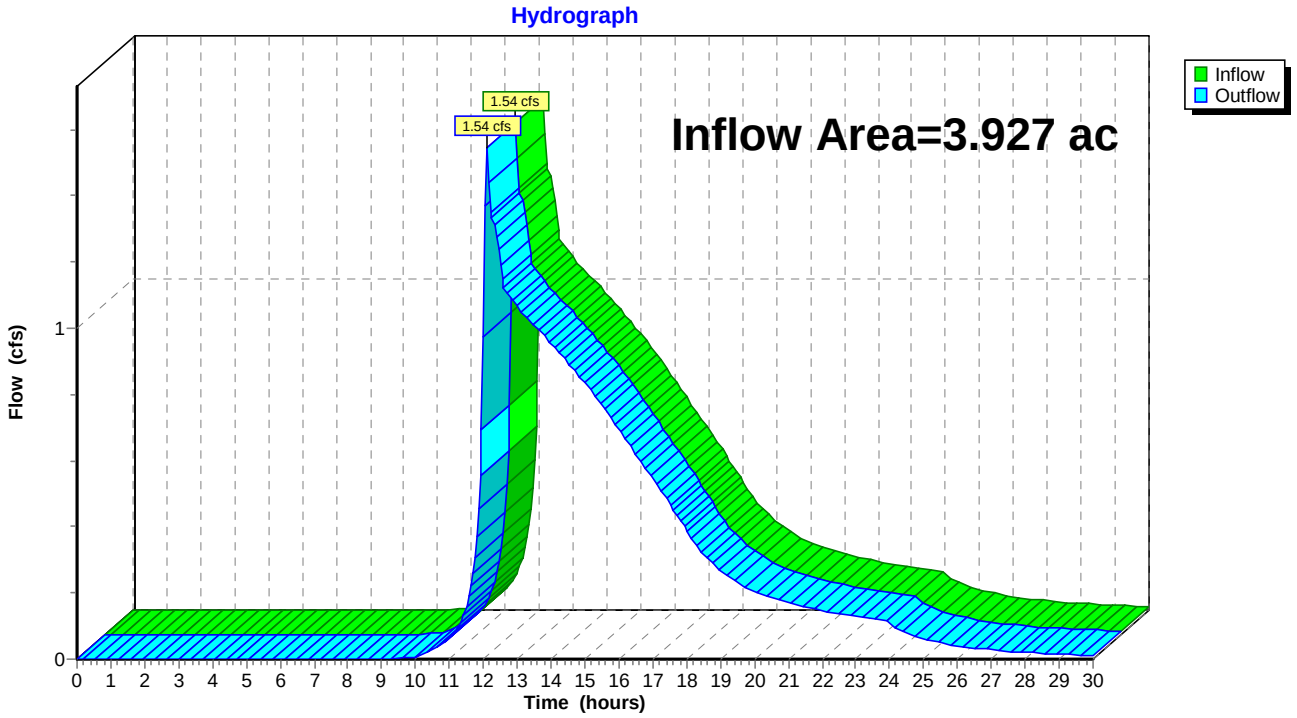
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 1.67" for 1-Year event
Inflow = 1.54 cfs @ 12.11 hrs, Volume= 0.548 af
Outflow = 1.54 cfs @ 12.11 hrs, Volume= 0.548 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 1.94" for 1-Year event
Inflow = 5.84 cfs @ 12.14 hrs, Volume= 0.481 af
Outflow = 0.94 cfs @ 12.76 hrs, Volume= 0.473 af, Atten= 84%, Lag= 36.8 min
Primary = 0.94 cfs @ 12.76 hrs, Volume= 0.473 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 18.94' @ 12.76 hrs Surf.Area= 9,152 sf Storage= 9,031 cf

Plug-Flow detention time= 138.1 min calculated for 0.473 af (98% of inflow)
Center-of-Mass det. time= 128.0 min (959.2 - 831.2)

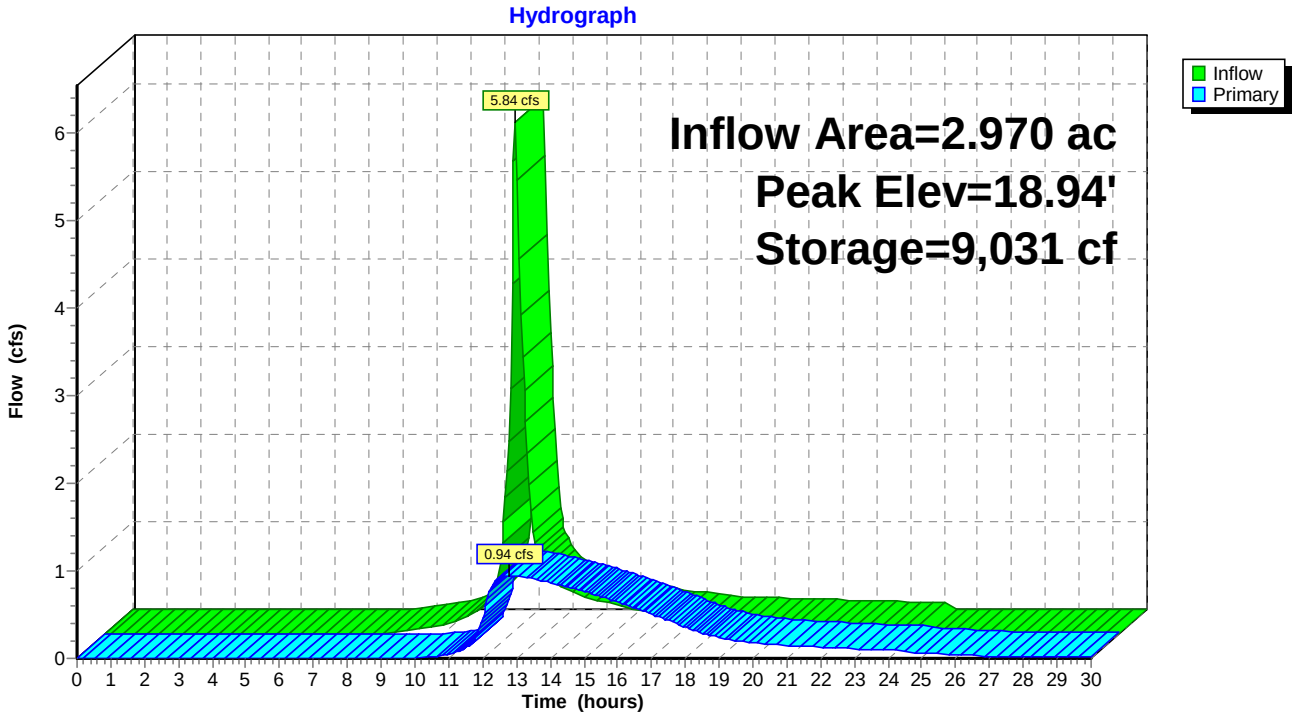
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.94 cfs @ 12.76 hrs HW=18.94' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.94 cfs @ 4.80 fps)
└**2=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)

Pond 5P: Pond


Hydrograph
Inflow Area=2.970 ac
Peak Elev=18.94'
Storage=9,031 cf
5.84 cfs
0.94 cfs
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=2.99"
Tc=10.0 min CN=83 Runoff=8.97 cfs 0.741 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=1.25"
Tc=5.0 min CN=61 Runoff=0.19 cfs 0.015 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=2.29"
Tc=5.0 min CN=75 Runoff=1.09 cfs 0.078 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=1.25"
Tc=5.0 min CN=61 Runoff=0.54 cfs 0.043 af

Reach 6R: Post Combine Inflow=2.68 cfs 0.867 af
Outflow=2.68 cfs 0.867 af

Pond 5P: Pond Peak Elev=19.35' Storage=13,621 cf Inflow=8.97 cfs 0.741 af
Outflow=2.30 cfs 0.732 af

Total Runoff Area = 3.927 ac Runoff Volume = 0.876 af Average Runoff Depth = 2.68"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

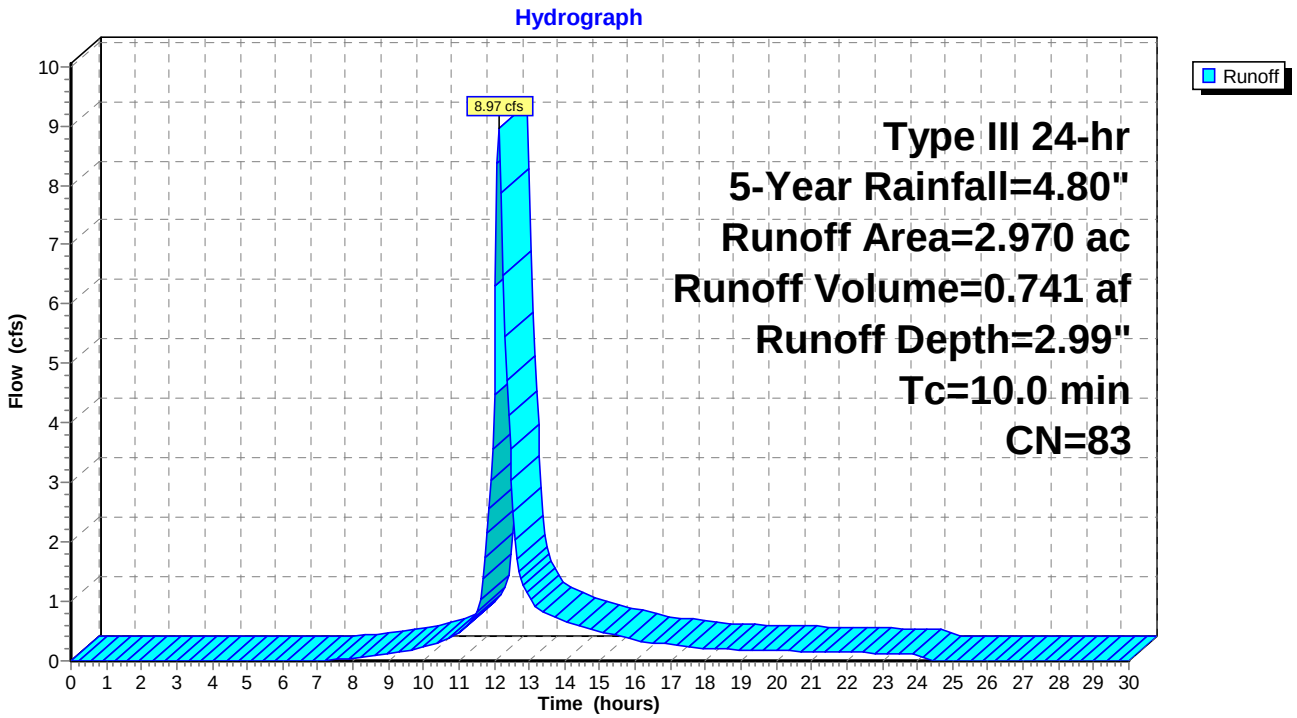
Runoff = 8.97 cfs @ 12.14 hrs, Volume= 0.741 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

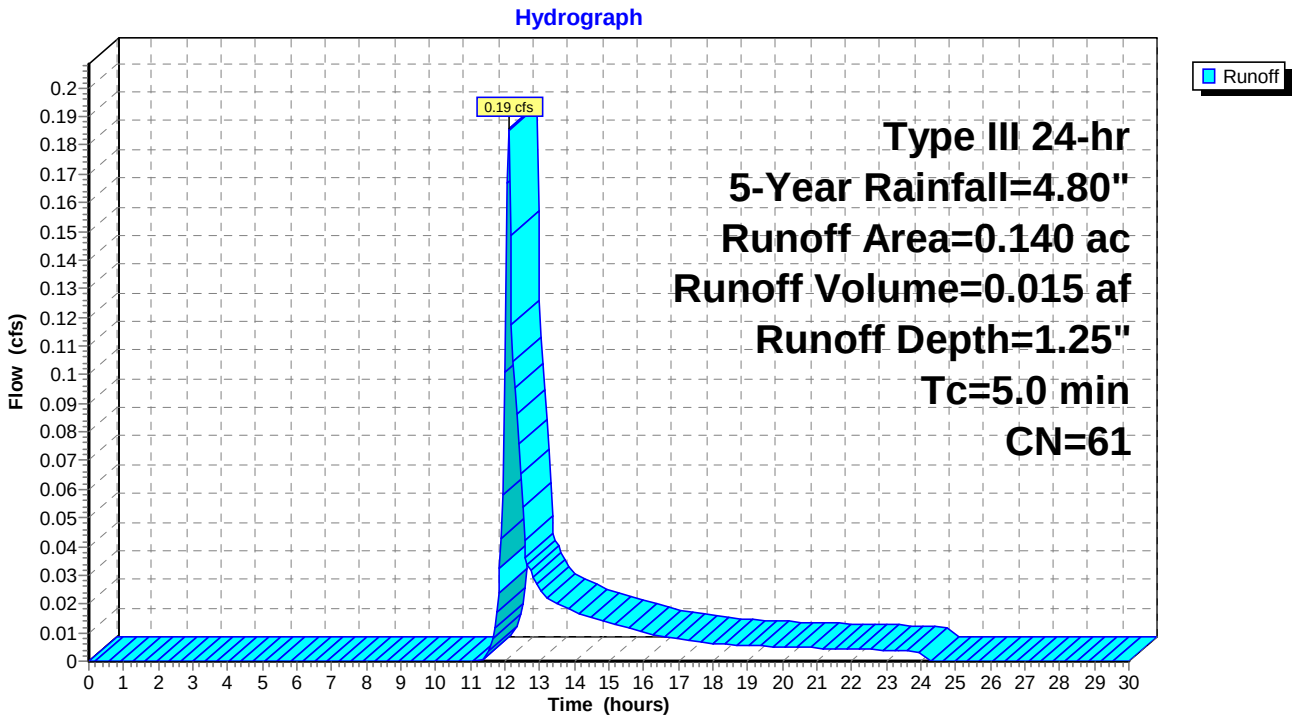
Runoff = 0.19 cfs @ 12.09 hrs, Volume= 0.015 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

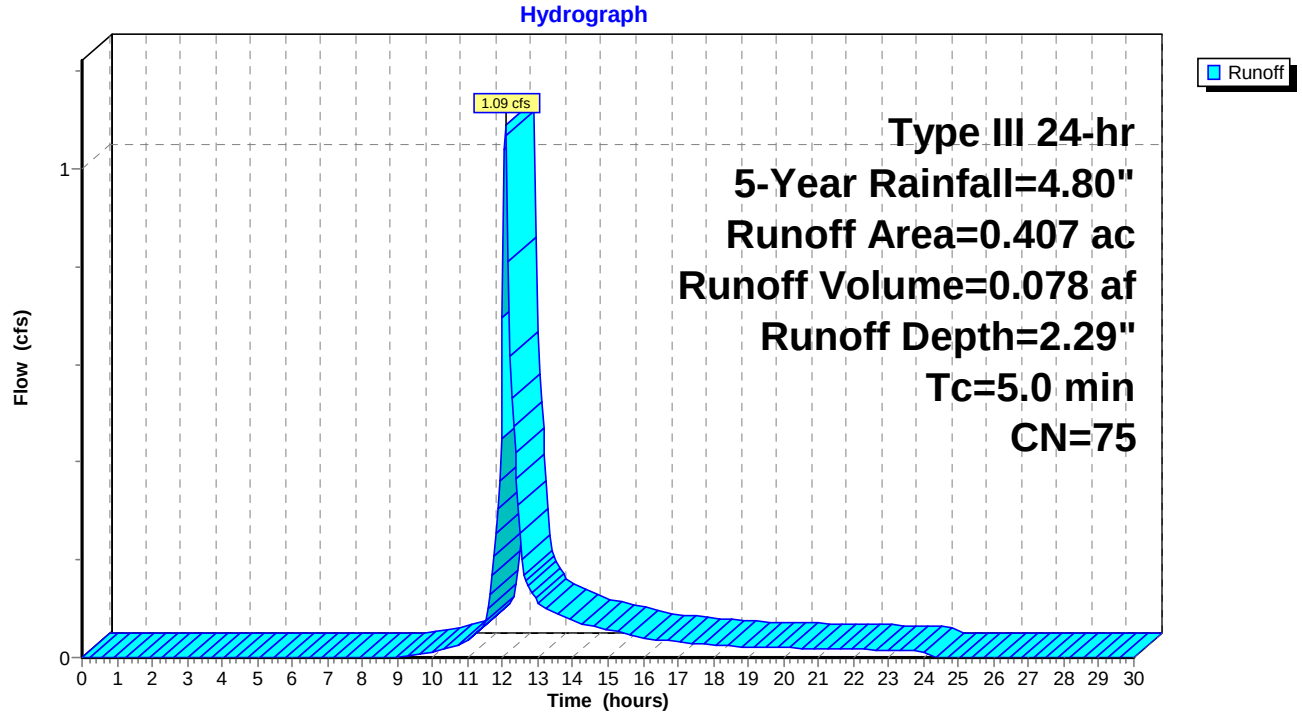
Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.078 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

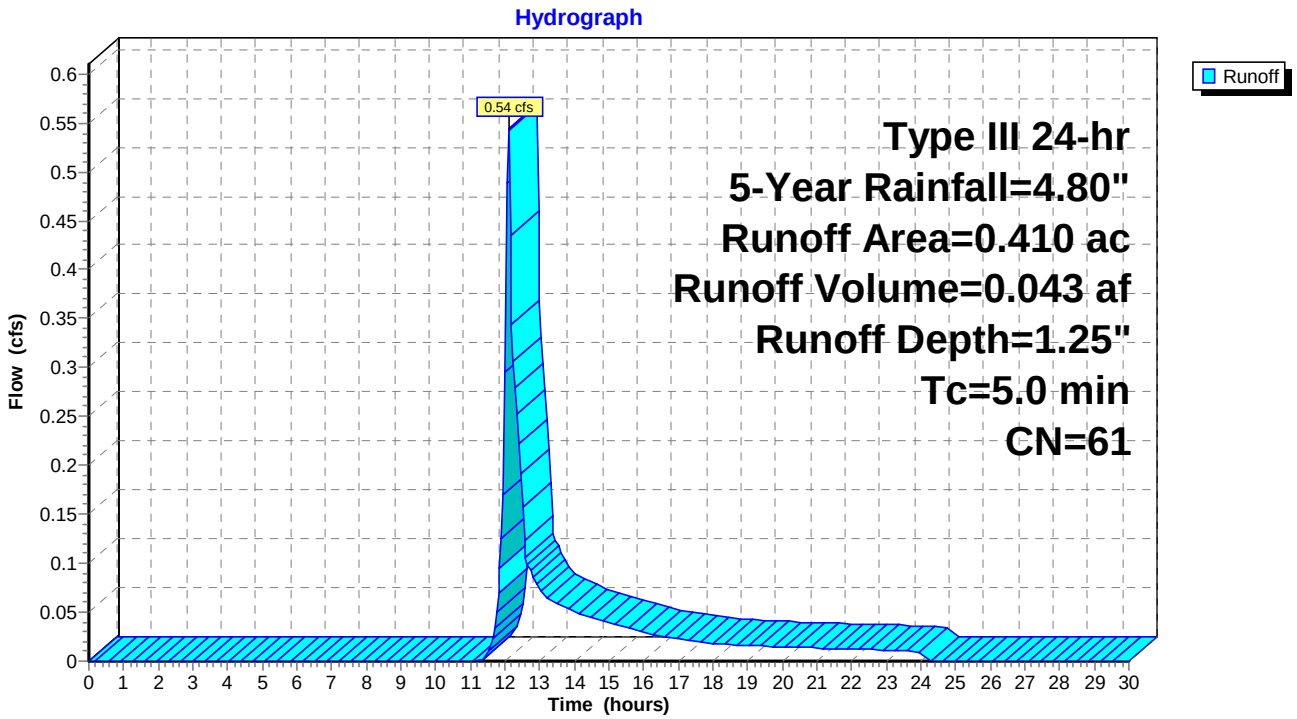
Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 5-Year Rainfall=4.80"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



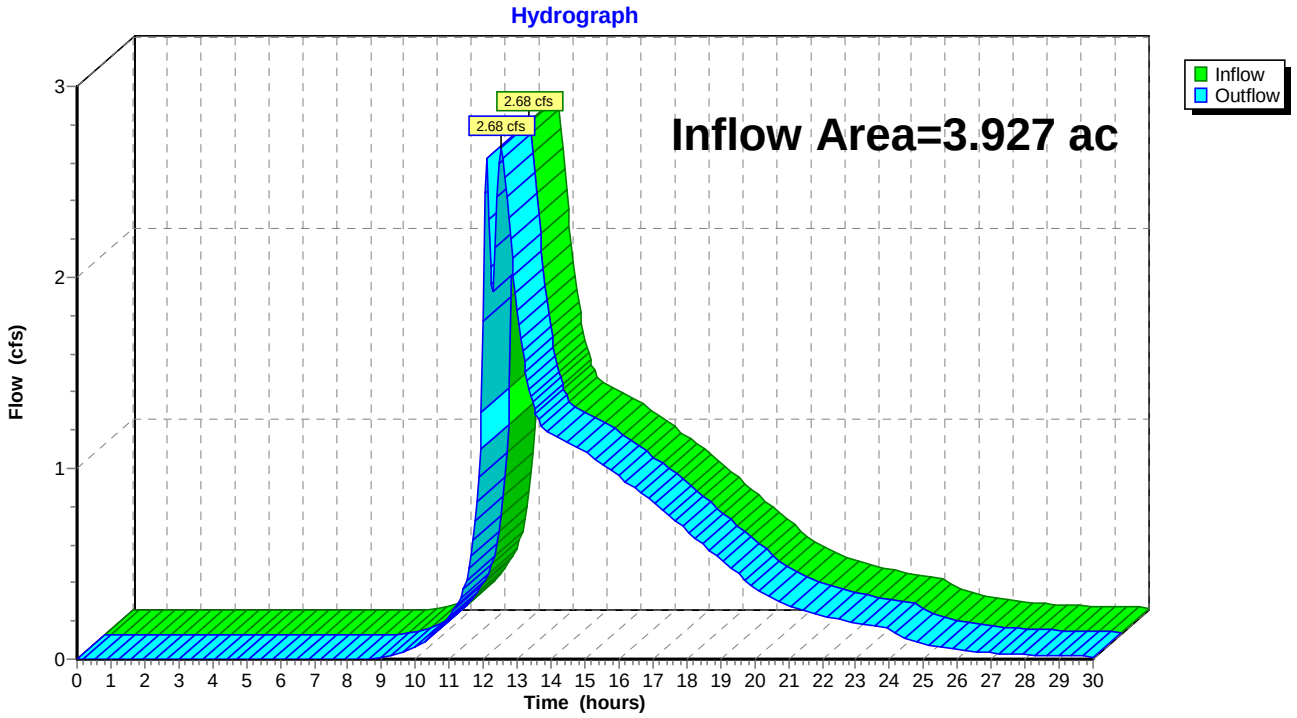
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 2.65" for 5-Year event
Inflow = 2.68 cfs @ 12.52 hrs, Volume= 0.867 af
Outflow = 2.68 cfs @ 12.52 hrs, Volume= 0.867 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 2.99" for 5-Year event
Inflow = 8.97 cfs @ 12.14 hrs, Volume= 0.741 af
Outflow = 2.30 cfs @ 12.57 hrs, Volume= 0.732 af, Atten= 74%, Lag= 25.9 min
Primary = 2.30 cfs @ 12.57 hrs, Volume= 0.732 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 19.35' @ 12.57 hrs Surf.Area= 13,766 sf Storage= 13,621 cf

Plug-Flow detention time= 139.7 min calculated for 0.731 af (99% of inflow)
Center-of-Mass det. time= 132.9 min (951.7 - 818.8)

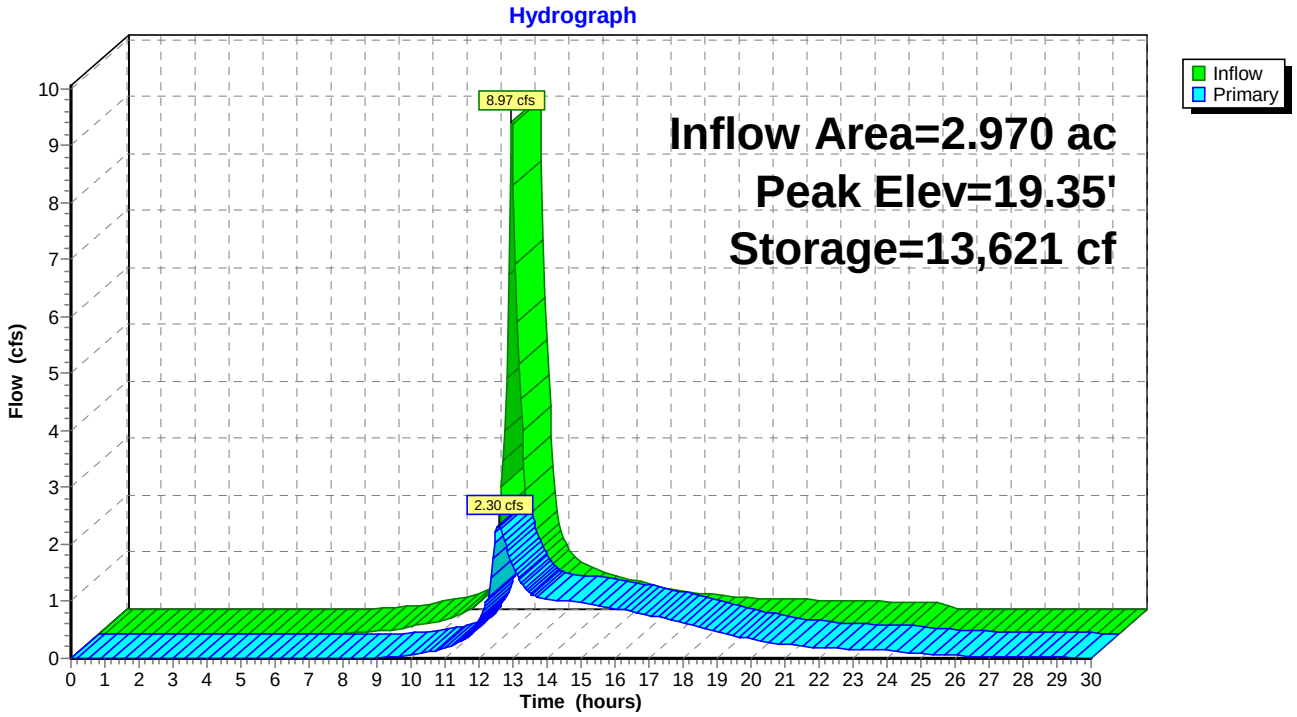
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=2.29 cfs @ 12.57 hrs HW=19.35' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.12 cfs @ 5.70 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.17 cfs @ 1.28 fps)

Pond 5P: Pond


Hydrograph
Inflow
Primary
8.97 cfs
2.30 cfs
Inflow Area=2.970 ac
Peak Elev=19.35'
Storage=13,621 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=5.03"
Tc=10.0 min CN=83 Runoff=14.84 cfs 1.244 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=2.70"
Tc=5.0 min CN=61 Runoff=0.43 cfs 0.032 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=4.15"
Tc=5.0 min CN=75 Runoff=1.98 cfs 0.141 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=2.70"
Tc=5.0 min CN=61 Runoff=1.27 cfs 0.092 af

Reach 6R: Post Combine Inflow=8.67 cfs 1.499 af
Outflow=8.67 cfs 1.499 af

Pond 5P: Pond Peak Elev=19.65' Storage=18,336 cf Inflow=14.84 cfs 1.244 af
Outflow=7.25 cfs 1.235 af

Total Runoff Area = 3.927 ac Runoff Volume = 1.509 af Average Runoff Depth = 4.61"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

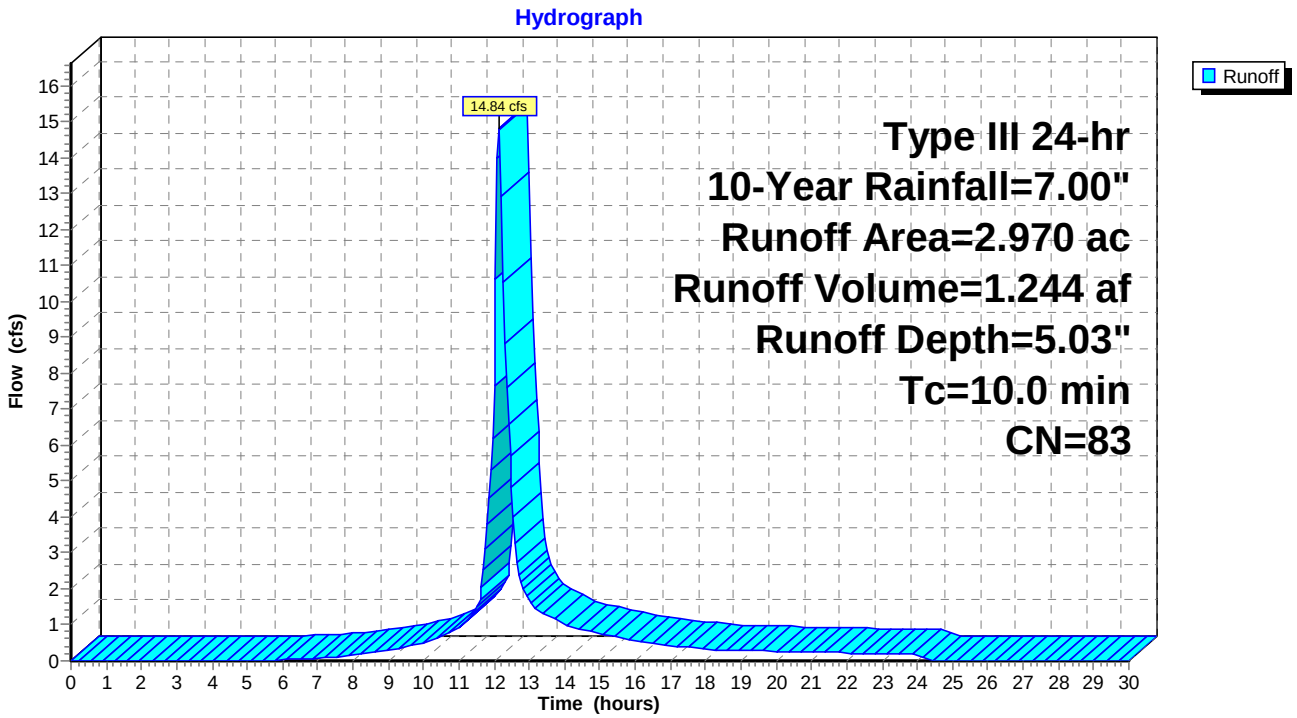
Runoff = 14.84 cfs @ 12.14 hrs, Volume= 1.244 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

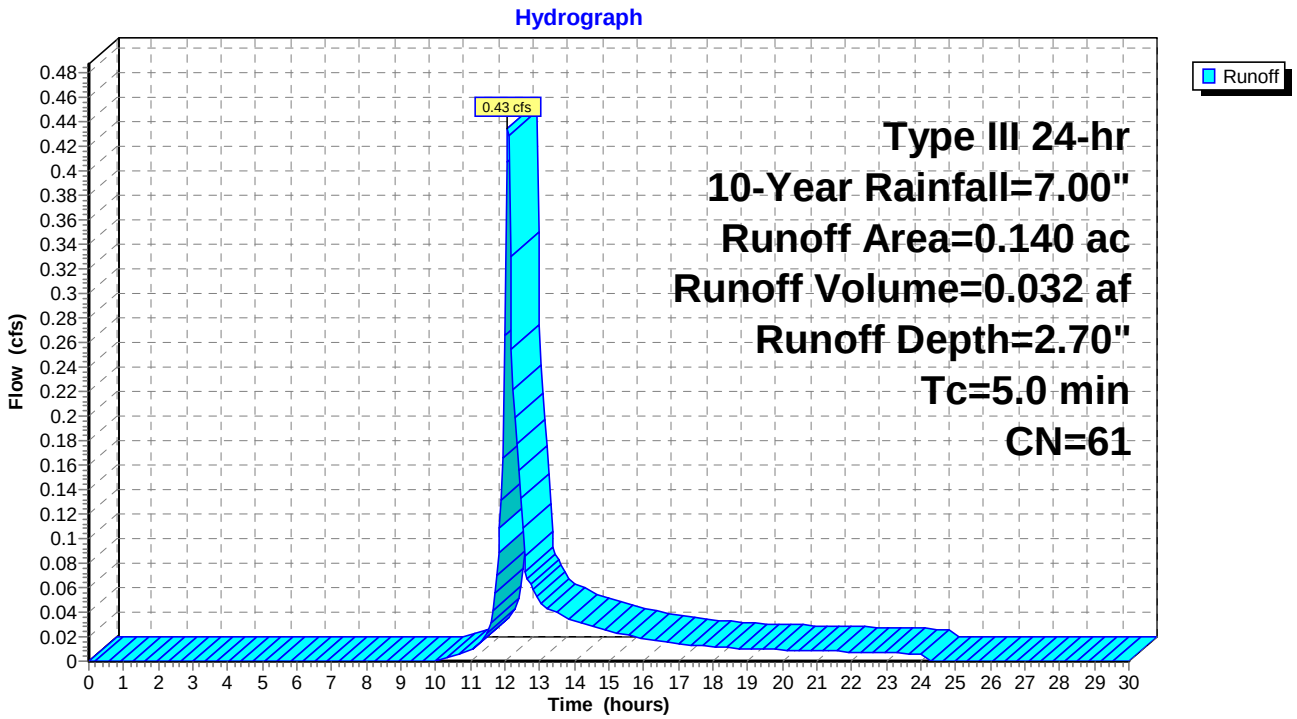
Runoff = 0.43 cfs @ 12.08 hrs, Volume= 0.032 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

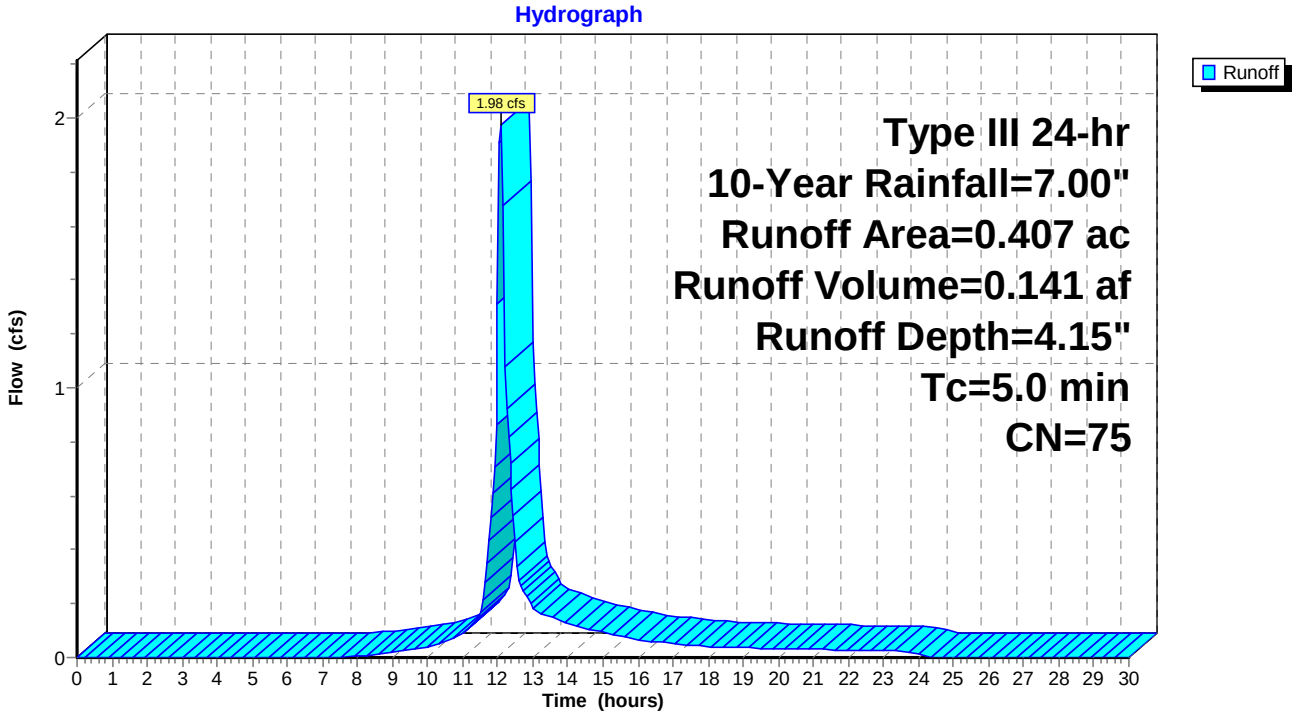
Runoff = 1.98 cfs @ 12.08 hrs, Volume= 0.141 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

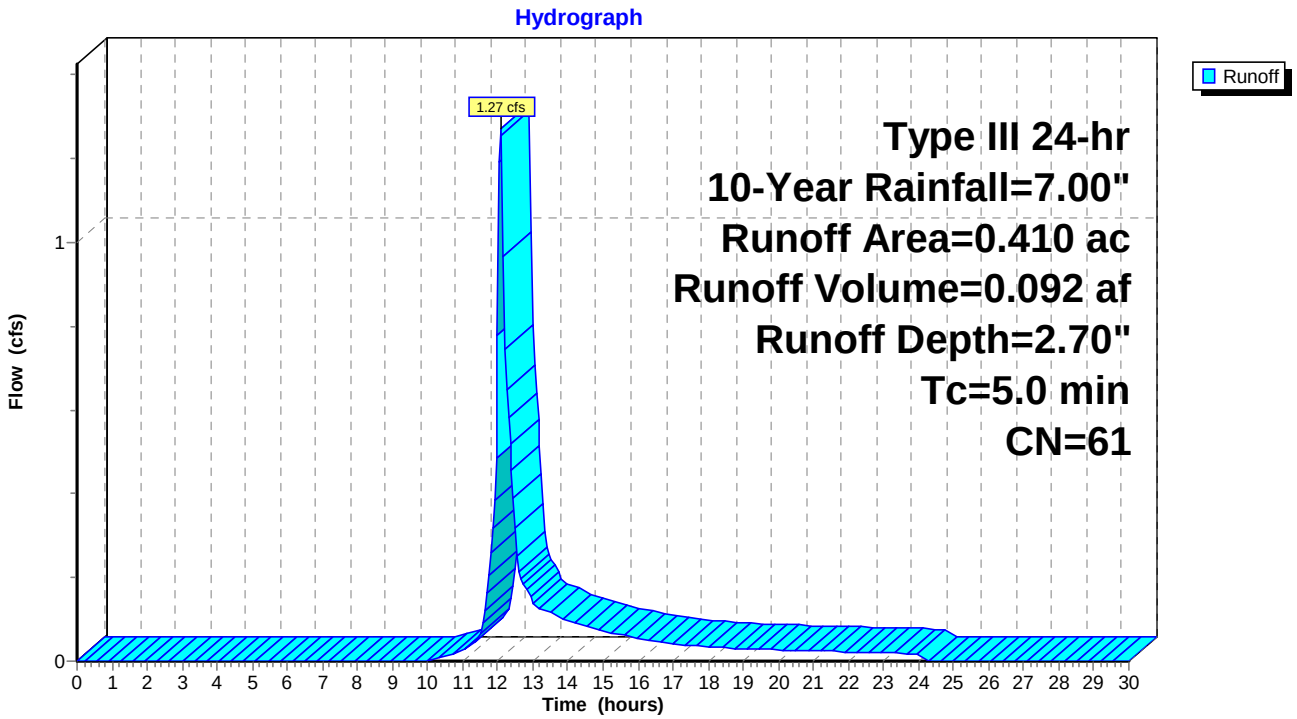
Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.092 af, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=7.00"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



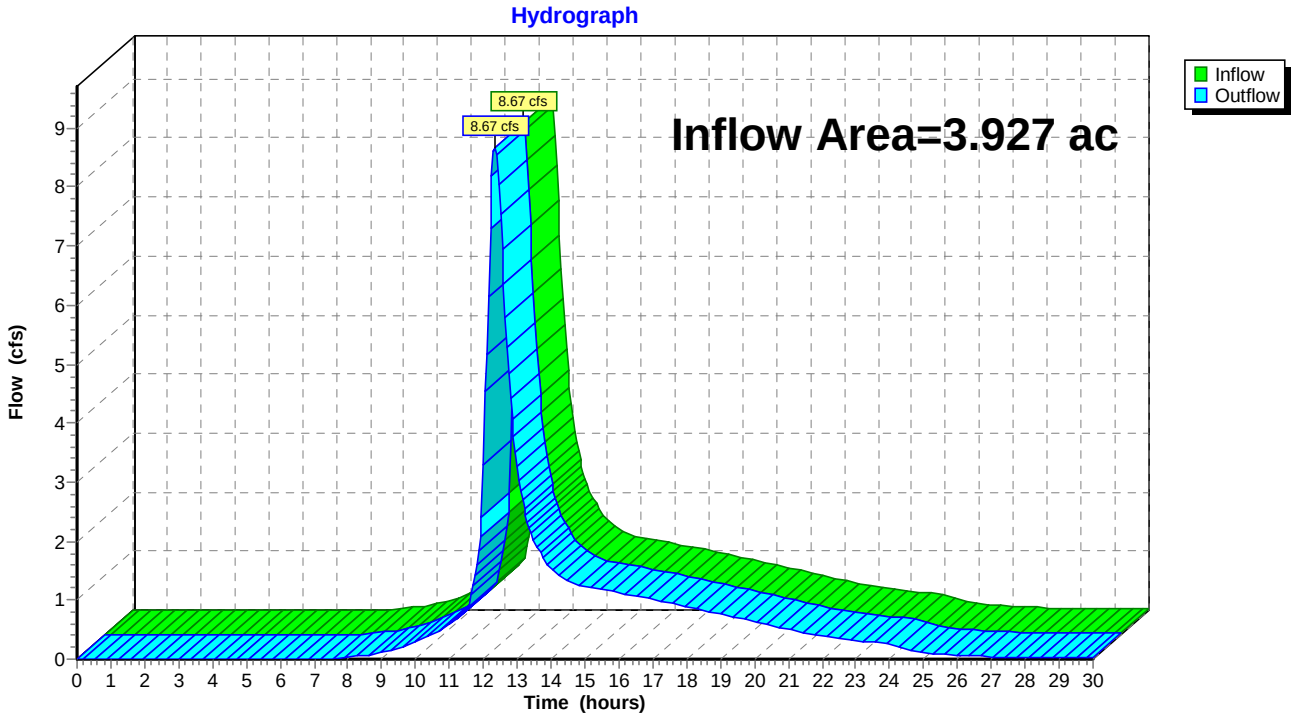
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 4.58" for 10-Year event
Inflow = 8.67 cfs @ 12.33 hrs, Volume= 1.499 af
Outflow = 8.67 cfs @ 12.33 hrs, Volume= 1.499 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 5.03" for 10-Year event
Inflow = 14.84 cfs @ 12.14 hrs, Volume= 1.244 af
Outflow = 7.25 cfs @ 12.37 hrs, Volume= 1.235 af, Atten= 51%, Lag= 13.8 min
Primary = 7.25 cfs @ 12.37 hrs, Volume= 1.235 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 19.65' @ 12.37 hrs Surf.Area= 17,551 sf Storage= 18,336 cf

Plug-Flow detention time= 111.9 min calculated for 1.235 af (99% of inflow)
Center-of-Mass det. time= 107.1 min (911.3 - 804.2)

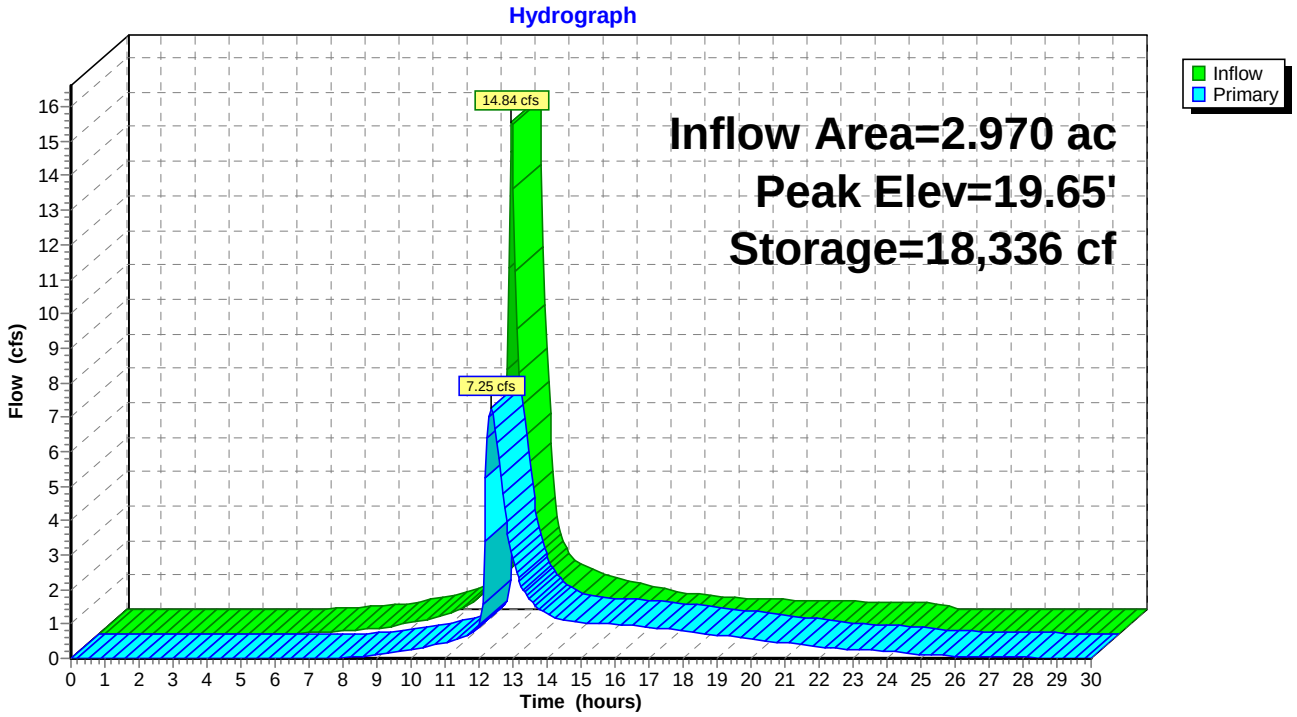
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=7.22 cfs @ 12.37 hrs HW=19.65' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.23 cfs @ 6.28 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 5.99 cfs @ 2.20 fps)

Pond 5P: Pond


Hydrograph
Inflow
Primary
14.84 cfs
7.25 cfs
Inflow Area=2.970 ac
Peak Elev=19.65'
Storage=18,336 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=5.98"
Tc=10.0 min CN=83 Runoff=17.51 cfs 1.479 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=3.44"
Tc=5.0 min CN=61 Runoff=0.56 cfs 0.040 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=5.04"
Tc=5.0 min CN=75 Runoff=2.39 cfs 0.171 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=3.44"
Tc=5.0 min CN=61 Runoff=1.64 cfs 0.118 af

Reach 6R: Post Combine Inflow=11.52 cfs 1.798 af
Outflow=11.52 cfs 1.798 af

Pond 5P: Pond Peak Elev=19.76' Storage=20,338 cf Inflow=17.51 cfs 1.479 af
Outflow=9.60 cfs 1.469 af

Total Runoff Area = 3.927 ac Runoff Volume = 1.808 af Average Runoff Depth = 5.53"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

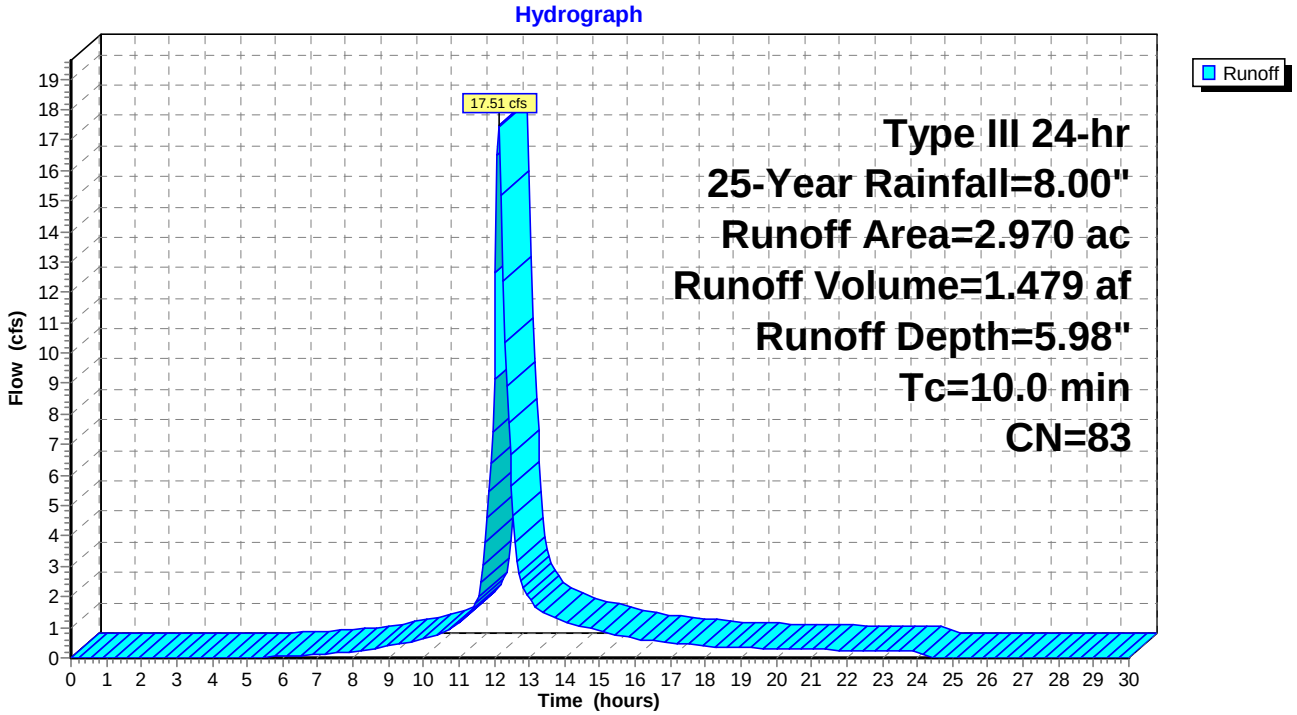
Runoff = 17.51 cfs @ 12.14 hrs, Volume= 1.479 af, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

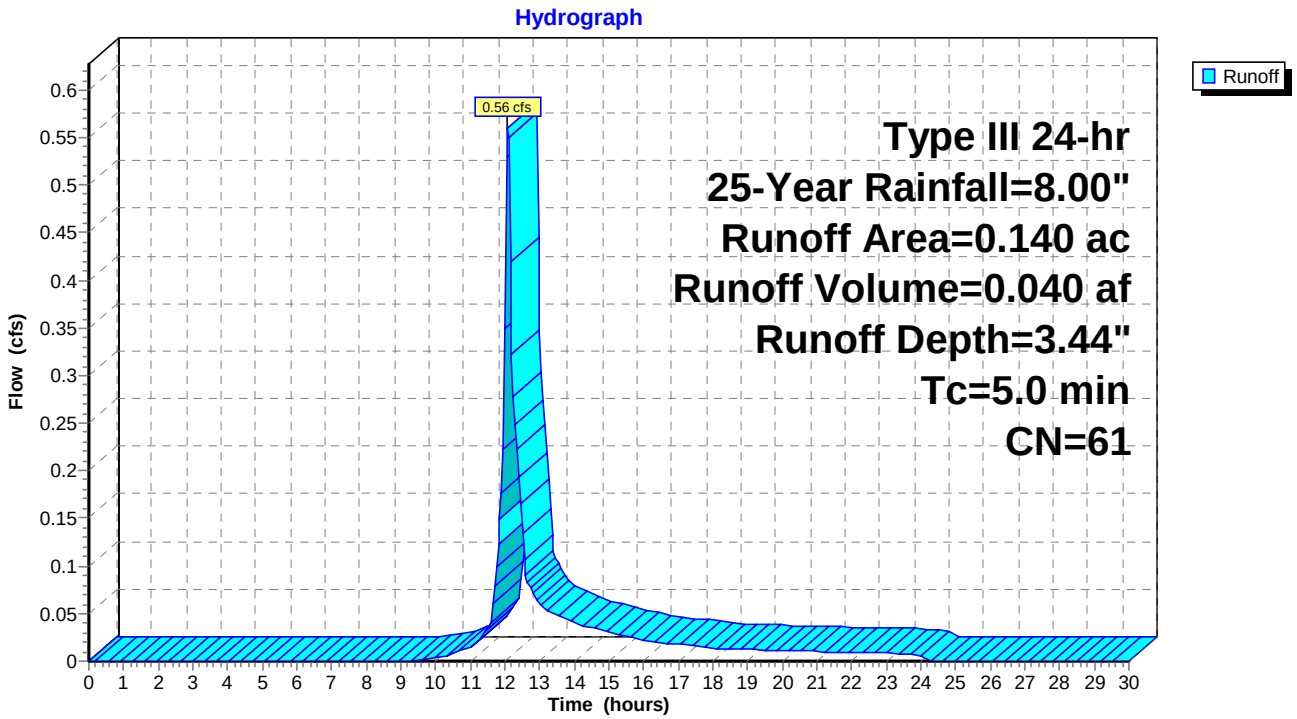
Runoff = 0.56 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

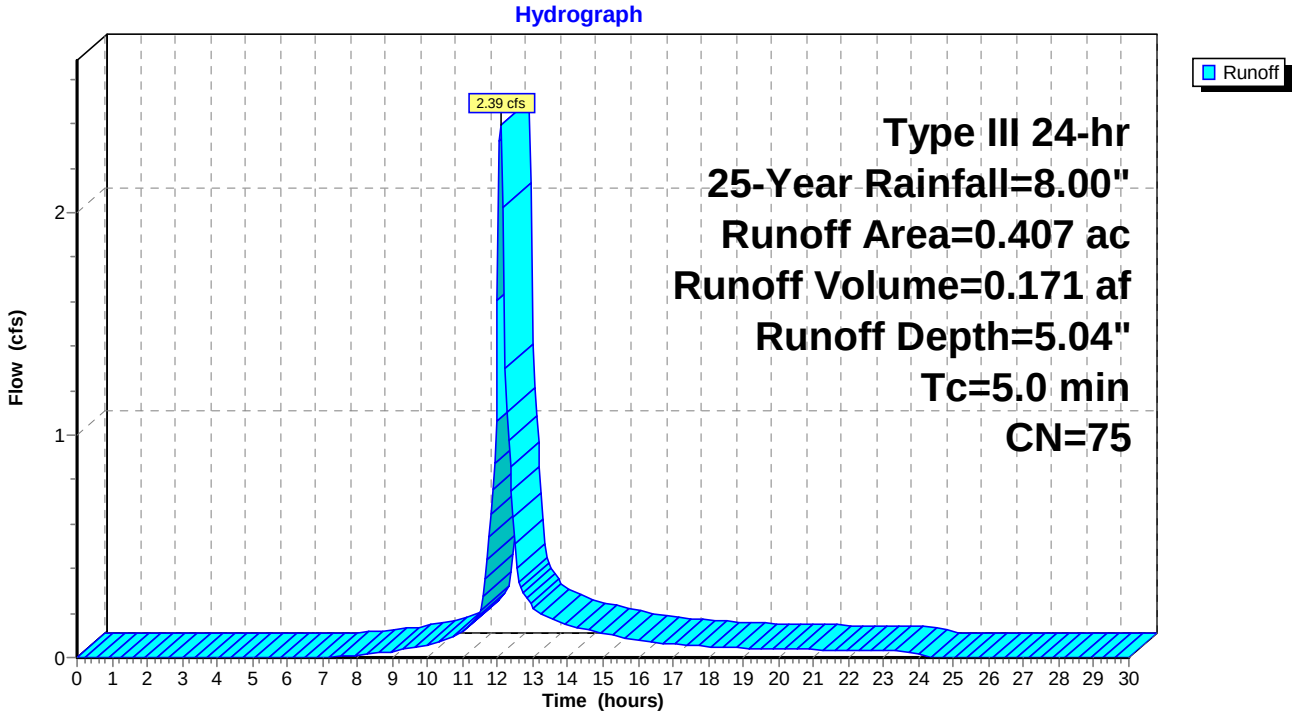
Runoff = 2.39 cfs @ 12.08 hrs, Volume= 0.171 af, Depth= 5.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

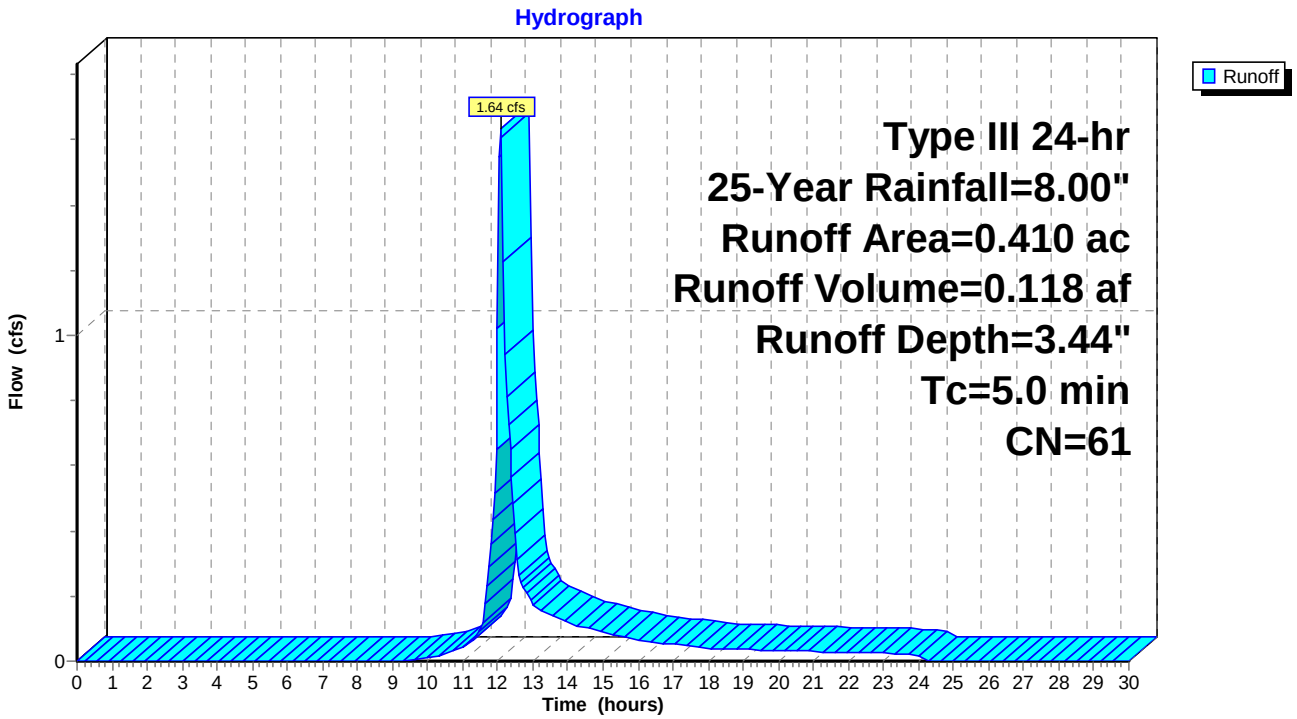
Runoff = 1.64 cfs @ 12.08 hrs, Volume= 0.118 af, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=8.00"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



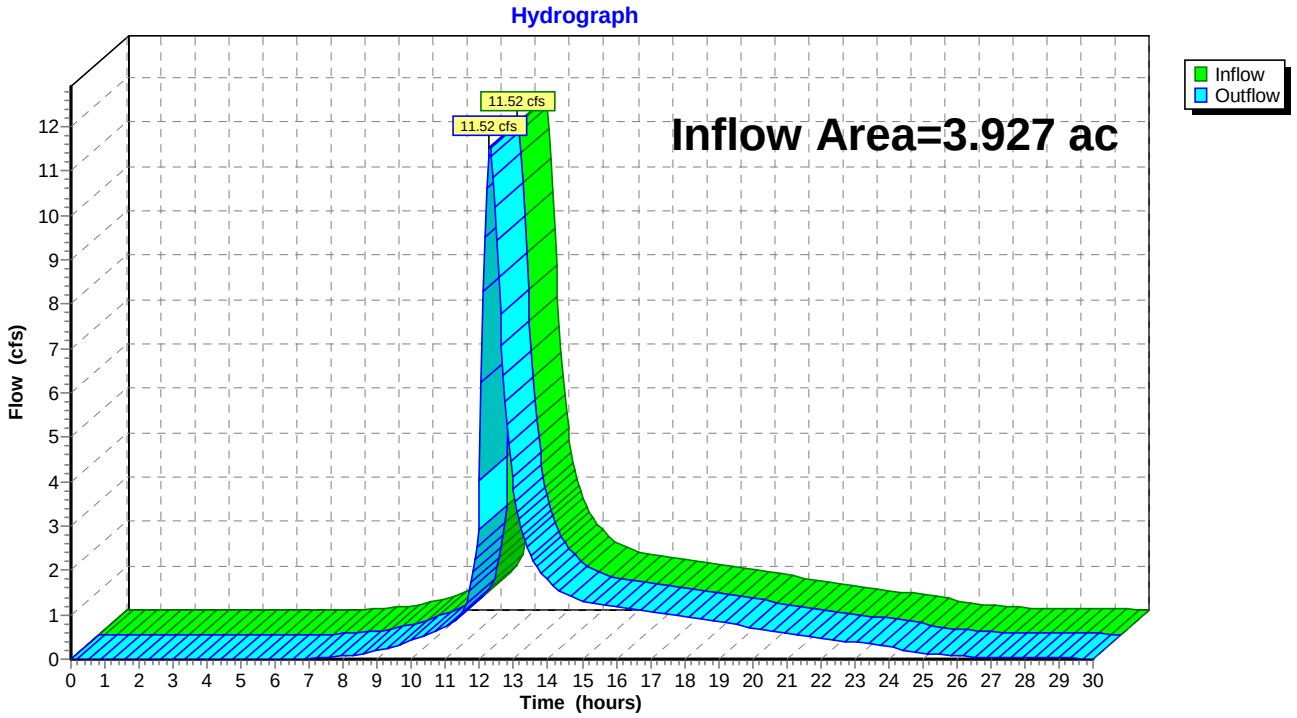
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 5.50" for 25-Year event
Inflow = 11.52 cfs @ 12.30 hrs, Volume= 1.798 af
Outflow = 11.52 cfs @ 12.30 hrs, Volume= 1.798 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 5.98" for 25-Year event
Inflow = 17.51 cfs @ 12.14 hrs, Volume= 1.479 af
Outflow = 9.60 cfs @ 12.33 hrs, Volume= 1.469 af, Atten= 45%, Lag= 11.2 min
Primary = 9.60 cfs @ 12.33 hrs, Volume= 1.469 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 19.76' @ 12.33 hrs Surf.Area= 18,930 sf Storage= 20,338 cf

Plug-Flow detention time= 103.7 min calculated for 1.467 af (99% of inflow)
Center-of-Mass det. time= 100.0 min (899.3 - 799.3)

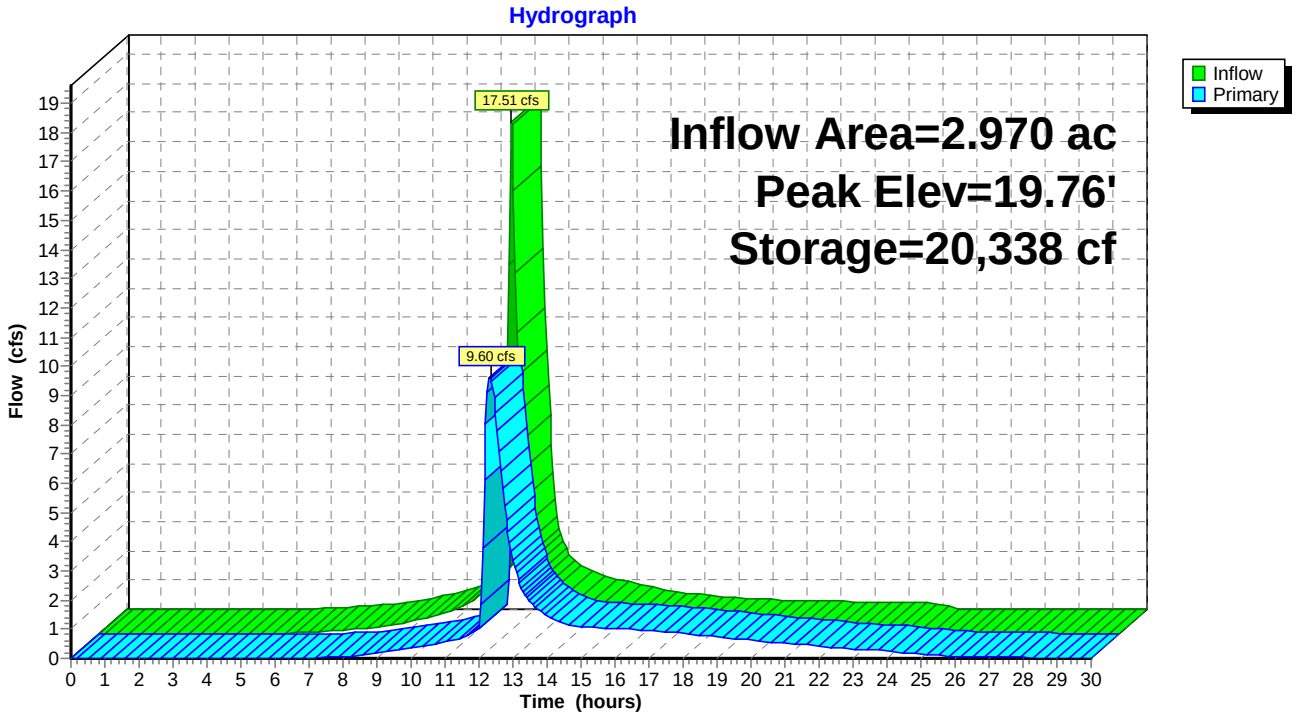
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=9.57 cfs @ 12.33 hrs HW=19.76' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.27 cfs @ 6.48 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 8.30 cfs @ 2.46 fps)

Pond 5P: Pond


Hydrograph
Inflow
Primary
17.51 cfs
9.60 cfs
Inflow Area=2.970 ac
Peak Elev=19.76'
Storage=20,338 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=6.94"
Tc=10.0 min CN=83 Runoff=20.17 cfs 1.717 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=61 Runoff=0.69 cfs 0.049 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=5.95"
Tc=5.0 min CN=75 Runoff=2.83 cfs 0.202 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=4.22"
Tc=5.0 min CN=61 Runoff=2.02 cfs 0.144 af

Reach 6R: Post Combine Inflow=14.33 cfs 2.102 af
Outflow=14.33 cfs 2.102 af

Pond 5P: Pond Peak Elev=19.86' Storage=22,277 cf Inflow=20.17 cfs 1.717 af
Outflow=11.93 cfs 1.707 af

Total Runoff Area = 3.927 ac Runoff Volume = 2.112 af Average Runoff Depth = 6.45"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

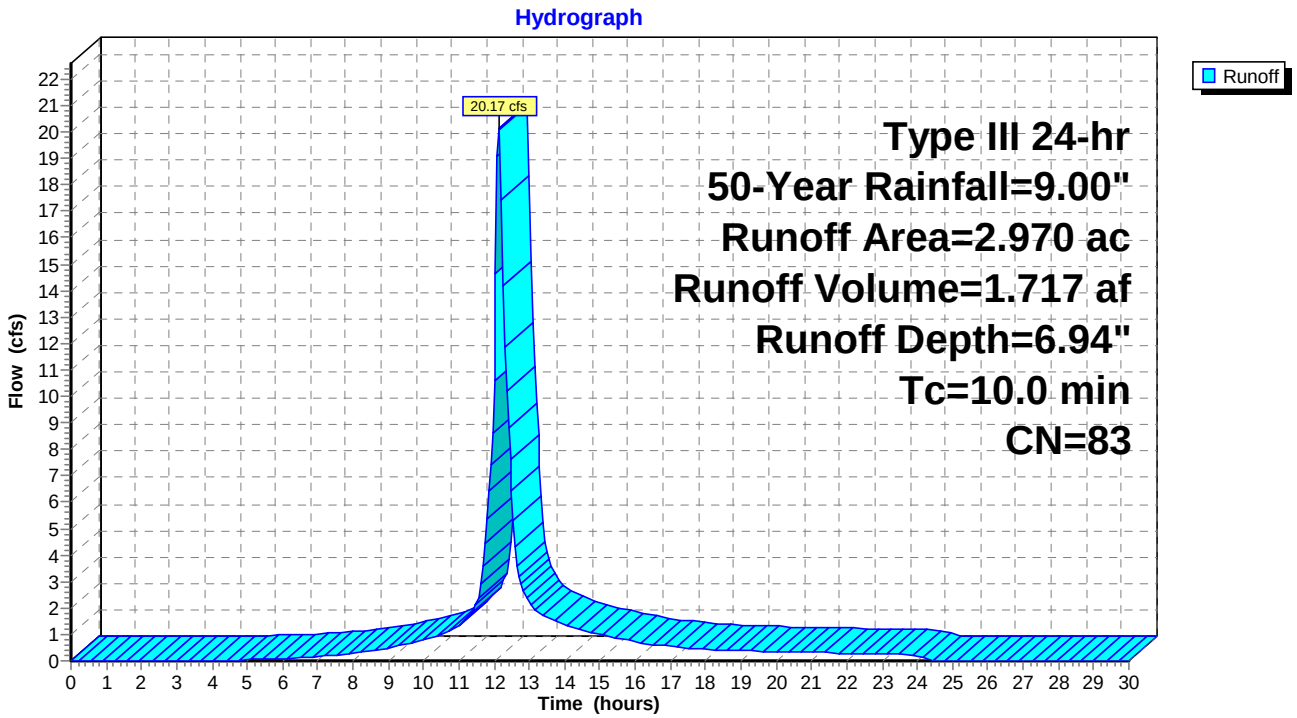
Runoff = 20.17 cfs @ 12.14 hrs, Volume= 1.717 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

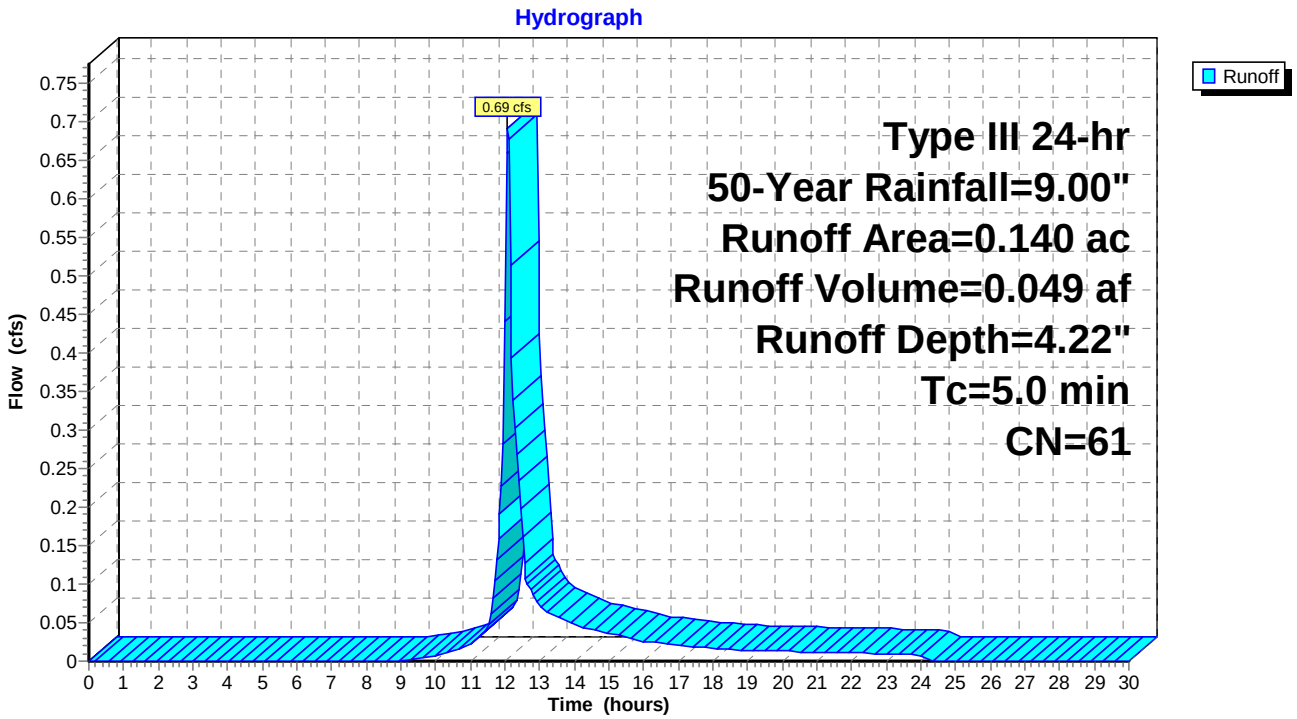
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.049 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

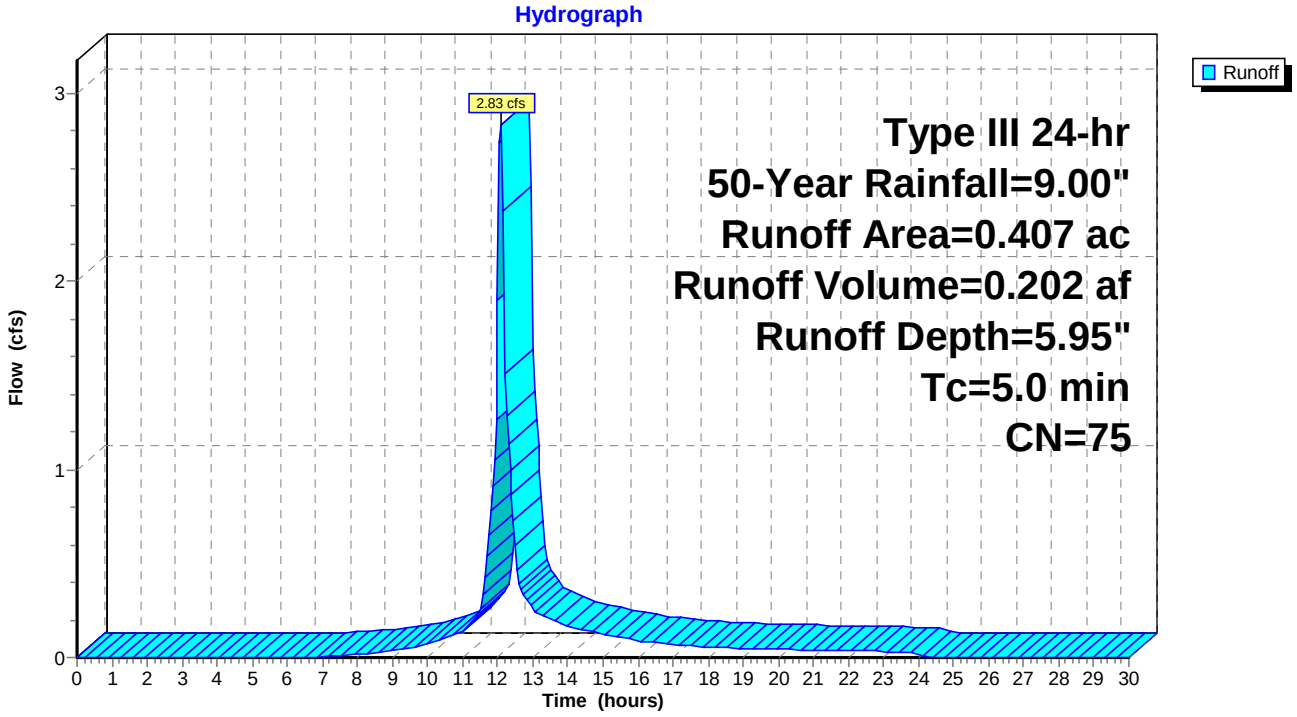
Runoff = 2.83 cfs @ 12.07 hrs, Volume= 0.202 af, Depth= 5.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

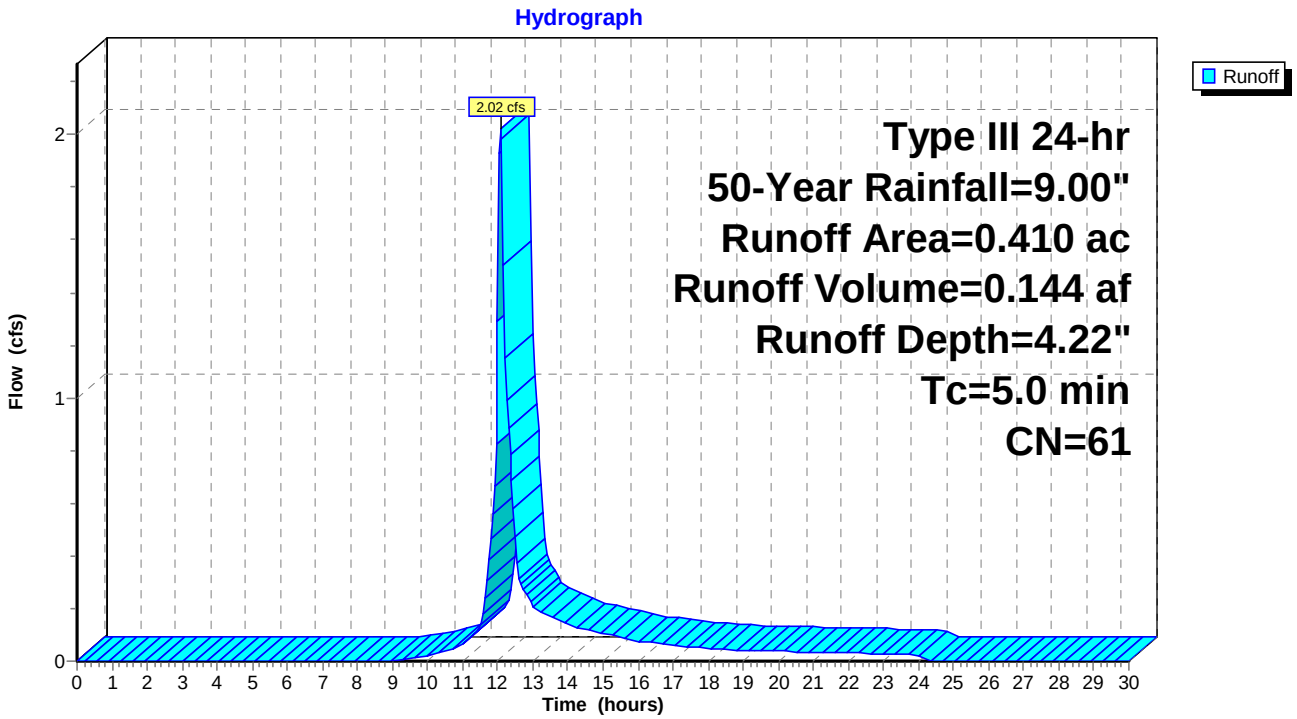
Runoff = 2.02 cfs @ 12.08 hrs, Volume= 0.144 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=9.00"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



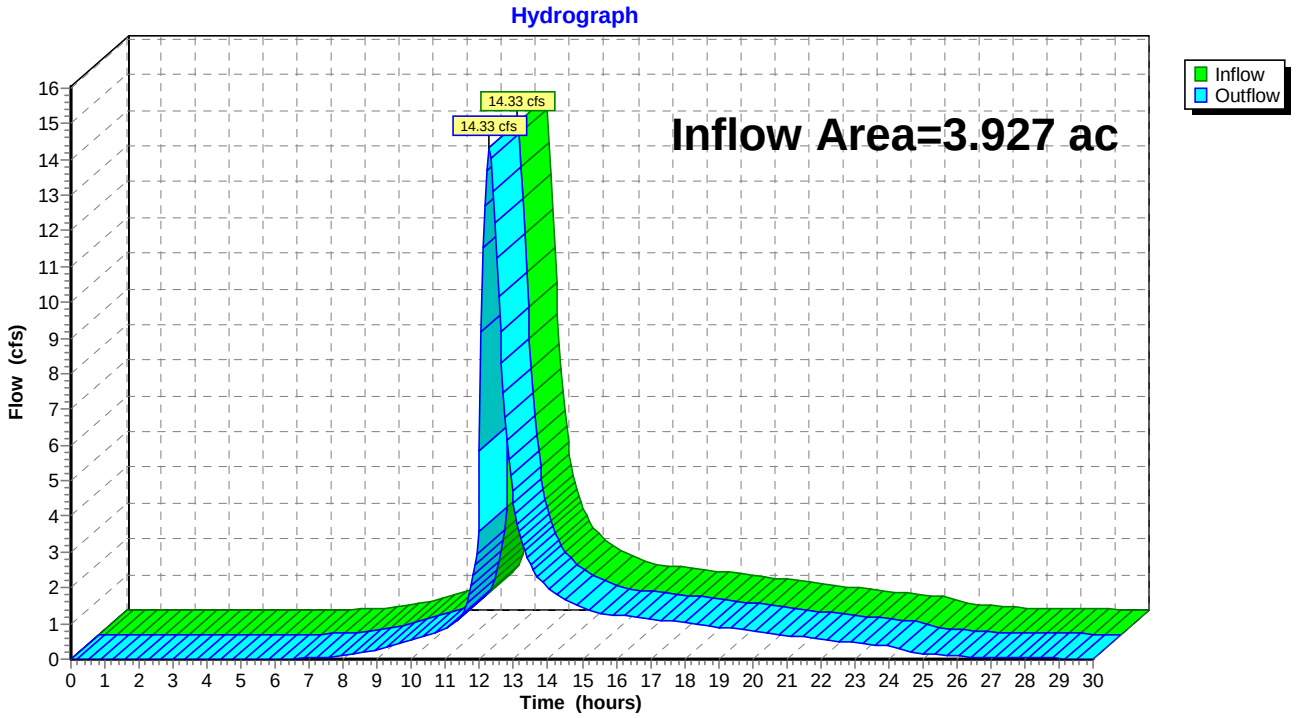
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 6.42" for 50-Year event
Inflow = 14.33 cfs @ 12.27 hrs, Volume= 2.102 af
Outflow = 14.33 cfs @ 12.27 hrs, Volume= 2.102 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 6.94" for 50-Year event
Inflow = 20.17 cfs @ 12.14 hrs, Volume= 1.717 af
Outflow = 11.93 cfs @ 12.31 hrs, Volume= 1.707 af, Atten= 41%, Lag= 10.0 min
Primary = 11.93 cfs @ 12.31 hrs, Volume= 1.707 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 19.86' @ 12.31 hrs Surf.Area= 20,176 sf Storage= 22,277 cf

Plug-Flow detention time= 97.7 min calculated for 1.704 af (99% of inflow)
Center-of-Mass det. time= 94.3 min (889.6 - 795.2)

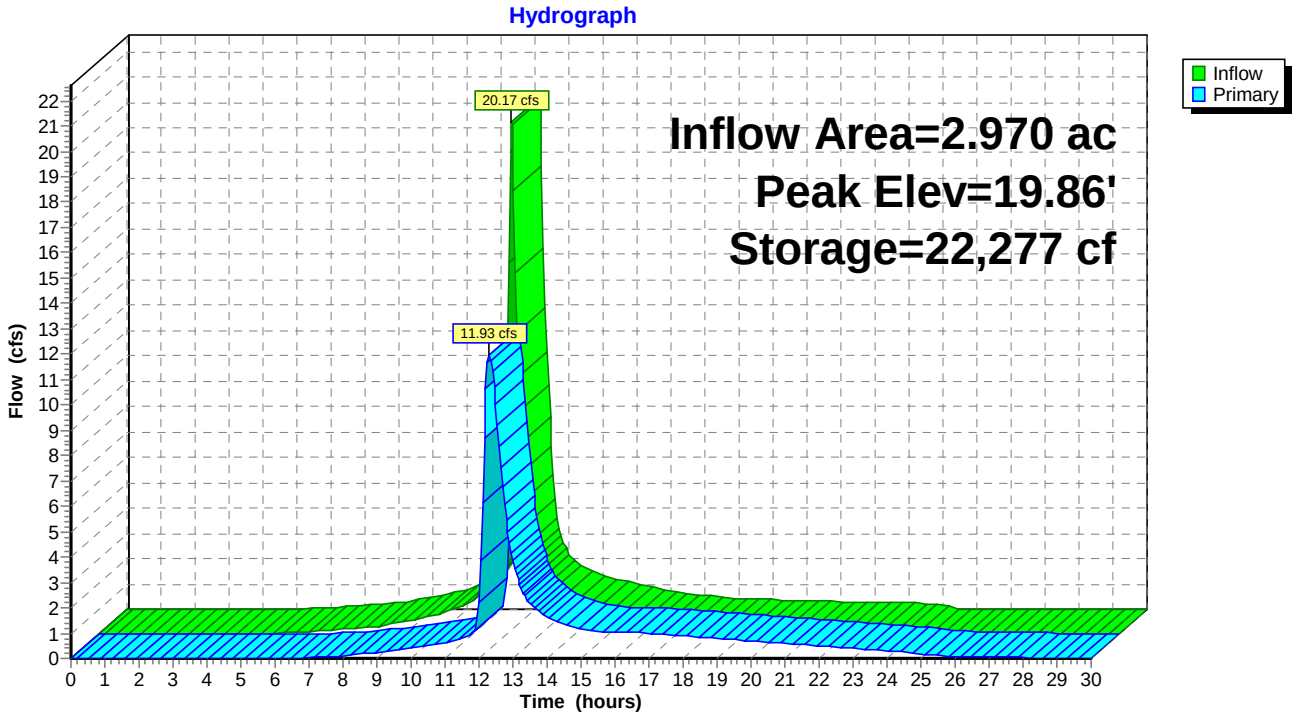
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=11.90 cfs @ 12.31 hrs HW=19.86' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 1.31 cfs @ 6.66 fps)
└─**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 10.60 cfs @ 2.67 fps)

Pond 5P: Pond


Hydrograph
Inflow
Primary
20.17 cfs
11.93 cfs
Inflow Area=2.970 ac
Peak Elev=19.86'
Storage=22,277 cf
Flow (cfs)
Time (hours)

Time span=0.00-30.00 hrs, dt=0.05 hrs, 601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Post Basin 1 Runoff Area=2.970 ac 9.06% Impervious Runoff Depth=7.75"
Tc=10.0 min CN=83 Runoff=22.40 cfs 1.918 af

Subcatchment 2S: Bypass A Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=4.90"
Tc=5.0 min CN=61 Runoff=0.80 cfs 0.057 af

Subcatchment 3S: Bypass B Runoff Area=0.407 ac 18.92% Impervious Runoff Depth=6.73"
Tc=5.0 min CN=75 Runoff=3.19 cfs 0.228 af

Subcatchment 4S: Bypass C Runoff Area=0.410 ac 0.00% Impervious Runoff Depth=4.90"
Tc=5.0 min CN=61 Runoff=2.35 cfs 0.167 af

Reach 6R: Post Combine Inflow=16.59 cfs 2.360 af
Outflow=16.59 cfs 2.360 af

Pond 5P: Pond Peak Elev=19.94' Storage=23,806 cf Inflow=22.40 cfs 1.918 af
Outflow=13.78 cfs 1.907 af

Total Runoff Area = 3.927 ac Runoff Volume = 2.370 af Average Runoff Depth = 7.24"
91.19% Pervious = 3.581 ac 8.81% Impervious = 0.346 ac

Summary for Subcatchment 1S: Post Basin 1

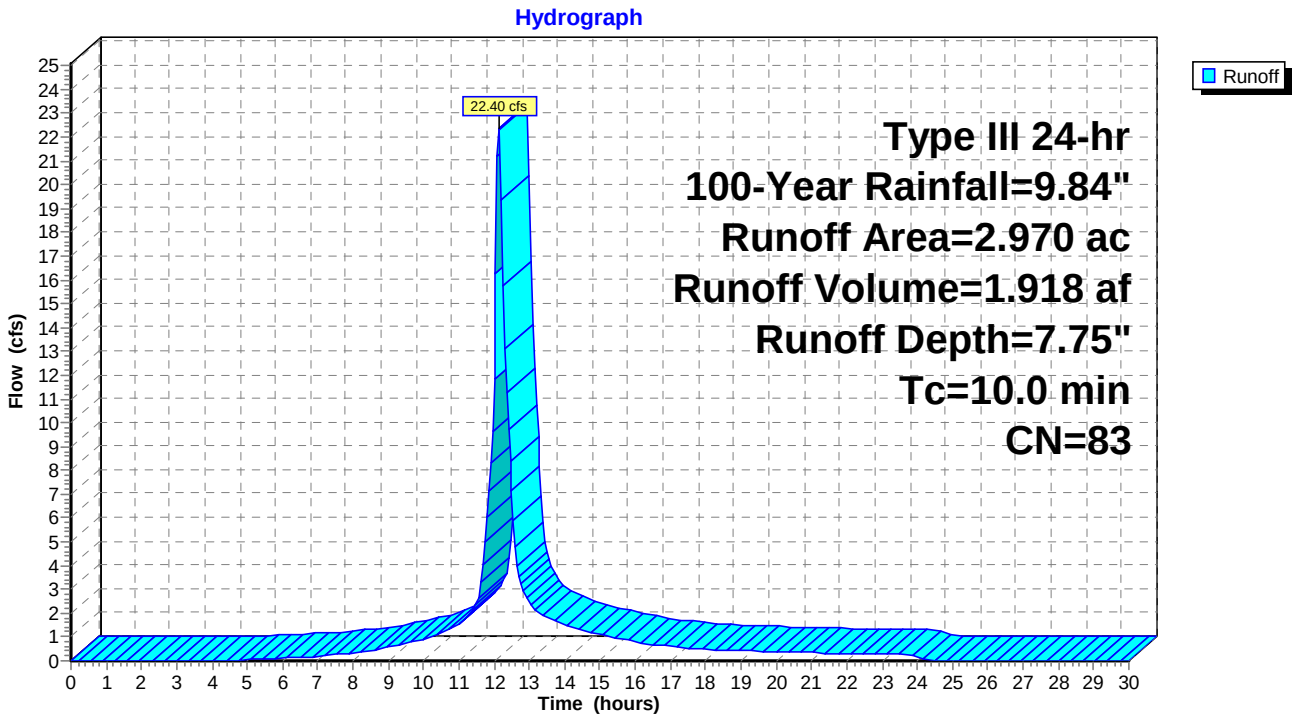
Runoff = 22.40 cfs @ 12.14 hrs, Volume= 1.918 af, Depth= 7.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

	Area (ac)	CN	Description
	0.064	98	Roofs, HSG B
*	1.817	91	Gravel, HSG B
	0.205	98	Paved parking, HSG B
	0.884	61	>75% Grass cover, Good, HSG B
	2.970	83	Weighted Average
	2.701		90.94% Pervious Area
	0.269		9.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Subcatchment 1S: Post Basin 1



Summary for Subcatchment 2S: Bypass A

[49] Hint: Tc<2dt may require smaller dt

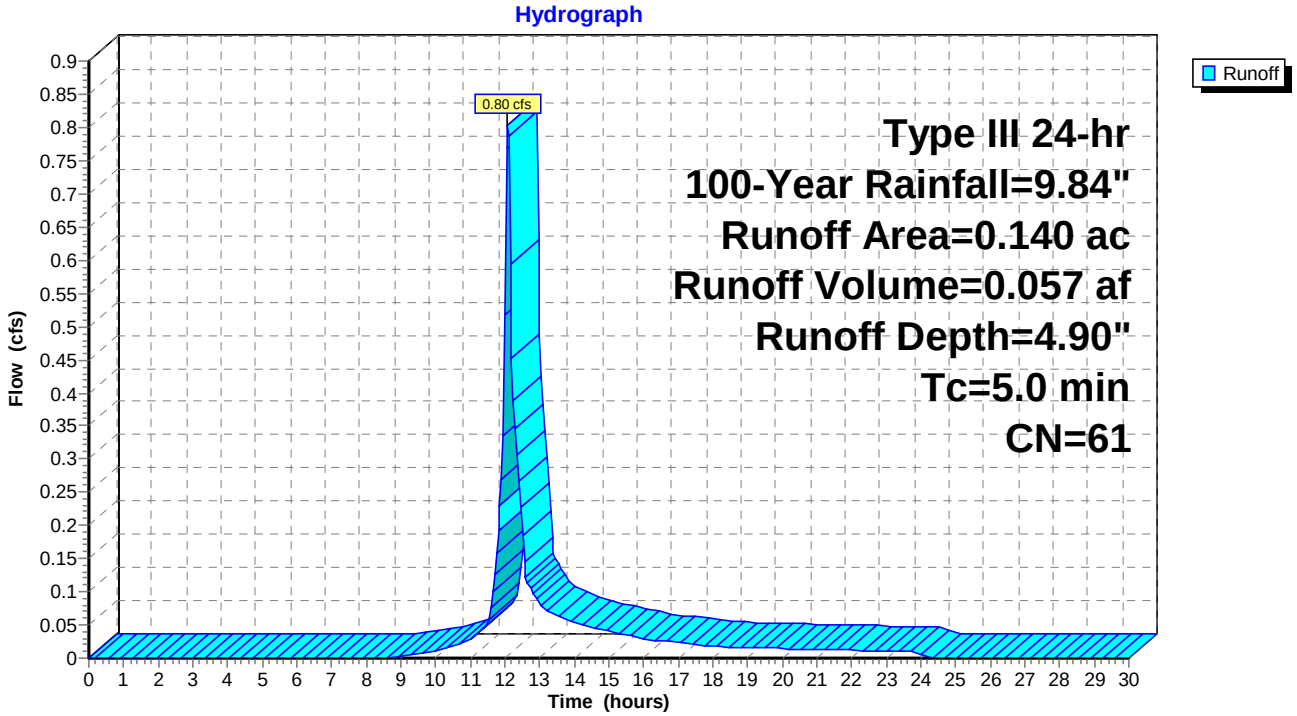
Runoff = 0.80 cfs @ 12.08 hrs, Volume= 0.057 af, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

Area (ac)	CN	Description
0.140	61	>75% Grass cover, Good, HSG B
0.140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: Bypass A



Summary for Subcatchment 3S: Bypass B

[49] Hint: Tc<2dt may require smaller dt

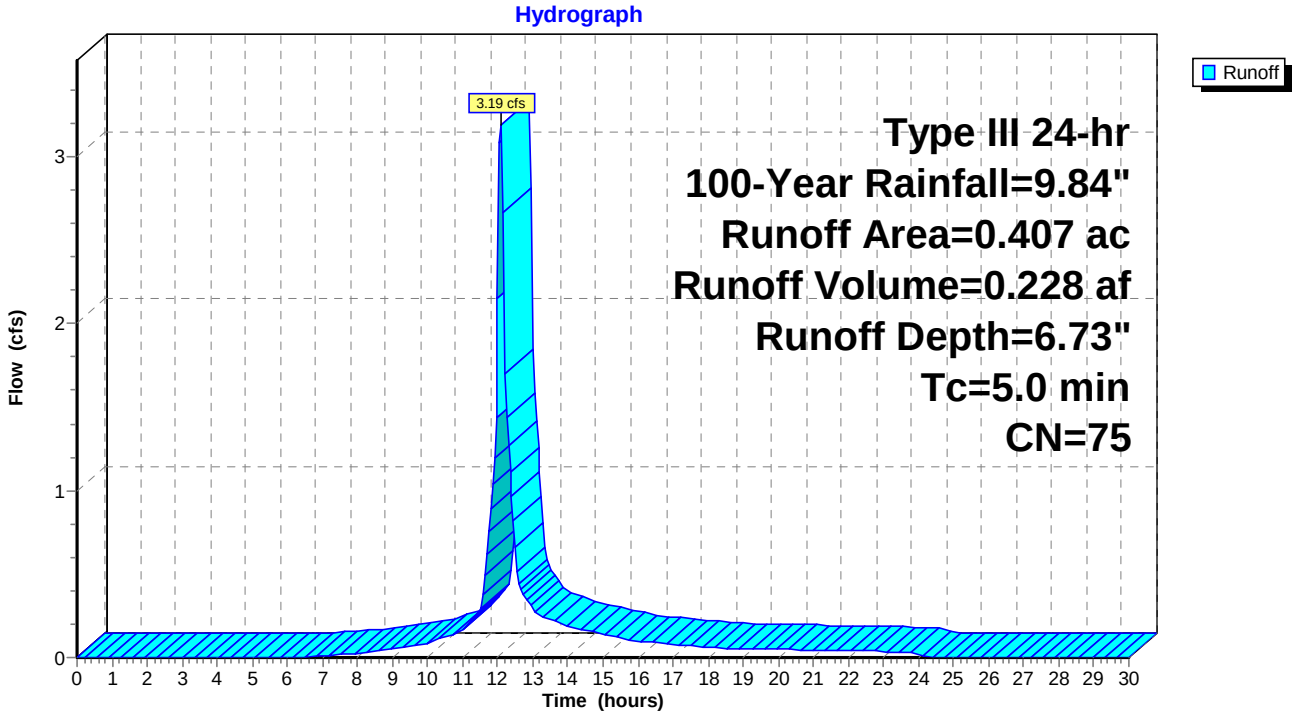
Runoff = 3.19 cfs @ 12.07 hrs, Volume= 0.228 af, Depth= 6.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

Area (ac)	CN	Description
0.063	98	Roofs, HSG B
0.119	85	Gravel roads, HSG B
0.014	98	Paved parking, HSG B
0.211	61	>75% Grass cover, Good, HSG B
0.407	75	Weighted Average
0.330		81.08% Pervious Area
0.077		18.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 3S: Bypass B



Summary for Subcatchment 4S: Bypass C

[49] Hint: Tc<2dt may require smaller dt

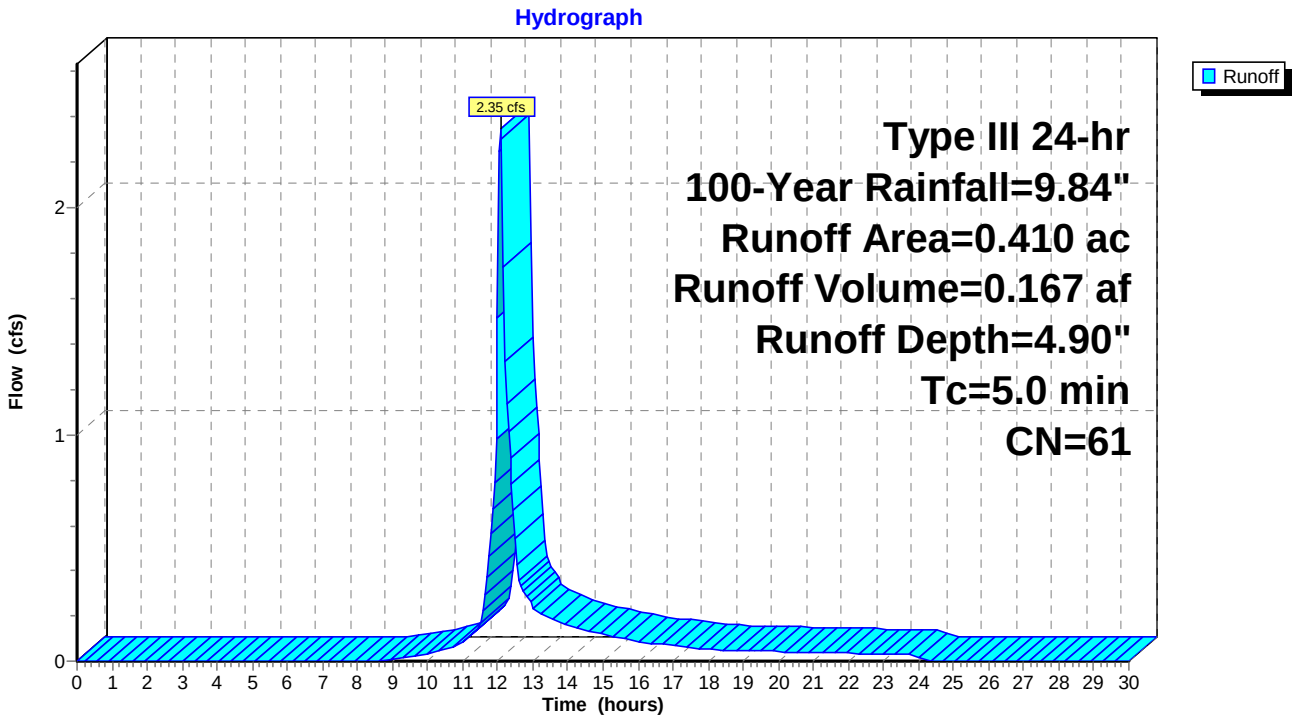
Runoff = 2.35 cfs @ 12.08 hrs, Volume= 0.167 af, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=9.84"

Area (ac)	CN	Description
0.410	61	>75% Grass cover, Good, HSG B
0.410		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 4S: Bypass C



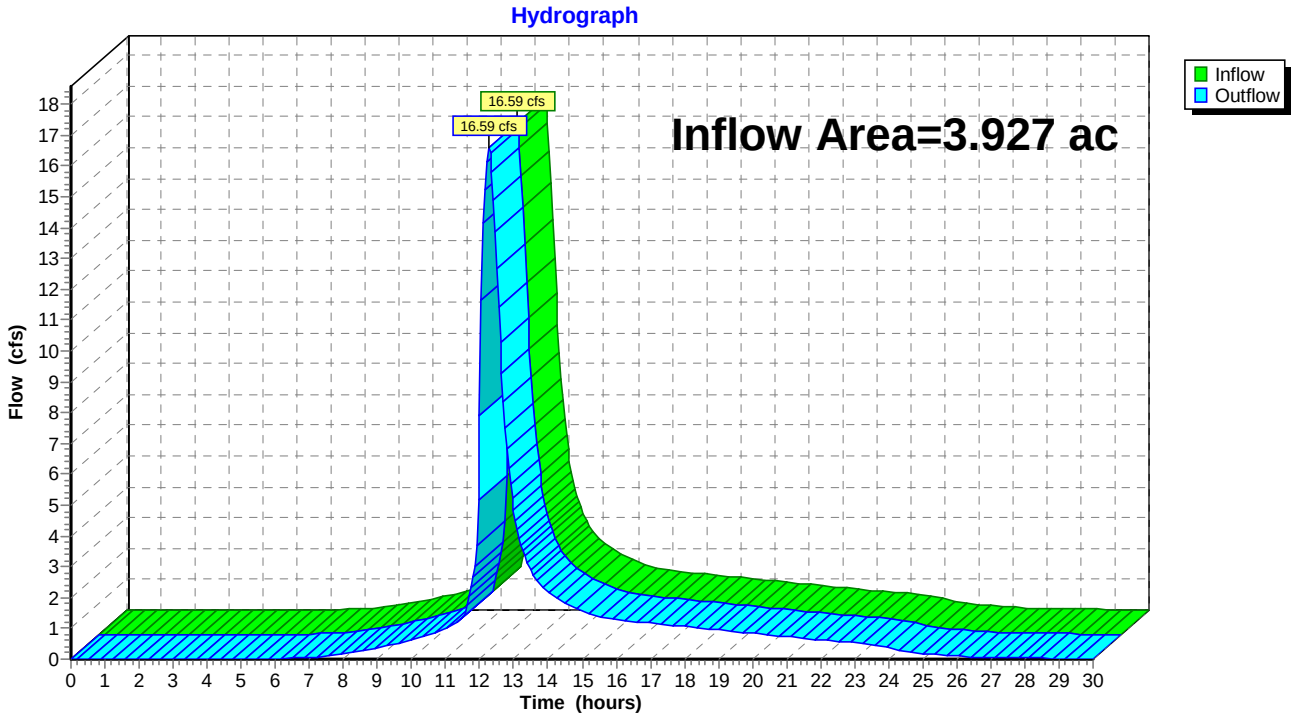
Summary for Reach 6R: Post Combine

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.927 ac, 8.81% Impervious, Inflow Depth > 7.21" for 100-Year event
Inflow = 16.59 cfs @ 12.26 hrs, Volume= 2.360 af
Outflow = 16.59 cfs @ 12.26 hrs, Volume= 2.360 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Reach 6R: Post Combine



Summary for Pond 5P: Pond

Inflow Area = 2.970 ac, 9.06% Impervious, Inflow Depth = 7.75" for 100-Year event
Inflow = 22.40 cfs @ 12.14 hrs, Volume= 1.918 af
Outflow = 13.78 cfs @ 12.29 hrs, Volume= 1.907 af, Atten= 38%, Lag= 9.2 min
Primary = 13.78 cfs @ 12.29 hrs, Volume= 1.907 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 19.94' @ 12.29 hrs Surf.Area= 21,107 sf Storage= 23,806 cf

Plug-Flow detention time= 93.5 min calculated for 1.904 af (99% of inflow)
Center-of-Mass det. time= 90.5 min (882.7 - 792.2)

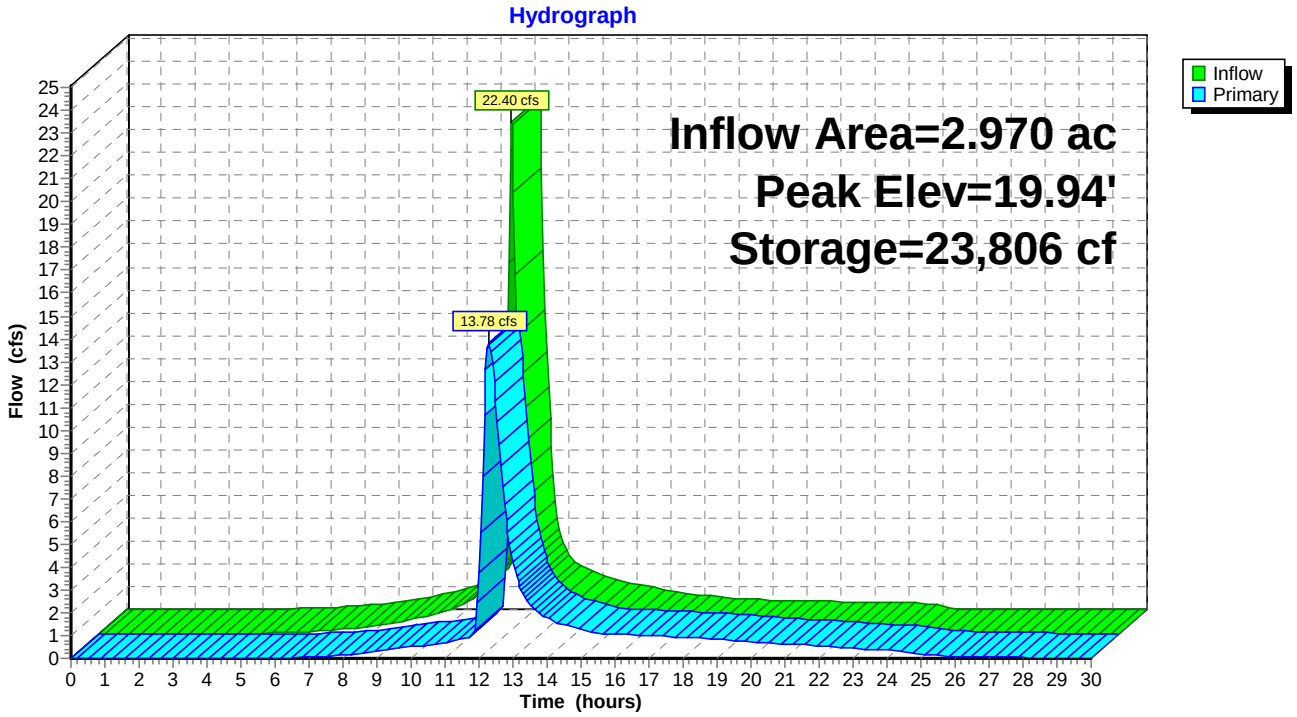
Volume	Invert	Avail.Storage	Storage Description
#1	17.70'	25,151 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
17.70	5,782	0	0
18.00	6,171	1,793	1,793
19.00	9,326	7,749	9,541
20.00	21,893	15,610	25,151

Device	Routing	Invert	Outlet Devices
#1	Primary	17.70'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	19.20'	**6.0' long Sharp-Crested Vee/Trap Weir** Cv= 2.62 (C= 3.28)

Primary OutFlow Max=13.75 cfs @ 12.29 hrs HW=19.94' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.33 cfs @ 6.79 fps)
2=Sharp-Crested Vee/Trap Weir (Weir Controls 12.41 cfs @ 2.81 fps)

Pond 5P: Pond


Hydrograph
Inflow
Primary
22.40 cfs
13.78 cfs
Inflow Area=2.970 ac
Peak Elev=19.94'
Storage=23,806 cf
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Areas of Significant Habitat: None

Existing Conditions Map:

See the attached "Predevelopment Basin Map"
Existing Improvements: None
Existing Utilities and Easements: None
Existing Conservation Areas: None
Existing Low Impact Development and Stormwater Management Practices: None
Existing Stormwater drainage Infrastructure: Shown – Ditches within city Right-of-way

	Existing Conditions Stormwater Runoff Summary (Q cfs)								
Basin	Area	"CN"	Tc	1-year	5-year	10-year	25-year	50-year	100-year
	(ac)		(min.)	3.60"	4.80"	6.72"	7.92"	9.00"	9.84"
1	2.16	61	13.4	0.89	2.21	5.21	6.73	8.31	9.68
2	1.77	61	13.7	0.73	1.80	4.24	5.48	6.77	7.88
Combined	3.93	61		1.62	4.01	9.44	12.20	15.08	17.58

Proposed Conditions Map:

See the attached "Post Development Basin Map"
Proposed topography: Shown
Proposed drainage divides and patterns: Shown
Proposed roads, buildings, parking areas, and other impervious surfaces: Shown
Proposed utilities and utility easements: Shown
Proposed limits of clearing: Shown
Proposed conservation areas: None
Proposed low impact development and stormwater management practices: Shown
Proposed stormwater drainage Infrastructure: Shown

	Proposed Conditions Stormwater Runoff (Q cfs)								
Basin	Area	"CN"	Tc	1-year	5-year	10-year	25-year	50-year	100-year
	(ac)		(min.)	3.60"	4.80"	6.72"	7.92"	9.00"	9.84"
1*	2.97	83	10	0.94	2.30	7.25	9.60	11.93	13.78
Bypass A	0.14	61	5	0.08	0.19	0.43	0.56	0.69	0.80
Bypass B	0.41	75	5	0.64	1.09	1.98	2.39	2.83	3.19
Bypass C	0.41	61	5	0.23	0.54	1.27	1.64	2.02	2.35
Combined	**3.93**	**79**		**1.54**	**2.68**	**8.67**	**11.52**	**14.33**	**16.59**

*Routed

Pond B	1-year	5-year	10-year	25-year	50-year	100-year
Qin	5.84	8.97	14.84	17.51	20.17	22.40
Qout	0.94	2.30	7.25	9.60	11.93	13.78
WSE	18.94	19.35	19.65	19.76	19.86	19.94
V	9,031	13,621	18,336	20,338	22,277	23,806

Post-Construction Stormwater Management System Narrative:

The proposed development is an 8,200sf+/- truck shop with associated improvements. The facility will utilize an on-site ditch network to collect the surface run-off and transmit it to the bio-retention facility.

Please see the attached CSS spreadsheet for the determination of the RRv values.

Stormwater Management Design Plan:

Existing Condition Hydrologic Analysis

Existing conditions map:

See the attached "Predevelopment Basin Map"

Information about the existing conditions of each of the drainage areas found on the development site:

The site is divided into two basins by a ridge line bisecting the site running East to West. It is currently a 3.93ac maintained grassed field.

Information about the existing conditions of any off-site drainage areas that contribute stormwater runoff to the development site:

There are no contributing off-site drainage areas.

Information about the stormwater runoff rates and volumes generated, under existing conditions, in each of the drainage areas found on the development site:

See the summary chart

Information about the stormwater runoff rates and volumes generated, under existing conditions, in each of the off-site drainage areas:

None

Documentation (e.g., model diagram) and calculations showing how the existing conditions hydrologic analysis was completed:

See the attached stormwater model results

***Proposed conditions hydrologic analysis**:*

Proposed conditions map:

See the attached "Postdevelopment Basin Map"

Information about the proposed conditions of each of the drainage areas found on the development site (e.g., size, soil types, land cover characteristics):

See the Summary Chart

Information about the proposed conditions of any off-site drainage areas that contribute stormwater runoff to the development site (e.g., size, soil types, land cover characteristics):

None

Information about the stormwater runoff rates and volumes generated, under proposed conditions, in each of the drainage areas found on the development site:

See the Summary Chart

Information about the stormwater runoff rates and volumes generated, under proposed conditions, in each of the off-site drainage areas that contribute stormwater runoff to the development site:

None

Documentation (e.g., model diagram) and calculations showing how the proposed conditions hydrologic analysis was completed:

See the attached stormwater model results

Tailwater condition:

The downstream 100-yr flood elevation is 12. As a result, the downstream ditch as assumed to be flowing at a 2-foot depth, or a water surface elevation of 19.4 during the 25, 50-, & 100-year events. The tailwater depth was assumed to be 0 during the smaller rainfall events.

Post-construction stormwater management system plan:

Proposed topography:

See the attached "Postdevelopment Basin Map"

Proposed drainage divides and patterns:

See the attached "Postdevelopment Basin Map"

Existing and proposed roads, buildings, parking areas and other impervious surfaces:

See the attached "pre-development and Postdevelopment Basin Maps"

Existing and proposed primary and secondary conservation areas:

None

Plan view of existing and proposed low impact development and stormwater management practices:

See the attached "Postdevelopment Basin Map"

Cross-section and profile views of existing and proposed low impact development and stormwater management practices, including information about water surface elevations, storage volumes and inlet and outlet structures (e.g., orifice sizes);

See the construction plans

Plan view of existing and proposed storm drain infrastructure (e.g., inlets, manholes, storm drains):

See the attached "Postdevelopment Basin Map"

Cross-section and profile views of existing and proposed storm drain infrastructure (e.g., inlets, manholes, storm drains), including information about invert and water surface elevations:

See the construction plans

Existing and proposed channel modifications (e.g., bridge or culvert installations):

None

Post-construction stormwater management system narrative. The post-construction stormwater management system narrative shall include information about how post-construction stormwater runoff will be managed on the development site, including a list of the low impact development and stormwater management practices that will be used. It shall also include documentation and calculations that demonstrate how the selected low impact development and stormwater management practices satisfy the post-construction stormwater management criteria that apply to the development site, including information about the existing and proposed conditions of each of the drainage areas found on the development site (e.g., size, soil types, land cover characteristics):

See Post-Construction Stormwater Management System
Narrative above

Certification by plan preparer*:*

I, Jay Maupin, am a professional engineer registered in the State of Georgia and am familiar with the requirements of the City of Port Wentworth Stormwater Management Ordinance. The attached report and design plans for the site development known as Port Wentworth Truck Shop, 8191Old Hwy 21, Port Wentworth, GA 31407 are designed in compliance with the Local Design Manual of the City of Port Wentworth.

Adverse Impacts Statement:

I, Jay Maupin, certify that there are no adverse impacts upstream or downstream of the site for any design storm analyzed.

Certification by owner: Please see the attached letter

Stormwater management inspection and maintenance agreement and plan:

Please see the attached signed plan

Site Plan Review Application submitted by Allen Engineering Services, LLC., on behalf of Shane Malek, Next Chapter Neighborhoods for PIN # 7-0906-04-064 (Old Highway 21) for a Specific Development Site Plan to allow a Single-Family Home For Rent Development (Jasper Village Phase II) in a M-P-O (Master Plan Overlay) Zoning District

Issue/Item: Site Plan Review Application submitted by Allen Engineering Services, LLC., on behalf of Shane Malek, Next Chapter Neighborhoods for PIN # 7-0906-04-064 (Old Highway 21) for a Specific Development Site Plan to allow a Single-Family Home For Rent Development (Jasper Village Phase II) in a M-P-O (Master Plan Overlay) Zoning District

Background: The subject property is currently undeveloped land. The first phase of Jasper Village is in Effingham County. The general development site plan for this project was approved during the July 22, 2021 regular City Council meeting.

Facts and Findings: This project is a general development plan for a single family for rent neighborhood. The project will consist of 1, 2, 3, and 4 bedroom homes for a total of seventy (70) homes and all associated roads, drainage, water and sewer utilities, and parking. Water and Sewer services will be provided by Effingham County according to an intergovernmental agreement between the City of Port Wentworth and Effingham County. The site plan is currently under review by City Engineers Thomas & Hutton. This project complies with the City of Port Wentworth 2021-2024 Comprehensive Plan.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, May 9, 2022 at 6:30 PM. **/ UPDATE: THE PLANNING COMMISSION VOTED 3-1 TO APPROVE THE APPLICATION WITH THE CONDITION THAT ALL ENGINEER COMMENTS BE ADDRESSED.**

ATTACHMENTS:

- JASPER VILLAGE PH 2 7-0906-04-064 S-SITE PLAN MAY 2022 - Application (PDF)
- JASPER VILLAGE PH 2 7-0906-04-064 S-SITE PLAN MAY 2022 - Landfill Cert Sewer (PDF)
- JASPER VILLAGE PH 2 7-0906-04-064 S-SITE PLAN MAY 2022 - Landfill Cert Water (PDF)
- JASPER VILLAGE PH 2 7-0906-04-064 S-SITE PLAN MAY 2022 - Intergovernmental Agreement W&S (PDF)
- JASPER VILLAGE PH 2 7-0906-04-064 S-SITE PLAN MAY 2022 - Timeline (DOCX)

220209

RECEIVED
APR 07 2022
BY:

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application

Site Plan Application is required for all new construction in a "P" or "MPO" zone as defined in the Zoning Ordinance of the City of Port Wentworth.

Site Plan Type (*Check One*): ☐ General / Concept ☑ Specific Development

Site Plan Address: Old Highway 21

PIN #(s): ~~Z09604064~~ 70906 04064

Zoning: ~~PUD~~ MPO Estimated Cost of Construction: $ 11,100,000

Type of Construction: Single Family for Rent

Applicant's Name: Allen Engineering Services, LLC

Mailing Address: P.O. Box 1749

Rincon, GA 31326

Phone #: (912) 667-2667 Email: tallen@allenengineering.org

Owner's Name (If Different form Applicant): Next Chapter Neighborhods

Mailing Address: 2500 Trade Center Drive

Evans, GA 30809

Phone #: (706) 831-3984 Email: Shane@nextchapterneighborhoods.com

---

I hereby acknowledge that the above information is true and correct.

Tom Allen
Applicant's Signature

3/29/2022
Date

Owner's Signature (If Different form Applicant)

3/29/2022
Date

Please see page 2 for required submittal checklist

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application Submittal Checklist

Documentation below is required for a complete submittal.

- ☑ Signed and Completed Application
- ☑ 3 Full size sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☑ 15 half size (11" X 17") sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☑ 2 copies of hydrology reports (if applicable)
- ☑ Names, mailing address, and PIN number of all property owners within 250 feet of all property lines
- ☑ 1 8 ½" X 11" of site plan civil drawings or concept plan (depending on type of site plan)
- ☑ PDF of entire submittal (either flash drive or CD)
- ☑ Other Engineering details or reports may be required once submittal has been received
- ☑ Site plan review fee check
  - ☐ No Land Disturbance- $206.00 Site Plan Fee + $50.00 Admin Fee = Total $256.00
  - ☑ With Land Disturbance - $836.00 Site Plan Fee + $50.00 Admin Fee = Total $886.00

Additional Fee Statement: If engineer review cost to the City exceeds the site plan review fee that is paid at the time of initial application submittal, you may be required to pay additional review cost.

I have read and agree to the above additional fee statement

Tom Allen
Applicant's Signature

3/29/2022
Date

CITY OF PORT WENTWORTH
(912) 964-4379

REC#: 00350559 4/11/2022 9:47 AM
OPER: ME TERM: 011
REF#: CK 1853

TRAN: 112.0000 BLDG PERMIT
220209 886.00CR
NEXT CHAPTER NEIGHBORHOODS
7-0906-04-064
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM

Property Owners Within 250' of Jasper Village Phase 2 Property Lines

Name	Mailing Address	PIN
Phillip H & Betty J Moore	96 Moore Dr., Savannah, GA 31407	70906 02001A
Fieldstone Land Group LLC	204 Whitley Bottom Rd., Savannah, GA 31411	70906 02002
Benjamin Foster	8177 Old Highway 21, Savannah, GA 31407	70906 02007
Joseph H McNamee	133 McNamee Ln., Guyton, GA 31312	70906 02009
Joseph H McNamee	133 McNamee Ln., Guyton, GA 31312	70906 02003B
Herbert Foster	8164 Old Highway 21, Savannah, GA 31407	70906 02004
James Steele	8168 Old Highway 21, Savannah, GA 31407	70906 03025
James D & Sylvia Mazza	457 Cypress Point Rd., Springfield, GA 31329	70906 03020
BEP RH Tract 2 LLC	100 Lakeside Blvd., Poert Wentworth, GA 31407	70906 04011
Herbert Foster	8164 Old Highway 21, Savannah, GA 31407	70906 03018
Carlos R & Jennifer Braz & Motta	149 Barrenton Rd., Pooler, GA 31322	70906 03017
Valerie McCarr Thompson	4122 Piney Creek Ln. W., Jacksonville, GA 32277	70906 03008
Etta & David Smart	8174 Old Highway 21, Savannah, GA 31407	70906 03009

INTERGOVERNMENTAL AGREEMENT
BETWEEN
EFFINGHAM COUNTY
AND
THE CITY OF PORT WENTWORTH

THIS INTERGOVERNMENTAL AGREEMENT is entered into between Effingham County, a public body corporate and politic of the State of Georgia existing under the Constitution of the State of Georgia, and the City of Port Wentworth, Georgia, a Municipal Corporation and political subdivision of the State of Georgia. The parties may each be referred to as "Party" or jointly as "Parties."

WHEREAS, Effingham County was duly created and is a validly existing County and political subdivision pursuant to the Constitution and laws of the State of Georgia;

WHEREAS, Effingham County and the City of Port Wentworth have, among others, the power to: (a) acquire by purchase and hold, maintain, lease and operate a water and sewerage system and now owns, operates and maintains a water and sewerage system (such water and sewerage system, as it now exists and as it may be hereafter added to, extended and improved, being hereinafter referred to as a "Water System"), (b) issue revenue bonds for the purpose of paying all or any part of the cost of any one or more "projects" and (c) contract with others pertaining to the water utilities and facilities; and

WHEREAS, Effingham County and the City of Port Wentworth, have general supervision and control over their respective Water System or systems that may be constructed and placed in operation for Effingham County and the City of Port Wentworth, together with the right to expand or curtail such operations as it may deem advisable; and

WHEREAS, pursuant to the Constitution and laws of the State of Georgia, Effingham County and the City of Port Wentworth have the power to provide storm water and sewage collection and disposal systems and to provide for the development, storage, treatment, purification, and distribution of water; and

WHEREAS, the infrastructure, equipment and related facilities for any water or sewerage system that may be constructed under the provisions of this Intergovernmental Agreement, shall be construed to be the property of Effingham County once properly platted, dedicated and accepted by Effingham County; and

Type: AGRE
Kind: CONTRACT
Recorded: 11/11/2021 11:44:00 AM
Fee Amt: $25.00 Page 1 of 9
Chatham, Ga. Clerk Superior Court
Tammie Mosley Clerk Superior Court

Participant ID: 0928286603

BK 2605 PG 560 - 568

WHEREAS, Article IX, Section III, Paragraph I (a) of the Constitution of the State of Georgia authorizes, among other things, that any City, municipality or other political subdivision of the State to contract, for a period not exceeding fifty years, with another City, municipality or political subdivision or with any other public agency, public corporation or public authority for joint services, for the provision of services, or for the provision or separate use of facilities or equipment, provided that such contract provides for activities, services or facilities which the contracting parties are authorized by law to undertake or provide; and

WHEREAS, BEP RH Tract 2 LLC is a Georgia limited liability company ("RH2") which owns Chatham County Tax Parcel ID 70906 04064 which is approximately 36 acres of real property, of which approximately 11 acres are uplands ("Subject Property") which is in the City limits of the City of Port Wentworth, Chatham County, abutting the boundary line between Effingham County and Chatham County, Georgia; and

WHEREAS, Jasper Village Two LLC, a Georgia limited liability company ("Jasper Two"), and the owner and developer of a single family for rent community named "Jasper Village" which is in Effingham County, and also on the boundary line between Chatham County with Effingham County, Georgia and abuts the Subject Property in the City of Port Wentworth; and

WHEREAS, Jasper Village and the Subject Property share a common boundary of approximately 900 feet, but Jasper Village is wholly within Effingham County and the Subject Property is wholly within the City of Port Wentworth;

WHEREAS, the Parties have been advised that Jasper Village Two, LLC, a Georgia LLC, wishes to purchase the Subject Property in the City of Port Wentworth so that it can expand its privately owned Jasper Village development into the City of Port Wentworth. Jasper Village Two, LLC intends to build, privately own and operate approximately 70 single family units for rent on the Subject Property in the City of Port Wentworth, as set forth as a Concept Plan on Exhibit A attached hereto; and

WHEREAS, the Parties have been further advised that BEP RH Tract 2 LLC wishes to sell the Subject Property to Jasper Village Two, LLC and Jasper Village Two, LLC wishes to buy the Subject Property in the City of Port Wentworth for the reasons set forth above; and

WHEREAS, Effingham County and the City of Port Wentworth wish to facilitate the expansion of the Jasper Village development from Effingham County into the City of Port Wentworth, and therefore wish to document and memorialize their agreement as set forth herein for the provision of water and sewer services for the Subject Property in Port Wentworth, as well as address and clarify other agreements, duties and responsibilities between the Parties; and

WHEREAS, the Parties have been advised that Jasper Village Two, LLC has engaged the engineering firm of Allen Engineering in Rincon, Georgia ("Engineer") to design the extension of

existing water and sewer lines and services from their existing locations in Jasper Village in Effingham County onto the Subject Property in the City of Port Wentworth; and

WHEREAS, the actions to be mutually taken by the Parties herein will benefit the health, safety and general welfare of the citizens of Effingham County and the City of Port Wentworth.

NOW THEREFORE, in consideration of the following mutual covenants, promises and obligations made herein, Effingham County and the City of Port Wentworth agree as follows:

ARTICLE 1
EFFECTIVE DATE OF THIS AGREEMENT; DURATION OF CONTRACT TERM

1.1 This Agreement shall commence on the date of last signature of the parties, after approval by the Effingham County Commission and the City Council of the City of Port Wentworth ("Effective Date"). The obligations, duties and responsibilities created by this Agreement shall then begin, and, subject to the other provision of this Agreement, shall terminate at 11:59 p.m. on the date that is fifty (50) years from its Effective Date, unless otherwise terminated as set forth herein.

ARTICLE 2
ENGINEERING PLANS

2.1 Engineer shall prepare engineering plans for the design, construction, extension, implementation and operation of water and sewer lines presently in Jasper Village in Effingham County onto the Subject Property in the City of Port Wentworth ("Utility Plans") for approval by the Parties.

2.2 Engineer shall be responsible, together with the Parties, for all engineering inspections in connection with the installation of the infrastructure, equipment and related Utility Plans.

2.3 Jasper Village Two, LLC shall bear the cost of preparing the Utility Plans and also shall be responsible for arranging for inspections during construction phase and ensuring the Engineer's conformance to area planning, adequacy of design, and conformance to the Parties requirements regarding location, size and depth of lines, capacity and arrangement of lift stations and quality of construction in accordance with all building and development ordinances and codes of the respective Parties, including posting any surety bonds which are required.

2.4 Upon completion of construction, Engineer shall certify that the materials and workmanship including pipes, bedding, thrust blocks, valves, fire hydrants, manholes, lift station equipment, meters and other related materials and work satisfy the Parties development

specifications and standards. All construction, engineering and inspection costs in connection with the Utility systems shall be borne by Jasper Village Two, LLC.

ARTICLE 3
ACCEPTANCE AND DEDICATION

3.1 Upon installation and completion of the water and sewer infrastructure, equipment, and all any related facilities shown on the Utility Plans, including the full payment of all water and sewage fees being paid to Effingham County by Jasper Village Two, LLC, and its provision of two copies of "as built" drawings on Chronoflex Mylar, Jasper Village Two, LLC shall offer for dedication the easements, infrastructure, equipment and related facilities to Effingham County for approval by the Effingham County Commission. This dedication and acceptance shall include all rights, title and interest which Jasper Village Two, LLC has in and to the water and sanitary sewer systems serving the Subject Property in the City of Port Wentworth and also easements and rights-of-way required for the purpose of access to and maintenance thereof.

3.2 Once accepted for dedication, Effingham County shall assume full and complete responsibility for maintenance and operation of the water and sewer lines and facilities within the Subject Property in the City of Port Wentworth that are within easements or rights-of-way dedicated for such purposes.

3.3 The Parties understand and have been mutually advised that the Jasper Village Two, LLC development shall be a private project and development. As such, Jasper Village Two, LLC will not dedicate any roads or rights of way to the City of Port Wentworth and the City shall have no responsibility to service or maintain any easements conveyed to Effingham County or any private roads on the Subject Property.

3.4 Jasper Village Two, LLC will provide to both Effingham County and the City of Port Wentworth a recordable plat showing all utilities within public easements and rights-of-way to be owned and maintained by Effingham County. All easements shall be clearly labeled and/or noted on the plat as being dedicated for the approval by the Effingham County Board of Commissioners. This document shall be provided prior to construction and after completion of construction of the Utilities on an "as-built" basis. Should installation deviate from the original recordable plat, Jasper Village Two, LLC will provide to the Parties a revised recordable plat showing all utilities in dedicated easements and rights-of-way.

ARTICLE 4
UTILITY TAP AND SERVICE FEES

4.1 All sanitary sewer and water cost recovery fees and meter fee and deposit, traditionally known as "tap-in fees," shall be paid to the City of Port Wentworth at the rate in effect at the time the fees or assessments are imposed. Port Wentworth shall collect the Effingham water meter application, deposit application, and said fees at the time of building permits are issued and remit said fees to Effingham County in the ordinary course of the City's business. Port Wentworth shall not be entitled to receive any utility service or utility connection fees for buildings on the Subject Property.

4.2 All water meters shall be installed by Effingham County on the Subject Property. Each meter shall be identified by the address of the nearest structure. Irrigation meters not associated with a residential unit shall have an address of the nearest structure and noted as irrigation meter on the Effingham County application so that the meter is properly documented within the billing account.

4.3 Building Permits. All building permits for construction of water and sewer lines, equipment and infrastructure on the Subject Property shall be issued by and under the ordinances and regulations of the City of Port Wentworth and approval of all building plans and inspections shall be conducted by the City of Port Wentworth.

ARTICLE 5
SERVICES BY THE PARTIES

5.1 Except for Effingham County's responsibilities to install maintain and operate the water and sewer services on the Subject Property in the City of Port Wentworth, Port Wentworth shall provide all usual and customary municipal services to the Subject Property and its residents, including police, fire and emergency services. The City of Port Wentworth shall have no responsibility to maintain storm water drains or roads within the privately owned Jasper Village Two, LLC development.

5.2 Effingham County will have sole responsibility to make repairs to its water and sewer system in Jasper Village Two.

5.3 Effingham County will meter and bill its customers in Jasper Village Two for water and sewer services and will collect all of its fees for services directly. The City of Port Wentworth shall have no responsibility to bill or collect Effingham County water and sewer fees and charges for Jasper Village Two residing in the City of Port Wentworth.

ARTICLE 6
TERMINATION AND REMEDIES

6.1 Notwithstanding any provision to the contrary in this Agreement, at any time, the Parties may agree in writing to terminate this Agreement, which termination shall be effective as of the date agreed upon by the Parties.

ARTICLE 7
NOTICES

7.1 All required notices shall be given by certified first class U.S. Mail, return receipt requested, and by electronic mail to the County or City Manager then in charge. Future changes in address shall be effective upon written notice being given to the other Party via certified first class U.S. Mail, return receipt requested and by electronic mail. Notices shall be addressed to the parties at the following addresses:

Effingham County

The City of Port Wentworth
7224 GA Highway 21
Port Wentworth, GA 31407
912-964-4379

ARTICLE 8
NON-ASSIGNABILITY

8.1 Neither Party shall assign any of the obligations or benefits of this Agreement without the prior written approval of Effingham County and the City of Port Wentworth.

ARTICLE 9
ENTIRE AGREEMENT

9.1 The Parties acknowledge, one to the other, that the terms of this Agreement constitute the entire understanding and Agreement of the Parties regarding the subject matter of the Agreement. This Agreement constitutes the entire understanding and agreement between the Parties concerning the subject matter of this Agreement, and supersedes all prior oral or written agreements or understandings. No representations, oral or written, not incorporated in this Agreement shall be binding upon the City of Port Wentworth or Effingham County.

ARTICLE 10
AMENDMENTS

10.1 This Agreement may be amended only upon the mutual consent of the Parties and upon written amendment signed by both Parties.

ARTICLE 11
SEVERABILITY, VENUE AND ENFORCEABILITY

11.1 If a court of competent jurisdiction renders any provision of this Agreement (or portion of a provision) to be invalid or otherwise unenforceable, that provision or portion of the provision will be severed and the remainder of this Agreement will continue in full force and effect as if the invalid provision or portion of the provision were not part of this Agreement. No action taken pursuant to this Agreement should be deemed to constitute a waiver of compliance with any representation, warranty, covenant or agreement contained in this Agreement and will not operate or be construed as a waiver of any subsequent breach, whether of a similar or dissimilar nature. This Agreement is governed by the laws of the State of Georgia without regard to conflicts of law principles thereof. Should any Party institute suit concerning this Agreement, venue shall be in the Superior Court of Chatham County, Georgia. Should any provision of this Agreement require judicial interpretation, it is agreed that the court interpreting or construing the same shall not apply a presumption that the terms hereof shall be more strictly construed against one Party by reason of the rule of construction that a document is to be construed more strictly against the Party who itself or through its agent prepared the same, it being agreed that the agents of all parties have participated in the preparation hereof.

ARTICLE 12
BINDING EFFECT

12.1 This Agreement shall inure to the benefit of, and be binding upon, the respective parties' successors.

ARTICLE 13
COUNTERPARTS

13.1 This Agreement may be executed in several counterparts, each of which shall be an original, and all of which shall constitute but one and the same instrument.

ARTICLE 14
RECORDING

14.1 The Parties agree that this instrument may be recorded in the deed records of the Superior Court of Chatham County or in such other counties or place(s) as the Parties deem necessary.

IN WITNESS WHEREOF, Effingham County and the City of Port Wentworth have executed this Agreement through their duly authorized officers on the day and year noted.

EFFINGHAM COUNTY

BY: Wesley M. Corbitt
CHAIRMAN
EFFINGHAM COUNTY COMMISSION

Date: 11/02/2021 ATTEST: S. Johnson
CLERK

THE CITY OF PORT WENTWORTH

BY:
GARY NORTON, MAYOR

Date: 10/28/21 ATTEST:
SHANTA SCARBORO
CITY CLERK

(Seal)

APPROVED AS TO FORM AND CONTENT:

James L. Coursey, Jr., City Attorney for the
City of Port Wentworth

March 29, 2022

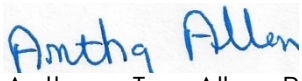
City of Port Wentworth
7224 GA Highway 21
Port Wentworth, GA 31407

RE: Jasper Village Phase 2
AES Job No. 21-015

Dear Mr. Harvey:

This is to certify that none of the sewers, services or any other utilities associated with this project are constructed on or serving structures constructed or proposed to be constructed on solid waste landfills.

Sincerely,



Anthony Toss Allen, P.E.
Ga. Registration No. PE032181

173 Cubbedge Drive • Post Office Box 1749 • Rincon, Georgia 31326
Telephone: (912) 667-2667 • E-mail: tallen@allenengineering.org

March 29, 2022

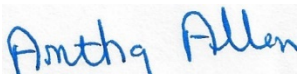
City of Port Wentworth
7224 GA Highway 21
Port Wentworth, GA 31407

RE: Jasper Village Phase 2
AES Job No. 21-015

Dear Mr. Harvey:

This is to certify that the appurtenances pertaining to the water system, are not located on or in close proximity to an abandoned landfill or any other site used for the waste disposal.

Sincerely,



Anthony Toss Allen, P.E.
Ga. Registration No. PE032181

173 Cubbedge Drive • Post Office Box 1749 • Rincon, Georgia 31326
Telephone: (912) 667-2667 • E-mail: tallen@allenengineering.org

EOM Operations
Your solution to a better tomorrow

Date: May 9, 2022
CC: Teresa Concannon

Mr. Eric W. Larson, P.E
Assistant County Manager
Effingham County Board of Commissioners
804 S. Laurel Street
Springfield, GA 31329

Re: Jasper Village Phase 2 – water and sewer supply capacity

Dear Charlie,

On behalf of Effingham County Development Services department, EOM Operations reviewed the design plans prepared by the developer's engineer, Allen Engineering Services, for the above referenced project. Based on the plans, the County can certify that Effingham County's water and sewer supply system have adequate capacity available to provide water to this proposed project. Effingham County is requested to own, operate and maintain the constructed facilities.

Please contact me if you have any questions at 912-445-0050.

Sincerely,

V. Srikar

Srikar Velagapudi
Civil Engineer
EOM Operations

480 Edsel Drive, Ste 100
Richmond Hill, GA 31324
www.eomworx.com
Ph: 912.445.0050
F: 912.756.5882

ESTD 1946
THOMAS & HUTTON

50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 | 912.234.5300
THOMASANDHUTTON.COM

May 9, 2022

Mr. Brian Harvey
Director of Development Services
City of Port Wentworth
305 South Coastal Highway
Port Wentworth, GA 31407

Re: Jasper Village Phase II
Port Wentworth, Georgia
Site Plan Review
J–25412.0032

Dear Brian:

We have received the site plan for the referenced project submittal. The following information was included in the submittal package:

- Geotechnical Engineering Report for Roadways and Pond, dated August 3, 2021
- Landfill Certification for Sewer System, dated March 29, 2022
- Landfill Certification for Water System, dated March 29, 2022
- Hydrologic and Hydraulic Report, dated March 2022
- Water System Design Considerations and Fire Flow Calculations, dated March 2022
- Site Plans by Allen Engineering Services, dated April 1, 2022
- Intergovernmental Agreement between Effingham County and the City of Port Wentworth, dated November 2, 2021

This site plan review was completed based on our interpretation of the latest City of Port Wentworth zoning ordinance and development regulations. Thomas & Hutton's review was performed in an effort to assess if the application package for the proposed improvements is in general conformance with City of Port Wentworth regulations. Our review shall not be interpreted as a detailed technical analysis of the design or for verification of technical sufficiency for elements of design. Under no circumstances shall our review and comments related to the site plans relieve the Applicant's Design Professional of their professional obligations and professional standards of care. As such, the design submitted by the Applicant's Design Professional shall be the sole responsibility of the Applicant's Design Professional. Thomas & Hutton shall not accept any responsibility for any liability due to design and construction, in whole or in part, for any aspect of the design and construction of design documents.

We have reviewed the submittal package and offer the comments noted below for consideration.

General Comments

1. The site lies within the Phase II Master Plan Overlay (M-P-O) district.

2. The site lies within an Effective FEMA Zone X, area of minimal flood hazard, and special flood hazard area (SFHA) Zone A, area of 1-percent annual chance flood hazard with no established base flood elevations. This is documented on FEMA FIRM Panels 13051C0030G and 130510035G, effective August 16, 2018.

   For areas of development that lie within a SFHA with no established base flood elevations, please perform and provide a determination of the 100-year flood elevations, as per Section 3.7.5(5) of the Port Wentworth CDM. Additionally, please ensure that the 100-year floodplain boundary is demonstrated on the plans and ensure that all finished floor regulations fulfill the necessary requirements in relation to the established base flood elevations, as per Section 7-53 of the Port Wentworth Code of Ordinances.

3. Please provide a GDOT encroachment permit, if applicable.

4. Please provide an EPD land disturbance approval.

5. Please provide EPD water/wastewater permits, if applicable.

6. Please provide any other pertinent permit approvals.

7. According to National Wetland Inventory (NWI) data, there appear to be wetlands on site. Please provide a US Army Corps of Engineers (USACE) permit prior to subdivision, as per Section 5.2.4(1) of Appendix B of the Port Wentworth Code of Ordinances. Additionally, please confirm with a statement on the plans that there are no impacts to jurisdictional wetlands.

Stormwater Comments

In accordance with the City of Port Wentworth Drainage and Flood Control Ordinance (PWSMO) Section 7–79, this project proposes site development that will involve the creation of 5,000 square feet or more of impervious cover that otherwise did not exist on the site previously. As such, all stormwater provisions apply to this site.

1. Topographic data suggests that there is a larger area of offsite drainage entering the site than currently reflected in stormwater calculations. Please ensure all calculations and drainage basin exhibits account for the entirety of offsite flow the site.

2. Please provide the necessary stormwater design calculations, as outlined in Sections 3.7.9 and 3.7.10 of the Port Wentworth CDM, for the 2-year storm event.

3. Current stormwater calculations use a rainfall distribution of SCS Type II. However, the site appears to lie within the geographic bounds of the SCS Type III zone. Please

revise calculations to reflect the SCS Type III rainfall distribution or provide supporting documentation for use of the Type II distribution.

4. Per Section 3.7.10 of the CDM, please provide a statement of no adverse upstream or downstream impacts to the existing stormwater system.

5. It appears that only 13% of runoff reduction for the 1.2-inch storm event is being achieved. Please provide further clarification on how the remaining runoff volume will be reduced and/or treated.

6. There appears to be a discrepancy between the total site area and the areas used within the CSS calculations. Specifically, the site plans state the total area of disturbance is 12.58 acres and the CSS calculations use an area of 11.91 acres. Please revise or provide clarification.

7. Please provide a detail and the location of all simple downspout disconnections per Section 7.8.8 of the Georgia CSS.

8. Provide a stormwater management inspection and maintenance agreement and plan as per Section 7–80(e) of the Port Wentworth Code of Ordinances.

9. Please acknowledge that a performance bond will be required prior to construction, as listed in Section 7–80(h) of Article III of the Drainage and Flood Control Ordinances within the Port Wentworth Code of Ordinances.

10. Please provide a landscaping plan describing the vegetative stabilization and management techniques to be used at a site after construction is completed, as per Section 7-83 of the Port Wentworth Code of Ordinances.

Water, Fire System, and Sanitary Sewer Design Comments

1. The intergovernmental agreement provided states that water and sewer services are to be provided by Effingham County. Please provide approval from Effingham County that the water and sewer systems are operational and adhere to their municipal requirements.

2. Complete and provide the Owner/Client Declaration for the development's fire system (Section 3.4.7 Exhibit 4 in the CDM).

3. It is our understanding that a fire protection/suppression system will not be included within this project. Please coordinate with the Port Wentworth Fire Marshal for the fire protection comments and approval.

Plan Sheets Comments

1. There appear to be several power lines around Moore Road but only one of these lines has a utility easement shown. Please ensure that all utility lines have the appropriate easement, and all easements are demonstrated on the plans.

2. Please provide a tree survey and tree protection plan as per Section 5.2.4 of Appendix B of the Port Wentworth Code of Ordinances. Additionally, please provide clarification as to what trees are to be removed, if any, and ensure that

3. Please show the location of all setbacks pursuant to Section 5.2 of Appendix B of the Port Wentworth Code of Ordinances.

4. Please note that all street names within a subdivision shall be approved by the Manager and Council, pursuant to Section 15.3-2.1(k) in Appendix B of the Port Wentworth Code of Ordinances.

5. Please provide right-of-way lines for all proposed roads, pursuant to Section 15.3-2.2 in Appendix B of the Port Wentworth Code of Ordinances.

6. Please confirm that all proposed curb and gutters have a minimum back slope of 8 feet, as per Section 15.3-2.2 of Appendix B of the Port Wentworth Code of Ordinances.

7. Please ensure that the minimum required tree yards are demonstrated on the plan set, as per Section 5.2-3.1.4 of Appendix B of the Port Wentworth Code of Ordinances.

8. Please provide all applicable Port Wentworth details from the CDM. Currently, it appears that a typical driveway detail (P-8) and a standard parking space detail are missing.

Site Lighting Comments

1. Please provide a site lighting plan, as per Section 5.6 of Appendix B of the Port Wentworth Code of Ordinances.

Paving, Signage, and Parking Comments

1. Applicant shall ensure construction of sidewalks, ADA parking, and accessible routes are in conformance with federal ADA standards, latest edition. Please provide a note on the plans.

2. Please provide the parking calculations per dwelling unit as defined in Section 4.10 of Appendix B in the Port Wentworth Code of Ordinances.

3. Any proposed signage will require a separate permit as outlined in Section 19.1–3 of Port Wentworth Code of Ordinances.

4. A building permit will be required as outlined in Section 7.3, Appendix B of Port Wentworth Code of Ordinances.

Thank you for your attention to this project. If there are any questions or comments, please feel free to call us at (912) 234–5300.

Sincerely,

THOMAS & HUTTON

Dana Scheetz

Project Timeline

Project Number: 220209

Project Name: Jasper Village Ph 2, Specific Site Plan

Applicant / Engineer: Toss Allen, Allen Engineering

Owner: Next Chapter Neighborhoods

City Review Engineer: Thomas & Hutton

- 4/7/22 – application received; missing 15 copies
- 4/8/22 – sent email to Toss Allen, that we need to schedule a predevelopment meeting for this project. He will check his schedule and get back with me.
- 4/11/22 – sent files to Thomas & Hutton to start a review
- 4/14/22 – conducted Pre-Development meeting.
- 5/9/22 – Received 1st comment letter from T&H. Applicant copied on email.
- 5/9/22 – The Planning Commission voted 3-1 to approve the application with the condition that all engineer comments be resolved.

SITE DEVELOPMENT PLANS

JASPER VILLAGE
PHASE 2

FOR

NEXT CHAPTER NEIGHBORHOODS, LLC
2500 TRADE CENTER DRIVE
EVANS, GEORGIA 30809
TELEPHONE NO. (706) 831-3984

REVISIONS		
REV. NO.	DATE	REQD. BY

VICINITY MAP
NOT TO SCALE

allen
ENGINEERING SERVICES

APRIL 2022

THIS SITE IS LOCATED AT
LAT 32.236° LON -81.192°

INDEX OF DRAWINGS	
SHT NO.	DESCRIPTION
1	COVER
2	GENERAL NOTES AND LEGEND
3 - 6	EROSION AND SEDIMENT CONTROL NOTES
7 - 9	TOPOGRAPHIC SURVEY AND DEMOLITION PLAN
10 - 12	STAKING AND TRAFFIC CONTROL PLAN
13 - 14	UTILITY PLAN
15 - 16	STORM DRAINAGE PLAN
17 - 19	PAVING AND GRADING PLAN
20 - 22	INITIAL EROSION AND SEDIMENTATION CONTROL PLAN
23 - 25	INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN
26 - 28	FINAL EROSION AND SEDIMENTATION CONTROL PLAN
29 - 30	ROADWAY PROFILES
31 - 33	STORM DRAINAGE PROFILES
34 - 35	SANITARY SEWER PROFILES
36 - 37	WATER PROFILES
38 - 40	EROSION AND SEDIMENTATION CONTROL DETAILS
41 - 45	CONSTRUCTION DETAILS

GEORGIA REGISTERED No. 32181 PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

GENERAL NOTES:

1. CONTRACTOR WILL BE REQUIRED TO ATTEND A PRE-CONSTRUCTION CONFERENCE WITH THE GOVERNMENTAL AGENCY IN CHARGE OF THE PROJECT.

2. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND INSPECTIONS AS REQUIRED FOR APPROVAL OF THE WORK WITH THE GOVERNMENTAL AGENCY WITH JURISDICTION.

3. CONTRACTOR WILL BE RESPONSIBLE FOR COST OF AND COORDINATION WITH LOCAL UTILITY COMPANIES OR AGENCIES FOR RELOCATION OF, OR CONNECTION TO, ALL EXISTING UTILITIES INCLUDING POWER AND TELEPHONE POLES AND WIRES.

4. ALL ELEVATIONS ARE BASED ON MEAN SEA LEVEL DATUM. (NAVD 88)

5. REMOVAL AND REPLACEMENT OF UNSUITABLE SUBGRADE MATERIAL WILL BE PAID FOR ON A CUBIC YARD BASIS IN PLACE MEASUREMENT, AT SUCH AUTHORIZED PRICE PER CUBIC YARD, AS AUTHORIZED BY THE ENGINEER.

6. SUBGRADE WILL BE COMPACTED FOR A DEPTH OF 24" EXTENDING 24" BEYOND PAVEMENT EDGES, TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY AS MEASURED BY A.A.S.H.T.O. METHOD T-99. 9.

7. ALL DIMENSIONS ARE TO EXTERIOR FACE OF BUILDING , EDGE OF SURFACE COURSE OR BACK OF CURBING.

8. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.

9. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS FOR "AS BUILTS" PURPOSES AND PROVIDE THIS INFORMATION TO THE ENGINEER AT THE COMPLETION OF THE PROJECT. IF THE CONTRACTOR FAILS TO FURNISH THIS INFORMATION, THE ENGINEER WILL OBTAIN THE NECESSARY INFORMATION AND CHARGE THE CONTRACTOR FOR THE SERVICES. THE ENGINEER WILL CHECK INFORMATION PROVIDED BY THE CONTRACTOR FOR ACCURACY. AS BUILT INFORMATION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING: ALL UTILITIES INCLUDING INVERTS, TOP ELEVATIONS, PIPE LENGTHS AND TYPE OF CONSTRUCTION MATERIAL; SPOT ELEVATIONS ON FORCE MAINS AND WATER LINES. THE DISTANCE OF THE CENTERLINE OF UTILITIES FROM A PERMANENT STRUCTURE. ALL VALVE MANHOLES AND VALVE BOXES SHALL BE LOCATED WITH RESPECT TO A PERMANENT STRUCTURE. GRADES SHALL BE CONFIRMED IN ROADS AND PARKING AREAS AS WELL AS SWALES TO SHOW DIRECTION OF STORMWATER FLOW. THE FINISHED FLOOR ELEVATION SHALL BE SHOWN ON ALL BUILDINGS. IF THE LANDSCAPING IS CHANGED IN ANY WAY AN AS BUILT OF THE LANDSCAPE PLAN IS TO BE SUBMITTED TO THE ENGINEER; AND ANY OTHER REQUIREMENT MADE BY THE LOCAL JURISDICTION.

10. ALL NEW DISTURBED AREAS WILL BE GRASSED BY SEEDING OR SPRIGGING IN ACCORDANCE WITH GA. D.O.T. STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.

12. CONTRACTOR SHALL PROVIDE DUST CONTROL OF ALL DISTURBED AREAS BY THE USE OF WATER AND FAST GROWING, TEMPORARY VEGETATION ON ALL STOCKPILED SOILS.

13. CONTRACTOR WILL PROVIDE A CONSTRUCTION SCHEDULE INCLUDING ALL EROSION AND SEDIMENT CONTROL MEASURES.

14. CONTRACTOR SHALL PROVIDE CRUSHED STONE 6" THICK, 50' MIN. LONG BY 20' MIN. WIDE AT ALL CONSTRUCTION EXITS TO MINIMIZE TRANSPORT OF SOIL FROM SITE BY VEHICLE WHEELS.

15. TESTING - PROVIDE ALL TESTING AS REQUIRED IN THE SPECIFICATIONS. PROVIDE ENGINEER WITH COPY DIRECT FROM TESTING LAB.

16. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.

17. THE DETENTION BASINS SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND GRADING TO HELP PREVENT THE LOSS OF SEDIMENT FROM THE SITE. THE CONTRACTOR SHOULD CLEAN OUT ANY SEDIMENT DEPOSITED IN THE BASINS DURING THE CONSTRUCTION PERIOD SO THAT THE SPECIFIED WATER DEPTH AT NORMAL POOL IS MAINTAINED; THE CONTRACTOR MAY OVER EXCAVATE THE BASINS TO ACCOMPLISH THIS, IF DESIRED, AT HIS OWN EXPENSE AND WITH THE CONCURRENCE OF THE ENGINEER.

18. ANY STUMP HOLES OR OTHER DEPRESSIONS SHOULD BE CLEARED OF LOOSE MATERIAL AND DEBRIS AND SHOULD THEN BE BACKFILLED WITH APPROVED FILL. THE BACKFILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM-D-1557.

19. ANY UTILITIES THAT UNDERLIE THE SITE SHOULD BE RELOCATED AND THE TRENCHES BACKFILLED WITH APPROVED SOIL. THE BACKFILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM-D-1557.

20. THE SUBGRADE SHOULD BE PROOFROLLED WITH A LOADED DUMP TRUCK TO LOCATE UNSTABLE OR SOFT AREAS. THESE AREAS SHOULD THEN BE INVESTIGATED TO DETERMINE THE CAUSE OF THE INSTABILITY. IF DUE TO UNSUITABLE SOIL, SUCH AS HIGHLY ORGANIC SOILS OR SOFT CLAYS, THE AREA SHOULD BE UNDERCUT TO A FIRM SOIL AND REPLACED WITH APPROVED FILL COMPACTED IN SIX INCH LIFTS TO MINIMUM OF 95% OF THE SOILS MODIFIED PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM-D-1557. UNSUITABLE SOIL MATERIALS ARE DEFINED AS THOSE COMPLYING WITH ASTM D2487 SOIL CLASSIFICATION GROUPS ML, MH, CH, CL, OL AND PT. IF THE INSTABILITY IS DUE TO EXCESS MOISTURE IN OTHERWISE SUITABLE SOIL, THE AREA SHOULD BE DRAINED AND COMPACTED TO 95% OF THE SOILS MODIFIED PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM-D-1557. ANY FILL REQUIRED TO LEVEL OR RAISE THE SITE SHOULD THAN BE PLACED IN 6" THICK LOOSE LIFTS AND COMPACTED TO 95% OF THE SOILS MODIFIED PROCTOR MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM-D-1557. THE ENGINEER SHALL CERTIFY THE PROOF ROLLING PROCESS AND THE RESULTS OF THE PROOF ROLL.

21. ALL OF THE FILL FOR THIS PROJECT SHOULD CONSIST OF NON PLASTIC GRANULAR MATERIAL WITH A MAXIMUM OF 25% FINES PASSING THE NO. 200 SIEVE. THE FILL SHOULD BE FREE OF ORGANICS, ROOTS, OR OTHER DELETERIOUS MATERIALS. FILL CLASSIFIED AS SW, SP, SP-SM OR SM WITH A MAXIMUM OF 15% PASSING A NO. 200 SIEVE MAY BE ACCEPTABLE.

22. MOISTURE CONTENT SHALL BE AT OR BELOW OPTIMUM.

23. ALL SIGNING AND PAVEMENT MARKINGS SHALL BE PER GADOT, M.U.T.C.D. AND THE LOCAL JURISDICTIONS SPECIFICATIONS.

24. ALL STANDARD HIGHWAY SIGNS AND POSTS SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE PLANS, THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, AND THE GEORGIA DEPARTMENT OF TRANSPORTATION'S STANDARD SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS, AND/OR SPECIAL PROVISIONS.

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN

Level II Certified Design Professional

CERTIFICATION NUMBER 0000044936

ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

UTILITY NOTES:

1. IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL MEASURES AS INDICATED ON THE PLANS, THE CONTRACTOR SHALL TAKE WHATEVER ACTIONS AS ARE NECESSARY TO ENSURE THAT ALL SEDIMENTATION IS CONFINED TO THE SITE AND THAT NO OFFSITE EROSION IS CAUSED BY THE WORK EITHER DIRECTLY OR INDIRECTLY.

2. HIGHLY CHLORINATED WATER USED IN THE DISINFECTION PROCESS SHALL BE DILUTED AND DISCHARGED IN ACCORDANCE WITH AWWA C651-99 "DISINFECTING WATER MAINS" SEC.4.5-4.5.2.

3. PIPE, FITTINGS, VALVES AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE LOADED AT THE POINT OF DELIVERY, AND STORED WHERE THEY WILL BE PROTECTED AND WILL NOT BE HAZARDOUS TO TRAFFIC. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. THE INTERIOR OF ALL PIPE, FITTINGS AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND OTHER FOREIGN MATTER AT ALL TIMES.

4. ANY DEFECTIVE, DAMAGED OR UNSOUND PIPE SHALL BE REJECTED. ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING. CARE SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE JOINT SPACE. AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY APPROVED MEANS AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE.

5. CLEAN THE INTERIORS OF ALL PIPE BY WASHING OUT ALL DIRT BEFORE LAYING.

6. FLUSH THE NEW PIPE LINES UNTIL WATER RUNS CLEAR AT THE END OF ALL MAINS AND LATERALS. THIS SHOULD BE DONE AFTER THE PRESSURE TEST AND BEFORE DISINFECTION.

7. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, OR APPROVED EQUAL, WILL BE USED TO FORM A WATER TIGHT SEAL AT BOTH ENDS OF THE LINE BEING LAID.

8. MAINTAIN A MINIMUM OF EIGHTEEN (18") INCH VERTICAL CLEARANCE BETWEEN THE WATER LATERAL AND THE STORM DRAINAGE.

9. ALL CONNECTIONS TO EXISTING MANHOLES SHALL BE DONE BY THE CORE DRILL METHOD.

10. THE CONTRACTOR IS RESPONSIBLE TO BRING PROPOSED MANHOLE TOPS TO GRADE. SET ALL MH TOPS ±3" ABOVE FINISHED GRADE.

11. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CERTIFICATIONS OF BACKFLOW DEVICES TO THE ENGINEER.

12. ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS TO ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS. THE CONTRACTOR SHALL CALL "CALL BEFORE YOU DIG" AT 811 TO INSURE PROPER LOCATIONS OF EXISTING UTILITIES.

13. ALL WATER USED FOR CONSTRUCTION SHALL BE METERED THROUGH AND APPROVED BACKFLOW PREVENTION DEVICE AND FIRE HYDRANT METER.

14. ALL TAPS ON A MAIN FOR SERVICE LATERALS SHALL BE MADE WITH AN ALL STAINLESS STEEL DOUBLE STRAP EPOXY COATED TAPPING SADDLE. THE SIZE OF THE SADDLE SHALL BE WATER MAIN DIAMETER C-900 + (NPT) NATIONAL PIPE THREAD.

15. ANY AND ALL UTILITY CROSSINGS FOR WATER MAINS BETWEEN STORM OR SEWER PIPING SHOULD BE ACCOMPLISHED BY USING OF 45° BENDS BOTH DOWN AND UP.

16. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CONFLICT WITH EXISTING UTILITIES NOT SHOWN ON THESE PLANS PRIOR TO LAYING ANY PIPE.

17. FIRE HYDRANTS SHALL BE AT LEAST 18" ABOVE FINISHED GRADE (MEASURED FROM BOTTOM OF 4-1/2" DISCHARGE TO FINISHED GRADE).

18. SEE MEP PLANS FOR CONTINUATION OF ALL UTILITIES. CIVIL INFORMATION TERMINATES 5' FROM BUILDING ENVELOPE.

19. CONTRACTOR TO COORDINATE TYPE AND INSTALLATION OF DOMESTIC AND/OR IRRIGATION WATER METERS, BACKFLOW PREVENTERS AND DETECTOR CHECK VALVES WITH UTILITY COMPANY.

20. ALL RELOCATED SERVICES TO BE INSTALLED PRIOR TO CONNECTION TO EXISTING SERVICE TO MINIMIZE THE TIME THE EXISTING BUILDING IS TO BE WITHOUT SERVICE. NOTIFY AND COORDINATE WITH OWNER.

21. ALL SANITARY SEWER PIPES SHALL MEET THE REQUIREMENTS OF ASTM D-3034, SDR 26. AND HAVE A MINIMUM COVER OF 36" FROM FINISHED GRADE.

22. WATER MAINS SHALL HAVE A MINIMUM OF 36" OF COVER FROM FINISHED GRADE.

23. AIR RELIEF VALVES SHALL BE INSTALLED OF ALL HIGH POINTS IN WATER MAINS AND FORCE MAINS WHERE AIR MAY ACCUMULATE. THESE LOCATION SHALL BE FIELD DETERMINED BY THE CONTRACTOR.

24. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES UTILIZED BY THE CONTRACTOR, NOR FOR THE SAFETY OF PUBLIC OR CONTRACTOR'S EMPLOYEES OR FOR THE FAILURE OF THE CONTRACTOR TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

25. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR GRAVITY SEWER AND FORCE MAINS AT APPROXIMATELY 30" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO MANHOLE RINGS. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.

26. ALL SANITARY SEWER LATERALS SHALL BE PROPERLY MARKED AT THE POINT WHERE LATERALS TERMINATE WITH PVC PIPE PAINTED GREEN. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. LATERALS SHALL BE MARKED WITH MARKING TAPE AND TRACER WIRE AS DESCRIBED ABOVE UNDER ITEM 25.

27. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR WATER MAINS AT APPROXIMATELY 18" TO 24" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO CURB STOPS AND BROUGHT TO THE TOP OF THE VALVE. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.

28. ALL WATER SERVICES SHALL BE PROPERLY MARKED ABOVE GROUND WITH PVC PIPE PAINTED BLUE. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. LATERALS SHALL BE MARKED WITH MARKING TAPE AND TRACER WIRE AS DESCRIBED ABOVE UNDER ITEM 27.

29. SEWER SERVICE LATERALS SHALL BE INSTALLED AT RIGHT ANGLES.

30. THE TENNIS BALL TEST ON SANITARY LATERALS WILL NEED TO BE CONDUCTED TWICE. ONCE BEFORE THE INSTALLATION OF THE DRY UTILITIES AND ONCE AFTER ALL DRY UTILITIES HAVE BEEN INSTALLED. THE SANITARY SEWER LATERALS MUST PASS THE TENNIS BALL TEST BEFORE FINAL ACCEPTANCE WILL BE GRANTED.

31. ALL SANITARY SEWER SERVICE LATERALS WILL BE REQUIRED TO BE CAPPED.

LEGEND

	EXISTING	PROPOSED
CONTROL NAIL	NF	NS
IRON PIPE	IPF	IPS
IRON REBAR	IRF	
CONCRETE MONUMENT	CMF	
RIGHT-OF-WAY MARKER	RWMF	RWMS
BENCHMARK	BMF	BMS
RAILROAD CROSSING ARM		
PIPES		
DRAINAGE MANHOLE		
GRATE INLET		
FLARED END SECTION		
INVERT ELEVATION	*IE 12.00*	IE 12.00
CURB INLET TYPE A		
CURB INLET TYPE B		
CURB INLET TYPE C		
RIP RAP		RIP RAP
BACKFLOW PREVENTER	BFP	BFP
BLOW-OFF	BO	BO
FIRE HYDRANT		
HOSE BIBB (SPIGOT)	HB	HB
WELL	W	W
WATER LINE MARKER	WMK	WMK
WATER METER	WM	WM
WATER MANHOLE	MH	MH
WATER VALVE	WV	WV
POWER POLE	PP	PP
GUY POLE	GP	GP
LIGHT POLE	LP	LP
GROUND LIGHT	GL	GL
ELECTRICAL LINE MARKER	EMK	EMK
ELECTRICAL MANHOLE	E MH	MH
ELECTRICAL CONTROL BOX	ECB	ECB
ELECTRICAL OUTLET BOX	EOB	EOB
ELECTRICAL SERVICE METER	EM	EM
ELECTRICAL TRANSFORMER	TRANS	TRANS
GAS LINE MARKER	GMK	GMK
GAS METER	GM	GM
TELEPHONE PEDESTAL	TELE PED	TELE PED
TELEPHONE LINE MARKER	TMK	TMK
CLEANOUT		CO
CENTER SANITARY MANHOLE	S MH	
GREASE TRAP	G GT	GT

CHAIN LINK	
BARBED WIRE	
HOG WIRE	
WROUGHT IRON	
WOODEN	
SILT FENCE (SINGLE)	
SILT FENCE (DOUBLE)	
CENTERLINE OF ROAD	
EDGE OF ASPHALT	
CURB & GUTTER	
RAILROAD TRACK	
WATERMAIN LINE (EXISTING)	12"W
WATERMAIN LINE (PROPOSED)	12"W
UNDERGROUND POWER CABLE	UGP
OVERHEAD POWER CABLE	OHP
GAS LINE	G
UNDERGROUND TELEPHONE CABLE	UGT
OVERHEAD TELEPHONE CABLE	OHT
UNDERGROUND FIBER OPTIC CABLE	UGF
OVERHEAD FIBER OPTIC CABLE	OHF
UNDERGROUND CABLE TV	
OVERHEAD CABLE TV	
EXISTING SEWER LINE	SS
PROPOSED SEWER LINE	
FORCEMAIN LINE	

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TODD ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

GENERAL NOTES AND LEGEND

SHEET NUMBER
2
OF 45

EROSION CONTROL SEQUENCING NOTES:

CLEARING PHASE

PRIOR TO THE LAND DISTURBING CONSTRUCTION, THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE AREA SITE DEVELOPMENT INSPECTOR.

THE CONTRACTOR SHALL OBSERVE THE PROJECT SEQUENCE SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN CAREFUL SCHEDULING AND PERFORMANCE TO INSURE THAT LAND STRIPPING OF ITS NATURAL COVER IS EXPOSED ONLY IN SMALL QUANTITIES.

THE OWNER AGREES TO PROVIDE AND MAINTAIN OFF-STREET PARKING ON THE SUBJECT PROPERTY DURING THE ENTIRE CONSTRUCTION PERIOD.

NO STAGING AREAS, MATERIAL STORAGE, CONCRETE WASH OUT AREAS, OR DEBRIS BURN AND BURIAL HOLES SHALL BE LOCATED WITHIN 500 FEET OF DESIGNATED TREE PROTECTION AREAS.

A COPY OF THE APPROVED LAND DISTURBANCE PLAN AND PERMIT SHALL BE PRESENT ON THE SITE AT ALL TIMES.

THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE AND ALL STREAM BUFFERS SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE ACTIVITY SHALL BE DEMARCATED FOR THE DURATION OF THE CONSTRUCTION ACTIVITY. NO LAND DISTURBANCE SHALL OCCUR OUTSIDE THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS.

PRIOR TO ANY OTHER CONSTRUCTION, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT EACH POINT OF ENTRY TO OR EXIT FROM THE SITE OR ONTO ANY PUBLIC ROADWAY.

THE FOLLOWING INITIAL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED PRIOR TO ANY OTHER CONSTRUCTION ACTIVITY:

1. THE CONSTRUCTION EXIT, CONSISTING OF A MINIMUM PAD SIZE OF 20 FEET BY 50 FEET WITH A MINIMUM 6" THICK STONE, SHALL BE PLACED AS SHOWN ON THE PLAN. THE STONE SIZE SHOULD CONSIST OF COURSE AGGREGATE BETWEEN 1-1/2" & 3-1/2" IN DIAMETER AND OVERLAID ON A GEOTEXTILE UNDERLINER. THE GEOTEXTILE UNDERLINER SHALL MEET THE REQUIREMENTS OF AASHTO M288-96, SECTION 7.3 SEPARATION REQUIREMENTS.

2. IMMEDIATELY AFTER THE ESTABLISHMENT OF CONSTRUCTION ENTRANCE/EXITS, ALL PERIMETER EROSION CONTROL AND STORM WATER MANAGEMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE CLEARING PHASE EROSION CONTROL PLAN.

3. TYPE 'NS' SILT FENCE SHOULD BE INSTALLED AT THE PERIMETER OF THE DISTURBED AREA AS SHOWN ON THE PLAN. THE SILT FENCE SHOULD BE PLACED IN ACCORDANCE WITH THE MANUAL FOR EROSION CONTROL IN GEORGIA, TABLE 6-20.2. THE SILT FENCE SHOULD BE KEPT ERECT AT ALL TIMES AND REPAIRED WHEN REQUESTED BY THE INSPECTOR OR THE PROJECT DESIGN PROFESSIONAL OF RECORD. SILT SHOULD BE REMOVED WHEN ACCUMULATION REACHED ½ THE HEIGHT OF THE BARRIER. THE PERIMETER SILT FENCE SHOULD BE INSPECTED DAILY FOR ANY FAILURES. ANY FAILURES OF SAID FENCING SHOULD BE REPAIRED IMMEDIATELY.

4. INLET SEDIMENT PROTECTION MEASURES SHALL BE INSTALLED ON ALL EXISTING STORM STRUCTURES AS SHOWN ON THE PLAN. SEE SEPARATE DETAILS FOR SPECIFICS ON TYPE OF INLET PROTECTION SPECIFIED.

5. STONE CHECK DAMS SHALL BE INSTALLED IN AREAS OF CONCENTRATED FLOWS AS SHOWN ON THE PLAN.

6. TREE PROTECTION FENCING SHOULD BE INSTALLED PRIOR TO THE START OF ANY LAND DISTURBANCE ACTIVITY AND MAINTAINED UNTIL FINAL LANDSCAPE IS INSTALLED. THE TREE PROTECTION FENCING SHOULD BE INSPECTED DAILY. ANY FAILURES OF SAID FENCING SHOULD BE REPAIRED IMMEDIATELY.

WITHIN SEVEN (7) DAYS AFTER INSTALLATION OF INITIAL EROSION CONTROL MEASURES, THE SITE CONTRACTOR SHALL SCHEDULE AN INSPECTION BY THE PROJECT DESIGN PROFESSIONAL. NO OTHER CONSTRUCTION ACTIVITIES SHALL OCCUR UNTIL THE PROJECT PROFESSIONAL APPROVES THE INSTALLATION OF SAID EROSION CONTROL MEASURES. IF UNFORESEEN CONDITIONS EXIST IN THE FIELD THAT WARRANT ADDITIONAL EROSION CONTROL MEASURES, THE CONTRACTOR MUST CONSTRUCT ANY ADDITIONAL EROSION CONTROL DEVICES DEEMED NECESSARY BY THE PROJECT PROFESSIONAL DURING THE SITE INSPECTION.

AFTER APPROVAL OF INITIAL EROSION CONTROL INSTALLATION, THE CONTRACTOR MAY PROCEED WITH CLEARING AND GRUBBING ACTIVITIES, AS CLEARING PERMITS, THE CONTRACTOR SHALL CONSTRUCT SEDIMENT PONDS AS SHOWN ON PLANS.

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 7 DAYS OF LAND DISTURBANCE. ALL DISTURBED AREAS LEFT MULCHED MORE THAN 30 DAYS SHALL BE STABILIZED WITH TEMPORARY VEGETATION.

FAILURE TO INSTALL, OPERATE OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE SITE UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE APPROVED PLANS.

GRADING PHASE

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE PRELIMINARY GRADING PHASE OR CONSTRUCTION.

DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN CAREFUL SCHEDULING AND PERFORMANCE TO ENSURE THAT LAND STRIPPING OF ITS NATURAL GROUND COVER IS EXPOSED ONLY IN SMALL QUANTITIES AND THEREFORE LIMITED DURATIONS, BEFORE PERMANENT EROSION PROTECTION IS ESTABLISHED. NOTE SUB PHASES SHOWN ON PLANS.

EARTHWORK OPERATIONS IN THE VICINITY OF STREAM BUFFERS SHALL BE CAREFULLY CONTROLLED TO AVOID DUMPING OR SLOUGHING INTO THE BUFFER AREAS.

SEDIMENT SHALL NOT BE WASHED INTO INLETS. IS SHALL BE REMOVED FROM THE SEDIMENT TRAPS AND DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLETS AGAIN.

EROSION CONTROL DEVICES SHALL BE INSTALLED IMMEDIATELY AFTER GROUND DISTURBANCE OCCURS. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTORS RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE DESIGN PROFESSIONAL IMMEDIATELY.

THE CONTRACTOR SHALL FURNISH AND MAINTAIN NECESSARY BARRICADES WHILE ROADWAY FRONTAGE IMPROVEMENTS ARE BEING MADE.

TYPE "NS" SILT FENCE SHOULD BE INSTALLED AT THE TOE OF ALL FILL SLOPES 10 FEET OR GREATER IN HEIGHT. THE SILT FENCE SHOULD BE PLACED IN ACCORDANCE WITH THE MANUAL FOR EROSION CONTROL IN GEORGIA, TABLE 6-20.2. THE SILT FENCE SHALL BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED ON THE SLOPE. SILT FENCE SHALL BE REMOVED WHEN ACCUMULATION REACHES ½ THE HEIGHT OF THE BARRIER. ADDITIONALLY, DIVERSION DIKES SHALL BE CONSTRUCTED ALONG THE TOP OF ALL SAID FILL SLOPES WITH THE USE OF TEMPORARY DOWN DRAINS TO CONTROL STORM WATER RUN OFF AS SHOWN ON THE PLANS. SEE SEPARATE DETAILS FOR ADDITIONAL INFORMATION.

THE CONTRACTOR SHALL MAINTAIN THE SEDIMENT POND UNTIL PERMANENT GROUNDCOVER IS ESTABLISHED. SEDIMENT SHALL BE CLEANED OUT OF THE POND WHEN IT REACHES ONE THIRD OF THE DEPTH OF THE BASIN.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING BARRIERS AT THE TOE OF SLOPES UNDER CONSTRUCTION. THESE BARRIERS SHALL BE AS SHOWN IN THE PLANS. THESE BARRIERS MAY BE RELOCATED AND REUSED AFTER PERMANENT SLOPE STABILIZATION BECOMES FULLY ESTABLISHED. AS THEY ARE RELOCATED, ANY DEFECTIVE MATERIALS IN THE BARRIERS SHALL BE REPLACED. IN ADDITION, ALL DEBRIS AND SILT AT THE PREVIOUS LOCATION SHALL BE REMOVED.

CUT AND FILL SLOPES ARE NOT TO EXCEED "3H:1V"

ADDITIONAL SILT BARRIERS MUST BE PLACED AS SHOWN ON THE PLAN AS ACCESS IS OBTAINED DURING CLEARING. NO GRADING SHALL TAKE PLACE UNTIL SILT BARRIER INSTALLATION AND INLET PROTECTION ARE CONSTRUCTED AS SHOWN ON THE CLEARING PHASE EROSION CONTROL PLAN.

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 7 DAYS OF LAND DISTURBANCE.

ALL DISTURBED AREAS LEFT MULCHED AFTER 30 DAYS SHALL BE STABILIZED WITH TEMPORARY VEGETATION.

SEDIMENT AND EROSION CONTROL MEASURES SHOULD BE CHECKED AFTER EACH RAIN EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE. ADDITIONAL DEVICES MUST BE INSTALLED IF NEW CHANNELS HAVE DEVELOPED.

THE CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACK OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 1-3" OF STONE, AS CONDITIONS DEMAND. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE ONTO PUBLIC ROADWAY OR INTO STORM DRAIN MUST BE REMOVED IMMEDIATELY.

CONTRACTOR SHALL INSPECT CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.

EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES, IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED SOURCE AS DIRECTED BY THE ON SITE INSPECTOR OR THE CIVIL ENGINEER.

FAILURE TO INSTALL, OPERATE, OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE APPROVED EROSION CONTROL PLANS.

THE SITE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES INCLUDING REPLACING OR REPAIRING ANY DAMAGED DEVICES DUE TO ANY CONSTRUCTION ACTIVITY BY OTHERS.

TYPE "NS" SILT FENCE SHALL BE PLACED AT THE TOE OF ALL DIRT STOCK PILE AREAS. SEE SEPARATE DETAILS FOR ADDITIONAL INFORMATION.

INLET SEDIMENT PROTECTION MEASURES SHALL BE INSTALLED ON ALL STORM STRUCTURES AS THEY ARE CONSTRUCTED. SEE PLAN VIEW FOR SPECIFIC TYPE AND SEPARATE DETAILS FOR ADDITIONAL INFORMATION.

STONE CHECK DAMS SHALL BE INSTALLED IN AREAS OF CONCENTRATED FLOWS, AS SHOWN ON THE PLAN. SEE SEPARATE DETAIL FOR ADDITIONAL INFORMATION.

STORM DRAIN OUTLET PROTECTION SHALL BE PLACED AT ALL STORM DRAIN OUTLETS AS SOON AS THE OUTLET IS CONSTRUCTED.

ALL DRAINAGE SWALES SHALL BE APPLIED WITH VEGETATIVE COVER AS SOON AS FINAL GRADE IS ACHIEVED.

AFTER PRELIMINARY GRADING ACTIVITIES, THE CONTRACTOR SHALL CONSTRUCT INLET PROTECTIONS AS SHOWN ON PLAN. THE CONTRACTOR SHALL MAINTAIN THE INLET PROTECTIONS AS SHOWN UNTIL PERMANENT GRADING COVER IS ESTABLISHED.

FINAL PHASE

THE FOLLOWING EROSION CONTROL MEASURES SHALL BE IMPLEMENTED DURING THE FINAL EROSION CONTROL PHASE OF CONSTRUCTION.

SEDIMENT SHALL NOT BE WASHED INTO INLETS. IT SHALL BE REMOVED FROM THE SEDIMENT TRAPS AND DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLETS AGAIN.

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 7 DAYS OF LAND DISTURBANCE.

ALL DISTURBED AREAS LEFT MULCHED AFTER 30 DAYS SHALL BE STABILIZED WITH TEMPORARY GRASSING.

THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES UNTIL PERMANENT GROUND COVER IS ESTABLISHED. SEDIMENT SHALL BE CLEANED OUT OF THE PONDS WHEN IT REACHES THE HALF WAY POINT ON THE RISER.

AFTER CURBING, GRADED AGGREGATE BASE, AND PAVEMENT HAS BEEN INSTALLED, ALL INLET SEDIMENT TRAPS ON SINGLE AND DOUBLE WING CATCH BASINS ALONG WITH ANY CURB INLETS SHALL BE REMOVED AND REPLACED WITH CURB FILTER PROTECTION. SEE SEPARATE DETAIL FOR ADDITIONAL INFORMATION.

ALL ROADWAY AND PARKING SHOULD BE APPLIED WITH VEGETATIVE COVER AS SOON AS FINAL GRADE IS ACHIEVED BEHIND CURBS.

SEDIMENT AND EROSION CONTROL MEASURES SHOULD BE CHECKED AFTER EACH RAIN EVENT. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OR THE DEVICE. ADDITIONAL DEVICES MUST BE INSTALLED IF NEW CHANNELS HAVE DEVELOPED.

THE CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACK OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 1-3" OF STONE, AS CONDITIONS DEMAND. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE ONTO PUBLIC ROADWAY OR INTO STORM DRAIN MUST BE REMOVED IMMEDIATELY.

CONTRACTOR SHALL INSPECT CONTROL MEASURES AT THE END OF EACH WORKING DAY TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.

EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES, IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED SOURCE AS DIRECTED BY THE ON SITE INSPECTOR OR THE CIVIL ENGINEER.

FAILURE TO INSTALL, OPERATE, OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE APPROVED EROSION CONTROL PLANS.

THE SITE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES INCLUDING REPLACING OR REPAIRING ANY DAMAGED DEVICES DUE TO ANY CONSTRUCTION ACTIVITY BY OTHERS.

UPON COMPLETION OF THE PROJECT AND RECEIPT OF CERTIFICATION OF OCCUPANCY, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AND DISPOSE OF THEM UNLESS NOTED ON PLANS.

NOTE:
SILT FENCE, INLET SEDIMENT TRAPS AND RETROFITTING
SHALL BE REMOVED ONCE FINAL STABILIZATION IS ACHIEVED.

EROSION & SEDIMENT CONTROL PHASING SCHEDULE

CONTROL MEASURES		PHASE 1	PHASE 2	PHASE 3
CONSTRUCTION EXIT	(CxS)	X	X	X
SEDIMENT BARRIER	(SB1-NS)	X	X	X
INLET SEDIMENT TRAP	(SIS)		X	X
TEMPORARY SEDIMENT BASIN	(SAS)	X	X	X
FLOATING SURFACE SKIMMER	(SK)		X	X
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	(DS/S)	X	X	
FILTER RING	(FF)		X	X
RETROFIT	(RT-P)		X	X
DUST CONTROL ON DISTURBED AREAS	(DU)	X	X	
CHECK DAM	(Cd-Hb)			
OUTLET PROTECTION	(ST)			X
DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)	(DS:) (DS:)			X

PHASE 1 - PERIMETER CONTROL - TO BE INSTALLED PRIOR TO ANY LAND DISTURBANCE
PHASE 2 - GRADING AND DRAINAGE CONTROL MEASURES
PHASE 3 - FINAL CONTROL MEASURES - TO BE INSTALLED AT COMPLETION OF LAND DISTURBANCE AND SHALL REMAIN IN PLACE AFTER CONSTRUCTION

SEE SHEET 3-6, 20-28, 38-40 FOR SOIL EROSION NOTES AND DETAILS

TENTATIVE ACTIVITY SCHEDULE

	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	MONTH 7	MONTH 8	MONTH 9	MONTH 10	MONTH 11	MONTH 12	MONTH 13	MONTH 14	MONTH 15
INITIAL PERIMETER AND SEDIMENT STORAGE BMP'S	■														
CLEARING AND GRUBBING		■	■	■											
CONSTRUCTION EXIT	■	■	■	■	■	■	■	■	■	■	■	■			
SEDIMENT BARRIER	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
DISTURBED AREA STABILIZATION (WITH MULCHING)		■	■	■	■	■	■	■	■	■	■				
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)		■	■	■	■	■	■	■	■	■	■				
DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)												■	■	■	■
DUST CONTROL	■	■	■	■	■	■	■	■	■	■	■	■			
GRADING		■	■	■	■	■	■	■	■	■	■				
REMOVE TEMPORARY EROSION CONTROL															■
BUILDING AND SITE PAVING					■	■	■	■	■	■	■	■	■	■	■
MAINTENANCE OF ES&PC BMPs	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL NOTES

SHEET NUMBER
3
OF 45

ATTACHED | YES 1. THE APPLICABLE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN CHECKLIST ESTABLISHED BY THE COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED (THE COMPLETED CHECKLIST MUST BE SUBMITTED WITH THE ES&PC PLAN OR THE PLAN WILL NOT BE REVIEWED)

PLEASE FIND THE CURRENT STAND ALONE EROSION, SEDIMENTATION AND POLLUTION CONTROL CHECKLIST ATTACHED TO THIS PLAN

ALL | YES 2. THE LEVEL II CERTIFICATION NUMBER ISSUED BY THE COMMISSION, SIGNATURE AND SEAL OF THE CERTIFIED DESIGN PROFESSIONAL. (SIGNATURE, SEAL AND LEVEL II NUMBER MUST BE ON EACH SHEET PERTAINING TO ES&PC PLAN OR THE PLAN WILL NOT BE REVIEWED)

PLEASE FIND ON EACH SHEET OF THIS PLAN THE GSWCC LEVEL II CERTIFICATION NUMBER, SIGNATURE AND SEAL FOR MR. ANTHONY TOSS ALLEN, P.E.

- | N/A 3. LIMITS OF DISTURBANCE SHALL BE NO GREATER THAN 50 ACRES AT ANY ONE TIME WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE GAEPD DISTRICT OFFICE. IF GAEPD APPROVES THE REQUEST TO DISTURB 50 ACRES OR MORE AT ANY ONE TIME, THE PLAN MUST INCLUDE AT LEAST 4 OF THE BMPS LISTED IN APPENDIX 1 OF THIS CHECKLIST AND THE GAEPD APPROVAL LETTER. *
(A COPY OF THE WRITTEN APPROVAL BY GAEPD MUST BE ATTACHED TO THE PLAN FOR THE PLAN TO BE REVIEWED.)

AREA OF DISTURBANCE DOES NOT EXCEED 50 ACRES

4 | YES 4. THE NAME AND PHONE NUMBER OF THE 24-HOUR CONTACT RESPONSIBLE FOR EROSION, SEDIMENTATION AND POLLUTION CONTROLS

ANTHONY TOSS ALLEN, P.E.
P.O. BOX 1749
RINCON, GEORGIA 31326
(912) 667-2667

4 | YES 5. PROVIDE THE NAME, ADDRESS, EMAIL ADDRESS, AND PHONE NUMBER OF PRIMARY PERMITTEE

NEXT CHAPTER NEIGHBORHOODS
2500 TRADE CENTER DRIVE
EVANS, GEORGIA 30809
(706) 831-3984
SHANE@NEXTCHAPTERNEIGHBORHOODS.COM

4 | YES 6. NOTE TOTAL AND DISTURBED ACREAGES OF THE PROJECT OR PHASE UNDER CONSTRUCTION

TOTAL ACREAGE - 36.19
DISTURBED ACREAGE -12.58

4 | YES 7. PROVIDE THE GPS LOCATION OF THE CONSTRUCTION EXIT FOR THE SITE. GIVE THE LATITUDE AND LONGITUDE IN DECIMAL DEGREES

THE CONSTRUCTION EXIT FOR THIS SITE IS LOCATED AT:
LAT 32.236°; LONG -81.192°

ALL | YES 8. INITIAL DATE OF THE PLAN AND THE DATES OF ANY REVISIONS MADE TO THE PLAN INCLUDING THE ENTITY WHO REQUESTED THE REVISIONS

PLEASE FIND THE INITIAL DATE OF THE PLAN AND ALL REVISIONS ON THE COVER SHEET AS WELL AS EACH INDIVIDUAL SHEET OF THE PLAN

4 | YES 9. DESCRIPTION OF THE NATURE OF CONSTRUCTION ACTIVITY AND EXISTING SITE CONDITIONS

THIS SITE IS LOCATED AT THE INTERSECTION OF OLD AUGUSTA ROAD AND MOORE ROAD IN THE CITY OF PORT WENTWORTH, CHATHAM COUNTY, GEORGIA. THE SITE IS APPROXIMATELY 36.19 ACRES AND IS CURRENTLY PARTIALLY WOODED AND VACANT. THE INTENTION OF THE OWNER IS TO DEVELOP AN APPROXIMATELY 70-UNIT MULTIFAMILY DEVELOPMENT AND THE RELATED INFRASTRUCTURE TO SERVE IT. (PIN 709604064)

COVER | YES 10. PROVIDE VICINITY MAP SHOWING SITE'S RELATION TO SURROUNDING AREAS. INCLUDE DESIGNATION OF SPECIFIC PHASE, IF NECESSARY

PLEASE FIND THE VICINITY MAP LOCATED ON THE COVER SHEET OF THE PLANS

4 | YES 11. IDENTIFY THE PROJECT RECEIVING WATERS AND DESCRIBE ALL SENSITIVE ADJACENT AREAS INCLUDING STREAMS, LAKES, RESIDENTIAL AREAS, WETLANDS, MARSHLANDS, ETC. WHICH MAY BE AFFECTED

THE RECEIVING WATERS FOR THE PROJECT ARE WETLANDS DRAINING TO THE KNOXBORO CREEK AND THEN THE SAVANNAH RIVER. SEE QUAD MAP ON SHEET 6

4 | YES 12. DESIGN PROFESSIONAL'S CERTIFICATION STATEMENT AND SIGNATURE THAT THE SITE WAS VISITED PRIOR TO DEVELOPMENT OF THE ES&PC PLAN AS STATED ON PART IV PAGE 19 OF THE PERMIT

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen

ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

4 | YES 13. DESIGN PROFESSIONAL'S CERTIFICATION STATEMENT AND SIGNATURE THAT THE PERMITTEE'S ES&PC PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BMPS AND SAMPLING TO MEET PERMIT REQUIREMENTS AS STATED ON PART IV PAGE 19 OF THE PERMIT

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH LAND DISTURBING ACTIVITY WAS PERMITTED. THE PLAN PROVIDES FOR THE SAMPLING OF THE STORM WATER OUTFALLS. THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

Anthony Allen

ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

4 | YES 14. CLEARLY NOTE THE STATEMENT THAT "THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPS WITHIN 7 DAYS AFTER INSTALLATION." IN ACCORDANCE WITH PART IV.A.5 PAGE 25 OF THE PERMIT *

THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMP'S WITHIN 7 DAYS AFTER INSTALLATION.

DESIGN PROFESSIONAL 7-DAY VISIT CERTIFICATION:

DATE OF INSPECTION _____

I CERTIFY THE SITE WAS IN COMPLIANCE WITH THE ES&PC PLAN ON THE DATE OF INSPECTION.

_____

GSWCC LEVEL II DESIGN PROFESSIONAL **CERTIFICATION #**

INSPECTION REVEALED THE FOLLOWING DISCREPANCIES FROM THE ES&PC PLAN

_____

_____

_____

THESE DISCREPANCIES MUST BE ADDRESSED IMMEDIATELY AND A RE-INSPECTION SCHEDULED. WORK SHALL NOT PROCEED ON SITE UNTIL DESIGN PROFESSIONAL CERTIFICATION IS OBTAINED

4 | YES 15. CLEARLY NOTE THE STATEMENT THAT "NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS"

NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50 FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION NOR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS

4 | YES 16. PROVIDE A DESCRIPTION OF ANY BUFFER ENCROACHMENTS AND INDICATE WHETHER A BUFFER VARIANCE IS REQUIRED

THERE ARE NO BUFFER ENCROACHMENTS PROPOSED WITH THE PROJECT AND A BUFFER VARIANCE IS NOT REQUIRED

4 | YES 17. CLEARLY NOTE THE STATEMENT THAT "AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPS WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL." *

AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON THE BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL

4 | YES 18. CLEARLY NOTE THE STATEMENT THAT "WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT"

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT

4 | YES 19. CLEARLY NOTE STATEMENT THAT "THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES"

THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES

4 | YES 20. CLEARLY NOTE STATEMENT THAT "EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE"

EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATIONS OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURE SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE

4 | YES 21. CLEARLY NOTE THE STATEMENT "ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING"

ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD OF GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING

- | N/A 22. ANY CONSTRUCTION ACTIVITY WHICH DISCHARGES STORM WATER INTO AN IMPAIRED STREAM SEGMENT, OR WITHIN 1 LINEAR MILE UPSTREAM OF AND WITHIN THE SAME WATERSHED AS, ANY PORTION OF A BIOTA IMPAIRED STREAM SEGMENT MUST COMPLY WITH PART III, C, OF THE PERMIT. INCLUDE THE COMPLETED APPENDIX 1 LISTING ALL THE BMPS THAT WILL BE USED FOR THOSE AREAS OF THE SITE WHICH DISCHARGE TO THE IMPAIRED STREAM SEGMENT

THERE ARE NO DISCHARGES INTO AN IMPAIRED STREAM SEGMENT OR WITHIN 1 LINEAR MILE UPSTREAM OF AND WITHIN THE SAME WATERSHED AS ANY PORTION OF A BIOTA IMPAIRED STREAM SEGMENT

- | N/A 23. IF A TMDL IMPLEMENTATION PLAN FOR SEDIMENT HAS BEEN FINALIZED FOR THE IMPAIRED STREAM SEGMENT (IDENTIFIED IN ITEM 22 ABOVE) AT LEAST SIX MONTHS PRIOR TO SUBMITTAL OF NOI, THE ES&PC PLAN MUST ADDRESS ANY SITE-SPECIFIC CONDITIONS OR REQUIREMENTS INCLUDED IN THE TMDL IMPLEMENTATION PLAN

THERE ARE NO DISCHARGES INTO AN IMPAIRED STREAM SEGMENT

4 | YES 24. BMPS FOR CONCRETE WASHDOWN OF TOOLS, CONCRETE MIXER CHUTES, HOPPERS AND THE REAR OF THE VEHICLES. WASHOUT OF THE DRUM AT THE CONSTRUCTION SITE IS PROHIBITED *

WASHOUT OF THE DRUM OF CONCRETE TRUCKS AT THE CONSTRUCTION SITE IS PROHIBITED. THE WASHDOWN OF TOOLS, CHUTES, HOPPERS, AND THE REAR OF VEHICLES SHALL BE COLLECTED IN THE DESIGNATED CONCRETE WASHOUT AREA.

4 | YES 25. PROVIDE BMPS FOR THE REMEDIATION OF ALL PETROLEUM SPILLS AND LEAKS

PETROLEUM BASED PRODUCTS - CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS, AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AND MACHINERY DAILY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE OF SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATER, NATURAL DRAINS AND STORM DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS

SOIL CLEANUP AND CONTROL PRACTICES:

- **LOCAL, STATE AND MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND PROCEDURES WILL BE MADE AVAILABLE TO SITE PERSONNEL.**
- **MATERIAL AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREAS. TYPICAL MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST AND PROPERLY LABELED PLASTIC AND METAL WASTE CONTAINERS.**
- **ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. ALL SPILLS WILL BE REPORTED AS REQUIRED BY LOCAL, STATE AND FEDERAL REGULATIONS.**
- **FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER) THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802.**
- **FOR SPILLS OF AN UNKNOWN AMOUNT, THE THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802.**
- **FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS.**
- **FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS**
- **FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.**

THE CONTRACTOR SHALL NOTIFY THE LICENSED PROFESSIONAL WHO PREPARED THIS PLAN IF MORE THAN 1320 GALLONS OF PETROLEUM IS STORED ONSITE (THIS INCLUDES CAPACITIES OF EQUIPMENT) OR IF ANY ONE PIECE OF EQUIPMENT HAS A CAPACITY GREATER THAN 660 GALLONS. THE CONTRACTOR WILL NEED A SPILL PREVENTION CONTAINMENT AND COUNTERMEASURES PLAN PREPARED BY THAT LICENSED PROFESSIONAL

4 | YES 26. DESCRIPTION OF THE MEASURES THAT WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL POLLUTANTS IN STORM WATER THAT WILL OCCUR AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED

RIP-RAP IS INSTALLED ON ALL DISCHARGE ENDS OF STORM PIPE AND AT THE OUTFALL LOCATIONS. PERMANENT GRASSING AND LANDSCAPING WILL BE INSTALLED TO PROTECT EARTHEN AREAS FROM EROSION ONCE CONSTRUCTION IS COMPLETE OVERLAND FLOW TO THE DRAINAGE INLETS AND TO THE BASIN WILL OCCUR THROUGH GRASS AND VEGETATION WHICH WILL ACT AS A FILTER FOR POLLUTANTS AND SEDIMENT.

4 | YES 27. DESCRIPTION OF PRACTICES TO PROVIDE COVER FOR BUILDING MATERIALS AND BUILDING PRODUCTS ON SITE

PAINTS/FINISHES/SOLVENTS - ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCTS, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS

FERTILIZER/HERBICIDES - THESE PRODUCTS WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATION OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. ANY STORAGE OF LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES OR HERBICIDES ON SITE WILL BE UNDER ROOF IN SEALED CONTAINERS

BUILDING MATERIALS - ANY BUILDING MATERIALS OR BUILDING PRODUCTS STORED ON SITE WILL BE UNDER PLASTIC SHEETING OR A ROOF SO THAT SUFFICIENT TO PREVENT THEM FROM COMING INTO CONTACT WITH PRECIPITATION OR STORMWATER. NO BUILDING MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIALS WILL BE DISPOSED OF IN PROPER WASTE DISPOSAL PROCEDURES

4 | YES 28. DESCRIPTION OF THE PRACTICES THAT WILL BE USED TO REDUCE THE POLLUTANTS IN STORM WATER DISCHARGES

POLLUTANT PREVENTION

THE FOLLOWING MATERIAL ARE EXPECTED ONSITE DURING CONSTRUCTION: PETROLEUM BASED FUELS AND LUBRICANTS FOR EQUIPMENT, ADDITIVES FOR SOIL STABILIZATION, PESTICIDES, FERTILIZERS, HERBICIDES, CRUSHED STONE, CONCRETE PRODUCTS, ASPHALT, TAR, LUMBER, PAINTS/STAINS/FINISHING TREATMENTS, PAINT SOLVENTS, CLEANING SOLVENTS, PLASTICS AND METAL PIPES

PRACTICES SUCH AS GOOD HOUSEKEEPING, PROPER HANDLING OF HAZARDOUS PRODUCTS AND PROPER SPILL CONTROL PRACTICES WILL BE FOLLOWED TO REDUCE THE RISK OF SPILLS FROM DISCHARGING INTO THE STORM WATER RUNOFF

GOOD HOUSEKEEPING

- **QUANTITIES ONSITE WILL BE LIMITED TO THE AMOUNT NEEDED FOR THE JOB**
- **PRODUCTS AND MATERIAL WILL BE STORED IN A NEAT, ORDERLY MANNER IN APPROPRIATE CONTAINERS PROTECTED FROM RAINFALL, WHERE POSSIBLE**
- **PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH MANUFACTURER'S LABELS LEGIBLE AND VISIBLE.**
- **PRODUCT MIXING, DISPOSAL, AND DISPOSAL OF PRODUCT CONTAINERS WILL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.**
- **THE CONTRACTOR WILL INSPECT SUCH MATERIALS TO ENSURE PROPER USE, STORAGE AND DISPOSAL.**

PRODUCT SPECIFIC PRACTICES

FERTILIZER/HERBICIDES/PESTICIDES/DETERGENTS- THESE WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENTATION CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS. NO NOT DISCHARGE WASH WATER INTO STORM WATER SYSTEM. INSTALL CURBS OR DIKES AROUND STORAGE AREA TO PROTECT AGAINST SPILLS. LIMIT USE OF DETERGENTS ON-SITE

PAINTS/FINISHES/SOLVENTS- ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCTS, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS

CONCRETE TRUCK WASHING- WASHOUT OF THE DRUM OF CONCRETE TRUCKS AT THE CONSTRUCTION SITE IS PROHIBITED. THE WASHDOWN OF TOOLS, CHUTES, HOPPERS, AND THE REAR OF VEHICLES SHALL BE COLLECTED IN THE DESIGNATED CONCRETE WASHOUT AREA.

BUILDING MATERIALS- NO BUILDING OR CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIAL WILL BE DISPOSED OF IN PROPERTY WASTE DISPOSAL PROCEDURES

NO WASTE WILL BY DISPOSED INTO STORM WATER INLETS OR WATERS OF THE STATE

WASTE MATERIALS

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED A MINIMUM OF ONCE PER WEEK OR MORE OFTEN IF NECESSARY AND TRASH WILL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO CONSTRUCTION WASTE WILL BE BURIED ONSITE. ALL PERSONNEL WILL BE INSTRUCTED ON PROPER PROCEDURES FOR WASTE DISPOSAL. A NOTICE STATING THESE PRACTICES WILL BE POSTED AT THE JOB SITE AND THE CONTRACTOR WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED

HAZARDOUS WASTES:

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL, STATE AND/OR FEDERAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. THE JOB SITE SUPERINTENDENT, WHO WILL ALSO BE RESPONSIBLE FOR SEEING THAT THESE PRACTICES ARE FOLLOWED, WILL INSTRUCT SITE PERSONNEL IN THESE PRACTICES. MATERIAL SAFETY DATA SHEETS (MSDS'S) FOR EACH SUBSTANCE WITH HAZARDOUS PROPERTIES THAT IS USED ON THE JOB SITE WILL BE OBTAINED AND USED FOR THE PROPER MANAGEMENT OF POTENTIAL WASTES THAT MAY RESULT FROM THESE PRODUCTS. THE MSDS WILL BE POSTED IN THE IMMEDIATE AREA WHERE SUCH PRODUCT IS STORED AND/OR USED AND ANOTHER COPY OF EACH MSDS WILL BE MAINTAINED IN THE ESPCP FILE AT THE JOB SITE CONSTRUCTION TRAILER OFFICE. EACH EMPLOYEE WHO MUST HANDLE A SUBSTANCE WITH HAZARDOUS PROPERTIES WILL BE INSTRUCTED ON THE USE OF MSDS SHEETS AND THE SPECIFIC INFORMATION IN THE APPLICABLE MSDS FOR THE PRODUCT HE/SHE IS USING, PARTICULARLY REGARDING SPILL CONTROL TECHNIQUES.

THE CONTRACTOR WILL IMPLEMENT THE SPILL PREVENTION CONTROL AND COUNTERMEASURES (SPCC) PLAN FOUND WITHIN THIS ESPCP AND WILL TRAIN ALL PERSONNEL IN THE PROPER CLEANUP AND HANDLING OF SPILLED MATERIALS. NO SPILLED HAZARDOUS MATERIALS OR HAZARDOUS WASTES WILL BE ALLOWED TO SOME IN CONTACT WITH STORMWATER DISCHARGES. IF SUCH CONTACT OCCURS, THE STORMWATER DISCHARGE WILL BE CONTAINED ON SITE UNTIL APPROPRIATE MEASURES IN COMPLIANCE WITH STATE AND FEDERAL REGULATIONS ARE TAKEN TO DISPOSE OF SUCH CONTAMINATED STORMWATER. IT SHALL BE THE RESPONSIBILITY OF THE JOB SITE SUPERINTENDENT TO PROPERLY TRAIN ALL PERSONNEL IN THE USE OF THE SPCC PLAN.

SANITARY WASTES

A MINIMUM OF ONE PORTABLE SANITARY UNIT WILL BE PROVIDED FOR EVERY TEN (10) WORKERS ON THE SITE. ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONE TIME PER WEEK BY A LICENSED PORTABLE FACILITY PROVIDER IN COMPLETE COMPLIANCE WITH LOCAL AND STATE REGULATIONS.
ALL SANITARY WASTE UNITS WILL BE LOCATED IN ONE AREA WHERE THE LIKELIHOOD OF THE UNIT CONTRIBUTING TO STORM WATER DISCHARGE IS NEGLIGIBLE. ADDITIONAL CONTAINMENT BMPS MUST BE IMPLEMENTED SUCH AS GRAVEL BAGS OR SPECIALLY DESIGNED PLASTIC SKID CONTAINERS AROUND THE BASE TO PREVENT WASTES FROM CONTRIBUTING TO STORM WATER DISCHARGES. ALL SANITARY WASTE UNITS WILL BE COMPLETELY ENCLOSED SO AS TO PREVENT PRECIPITATION FROM COMING INTO CONTACT WITH THE SANITARY WASTE STORED IN THEM. THE LOCATION OF SANITARY WASTE UNITS MUST BE IDENTIFIED ON THE EROSION CONTROL PLAN GRADING PHASE SHEETS 23-25, BY THE CONTRACTOR ONCE THE LOCATION HAVE BEEN DETERMINED.
SANITARY SEWER WILL BE PROVIDED BY MUNICIPAL AUTHORITY/SEPTIC SYSTEM UPON THE COMPLETION OF THIS PROJECT.

3 | YES 29. DESCRIPTION AND CHART OR TIMELINE OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOILS FOR THE MAJOR PORTIONS OF THE SITE (I.E., INITIAL PERIMETER AND SEDIMENT STORAGE BMPS, CLEARING AND GRUBBING ACTIVITIES, EXCAVATION ACTIVITIES, UTILITY ACTIVITIES, TEMPORARY AND FINAL STABILIZATION)

PLEASE FIND THE DESCRIPTION, CHART AND TIMELINE OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOIL ON SHEET 3 OF THE PLANS

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS	NO.	DATE	REQ. BY
	-	-	-
	-	-	-
	-	-	-
	-	-	-

DESIGNED	A/A
DRAWN	A/A
CHECKED	A/A
DTAIE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL NOTES (CONTINUED)

SHEET NUMBER
4
OF 45

5 | YES 30. PROVIDE COMPLETE REQUIREMENTS OF INSPECTIONS AND RECORD KEEPING BY THE PRIMARY PERMITTEE

INSPECTIONS AND RECORD KEEPING

a. PERMITTEE REQUIREMENTS.

(1). EACH DAY WHEN ANY TYPE OF CONSTRUCTION ACTIVITY HAS TAKEN PLACE AT A PRIMARY PERMITTEE'S SITE, CERTIFIED PERSONNEL PROVIDED BY THE PRIMARY PERMITTEE SHALL INSPECT: (A) ALL AREAS AT THE PRIMARY PERMITTEE'S SITE WHERE PETROLEUM PRODUCTS ARE STORED, USED, OR HANDLED FOR SPILLS AND LEAKS FROM VEHICLES AND EQUIPMENT AND (B) ALL LOCATIONS AT THE PRIMARY PERMITTEE'S SITE WHERE VEHICLES ENTER OR EXIT THE SITE FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING. THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

(2). MEASURE AND RECORD RAINFALL WITHIN DISTURBED AREAS OF THE SITE THAT HAVE NOT MET FINAL STABILIZATION ONCE EVERY 24 HOURS EXCEPT ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY AND NON-WORKING FEDERAL HOLIDAY. THE DATA COLLECTED FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY. MEASUREMENT OF RAINFALL MAY BE SUSPENDED IF ALL AREAS OF THE SITE HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION.

(3). CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT THE FOLLOWING AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES RAINFALL OR GREATER (UNLESS SUCH STORM ENDS AFTER 5:00 PM ON ANY FRIDAY OR ON ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY OR ANY NON-WORKING FEDERAL HOLIDAY IN WHICH CASE THE INSPECTION SHALL BE COMPLETED BY THE END OF THE NEXT BUSINESS DAY AND/OR WORKING DAY, WHICHEVER OCCURS FIRST): (A) DISTURBED AREAS OF THE PRIMARY PERMITTEE'S CONSTRUCTION SITE; (B) AREAS USED BY THE PRIMARY PERMITTEE FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION; AND (C) STRUCTURAL CONTROL MEASURES. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN APPLICABLE TO THE PRIMARY PERMITTEE'S SITE SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S). FOR AREAS OF A SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION, THE PERMITTEE MUST COMPLY WITH PART IV.D.4.A.(4). THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.

(4). CERTIFIED PERSONNEL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT AT LEAST ONCE PER MONTH DURING THE TERM OF THIS PERMIT (I.E., UNTIL A NOTICE OF TERMINATION HAS BEEN SUBMITTED) THE AREAS OF THE SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION. THESE AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM AND THE RECEIVING WATER(S). EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S).

(5). BASED ON THE RESULTS OF EACH INSPECTION, THE SITE DESCRIPTION AND THE POLLUTION PREVENTION AND CONTROL MEASURES IDENTIFIED IN THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, THE PLAN SHALL BE REVISED AS APPROPRIATE NOT LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION. IMPLEMENTATION OF SUCH CHANGES SHALL BE MADE AS SOON AS PRACTICAL BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION.

(6). A REPORT OF EACH INSPECTION THAT INCLUDES THE NAME(S) OF CERTIFIED PERSONNEL MAKING EACH INSPECTION, THE DATE(S) OF EACH INSPECTION, CONSTRUCTION PHASE (I.E., INITIAL, INTERMEDIATE OR FINAL), MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, AND ACTIONS TAKEN IN ACCORDANCE WITH PART IV.D.4.A.(5). OF THE PERMIT SHALL BE MADE AND RETAINED AT THE SITE OR BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION UNTIL THE ENTIRE SITE OR THAT PORTION OF A CONSTRUCTION SITE THAT HAS BEEN PHASED HAS UNDERGONE FINAL STABILIZATION AND A NOTICE OF TERMINATION IS SUBMITTED TO EPD. SUCH REPORTS SHALL BE READILY AVAILABLE BY END OF THE SECOND BUSINESS DAY AND/OR WORKING DAY AND SHALL IDENTIFY ALL INCIDENTS OF BEST MANAGEMENT PRACTICES THAT HAVE NOT BEEN PROPERLY INSTALLED AND/OR MAINTAINED AS DESCRIBED IN THE PLAN. WHERE THE REPORT DOES NOT IDENTIFY ANY INCIDENTS, THE INSPECTION REPORT SHALL CONTAIN A CERTIFICATION THAT THE BEST MANAGEMENT PRACTICES ARE IN COMPLIANCE WITH THE EROSION,

SEDIMENTATION AND POLLUTION CONTROL PLAN. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART V.G.2. OF THIS PERMIT.

5 | YES 31. PROVIDE COMPLETE REQUIREMENTS OF SAMPLING FREQUENCY AND REPORTING OF SAMPLING RESULTS

SAMPLING REQUIRMENTS:

THIS PERMIT REQUIRES THE MONITORING OF NEPHELOMETRIC TURBIDITY IN RECEIVING WATER(S) OR OUTFALLS IN ACCORDANCE WITH THIS PERMIT. THIS PARAGRAPH SHALL NOT APPLY TO ANY LAND DISTURBANCE ASSOCIATED WITH THE CONSTRUCTION OF SINGLE-FAMILY HOMES WHICH ARE NOT PART OF A SUBDIVISION OR PLANNED COMMON DEVELOPMENT UNLESS FIVE (5) ACRES OR MORE WILL BE DISTURBED. THE FOLLOWING PROCEDURES CONSTITUTE EPD'S GUIDELINES FOR SAMPLING TURBIDITY.

a. *SAMPLING REQUIREMENTS* SHALL INCLUDE THE FOLLOWING:

(1). A USGS TOPOGRAPHIC MAP, A TOPOGRAPHIC MAP OR A DRAWING (REFERRED TO AS A TOPOGRAPHIC MAP) THAT IS A SCALE EQUAL TO OR MORE DETAILED THAN A 1:24000 MAP SHOWING THE LOCATION OF THE SITE OR THE STAND ALONE CONSTRUCTION; (A) THE LOCATION OF ALL PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES AS SHOWN ON A USGS TOPOGRAPHIC MAP, AND ALL OTHER PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES LOCATED DURING MANDATORY FIELD VERIFICATION, INTO WHICH THE STORMWATER IS DISCHARGED AND (B) THE RECEIVING WATER AND/OR OUTFALL SAMPLING LOCATIONS. WHEN THE PERMITTEE HAS CHOSEN TO USE A USGS TOPOGRAPHIC MAP AND THE RECEIVING WATER(S) IS NOT SHOWN ON THE USGS TOPOGRAPHIC MAP, THE LOCATION OF THE RECEIVING WATER(S) MUST BE HAND-DRAWN ON THE USGS TOPOGRAPHIC MAP FROM WHERE THE STORMWATER(S) ENTERS THE RECEIVING WATER(S) TO THE POINT WHERE THE RECEIVING WATER(S) COMBINES WITH THE FIRST BLUE LINE STREAM SHOWN ON THE USGS TOPOGRAPHIC MAP;

(2). A WRITTEN NARRATIVE OF SITE SPECIFIC ANALYTICAL METHODS USED TO COLLECT, HANDLE AND ANALYZE THE SAMPLES INCLUDING QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES. THIS NARRATIVE MUST INCLUDE PRECISE SAMPLING METHODOLOGY FOR EACH SAMPLING LOCATION;

(3). WHEN THE PERMITTEE HAS DETERMINED THAT SOME OR ALL OUTFALLS WILL BE SAMPLED, A RATIONALE MUST BE INCLUDED ON THE PLAN FOR THE NTU LIMIT(S) SELECTED FROM APPENDIX B. THIS RATIONALE MUST INCLUDE THE SIZE OF THE CONSTRUCTION SITE, THE CALCULATION OF THE SIZE OF THE SURFACE WATER DRAINAGE AREA, AND THE TYPE OF RECEIVING WATER(S) (I.E., TROUT STREAM OR SUPPORTING WARM WATER FISHERIES); AND

(4). ANY ADDITIONAL INFORMATION EPD DETERMINES NECESSARY TO BE PART OF THE PLAN. EPD WILL PROVIDE WRITTEN NOTICE TO THE PERMITTEE OF THE INFORMATION NECESSARY AND THE TIME LINE FOR SUBMITTAL.

b. *SAMPLE TYPE.* ALL SAMPLING SHALL BE COLLECTED BY "GRAB SAMPLES" AND THE ANALYSIS OF THESE SAMPLES MUST BE CONDUCTED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 (UNLESS OTHER TEST PROCEDURES HAVE BEEN APPROVED); THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-B-92-001" AND GUIDANCE DOCUMENTS THAT MAY BE PREPARED BY THE EPD.

(1). SAMPLE CONTAINERS SHOULD BE LABELED PRIOR TO COLLECTING THE SAMPLES.

(2). SAMPLES SHOULD BE WELL MIXED BEFORE TRANSFERRING TO A SECONDARY CONTAINER.

(3). LARGE MOUTH, WELL CLEANED AND RINSED GLASS OR PLASTIC JARS SHOULD BE USED FOR COLLECTING SAMPLES. THE JARS SHOULD BE CLEANED THOROUGHLY TO AVOID CONTAMINATION.

(4). MANUAL, AUTOMATIC OR RISING STAGE SAMPLING MAY BE UTILIZED. SAMPLES REQUIRED BY THIS PERMIT SHOULD BE ANALYZED IMMEDIATELY, BUT IN NO CASE LATER THAN 48 HOURS AFTER COLLECTION. HOWEVER, SAMPLES FROM AUTOMATIC SAMPLERS MUST BE COLLECTED NO LATER THAN THE NEXT BUSINESS DAY AFTER THEIR ACCUMULATION, UNLESS FLOW THROUGH AUTOMATED ANALYSIS IS UTILIZED. IF AUTOMATIC SAMPLING IS UTILIZED AND THE AUTOMATIC SAMPLER IS NOT ACTIVATED DURING THE QUALIFYING EVENT, THE PERMITTEE MUST UTILIZE MANUAL SAMPLING OR RISING STAGE SAMPLING DURING THE NEXT QUALIFYING EVENT. DILUTION OF SAMPLES IS NOT REQUIRED. SAMPLES MAY BE ANALYZED DIRECTLY WITH A PROPERLY CALIBRATED TURBIDIMETER. SAMPLES ARE NOT REQUIRED TO BE COOLED.

(5). SAMPLING AND ANALYSIS OF THE RECEIVING WATER(S) OR OUTFALLS BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED TO EPD AS SPECIFIED IN PART IV.E.

c. *SAMPLING POINTS.*

(1). FOR CONSTRUCTION ACTIVITIES THE PRIMARY PERMITTEE MUST SAMPLE ALL RECEIVING WATER(S), OR ALL OUTFALL(S), OR A COMBINATION OF RECEIVING WATER(S) AND OUTFALL(S). SAMPLES TAKEN FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY AND REPRESENTATIVE OF THE WATER QUALITY OF THE RECEIVING WATER(S) AND/OR THE STORMWATER OUTFALLS USING THE FOLLOWING MINIMUM GUIDELINES:

(A). THE UPSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN IMMEDIATELY UPSTREAM OF THE CONFLUENCE OF THE FIRST STORMWATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST UPSTREAM AT THE SITE) BUT DOWNSTREAM OF ANY OTHER STORMWATER DISCHARGES NOT ASSOCIATED WITH THE PERMITTED ACTIVITY. WHERE APPROPRIATE, SEVERAL UPSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND THE ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE UPSTREAM TURBIDITY VALUE.

(B). THE DOWNSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN DOWNSTREAM OF THE CONFLUENCE OF THE LAST STORMWATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST DOWNSTREAM AT THE SITE) BUT UPSTREAM OF ANY OTHER STORMWATER DISCHARGE NOT ASSOCIATED WITH THE PERMITTED ACTIVITY. WHERE APPROPRIATE, SEVERAL DOWNSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND THE ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE DOWNSTREAM TURBIDITY VALUE.

(C). IDEALLY THE SAMPLES SHOULD BE TAKEN FROM THE HORIZONTAL AND VERTICAL CENTER OF THE RECEIVING WATER(S) OR THE STORMWATER OUTFALL CHANNEL(S).

(D). CARE SHOULD BE TAKEN TO AVOID STIRRING THE BOTTOM SEDIMENTS IN THE RECEIVING WATER(S) OR IN THE OUTFALL STORMWATER CHANNEL.

(E). THE SAMPLING CONTAINER SHOULD BE HELD SO THAT THE OPENING FACES UPSTREAM.

(F). THE SAMPLES SHOULD BE KEPT FREE FROM FLOATING DEBRIS.

(G). PERMITTEES DO NOT HAVE TO SAMPLE SHEET FLOW THAT FLOWS ONTO UNDISTURBED NATURAL AREAS OR AREAS STABILIZED BY THE PROJECT. FOR PURPOSES OF THIS SECTION, STABILIZED SHALL MEAN, FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES AND AREAS LOCATED OUTSIDE THE WASTE DISPOSAL LIMITS OF A LANDFILL CELL THAT HAS BEEN CERTIFIED BY EPD FOR WASTE DISPOSAL, 100% OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION WITH A DENSITY OF 70% OR GREATER, OR LANDSCAPED ACCORDING TO THE PLAN (UNIFORMLY COVERED WITH LANDSCAPING MATERIALS IN PLANNED LANDSCAPED AREAS), OR EQUIVALENT PERMANENT STABILIZATION MEASURES AS DEFINED IN THE MANUAL (EXCLUDING A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET CROP PERENNIALS APPROPRIATE FOR THE REGION).

(H). ALL SAMPLING PURSUANT TO THIS PERMIT MUST BE DONE IN SUCH A WAY (INCLUDING GENERALLY ACCEPTED SAMPLING METHODS, LOCATIONS, TIMING, AND FREQUENCY) AS TO ACCURATELY REFLECT WHETHER STORMWATER RUNOFF FROM THE CONSTRUCTION SITE IS IN COMPLIANCE WITH THE STANDARD SET FORTH IN PARTS III.D.3 OR III.D.4., WHICHEVER IS APPLICABLE.

d. *SAMPLING FREQUENCY.*

(1). THE PRIMARY PERMITTEE MUST SAMPLE IN ACCORDANCE WITH THE PLAN AT LEAST ONCE FOR EACH RAINFALL EVENT DESCRIBED BELOW. FOR A QUALIFYING EVENT, THE PERMITTEE SHALL SAMPLE AT THE BEGINNING OF ANY STORMWATER DISCHARGE TO A MONITORED RECEIVING WATER AND/OR FROM A MONITORED OUTFALL LOCATION WITHIN IN FORTY-FIVE (45) MINUTES OR AS SOON AS POSSIBLE.

(2). HOWEVER, WHERE MANUAL AND AUTOMATIC SAMPLING ARE IMPOSSIBLE (AS DEFINED IN THIS PERMIT), OR ARE BEYOND THE PERMITTEE'S CONTROL, THE PERMITTEE SHALL TAKE SAMPLES AS SOON AS POSSIBLE, BUT IN NO CASE MORE THAN TWELVE (12) HOURS AFTER THE BEGINNING OF THE STORMWATER DISCHARGE.

(3). SAMPLING BY THE PERMITTEE SHALL OCCUR FOR THE FOLLOWING QUALIFYING EVENTS:

(A). FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORMWATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THIS PERMIT AFTER ALL CLEARING AND GRUBBING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO COMPLETION OF MASS GRADING OPERATIONS, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATION;

(B). IN ADDITION TO (A) ABOVE, FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORMWATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THIS PERMIT EITHER 90 DAYS AFTER THE FIRST SAMPLING EVENT OR AFTER ALL MASS GRADING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO SUBMITTAL OF A NOT, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATION, WHICHEVER COMES FIRST;

(C). AT THE TIME OF SAMPLING PERFORMED PURSUANT TO (A) AND (B) ABOVE, IF BMPS IN ANY AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL ARE NOT PROPERLY DESIGNED, INSTALLED AND MAINTAINED, CORRECTIVE ACTION SHALL BE DEFINED AND IMPLEMENTED WITHIN TWO (2) BUSINESS DAYS, AND TURBIDITY SAMPLES SHALL BE TAKEN FROM DISCHARGES FROM THAT AREA OF THE SITE FOR EACH SUBSEQUENT RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH DURING NORMAL BUSINESS HOURS* UNTIL THE SELECTED TURBIDITY STANDARD IS ATTAINED, OR UNTIL POST-STORM EVENT INSPECTIONS DETERMINE THAT BMPS ARE PROPERLY DESIGNED, INSTALLED AND MAINTAINED;

(D). WHERE SAMPLING PURSUANT TO (A), (B) OR (C) ABOVE IS REQUIRED BUT NOT POSSIBLE (OR NOT REQUIRED BECAUSE THERE WAS NO DISCHARGE), THE PERMITTEE, IN ACCORDANCE WITH PART IV.D.4.A.(6), MUST INCLUDE A WRITTEN JUSTIFICATION IN THE INSPECTION REPORT OF WHY SAMPLING WAS NOT PERFORMED. PROVIDING THIS JUSTIFICATION DOES NOT RELIEVE THE PERMITTEE OF ANY SUBSEQUENT SAMPLING OBLIGATIONS UNDER (A), (B) OR (C) ABOVE; AND

(E). EXISTING CONSTRUCTION ACTIVITIES, I.E., THOSE THAT ARE OCCURRING ON OR BEFORE THE EFFECTIVE DATE OF THIS PERMIT, THAT HAVE MET THE SAMPLING REQUIRED BY (A) ABOVE SHALL SAMPLE IN ACCORDANCE WITH (B). THOSE EXISTING CONSTRUCTION ACTIVITIES THAT HAVE MET THE SAMPLING REQUIRED BY (B) ABOVE SHALL NOT BE REQUIRED TO CONDUCT ADDITIONAL SAMPLING OTHER THAN AS REQUIRED BY (C) ABOVE.

***NOTE THAT THE PERMITTEE MAY CHOOSE TO MEET THE REQUIREMENTS OF (A) AND (a) ABOVE BY COLLECTING TURBIDITY SAMPLES FROM ANY RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH AND ALLOWS FOR SAMPLING AT ANY TIME OF THE DAY OR WEEK.**

REPORTING

1. THE APPLICABLE PERMITTEES ARE REQUIRED TO SUBMIT THE SAMPLING RESULTS TO THE EPD AT THE ADDRESS SHOWN IN PART II.C. BY THE FIFTEENTH DAY OF THE MONTH FOLLOWING THE REPORTING PERIOD. REPORTING PERIODS ARE MONTHS DURING WHICH SAMPLES ARE TAKEN IN ACCORDANCE WITH THIS PERMIT. SAMPLING RESULTS SHALL BE IN A CLEARLY LEGIBLE FORMAT. UPON WRITTEN NOTIFICATION, EPD MAY REQUIRE THE APPLICABLE PERMITTEE TO SUBMIT THE SAMPLING RESULTS ON A MORE FREQUENT BASIS. SAMPLING AND ANALYSIS OF ANY STORMWATER DISCHARGE(S) OR THE RECEIVING WATER(S) BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED IN A SIMILAR MANNER TO THE EPD. THE SAMPLING REPORTS MUST BE SIGNED IN ACCORDANCE WITH PART V.G.2. SAMPLING REPORTS MUST BE SUBMITTED TO EPD USING THE ELECTRONIC SUBMITTAL SERVICE PROVIDED BY EPD. SAMPLING REPORTS MUST BE SUBMITTED TO EPD UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

2. ALL SAMPLING REPORTS SHALL INCLUDE THE FOLLOWING INFORMATION:

a. THE RAINFALL AMOUNT, DATE, EXACT PLACE AND TIME OF SAMPLING OR MEASUREMENTS;
e. THE RAINFALL AMOUNT, DATE, EXACT PLACE AND TIME OF SAMPLING OR MEASUREMENTS;
c. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE SAMPLING AND MEASUREMENTS;
d. THE DATE(S) ANALYSES WERE PERFORMED;
e. THE TIME(S) ANALYSES WERE INITIATED;
f. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE ANALYSES;
g. REFERENCES AND WRITTEN PROCEDURES, WHEN AVAILABLE, FOR THE ANALYTICAL TECHNIQUES OR METHODS USED;
h. THE RESULTS OF SUCH ANALYSES, INCLUDING THE BENCH SHEETS, INSTRUMENT READOUTS, COMPUTER DISKS OR TAPES, ETC., USED TO DETERMINE THESE RESULTS;
i. RESULTS WHICH EXCEED 1000 NTU SHALL BE REPORTED AS "EXCEEDS 1000 NTU;" AND
j. CERTIFICATION STATEMENT THAT SAMPLING WAS CONDUCTED AS PER THE PLAN.

3.ALL WRITTEN CORRESPONDENCE REQUIRED BY THIS PERMIT SHALL BE SUBMITTED BY RETURN RECEIPT CERTIFIED MAIL (OR SIMILAR SERVICE) TO THE APPROPRIATE DISTRICT OFFICE OF THE EPD ACCORDING TO THE SCHEDULE IN APPENDIX A OF THIS PERMIT. THE PERMITTEE SHALL RETAIN A COPY OF THE PROOF OF SUBMITTAL AT THE CONSTRUCTION SITE OR THE PROOF OF SUBMITTAL SHALL BE READILY AVAILABLE AT A DESIGNATED LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

5 | YES 32. PROVIDE COMPLETE DETAILS FOR RETENTION OF RECORDS AS PER PART IV.F. OF THE PERMIT

RETENTION OF RECORDS:

F. RETENTION OF RECORDS.

1. THE PRIMARY PERMITTEE SHALL RETAIN THE FOLLOWING RECORDS AT THE CONSTRUCTION SITE OR THE RECORDS SHALL BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI:

a. A COPY OF ALL NOTICES OF INTENT SUBMITTED TO EPD;
b. A COPY OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN REQUIRED BY THIS PERMIT;
c. THE DESIGN PROFESSIONAL'S REPORT OF THE RESULTS OF THE INSPECTION CONDUCTED IN ACCORDANCE WITH PART IV.A.5 OF THIS PERMIT;
d. A COPY OF ALL SAMPLING INFORMATION, RESULTS, AND REPORTS REQUIRED BY THIS PERMIT;
e. A COPY OF ALL INSPECTION REPORTS GENERATED IN ACCORDANCE WITH PART IV.D.4.A OF THIS PERMIT;
f. A COPY OF ALL VIOLATION SUMMARIES AND VIOLATION SUMMARY REPORTS GENERATED IN ACCORDANCE WITH PART III.D.2 OF THIS PERMIT; AND
g. DAILY RAINFALL INFORMATION COLLECTED IN ACCORDANCE WITH PART IV.D.4.A.(2) OF THIS PERMIT.

2. COPIES OF ALL NOTICES OF INTENT, NOTICES OF TERMINATION, INSPECTION REPORTS, SAMPLING REPORTS (INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS AND ALL ORIGINAL STRIP CHART RECORDINGS FOR CONTINUOUS MONITORING INSTRUMENTATION) AND OTHER REPORTS REQUESTED BY THE EPD, EROSION, SEDIMENTATION AND POLLUTION CONTROL PLANS. RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THIS PERMIT AND ALL OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED BY THE PERMITEE WHO EITHER PRODUCED OR USED IT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE DATE THAT THE NOT IS SUBMITTED IN ACCORDANCE WITH PART VI OF THIS PERMIT. THESE RECORDS MUST BE MAINTAINED AT THE PERMITEE'S PRIMARY PLACE OF BUSINESS OR AT A DESIGNATED ALTERNATIVE LOCATION ONCE THE CONSTRUCTION ACTIVITY HAS CEASED AT THE PERMITTED SITE. THIS PERIOD MAY BE EXTENDED BY REQUEST OF THE EPD AT ANY TIME UPON WRITTEN NOTIFICATION TO THE PERMITEE.

5 | YES 33. DESCRIPTION OF ANALYTICAL METHODS TO BE USED TO COLLECT AND ANALYZE THE SAMPLES FROM EACH LOCATION *

ALL SAMPLING SHOULD BE COLLECTED BY "GRAB SAMPLES." SAMPLING PROCEDURES SHALL BE IN ACCORDANCE WITH THE GUIDANCE DOCUMENT ENTITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-B-92-001", NPDES PERMIT NO. GAR 100001, PART 6, AND ANY GUIDANCE DOCUMENTS DEVELOPED BY GEORGIA EPD. THE ANALYSIS OF THESE SAMPLES SHOULD BE CONDUCTED IN ACCORDANCE WITH THE METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136.

SAMPLE COLLECTION SHALL PROCEED AS FOLLOWS:

- **SAMPLE CONTAINERS SHALL BE LABELED PRIOR TO SAMPLE COLLECTION.**
- **SAMPLES SHOULD BE WELL MIXED BEFORE TRANSFERRING TO A SECONDARY CONTAINER.**
- **LARGE MOUTH, WELL-CLEANED AND RINSED GLASS OR PLASTIC JARS SHOULD BE USED FOR SAMPLE COLLECTION.**
- **MANUAL, AUTOMATIC OR RISING STAGE SAMPLING MAY BE UTILIZED.**
- **SAMPLES SHOULD BE ANALYZED IMMEDIATELY, BUT NO LATER THAN 48 HOURS AFTER THE SAMPLE IS COLLECTED. HOWEVER, SAMPLES FROM AUTOMATIC SAMPLERS MUST BE COLLECTED NO LATER THAN THE NEXT BUSINESS DAY AFTER THEIR ACCUMULATION UNLESS FLOW THROUGH AUTOMATED ANALYSIS IS UTILIZED. IF AUTOMATIC SAMPLING IS UTILIZED AND THE AUTOMATIC SAMPLER IS NOT ACTIVATED DURING THE QUALIFYING EVENT, THE PERMITTEE MUST UTILIZE MANUAL SAMPLING OR RISING STAGE SAMPLING DURING THE NEXT QUALIFYING EVENT. SAMPLES ARE NOT REQUIRED TO BE COOLED.**
- **SAMPLING AND ANALYSIS OF THE RECEIVING WATER(S) OR OUTFALLS BEYOND THE MINIMUM FREQUENCY STATED MUST BE REPORTED TO EPD AS SPECIFIED BY NPDES GENERAL PERMIT NO. GAR 100001, PART IV.E.**
- **SEE SECTION IV.6.D OF THIS DOCUMENT FOR SAMPLING FREQUENCY.**

FOR COMPLIANCE WITH NPDES GENERAL PERMIT NO. GAR 100001, SAMPLES TAKEN SHOULD BE REPRESENTATIVE OF THE MONITORED ACTIVITY AND REPRESENTATIVE OF THE WATER QUALITY OF THE RECEIVING WATER(S) AND/OR THE STORM WATER OUTFALLS.

THE FOLLOWING GUIDELINES SHALL BE ADHERED TO:

- **THE UPSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN IMMEDIATELY UPSTREAM OF THE CONFLUENCE OF THE FIRST STORM WATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST UPSTREAM AT THE SITE) BUT DOWNSTREAM OF ANY OTHER STORM WATER DISCHARGES NOT ASSOCIATED WITH THE PERMITTED ACTIVITY. WHERE APPROPRIATE, SEVERAL UPSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND AN ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE UPSTREAM TURBIDITY VALUE.**
- **THE DOWNSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN DOWNSTREAM OF THE CONFLUENCE OF THE LAST STORM WATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST DOWNSTREAM AT THE SITE) BUT UPSTREAM OF ANY OTHER STORM WATER DISCHARGES NOT ASSOCIATED WITH THE PERMITTED ACTIVITY. WHERE APPROPRIATE, SEVERAL UPSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND AN ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE UPSTREAM TURBIDITY VALUE.**
- **SAMPLES SHOULD BE TAKEN FROM THE HORIZONTAL AND VERTICAL CENTER OF THE WATER(S) OUTFALL OR THE STORMWATER CHANNEL(S).**
- **CARE SHOULD BE TAKEN TO AVOID STIRRING SEDIMENTS IN THE RECEIVING WATER(S) OR IN THE OUTFALL STORM WATER CHANNEL.**
- **THE SAMPLING CONTAINER SHOULD BE HELD SO THAT THE OPENING FACES UPSTREAM.**
- **THE SAMPLE SHOULD BE KEPT FREE FROM FLOATING DEBRIS.**
- **PERMITTEES DO NOT HAVE TO SAMPLE SHEETFLOW THAT FLOWS ONTO UNDISTURBED NATURAL AREAS OR AREAS STABILIZED BY THE PROJECT.**
- **ALL SAMPLING PURSUANT TO THIS PERMIT MUST BE DONE IN SUCH A WAY (INCLUDING GENERALLY ACCEPTED SAMPLING METHODS, LOCATIONS, TIMING, AND FREQUENCY) AS TO ACCURATELY REFLECT WHETHER STORM WATER RUNOFF FROM FROM THE CONSTRUCTION SITE IS IN COMPLIANCE WITH THE STANDARD SET FORTH IN PARTS III.D.3. OR III.D.4., WHICHEVER IS APPLICABLE.**

5 | YES 34. APPENDIX B RATIONALE FOR NTU VALUES AT ALL OUTFALL SAMPLING POINTS WHERE APPLICABLE *

**STORM WATER IS TO BE SAMPLED FOR NEPHELOMETRIC TURBIDITY UNITS (NTU) AT THE OUTFALL LOCATIONS. A DISCHARGE OF STORM WATER RUNOFF FROM DISTURBED AREAS WHERE BEST MANAGEMENT PRACTICES HAVE NOT BEEN PROPERLY DESIGNED, INSTALLED , AND MAINTAINED SHALL CONSTITUTE A SEPARATE VIOLATION FOR EACH DAY ON WHICH SUCH CONDITION RESULTS IN THE TURBIDITY OF THE DISCHARGE EXCEEDING 50, THE VALUE THAT WAS SELECTED FROM APPENDIX B IN PERMIT NO. GAR 100001. THE NTU IS BASED UPON THE DISTURBED ACREAGE O

6, 20-28	YES	35. DELINEATE ALL SAMPLING LOCATIONS, PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES INTO WHICH STORM WATER IS DISCHARGED *

PLEASE SEE PLAN SHEET FOR DELINEATION OF SAMPLING LOCATIONS, PERENNIAL, INTERMITTENT STREAMS AND OTHER WATER BODIES INTO WHICH STORM WATER IS DISCHARGED

STORM WATER OUTFALLS SHALL BE SAMPLED. THE SAMPLING LOCATIONS SHALL BE IN THE OUTFALL FROM THE DETENTION POND/SEDIMENT BASIN. SAMPLING LOCATIONS DESIGNATED WITH "GS" ARE GRAB SAMPLES TAKEN WITH A PINT MASON JAR. EACH JAR IS LABELED WITH LOCATION, PROJECT NAME, DATE AND TIME PRIOR TO TAKING THE SAMPLE. SAMPLING LOCATIONS DESIGNATED WITH "AS" ARE AUTOMATIC SAMPLES COLLECTED BY A SS101 STORM WATER SAMPLER BY GLOBAL WATER. THE STORM WATER OUTFALLS ARE DESIGNATED AS FOLLOWS:

GS 1. WITHIN THE OUTFALL FROM DETENTION POND/SEDIMENT BASIN

RECEIVING WATERS: WETLANDS AND UNNAMED TRIBUTARY OF KNOXBORO CREEK.

6	YES	36. A DESCRIPTION OF APPROPRIATE CONTROLS AND MEASURES THAT WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE INCLUDING:(1) INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPS, (2) INTERMEDIATE GRADING AND DRAINAGE BMPS, AND (3) FINAL BMPS. FOR CONSTRUCTION SITES WHERE THERE WILL BE NO MASS GRADING AND THE INITIAL PERIMETER CONTROL BMPS, INTERMEDIATE GRADING AND DRAINAGE BMPS, AND FINAL BMPS ARE THE SAME, THE PLAN MAY COMBINE ALL OF THE BMPS INTO A SINGLE PHASE *

INITIAL PHASE - THE INITIAL PHASE OF THE ES&PC PLAN WILL INCLUDE THE INSTALLATION OF THE CONSTRUCTION EXIT AND SILT FENCE. TEMPORARY MULCHING, SEEDING AND DUST CONTROL WILL BE IMPLEMENTED AS NECESSARY

INTERMEDIATE PHASE - THE INTERMEDIATE GRADING AND DRAINAGE BMP'S WILL INCLUDE THE MAINTENANCE OF CONSTRUCTION EXIT AND SILT FENCE. INLET PROTECTION WILL BE INSTALLED AT NEW STORM INLETS AND STORM DRAIN OUTLET PROTECTION WILL BE INSTALLED AT DISCHARGE LOCATIONS. RETROFIT WILL BE INSTALLED AT CONTROL STRUCTURE. DUST CONTROL, MULCHING AND TEMPORARY SEEDING WILL BE IMPLEMENTED AS NECESSARY

FINAL PHASE - FINAL BMP'S WILL INCLUDE THE MAINTENANCE OF ALL INITIAL AND INTERMEDIATE BMPS. DUST CONTROL, MULCHING AND TEMPORARY SEEDING WILL BE IMPLEMENTED AS NECESSARY. PERMANENT SEEDING WILL BE IMPLEMENTED FOR FINAL STABILIZATION. ALL TEMPORARY BMPS WILL BE REMOVED UPON FINAL STABILIZATION AND ACCEPTANCE

ALL	YES	37. GRAPHIC SCALE AND NORTH ARROW

GRAPHIC SCALE AND NORTH ARROW ARE LOCATED ON EACH PLAN SHEET

20 - 28	YES	38. EXISTING AND PROPOSED CONTOUR LINES WITH CONTOUR LINES DRAWN AT AN INTERVAL IN ACCORDANCE WITH THE FOLLOWING:

EXISTING AND PROPOSED CONTOUR LINES DRAWN AT AN INTERVAL OF 1' ARE SHOWN ON EACH PLAN SHEET

MAP SCALE	GROUND SLOPE	CONTOUR INTERVALS, FT.
1 INCH = 100FT OR	FLAT 0 - 2%	0.5 OR 1
LARGER SCALE	ROLLING 2 - 8%	1 OR 2
	STEEP 8% +	2.5 OR 10

-	N/A	39. USE OF ALTERNATIVE BMPS WHOSE PERFORMANCE HAS BEEN DOCUMENTED TO BE EQUIVALENT TO OR SUPERIOR TO CONVENTIONAL BMPS AS CERTIFIED BY A DESIGN PROFESSIONAL (UNLESS DISAPPROVED BY GAEPD OR THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION). PLEASE REFER TO THE ALTERNATIVE BMP GUIDANCE DOCUMENT FOUND AT WWW.GASWCC.GEORGIA.GOV

ALTERNATIVE BMPS WILL NOT BE USED AS PART OF THIS PROJECT

-	N/A	40. USE OF ALTERNATIVE BMP FOR APPLICATION TO THE EQUIVALENT BMP LIST. PLEASE REFER TO APPENDIX A-2 OF THE MANUAL FOR EROSION & SEDIMENT CONTROL IN GEORGIA 2016 EDITION

ALTERNATIVE BMPS WILL NOT BE USED AS PART OF THIS PROJECT

-	N/A	41. DELINEATION OF THE APPLICABLE 25-FOOT OR 50-FOOT UNDISTURBED BUFFERS ADJACENT TO STATE WATERS AND ANY ADDITIONAL BUFFERS REQUIRED BY THE LOCAL ISSUING AUTHORITY. CLEARLY NOTE AND DELINEATE ALL AREAS OF IMPACT

THERE ARE NO STATE WATERS BUFFERS REQUIRED FOR THE EPHEMERAL DRAINAGE DITCH WITH NO POINT OF WRESTED VEGETATION THAT TRAVERSES THE SITE. NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25 FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS

20 - 28	YES	42. DELINEATION OF ON-SITE WETLANDS AND ALL STATE WATERS LOCATED ON AND WITHIN 200 FEET OF THE PROJECT SITE

THERE ARE STATE WATERS ON OR WITHIN 200' OF THE PROJECT LIMITS. THERE ARE WETLANDS WITHIN THE PROJECT LIMITS

ATTACHED	YES	43. DELINEATION AND ACREAGE OF CONTRIBUTING DRAINAGE BASINS ON THE PROJECT SITE

ALL CONTRIBUTING DRAINAGE BASINS ON THE PROJECT SITE ARE CLEARLY DELINEATED IN AN EXHIBIT AS PART OF THE ATTACHED STORM WATER MANAGEMENT PLAN

ATTACHED	YES	44. PROVIDE HYDROLOGY STUDY AND MAPS OF DRAINAGE BASINS FOR BOTH THE PRE- AND POST-DEVELOPED CONDITIONS

PLEASE FIND ATTACHED WITH THIS PLAN A HYDROLOGY STUDY AND MAPS OF DRAINAGE BASINS FOR BOTH PRE- AND POST-DEVELOPMENT CONDITIONS ENTITLED HYDROLOGY AND HYDRAULIC CALCULATIONS

6	YES	45. AN ESTIMATE OF THE RUNOFF COEFFICIENT OR PEAK DISCHARGE FLOW OF THE SITE PRIOR TO AND AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED

RUN OFF COEFFICIENT: PRE-CONSTRUCTION CN = 83
POST-CONSTRUCTIONS CN = 90

25-YR PRE DEVELOPMENT STORMWATER RUNOFF: 47.07 CFS

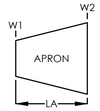
25-YR POST DEVELOPMENT STORMWATER RUNOFF: 47.72 CFS

6	YES	46. STORM-DRAIN PIPE AND WEIR VELOCITIES WITH APPROPRIATE OUTLET PROTECTION TO ACCOMMODATE DISCHARGES WITHOUT EROSION. IDENTIFY/DELINEATE ALL STORM WATER DISCHARGE POINTS

THE RIP-RAP CHARTS CONTAIN THE STORMWATER VELOCITIES. THE STORMWATER DISCHARGE POINTS ARE INDICATED ON THE PLANS

OUTLET PROTECTION SUMMARY

OUTFALL NO.	TYPE OF OUTFALL	FLOW RATE	VELOCITY	TAILWATER	LA	W1	W2	STONE DIAMETER	STONE DEPTH
1	18" RCP	4.45 CFS	2.52 FPS	Tw > 0.5 DIAMETER	7'	4.5'	4.3'	MIN. OF 6"	9"
2	24" RCP	11.57 CFS	3.68 FPS	Tw > 0.5 DIAMETER	9'	6.0'	5.6'	MIN. OF 6"	9"
3	42" RCP	19.53 CFS	2.03 FPS	Tw > 0.5 DIAMETER	14	10.5'	9.1'	MIN. OF 6"	9"
4	18" RCP	3.57 CFS	5.01 FPS	Tw > 0.5 DIAMETER	7'	4.5'	4.3'	MIN. OF 6"	9"
5	24" RCP	9.95 CFS	3.17 FPS	Tw > 0.5 DIAMETER	9'	6.0'	5.6'	MIN. OF 6"	9"
6	36" RCP	50.17 CFS	8.24 FPS	Tw < 0.5 DIAMETER	20'	9.0'	23.0'	MIN. OF 8"	9"
7	18" RCP	0.73 CFS	1.85 FPS	Tw < 0.5 DIAMETER	11'	4.5'	12.5'	MIN. OF 6"	9"
8	10' SPILLWAY	50.17 CFS	3.20 FPS	Tw < 0.5 DIAMETER	10'	30'	30'	MIN. OF 6"	9"



20 - 28	YES	47. SOIL SERIES FOR THE PROJECT SITE AND THEIR DELINEATION

SOILS ARE DELINEATED ON THE EROSION CONTROL SHEETS. THE SOILS FOR THE SITE ARE: Cc - CAPE FEAR SOILS (CD); Mba - MEGGET LOAM (C/D); OJ - OCILLA COMPLEX (B/D); PI - PELHAM LOAMY SAND (B/D); Pn - POOLER FINE SANDY LOAM (C/D); BdA BLADEN FINE SANDY LOAM (C/D); AND LeA LEEFIELD LOAMY SAND (C/D)

20 - 28	YES	48. THE LIMITS OF DISTURBANCE FOR EACH PHASE OF CONSTRUCTION

PLEASE SEE THE PLAN FOR THE DELINEATION OF THE LIMITS OF DISTURBANCE. THEY ARE THE SAME FOR ALL PHASES OF CONSTRUCTION

6	YES	49. PROVIDE A MINIMUM OF 67 CUBIC YARDS OF SEDIMENT STORAGE PER ACRE DRAINED USING A TEMPORARY SEDIMENT BASIN, RETROFITTED DETENTION POND, AND/OR EXCAVATED INLET SEDIMENT TRAPS FOR EACH COMMON DRAINAGE LOCATION. SEDIMENT STORAGE VOLUME MUST BE IN PLACE PRIOR TO AND DURING ALL LAND DISTURBANCE ACTIVITIES UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED. A WRITTEN JUSTIFICATION EXPLAINING THE DECISION TO USE EQUIVALENT CONTROLS WHEN A SEDIMENT BASIN IS NOT ATTAINABLE MUST BE INCLUDED IN THE PLAN FOR EACH COMMON DRAINAGE LOCATION IN WHICH A SEDIMENT BASIN IS NOT PROVIDED. A WRITTEN JUSTIFICATION AS TO WHY 67 CUBIC YARDS OF STORAGE IS NOT ATTAINABLE MUST ALSO BE GIVEN. WORKSHEETS FROM THE MANUAL INCLUDED FOR STRUCTURAL BMPS AND ALL CALCULATIONS USED BY THE STORAGE DESIGN PROFESSIONAL TO OBTAIN THE REQUIRED SEDIMENT WHEN USING EQUIVALENT CONTROLS. WHEN DISCHARGING FROM SEDIMENT BASINS AND IMPOUNDMENTS, PERMITTEES ARE REQUIRED TO UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE, UNLESS INFEASIBLE. IF OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE ARE NOT FEASIBLE,A WRITTEN JUSTIFICATION EXPLAINING THIS DECISION MUST BE INCLUDED IN THE PLAN

THE SEDIMENT WILL BE TRAPPED BY THE PROPOSED DETENTION POND. ANY BYPASS WILL BE CAPTURED BY THE PERIMETER SILT FENCE.

REQUIRED SEDIMENT STORAGE= 67 CY/ DISTURBED ACRE x 12.58 ACRES
REQUIRED SEDIMENT STORAGE= 843 CY

TOTAL PROVIDED STORAGE= 6,292 CY > 4,889 CY (REQ'D)

TO BE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN

STORAGE CALCULATIONS

1. REQUIRED STORMWATER STORAGE = 4,046 CY
   (AS DETERMINED BY LOCAL ORDINANCE)
2. REQUIRED SEDIMENT STORAGE = 843 CY
   (67 CY/AC * 12.58 AC DISTURBED AREA)
3. TOTAL REQUIRED STORAGE = 4,046 + 843 = 4,889 CY
4. AVAILABLE STORAGE = 6,292 CY
5. IS THE AVAILABLE STORAGE (4)GREATER THAN THE TOTAL REQUIRED STORAGE (3)YES
6. IF "NO" , THE SEDIMENT STORAGE CAPACITY OF THE POND MUST BE INCREASED. CHOOSE THE METHOD:
   _____RAISE THE INVERT OF THE OUTLET STRUCTURE _____ INCHES.
   _____ UNDERCUT THE POND _____ FEET
   _____ OTHER _____
7. CLEAN–OUT ELEVATION = 13.25 FEET
   (ELEVATION CORRESPONDING TO 22 CY/AC * 12.58 AC DISTURBED AREA)
8. IS THE LENGTH–WIDTH RATIO 2:1 OR GREATER?
   X YES _____ NO
9. IF "NO", THE LENGTH OF FLOW MUST BE INCREASED. CHOOSE THE METHOD TO BE USED:
   _____ BAFFLES (TYPE OF BAFFLE: _____)
   _____ OTHER _____

NOTE THE CMP DIAMETER AND HEIGHT IF A HALF–ROUND CMP RETROFIT IS TO BE USED.

DIAMETER = _____ INCHES HEIGHT = _____ FEET

6, 20 - 28	YES	50. LOCATION OF BEST MANAGEMENT PRACTICES THAT ARE CONSISTENT WITH AND NO LESS STRINGENT THAN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. USE UNIFORM CODING SYMBOLS FROM THE MANUAL, CHAPTER 6, WITH LEGEND

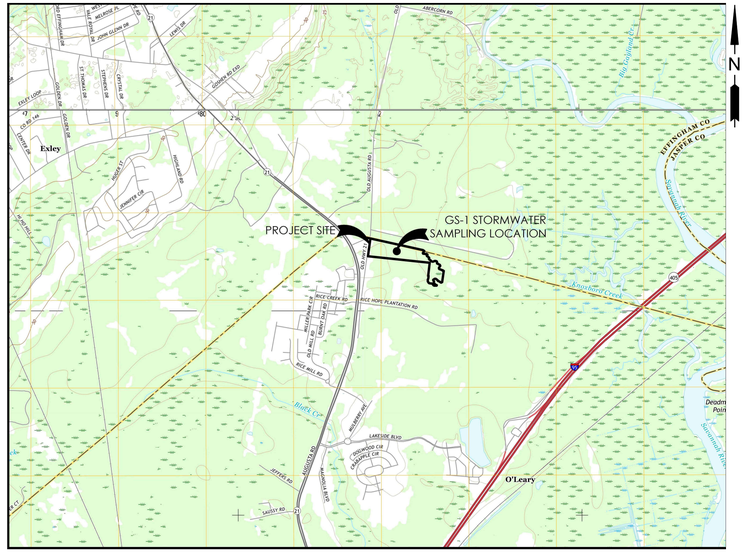
PLEASE SEE THE PLAN SHEETS FOR THE LOCATION OF BEST MANAGEMENT PRACTICES THAT ARE CONSISTENT WITH AND NO LESS STRINGENT THAN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA USING THE UNIFORM CODING SYMBOLS FROM THE MANUAL, CHAPTER 6 WITH ACCOMPANYING LEGEND

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional

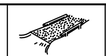
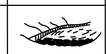
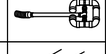
CERTIFICATION NUMBER 0000044936

ISSUED 08/21/2007 EXPIRES 08/21/2022



QUAD MAP
NOT TO SCALE

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Co	CONSTRUCTION EXIT			A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Rt	RETRO FITTING			A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER			A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN			A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SKIMMER			A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
St	STORMDRAIN OUTLET PROTECTION			A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Tr	TREE PROTECTION			To protect desirable trees from injury during construction activity.

VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE			Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)			Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)			Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)			A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS			Controlling surface and air movement of dust on construction site, roadways and similar sites.

20 - 28, 38 - 40	YES	51. PROVIDE DETAILED DRAWINGS FOR ALL STRUCTURAL PRACTICES. SPECIFICATIONS MUST, AT A MINIMUM, MEET THE GUIDELINES SET FORTH IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA

PLEASE SEE THE PLAN AND DETAIL SHEETS FOR DETAILED DRAWINGS FOR ALL STRUCTURAL PRACTICES WITH SPECIFICATIONS MEETING THE GUIDELINES SET FORTH IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA

6, 20 - 28	YES	52. PROVIDE VEGETATIVE PLAN, NOTING ALL TEMPORARY AND PERMANENT VEGETATIVE PRACTICES. INCLUDE SPECIES, PLANTING DATES AND SEEDING, FERTILIZER, LIME AND MULCHING RATES. VEGETATIVE PLAN SHALL BE SITE SPECIFIC FOR APPROPRIATE TIME OF THE YEAR THAT SEEDING WILL TAKE PLACE AND FOR THE APPROPRIATE GEOGRAPHIC REGION OF GEORGIA

PLEASE SEE THE PLAN AND DETAIL SHEETS FOR THE VEGETATIVE PLAN NOTING ALL TEMPORARY AND PERMANENT VEGETATIVE PRACTICES INCLUDING SPECIES, PLANTING DATES AND SEEDING, FERTILIZER, LIME AND MULCHING RATES. THIS PLAN IS SPECIFIC TO THE SITE AND APPROPRIATE FOR TIME OF YEAR THAT SEEDING WILL TAKE PLACE AND FOR THE APPROPRIATE GEOGRAPHIC REGION OF GEORGIA

DSI - 1. A WOOD MULCH SHALL BE PLACED AT A RATE OF 140 TONS PER ACRE AND APPLIED TO A DEPTH OF 2 TO 4 INCHES.

DS2 - 1. A TEMPORARY GRASSING OF PEARL MILLET SHALL BE APPLIED AT A RATE OF 50 LBS PER ACRE DURING THE MONTHS OF APRIL THROUGH AUGUST TO DISTURBED AREAS WITHIN 14 DAYS OF DISTURBANCE. A TEMPORARY GRASSING OF BARELY SHALL BE APPLIED AT A RATE OF 3 BU PER ACRE DURING THE MONTHS OF SEPTEMBER THROUGH DECEMBER TO DISTURBED AREAS WITHIN 14 DAYS OF DISTURBANCE.

2. A 10-10-10 FERTILIZER SHALL BE USED ON THE DISTURBED AREA OF DS2 AND SHALL BE APPLIED AT A RATE OF 500 LBS. PER AC. FERTILIZER SHOULD BE APPLIED BEFORE LAND PREPARATION AND INCORPORATED WITH A DISK, RIPPER OR CHISEL.

3. AGRICULTURAL LIME SHALL BE APPLIED AT A RATE OF ONE TON PER ACRE.

DS3 - 1. A PERMANENT GRASSING OF UNHULLED BERMUDA SHALL BE APPLIED AT A RATE OF 10 LBS. PER ACRE DURING THE MONTHS OF FEBRUARY THROUGH JUNE. IF A HYDRAULIC SEEDER IS TO BE USED, REFER TO THE EROSION AND SEDIMENT CONTROL MANUAL FOR FURTHER DIRECTION ON THE METHOD OF APPLICATION.

2. A 6-12-12 FERTILIZER SHALL BE USED ON THE DISTURBED AREA OF DS3 AND SHALL BE APPLIED AT RATE OF 1500 LBS. PER AC

3. AGRICULTURAL LIME IS REQUIRED AT THE RATE OF ONE TO TWO TONS PER ACRE UNLESS SOIL TESTS INDICATE OTHERWISE

4. DRIED STRAW OR DRY HAY SHALL BE USED FOR MULCHING AND APPLIED AT A RATE OF 2 TONS PER ACRE FOR DRIED STRAW AND 2-1/2 TONS PER ACRE FOR DRIED HAY. MULCH WILL BE SPREAD UNIFORMLY WITHIN 24 HOURS AFTER SEEDING. THE MULCH MAY BE SPREAD BY BLOWER-TYPE SPREADING EQUIPMENT, OTHER SPREADING EQUIPMENT OR BY HAND. MULCH SHALL BE APPLIED TO COVER 75% OF THE SOIL SURFACE

*IF USING THIS CHECKLIST FOR A PROJECT THAT IS LESS THAN 1 ACRE AND NOT PART OF A COMMON DEVELOPMENT BUT WITHIN 200 FT OF A PERENNIAL STREAM, THE * CHECKLIST ITEMS WOULD BE N/A

EFFECTIVE JANUARY 1, 2022

GEORGIA REGISTERED PROFESSIONAL ENGINEERS ANTHONY TOSS ALLEN
Anthony T Allen
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

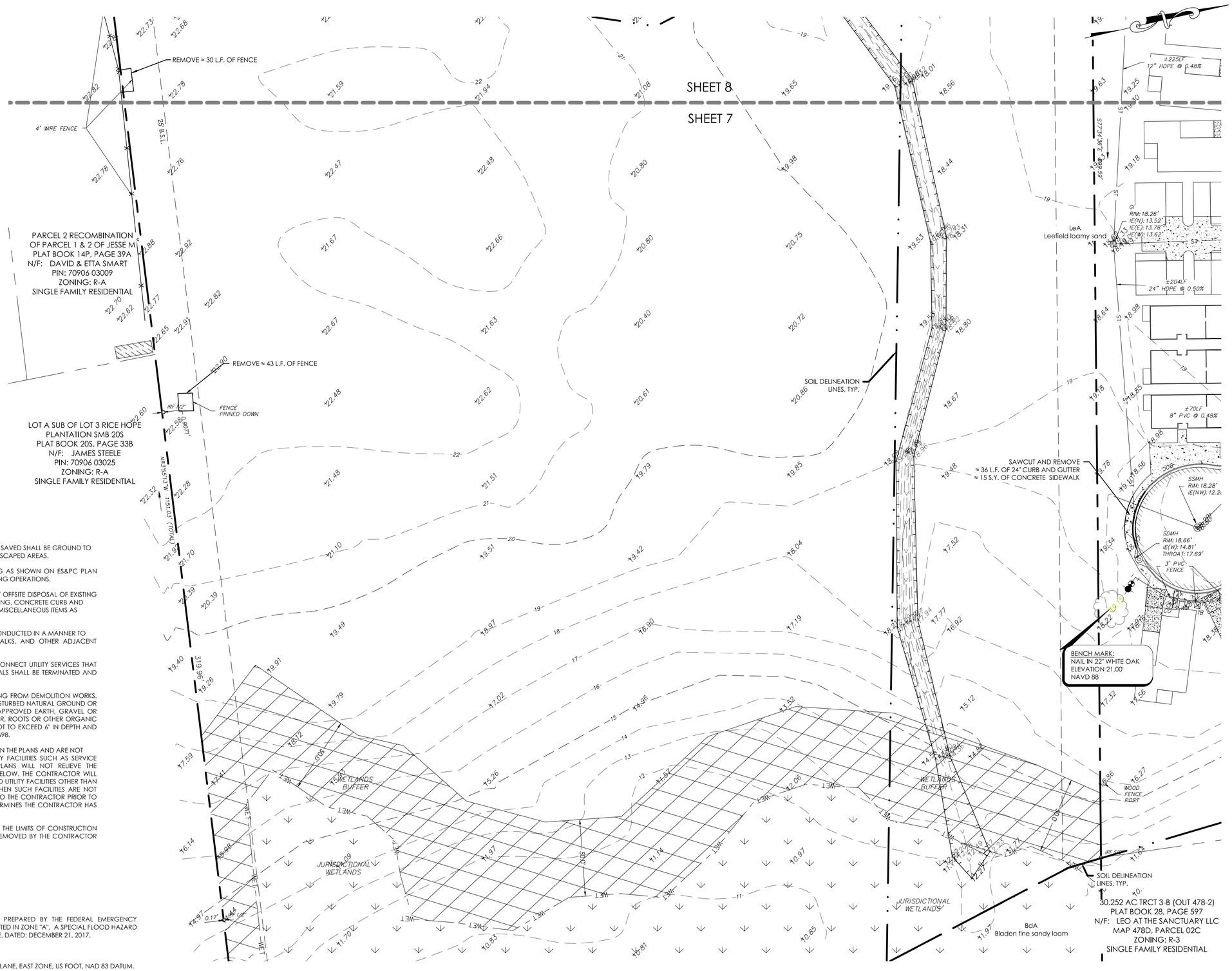
REVISIONS		
NO.	DATE	REQ. BY

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL NOTES (CONTINUED)

SHEET NUMBER
6
OF 45



DEMOLITION NOTES:

-- TREE STUMPS WITHIN THE CRITICAL ROOT ZONE OF TREES TO BE SAVED SHALL BE GROUND TO A DEPTH OF 6 INCHES BELOW EXISTING GRADE IF WITHIN LANDSCAPED AREAS.

-- SILT FENCE SHALL BE INSTALLED ALONG LIMITS OF CLEARING AS SHOWN ON ES&PC PLAN AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO CLEARING OPERATIONS.

-- DEMOLITION TO CONSIST OF THE REMOVAL AND SUBSEQUENT OFFSITE DISPOSAL OF EXISTING BUILDINGS, EXISTING BUILDING FOUNDATIONS, ASPHALT PAVING, CONCRETE CURB AND GUTTER, SIDEWALKS, CANOPIES, TREES, SHRUBS, AND OTHER MISCELLANEOUS ITEMS AS INDICATED ON PLANS.

-- DEMOLITION OPERATIONS AND DEBRIS REMOVAL SHALL BE CONDUCTED IN A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES.

-- CONTRACTOR SHALL LOCATE, IDENTIFY, STUB-OFF, AND DISCONNECT UTILITY SERVICES THAT ARE NOT INDICATED TO REMAIN. ALL UNUSED WATER LATERALS SHALL BE TERMINATED AND PLUGGED AT THE MAIN.

-- COMPLETELY FILL BELOW-GRADE AREAS AND VOIDS RESULTING FROM DEMOLITION WORKS. PRIOR TO FILLING, SUBGRADE IS TO BE CLEARED TO DRY UNDISTURBED NATURAL GROUND OR EXISTING COMPACTED FILL. PROVIDE FILL CONSISTING OF APPROVED EARTH, GRAVEL OR SAND, FREE OF TRASH AND DEBRIS, STONES OVER 6" DIAMETER, ROOTS OR OTHER ORGANIC MATTER. CONTROLLED FILL SHALL BE REPLACED IN LAYERS NOT TO EXCEED 6" IN DEPTH AND COMPACTED TO 98% MAXIMUM DRY WEIGHT PER AASHTO D-698.

-- ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS.

-- ALL EXISTING IMPROVEMENTS THAT EXIST ON THE SITE WITHIN THE LIMITS OF CONSTRUCTION AND INTERFERE WITH PROPOSED IMPROVEMENTS SHALL BE REMOVED BY THE CONTRACTOR WHETHER SHOWN ON CONSTRUCTION DOCUMENTS OR NOT.

SURVEY NOTES:

1. PIN: 70906 04064

2. ZONING: M-P-O

3. ACCORDING TO THE FLOOD INSURANCE RATE MAP, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, A PORTION OF THIS PROPERTY IS LOCATED IN ZONE "A", A SPECIAL FLOOD HAZARD AREA. (COMMUNITY NUMBER 130076, MAP 13103C, PANEL 0380E. DATED: DECEMBER 21, 2017.

4. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM.

5. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM.

6. THE SURVEY WAS COMPLETED ON 03/01/2022 BY ATLAS SURVEYING, INC.

7. ACCORDING TO THE WEB SOIL SURVEY, THE EXISTING SOIL TYPE LOCATED WITHIN THE PROJECT LIMITS IS:

Cc- Cape Fear soils
Mba- Meggett loam
Oj- Ocilla complex
Pl- Pelham loamy sand
Pn- Pooler fine sandy loam
BdA- Bladen fine sandy loam
LeA- Leefield loamy sand

GSWCC
GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811
Know what's below.
Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

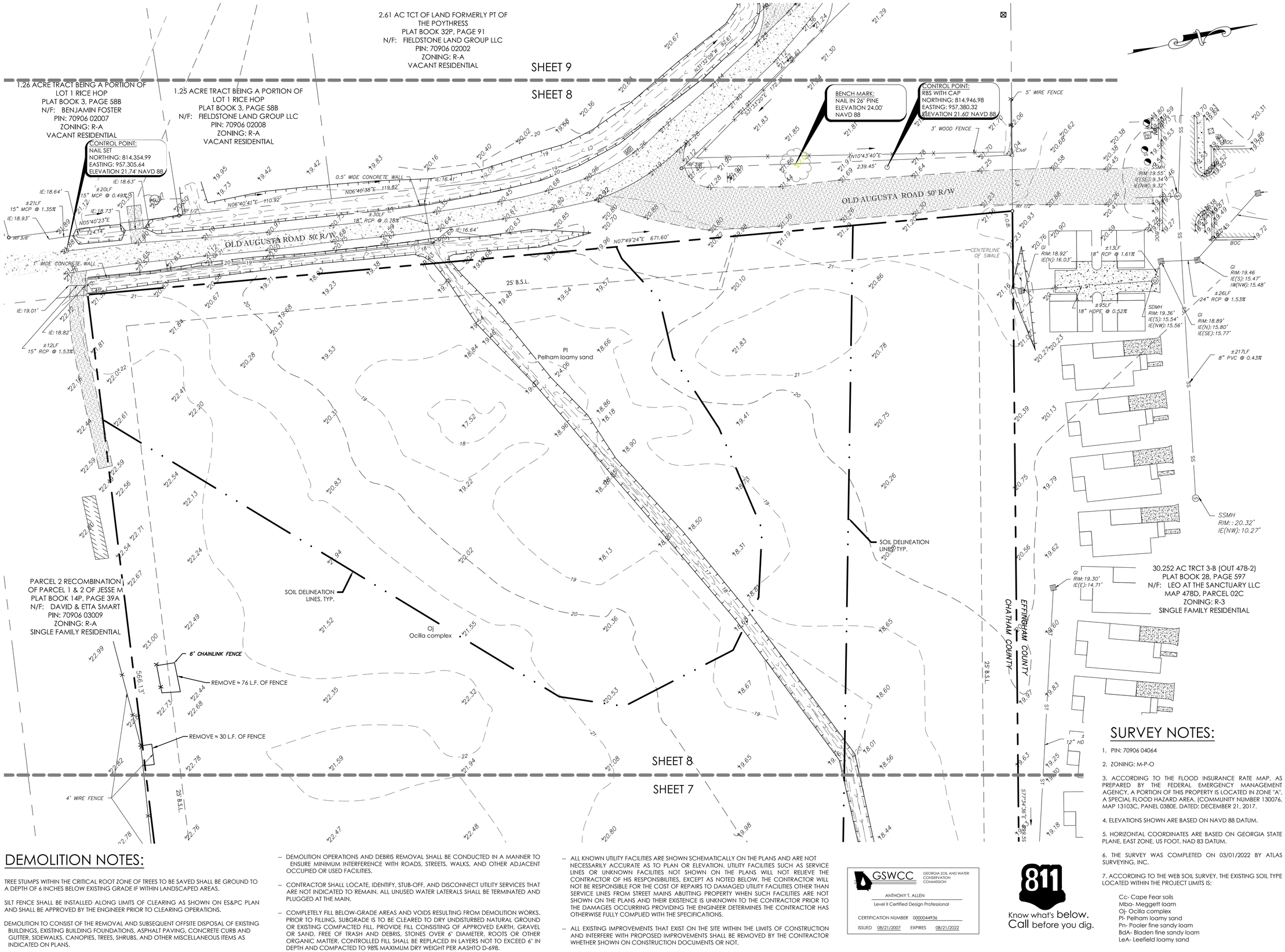
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

SHEET NUMBER
7
OF 45



SURVEY NOTES:

1. PIN: 70906 04064
2. ZONING: M-P-O
3. ACCORDING TO THE FLOOD INSURANCE RATE MAP, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, A PORTION OF THIS PROPERTY IS LOCATED IN ZONE "A", A SPECIAL FLOOD HAZARD AREA. (COMMUNITY NUMBER 130076, MAP 13103C, PANEL 0380E. DATED: DECEMBER 21, 2017.
4. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM.
5. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM.
6. THE SURVEY WAS COMPLETED ON 03/01/2022 BY ATLAS SURVEYING, INC.
7. ACCORDING TO THE WEB SOIL SURVEY, THE EXISTING SOIL TYPE LOCATED WITHIN THE PROJECT LIMITS IS:

Cc- Cape Fear soils
Mba- Meggett loam
Oj- Ocilla complex
Pi- Pelham loamy sand
Pn- Pooler fine sandy loam
BdA- Bladen fine sandy loam
LeA- Leefield loamy sand

DEMOLITION NOTES:

-- TREE STUMPS WITHIN THE CRITICAL ROOT ZONE OF TREES TO BE SAVED SHALL BE GROUND TO A DEPTH OF 6 INCHES BELOW EXISTING GRADE IF WITHIN LANDSCAPED AREAS.

-- SILT FENCE SHALL BE INSTALLED ALONG LIMITS OF CLEARING AS SHOWN ON ES&PC PLAN AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO CLEARING OPERATIONS.

-- DEMOLITION TO CONSIST OF THE REMOVAL AND SUBSEQUENT OFFSITE DISPOSAL OF EXISTING BUILDINGS, EXISTING BUILDING FOUNDATIONS, ASPHALT PAVING, CONCRETE CURB AND GUTTER, SIDEWALKS, CANOPIES, TREES, SHRUBS, AND OTHER MISCELLANEOUS ITEMS AS INDICATED ON PLANS.

-- DEMOLITION OPERATIONS AND DEBRIS REMOVAL SHALL BE CONDUCTED IN A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES.

-- CONTRACTOR SHALL LOCATE, IDENTIFY, STUB-OFF, AND DISCONNECT UTILITY SERVICES THAT ARE NOT INDICATED TO REMAIN. ALL UNUSED WATER LATERALS SHALL BE TERMINATED AND PLUGGED AT THE MAIN.

-- COMPLETELY FILL BELOW-GRADE AREAS AND VOIDS RESULTING FROM DEMOLITION WORKS. PRIOR TO FILLING, SUBGRADE IS TO BE CLEARED TO DRY UNDISTURBED NATURAL GROUND OR EXISTING COMPACTED FILL. PROVIDE FILL CONSISTING OF APPROVED EARTH, GRAVEL OR SAND, FREE OF TRASH AND DEBRIS, STONES OVER 6" DIAMETER, ROOTS OR OTHER ORGANIC MATTER. CONTROLLED FILL SHALL BE REPLACED IN LAYERS NOT TO EXCEED 6" IN DEPTH AND COMPACTED TO 98% MAXIMUM DRY WEIGHT PER AASHTO D-698.

-- ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS.

-- ALL EXISTING IMPROVEMENTS THAT EXIST ON THE SITE WITHIN THE LIMITS OF CONSTRUCTION AND INTERFERE WITH PROPOSED IMPROVEMENTS SHALL BE REMOVED BY THE CONTRACTOR WHETHER SHOWN ON CONSTRUCTION DOCUMENTS OR NOT.

GSWCC
GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811
Know what's below.
Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

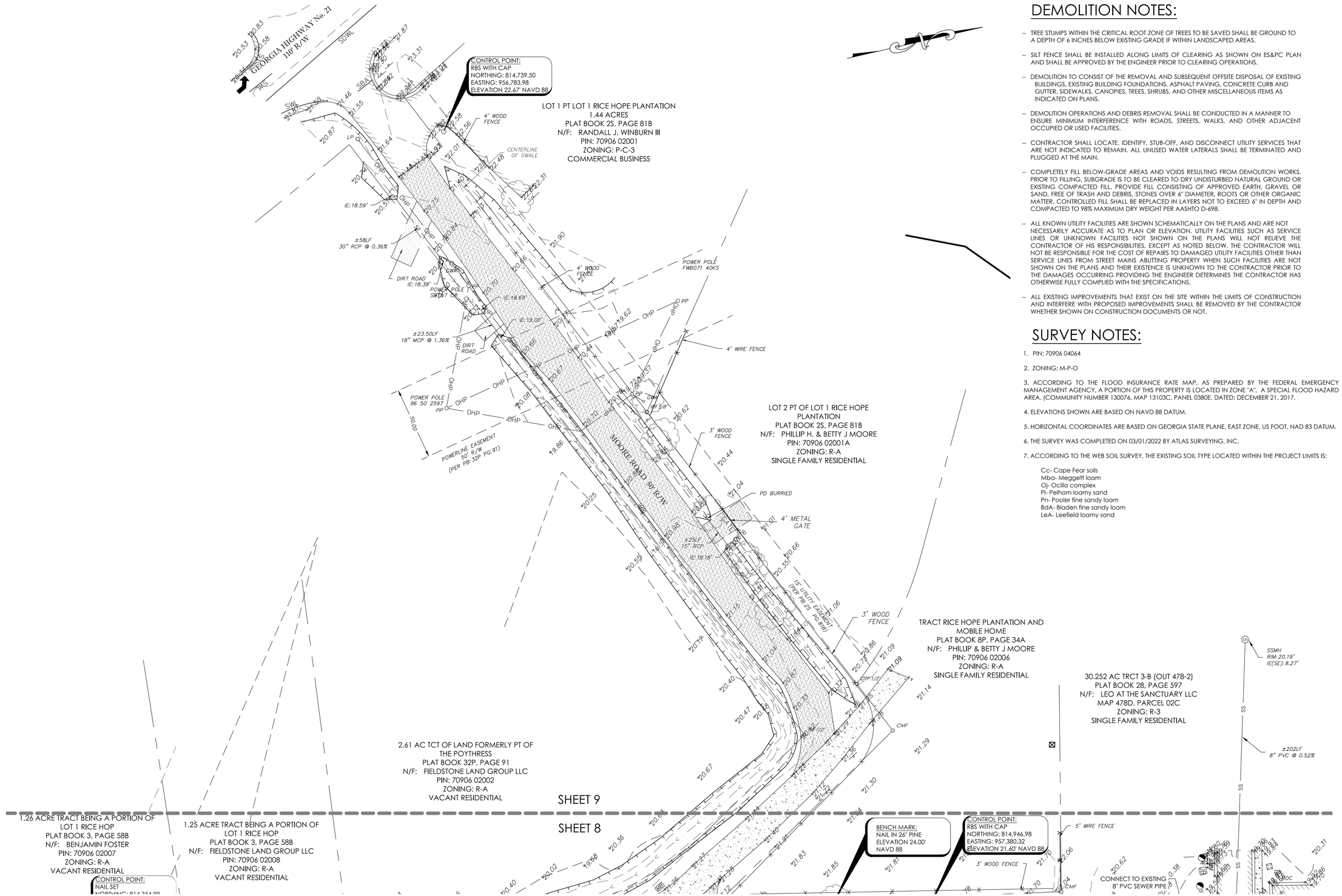
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

SHEET NUMBER
8
OF 45



DEMOLITION NOTES:

-- TREE STUMPS WITHIN THE CRITICAL ROOT ZONE OF TREES TO BE SAVED SHALL BE GROUND TO A DEPTH OF 6 INCHES BELOW EXISTING GRADE IF WITHIN LANDSCAPED AREAS.

-- SILT FENCE SHALL BE INSTALLED ALONG LIMITS OF CLEARING AS SHOWN ON ES&PC PLAN AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO CLEARING OPERATIONS.

-- DEMOLITION TO CONSIST OF THE REMOVAL AND SUBSEQUENT OFFSITE DISPOSAL OF EXISTING BUILDINGS, EXISTING BUILDING FOUNDATIONS, ASPHALT PAVING, CONCRETE CURB AND GUTTER, SIDEWALKS, CANOPIES, TREES, SHRUBS, AND OTHER MISCELLANEOUS ITEMS AS INDICATED ON PLANS.

-- DEMOLITION OPERATIONS AND DEBRIS REMOVAL SHALL BE CONDUCTED IN A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED OR USED FACILITIES.

-- CONTRACTOR SHALL LOCATE, IDENTIFY, STUB-OFF, AND DISCONNECT UTILITY SERVICES THAT ARE NOT INDICATED TO REMAIN. ALL UNUSED WATER LATERALS SHALL BE TERMINATED AND PLUGGED AT THE MAIN.

-- COMPLETELY FILL BELOW-GRADE AREAS AND VOIDS RESULTING FROM DEMOLITION WORKS. PRIOR TO FILLING, SUBGRADE IS TO BE CLEARED TO DRY UNDISTURBED NATURAL GROUND OR EXISTING COMPACTED FILL. PROVIDE FILL CONSISTING OF APPROVED EARTH, GRAVEL OR SAND, FREE OF TRASH AND DEBRIS, STONES OVER 6" DIAMETER, ROOTS OR OTHER ORGANIC MATTER. CONTROLLED FILL SHALL BE REPLACED IN LAYERS NOT TO EXCEED 6" IN DEPTH AND COMPACTED TO 98% MAXIMUM DRY WEIGHT PER AASHTO D-698.

-- ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS.

-- ALL EXISTING IMPROVEMENTS THAT EXIST ON THE SITE WITHIN THE LIMITS OF CONSTRUCTION AND INTERFERE WITH PROPOSED IMPROVEMENTS SHALL BE REMOVED BY THE CONTRACTOR WHETHER SHOWN ON CONSTRUCTION DOCUMENTS OR NOT.

SURVEY NOTES:

1. PIN: 70906 04064

2. ZONING: M-P-O

3. ACCORDING TO THE FLOOD INSURANCE RATE MAP, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, A PORTION OF THIS PROPERTY IS LOCATED IN ZONE "A", A SPECIAL FLOOD HAZARD AREA. (COMMUNITY NUMBER 130076, MAP 13103C, PANEL 0380E. DATED: DECEMBER 21, 2017.

4. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM.

5. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM.

6. THE SURVEY WAS COMPLETED ON 03/01/2022 BY ATLAS SURVEYING, INC.

7. ACCORDING TO THE WEB SOIL SURVEY, THE EXISTING SOIL TYPE LOCATED WITHIN THE PROJECT LIMITS IS:

Cc- Cape Fear soils
Mba- Meggett loam
Oj- Ocilla complex
Pl- Pelham loamy sand
Pn- Pooler fine sandy loam
BdA- Bladen fine sandy loam
LeA- Leefield loamy sand

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

TOPOGRAPHIC SURVEY AND DEMOLITION PLAN

SHEET NUMBER
9
OF 45

SHEET 11

SHEET 10

PARCEL 2 RECOMBINATION
OF PARCEL 1 & 2 OF JESSE M
PLAT BOOK 14P, PAGE 39A
N/F: DAVID & ETTA SMART
PIN: 70906 03009
ZONING: R-A
SINGLE FAMILY RESIDENTIAL

LOT A SUB OF LOT 3 RICE HOPE
PLANTATION SMB 20S
PLAT BOOK 20S, PAGE 33B
N/F: JAMES STEELE
PIN: 70906 03025
ZONING: R-A
SINGLE FAMILY RESIDENTIAL

25' B.S.L.

IRF 1/2"

0.90'71"

N42°35'57"W 1151.03' (TOTAL)

319.96'

1 BEDROOM F.F. =23.01

1 BEDROOM F.F. =23.16

1 BEDROOM F.F. =23.57

12" WIDE PAINTED WHITE STOP BAR & 30" HI STOP SIGN

63.0'

9.0'

22.57'

18.28'

27.0'

20.0'

63.0'

4" PAINTED WHITE STRIPE, TYP.

24" CURB AND GUTTER, TYP.

R3.5'

R286.5'

R313.5'

PC: 20+80.73

STOP

21+00

22+82

CL5

JASPER CIRCLE

24" CURB AND GUTTER, TYP.

4 BEDROOM F.F. =23.79

2 BEDROOM F.F. =23.93

PC: 21+50.17

23.06

50.01'

S8°38'58"E

87.58'

BVC: 21+74.11

2 BEDROOM F.F. =23.99

3 BEDROOM F.F. =23.96

PI: 21+93.31

22+00

23.23

PC: 22+01.06

5' WIDE CONCRETE SIDEWALK

3 BEDROOM F.F. =23.92

EVC: 22+49.11

R86.5'

2 BEDROOM F.F. =22.93

22.09

CL6

23+00

22.26

2 BEDROOM F.F. =23.70

R113.5'

APARTMENT F.F. =21.81

APARTMENT F.F. =21.49

APARTMENT F.F. =21.18

APARTMENT F.F. =20.86

108.0'

9.0'

12

PT: 23+57.65

R3.5'

20.0'

4" PAINTED WHITE STRIPE, TYP.

21.63

24+00

21.00

N13° 34' 54"E

JASPER CIRCLE

20.37

20.11

20.0'

2 BEDROOM F.F. =23.34

4 BEDROOM F.F. =22.97

3 BEDROOM F.F. =22.11

3 BEDROOM F.F. =21.71

3 BEDROOM F.F. =21.30

H/C SIGNAGE AND STRIPING PER ADA

PRECAST CONCRETE WHEEL STOP, TYP.

2 BEDROOM F.F. =21.07

MAIL KIOSK

R3.5'

5

20.0'

54.0'

25.2'

5' WIDE CONCRETE SIDEWALK

R66.5'

32.9'

34.0'

EXTENSION VAN PARKING OPERATOR

EXTENSION VAN PARKING OPERATOR

2 BEDROOM F.F. =20.51

EVC: 12+85.40

LP: 12+63.98

19.63

2 BEDROOM F.F. =20.45

2 BEDROOM F.F. =20.41

BVC: 12+35.40

19.93

12+00

3 BEDROOM F.F. =20.72

3 BEDROOM F.F. =20.64

27.0'

5' WIDE CONCRETE SIDEWALK

2 BEDROOM F.F. =21.01

3 BEDROOM F.F. =20.93

20.26

EVC: 11+39.37

JASPER CIRCLE

N78° 56' 27"W

3 BEDROOM F.F. =21.20

2 BEDROOM F.F. =21.19

HP: 11+14.26

20.39

11+00

PT: 11+02.66

PC: 10+97.78

R113.5'

R86.5'

BVC: 10+89.38

2 BEDROOM F.F. =21.01

97.72'

3 BEDROOM F.F. =21.02

STOP

20.08

3 BEDROOM F.F. =20.81

3 BEDROOM F.F. =20.83

12" WIDE PAINTED WHITE STOP BAR & 30" HI STOP SIGN

M.W. 25°36'

PC: 26+86.07

R20.5'

CL

24+00

19.86

19.82

PT: 26+07.30

PC: 26+13.51

24" CURB AND GUTTER, TYP.

N25° 44' 57"E

JASPER CIRCLE

20.0'

R3.5'

R3.5'

19.98

8

6

R3.5'

S77°34'36"E

899.39'

PC: 26+99.99

R8.5'

66.0'

R17.51'

27.98'

17.76'

R36.8'

R8.5'

30.0'

TB

BENCH MARK:
NAIL IN 22" WHITE OAK
ELEVATION 21.00'
NAVD 88

WETLANDS BUFFER

WETLANDS BUFFER

JURISDICTIONAL WETLANDS

50.0'

50.0'

IRF 5/8"

SITE DATA:

1. PIN: 70906 04064

2. PROPERTY ADDRESS: OLD HIGHWAY 21, PORT WENTWORTH, GA 31407

3. ZONING: M-P-O

3. BUILDING SETBACK = 25'

4. TOTAL LAND ACREAGE = 36.19 ACRES
   TOTAL DISTURBED ACREAGE = 12.58 AC
   TOTAL NUMBER OF PROPOSED UNITS = 70

5. WATER TO BE PROVIDED BY EFFINGHAM COUNTY.

6. SEWER TO BE PROVIDED BY EFFINGHAM COUNTY.

7. OWNER: NEXT CHAPTER NEIGHBORHOODS, LLC

8. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM

9. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM

Curve Table: Alignments

Curve #	Radius	Arc Length	Chord Direction	Chord Length	Tangent	Delta	PI Station
CL1	100.00'	4.34'	N77° 39' 44"W	4.34'	2.17'	2°29'15"	10+99.91
CL2	300.00'	18.16'	N77° 10' 17"W	18.16'	9.09'	3°28'09"	13+17.07
CL3	75.00'	126.04'	S56° 25' 16"W	111.72'	83.71'	96°17'03"	15+24.08
CL4	75.00'	126.29'	S39° 57' 35"E	111.89'	84.00'	96°28'38"	18+49.17
CL5	300.00'	69.44'	S81° 34' 02"E	69.29'	34.88'	13°15'44"	21+15.61
CL6	100.00'	159.67'	N59° 19' 22"E	143.24'	102.62'	91°28'56"	23+03.68
CL7	100.00'	21.24'	N19° 39' 56"E	21.20'	10.66'	12°10'04"	25+96.73
CL8	40.00'	57.48'	S72° 43' 33"E	52.66'	34.98'	82°20'27"	34+94.80
CL9	245.00'	163.48'	S12° 26' 21"E	160.47'	84.92'	38°13'57"	36+81.51

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS			
NO.	DATE	REQ. BY	
-	-	-	-
-	-	-	-
-	-	-	-

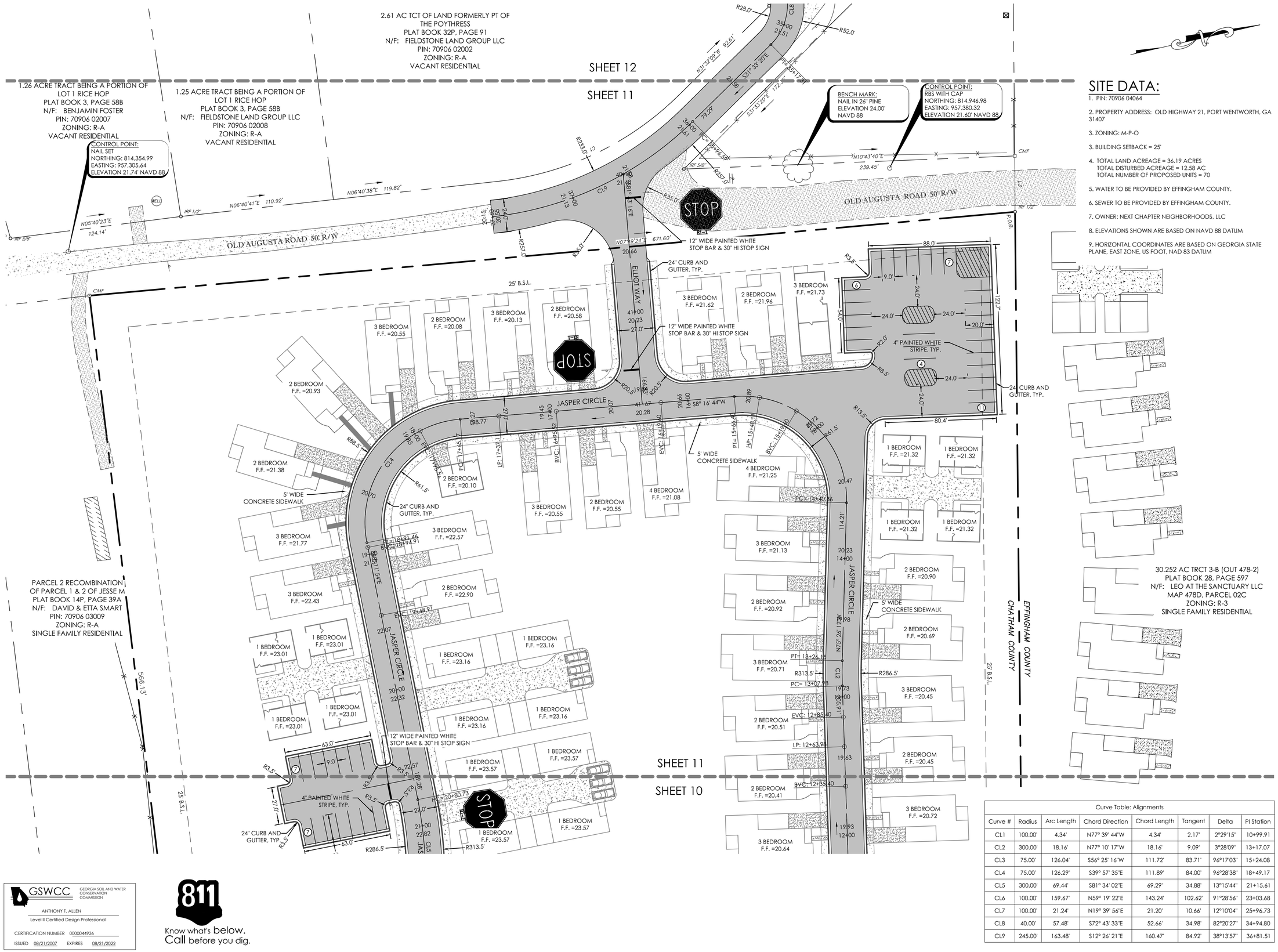
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STAKING AND TRAFFIC CONTROL PLAN

SHEET NUMBER
10
OF 45



SITE DATA:

1. PIN: 70906 04064
2. PROPERTY ADDRESS: OLD HIGHWAY 21, PORT WENTWORTH, GA 31407
3. ZONING: M-P-O
3. BUILDING SETBACK = 25'
4. TOTAL LAND ACREAGE = 36.19 ACRES
   TOTAL DISTURBED ACREAGE = 12.58 AC
   TOTAL NUMBER OF PROPOSED UNITS = 70
5. WATER TO BE PROVIDED BY EFFINGHAM COUNTY.
6. SEWER TO BE PROVIDED BY EFFINGHAM COUNTY.
7. OWNER: NEXT CHAPTER NEIGHBORHOODS, LLC
8. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM
9. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM

Curve Table: Alignments							
Curve #	Radius	Arc Length	Chord Direction	Chord Length	Tangent	Delta	PI Station
CL1	100.00'	4.34'	N77° 39' 44"W	4.34'	2.17'	2°29'15"	10+99.91
CL2	300.00'	18.16'	N77° 10' 17"W	18.16'	9.09'	3°28'09"	13+17.07
CL3	75.00'	126.04'	S56° 25' 16"W	111.72'	83.71'	96°17'03"	15+24.08
CL4	75.00'	126.29'	S39° 57' 35"E	111.89'	84.00'	96°28'38"	18+49.17
CL5	300.00'	69.44'	S81° 34' 02"E	69.29'	34.88'	13°15'44"	21+15.61
CL6	100.00'	159.67'	N59° 19' 22"E	143.24'	102.62'	91°28'56"	23+03.68
CL7	100.00'	21.24'	N19° 39' 56"E	21.20'	10.66'	12°10'04"	25+96.73
CL8	40.00'	57.48'	S72° 43' 33"E	52.66'	34.98'	82°20'27"	34+94.80
CL9	245.00'	163.48'	S12° 26' 21"E	160.47'	84.92'	38°13'57"	36+81.51

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org
allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-

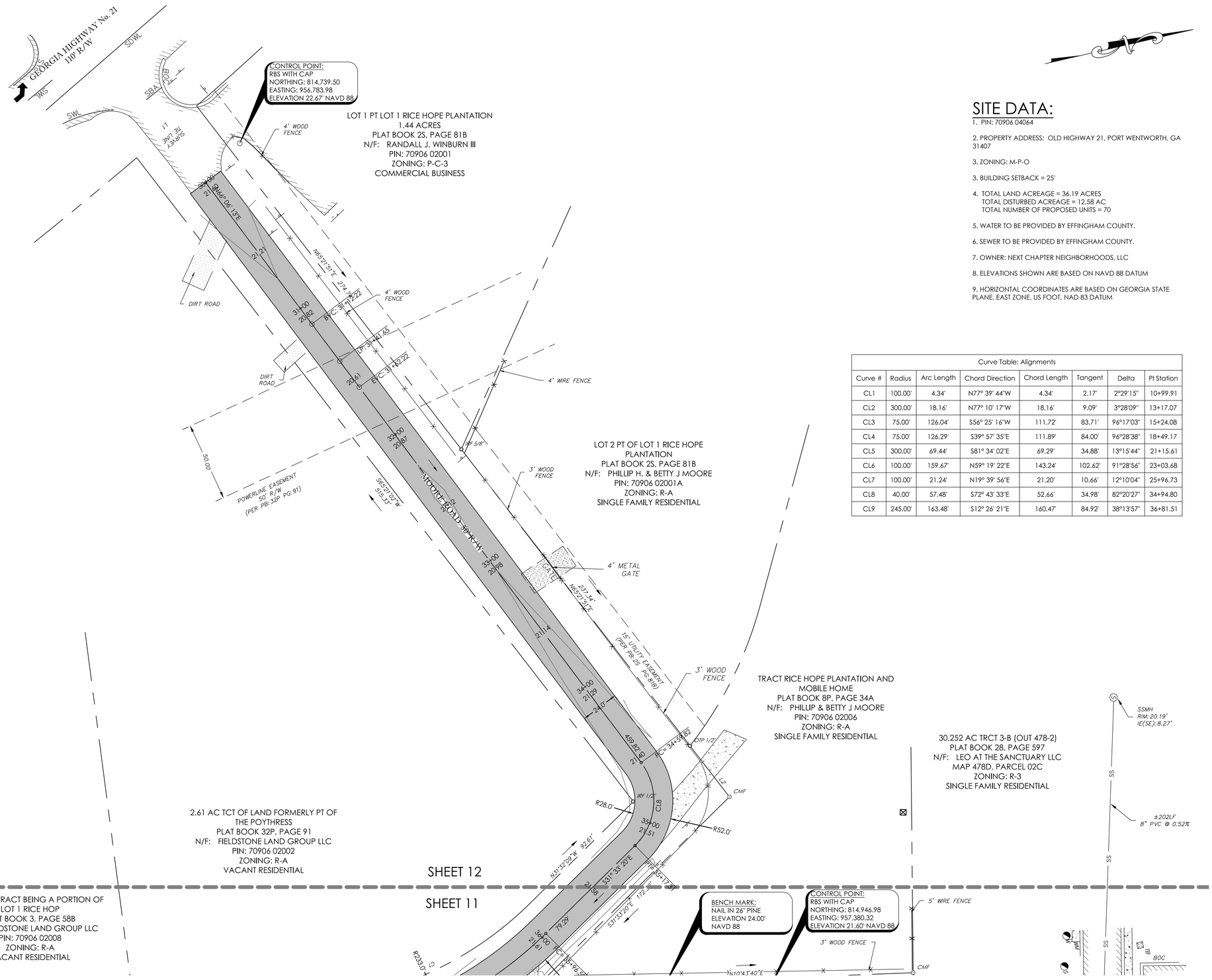
DESIGNED	ATA	CHECKED	ATA
DRAWN	ATA	DTATE	04/01/2022
		JOB NO.	21-015
		SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STAKING AND TRAFFIC CONTROL PLAN

SHEET NUMBER
11
OF 45



SITE DATA:

1. PIN: 70906 04064

2. PROPERTY ADDRESS: OLD HIGHWAY 21, PORT WENTWORTH, GA 31407

3. ZONING: M-P-O

3. BUILDING SETBACK = 25'

4. TOTAL LAND ACREAGE = 36.19 ACRES
   TOTAL DISTURBED ACREAGE = 12.58 AC
   TOTAL NUMBER OF PROPOSED UNITS = 70

5. WATER TO BE PROVIDED BY EFFINGHAM COUNTY.

6. SEWER TO BE PROVIDED BY EFFINGHAM COUNTY.

7. OWNER: NEXT CHAPTER NEIGHBORHOODS, LLC

8. ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM

9. HORIZONTAL COORDINATES ARE BASED ON GEORGIA STATE PLANE, EAST ZONE, US FOOT, NAD 83 DATUM

Curve Table: Alignments							
Curve #	Radius	Arc Length	Chord Direction	Chord Length	Tangent	Delta	PI Station
CL1	100.00'	4.34'	N77° 39' 44"W	4.34'	2.17'	2°29'15"	10+99.91
CL2	300.00'	18.16'	N77° 10' 17"W	18.16'	9.09'	3°28'09"	13+17.07
CL3	75.00'	126.04'	S56° 25' 16"W	111.72'	83.71'	96°17'03"	15+24.08
CL4	75.00'	126.29'	S39° 57' 35"E	111.89'	84.00'	96°28'38"	18+49.17
CL5	300.00'	69.44'	S81° 34' 02"E	69.29'	34.88'	13°15'44"	21+15.61
CL6	100.00'	159.67'	N59° 19' 22"E	143.24'	102.62'	91°28'56"	23+03.68
CL7	100.00'	21.24'	N19° 39' 56"E	21.20'	10.66'	12°10'04"	25+96.73
CL8	40.00'	57.48'	S72° 43' 33"E	52.66'	34.98'	82°20'27"	34+94.80
CL9	245.00'	163.48'	S12° 26' 21"E	160.47'	84.92'	38°13'57"	36+81.51

GSWCC — GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

Know what's below. Call before you dig. 811

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
'	'	'
'	'	'
'	'	'
'	'	'

DESIGNED	A1A
DRAWN	A1A
CHECKED	A1A
DTAIE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STAKING AND TRAFFIC CONTROL PLAN

SHEET NUMBER
12
OF 45

NOTES:

1. WATER AND SEWER SERVICE TO BE PROVIDED BY EFFINGHAM COUNTY.

2. THERE IS NOT A FIRE SYSTEM PROPOSED FOR THIS DEVELOMENT.

3. THERE IS AN IRRIGATION SYSTEM PROPOSED FOR THIS DEVELOPMENT.

4. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, OR APPROVED EQUAL, WILL BE USED TO FORM A WATERTIGHT SEAL AT BOTH ENDS OF LINE BEING LAID.

5. AFTER INSTALLATION NEW WATER LINES SHALL BE FLUSHED UTILIZING AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE COUNTY WATER SYSTEM. THE PIPES SHALL BE FLUSHED FOR A MINIMUM OF TWO MINUTES AT A VELOCITY OF AT LEAST 2.5 FEET PER SECOND.

PIPE CROSSINGS:

a. WATER MAINS CROSSING HOUSE SEWERS, STORM SEWERS OR SANITARY SEWERS SHALL BE LAID TO PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER. AT THE CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED.

b. WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION OF 18 INCHES, THE SEWER PASSING OVER OR UNDER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION AND SHALL BE PRESSURE TESTED TO ASSURE WATER-TIGHTNESS PRIOR TO BACKFILLING.

c. WHEN WATER MAINS CROSS UNDER SEWERS, ADDITIONAL MEASURES SHALL BE TAKEN BY PROVIDING;

1. A VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE SEWER AND THE TOP OF THE WATER MAIN;
2. ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING ON AND BREAKING THE WATER MAINS;
3. THAT THE LENGTH OF WATER PIPE BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER; AND,
4. BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF WATER PIPE MATERIALS AND SUBJECTED TO HYDROSTATIC TESTS, AS PRESCRIBED IN THIS DOCUMENT. ENCASEMENT OF THE WATER PIPE IN CONCRETE SHALL ALSO BE CONSIDERED.

INTERGOVERNMENTAL AGREEMENT NOTE:

WATER AND SEWER SERVICE TO BE PROVIDED BY EFFINGHAM COUNTY AS PER INTERGOVERNMENTAL AGREEMENT BETWEEN EFFINGHAM COUNTY AND THE CITY OF PORT WENTWORTH. SAID AGREEMENT HAS BEEN RECORDED IN THE OFFICE OF THE CHATHAM COUNTY SUPERIOR COURT CLERK IN DEED BOOK 2605, PAGES 560 - 568, ON NOVEMBER 11, 2021.

GSWCC — GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-

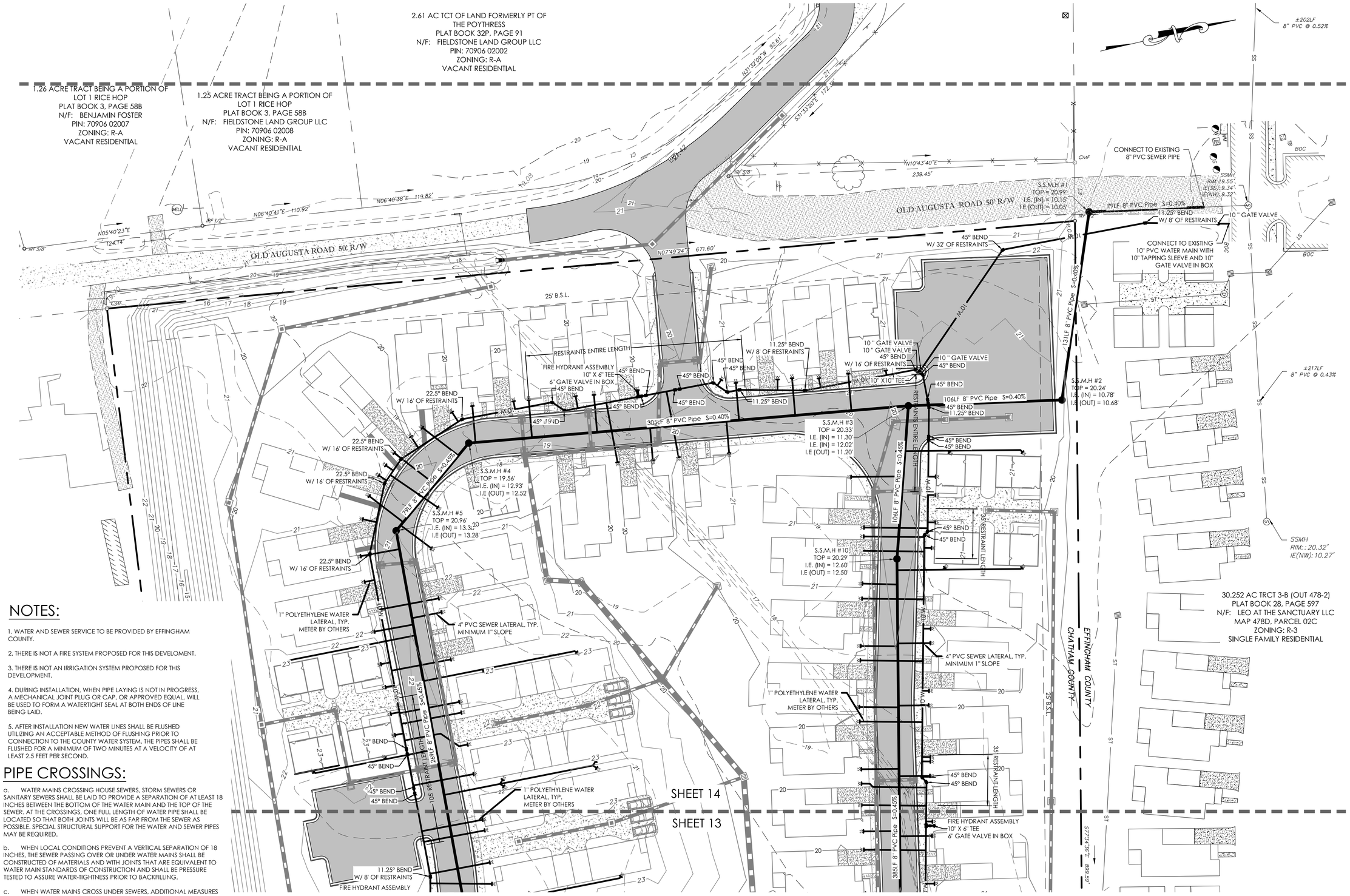
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

UTILITY PLAN

SHEET NUMBER
13
OF 45



NOTES:

1. WATER AND SEWER SERVICE TO BE PROVIDED BY EFFINGHAM COUNTY.

2. THERE IS NOT A FIRE SYSTEM PROPOSED FOR THIS DEVELOMENT.

3. THERE IS NOT AN IRRIGATION SYSTEM PROPOSED FOR THIS DEVELOPMENT.

4. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, OR APPROVED EQUAL, WILL BE USED TO FORM A WATERTIGHT SEAL AT BOTH ENDS OF LINE BEING LAID.

5. AFTER INSTALLATION NEW WATER LINES SHALL BE FLUSHED UTILIZING AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE COUNTY WATER SYSTEM. THE PIPES SHALL BE FLUSHED FOR A MINIMUM OF TWO MINUTES AT A VELOCITY OF AT LEAST 2.5 FEET PER SECOND.

PIPE CROSSINGS:

a. WATER MAINS CROSSING HOUSE SEWERS, STORM SEWERS OR SANITARY SEWERS SHALL BE LAID TO PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER. AT THE CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE. SPECIAL STRUCTURAL SUPPORT FOR THE WATER AND SEWER PIPES MAY BE REQUIRED.

b. WHEN LOCAL CONDITIONS PREVENT A VERTICAL SEPARATION OF 18 INCHES, THE SEWER PASSING OVER OR UNDER WATER MAINS SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS OF CONSTRUCTION AND SHALL BE PRESSURE TESTED TO ASSURE WATER-TIGHTNESS PRIOR TO BACKFILLING.

c. WHEN WATER MAINS CROSS UNDER SEWERS, ADDITIONAL MEASURES SHALL BE TAKEN BY PROVIDING:

1. A VERTICAL SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE SEWER AND THE TOP OF THE WATER MAIN;
2. ADEQUATE STRUCTURAL SUPPORT FOR THE SEWERS TO PREVENT EXCESSIVE DEFLECTION OF JOINTS AND SETTLING ON AND BREAKING THE WATER MAINS;
3. THAT THE LENGTH OF WATER PIPE BE CENTERED AT THE POINT OF CROSSING SO THAT THE JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER; AND,
4. BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF WATER PIPE MATERIALS AND SUBJECTED TO HYDROSTATIC TESTS, AS PRESCRIBED IN THIS DOCUMENT. ENCASEMENT OF THE WATER PIPE IN CONCRETE SHALL ALSO BE CONSIDERED.

INTERGOVERNMENTAL AGREEMENT NOTE:

WATER AND SEWER SERVICE TO BE PROVIDED BY EFFINGHAM COUNTY AS PER INTERGOVERNMENTAL AGREEMENT BETWEEN EFFINGHAM COUNTY AND THE CITY OF PORT WENTWORTH. SAID AGREEMENT HAS BEEN RECORDED IN THE OFFICE OF THE CHATHAM COUNTY SUPERIOR COURT CLERK IN DEED BOOK 2605, PAGES 560 - 568, ON NOVEMBER 11, 2021.

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

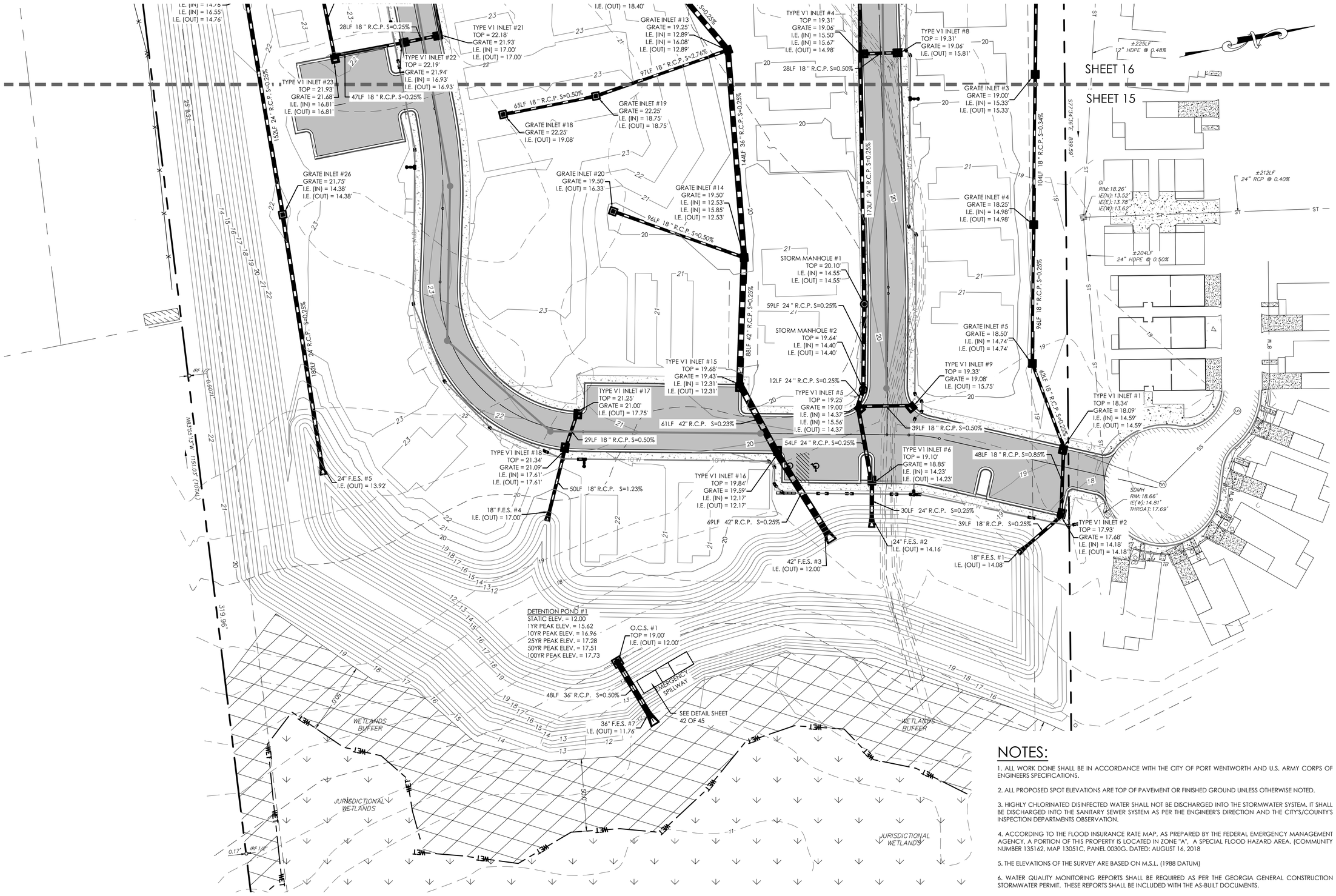
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

UTILITY PLAN

SHEET NUMBER
14
OF 45



NOTES:

1. ALL WORK DONE SHALL BE IN ACCORDANCE WITH THE CITY OF PORT WENTWORTH AND U.S. ARMY CORPS OF ENGINEERS SPECIFICATIONS.

2. ALL PROPOSED SPOT ELEVATIONS ARE TOP OF PAVEMENT OR FINISHED GROUND UNLESS OTHERWISE NOTED.

3. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYSTEM AS PER THE ENGINEER'S DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENTS OBSERVATION.

4. ACCORDING TO THE FLOOD INSURANCE RATE MAP, AS PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, A PORTION OF THIS PROPERTY IS LOCATED IN ZONE "A", A SPECIAL FLOOD HAZARD AREA. (COMMUNITY NUMBER 135162, MAP 13051C, PANEL 0030G, DATED: AUGUST 16, 2018

5. THE ELEVATIONS OF THE SURVEY ARE BASED ON M.S.L. (1988 DATUM)

6. WATER QUALITY MONITORING REPORTS SHALL BE REQUIRED AS PER THE GEORGIA GENERAL CONSTRUCTION STORMWATER PERMIT. THESE REPORTS SHALL BE INCLUDED WITH THE AS-BUILT DOCUMENTS.

7. THE CONTRACTOR SHALL CALL "CALL BEFORE YOU DIG" AT 811 A MINIMUM OF 72 HOURS BEFORE DIGGING TO INSURE PROPER LOCATIONS OF EXISTING UTILITIES.

8. ACCORDING TO THE WEB SOIL SURVEY, THE EXISTING SOIL TYPES LOCATED WITHIN THE PROJECT LIMITS IS:

Cc- Cape Fear soils
MbA- Megget loam
Oj- Ocilla complex
Pl- Pelham loamy sand
Pn- Pooler fine sandy loam
BdA- Bladen fine sandy loam
LeA- Leefield loamy sand

SUBGRADE DRAINAGE NOTES:

1. A PERMANENT DRAINAGE SYSTEM CONSISTING OF A 6" PERFORATED PIPE WITH SOCK SHALL BE INSTALLED ALONG BOTH SIDES OF EACH ROADWAY AND SHALL EXTEND ALONG ITS ENTIRE LENGTH.

2. THE PERMANENT DRAINAGE SYSTEM SHALL RESIDE A MINIMUM OF 2 FEET BELOW THE BOTTOM OF THE PAVEMENT SECTION.

3. SEE SHEET 43 OF 45 FOR A DETAIL OF THE 6" SUBGRADE DRAIN.

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS					
NO.	DATE	REQ. BY			
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

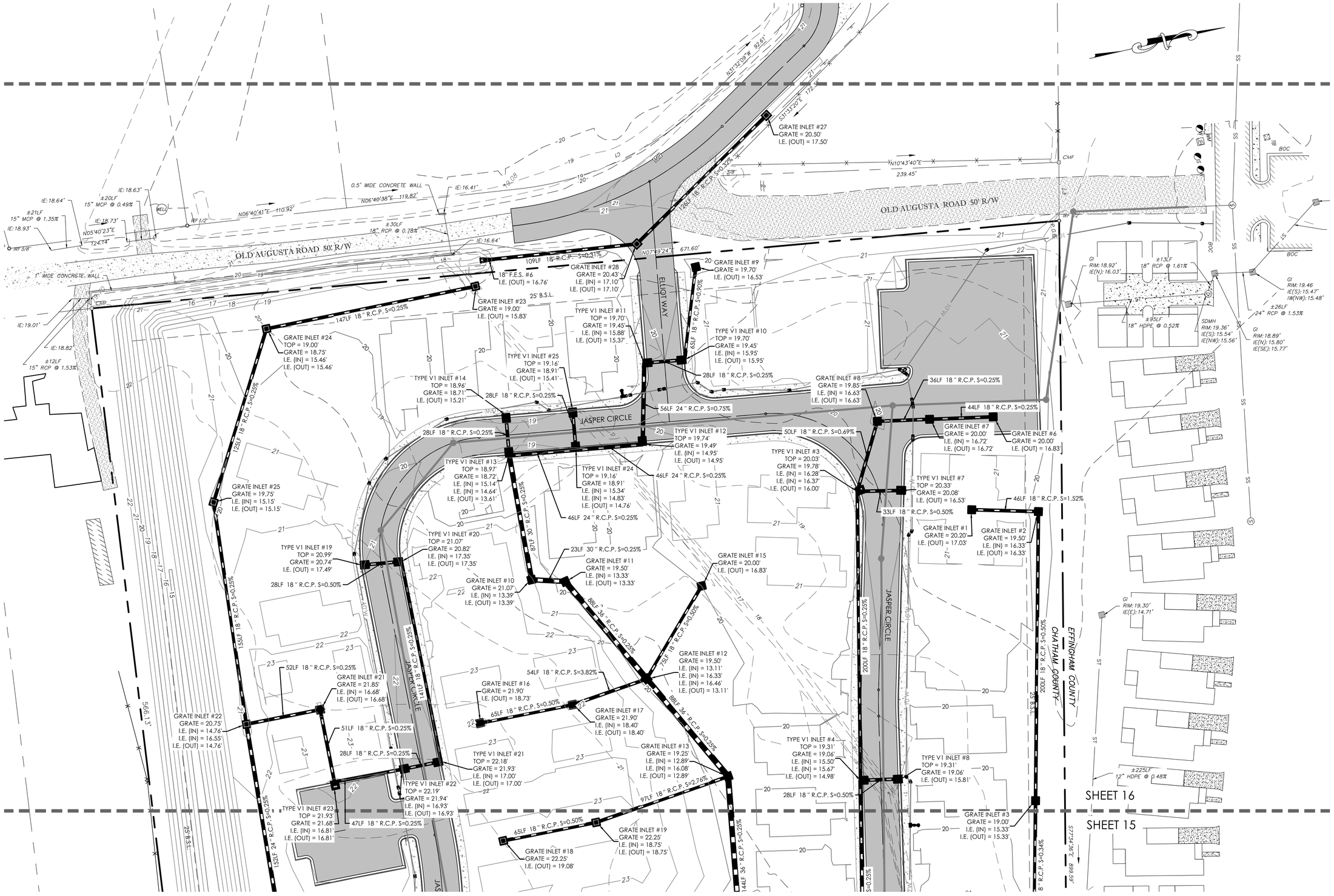
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STORM DRAINAGE PLAN

SHEET NUMBER
15
OF 45



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
4/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTAIE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STORM DRAINAGE PLAN

SHEET NUMBER
16
OF 45

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

SHEET 18

SHEET 17

SEE DETAIL SHEET 42 OF 45

EMERGENCY SPILLWAY

JURISDICTIONAL WETLANDS

WETLANDS BUFFER

GSWCC
GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional

CERTIFICATION NUMBER 0000044936

ISSUED 08/21/2007 EXPIRES 08/21/2022

811
Know what's below.
Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen
ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA	DRAWN	ATA
CHECKED	ATA	DTAIE	04/01/2022
JOB NO.	21-015	SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

PAVING AND GRADING PLAN

SHEET NUMBER
17
OF 45

SHEET 19

SHEET 18

OLD AUGUSTA ROAD 50' R/W

JASPER CIRCLE

ELIOT WAY

25' B.S.L.

SHEET 18

SHEET 17

GSWCC
GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional

CERTIFICATION NUMBER 0000044936

ISSUED 08/21/2007 EXPIRES 08/21/2022

811
Know what's below.
Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen
ENGINEERING SERVICES

REVISIONS					
NO.	DATE	REQ. BY			
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

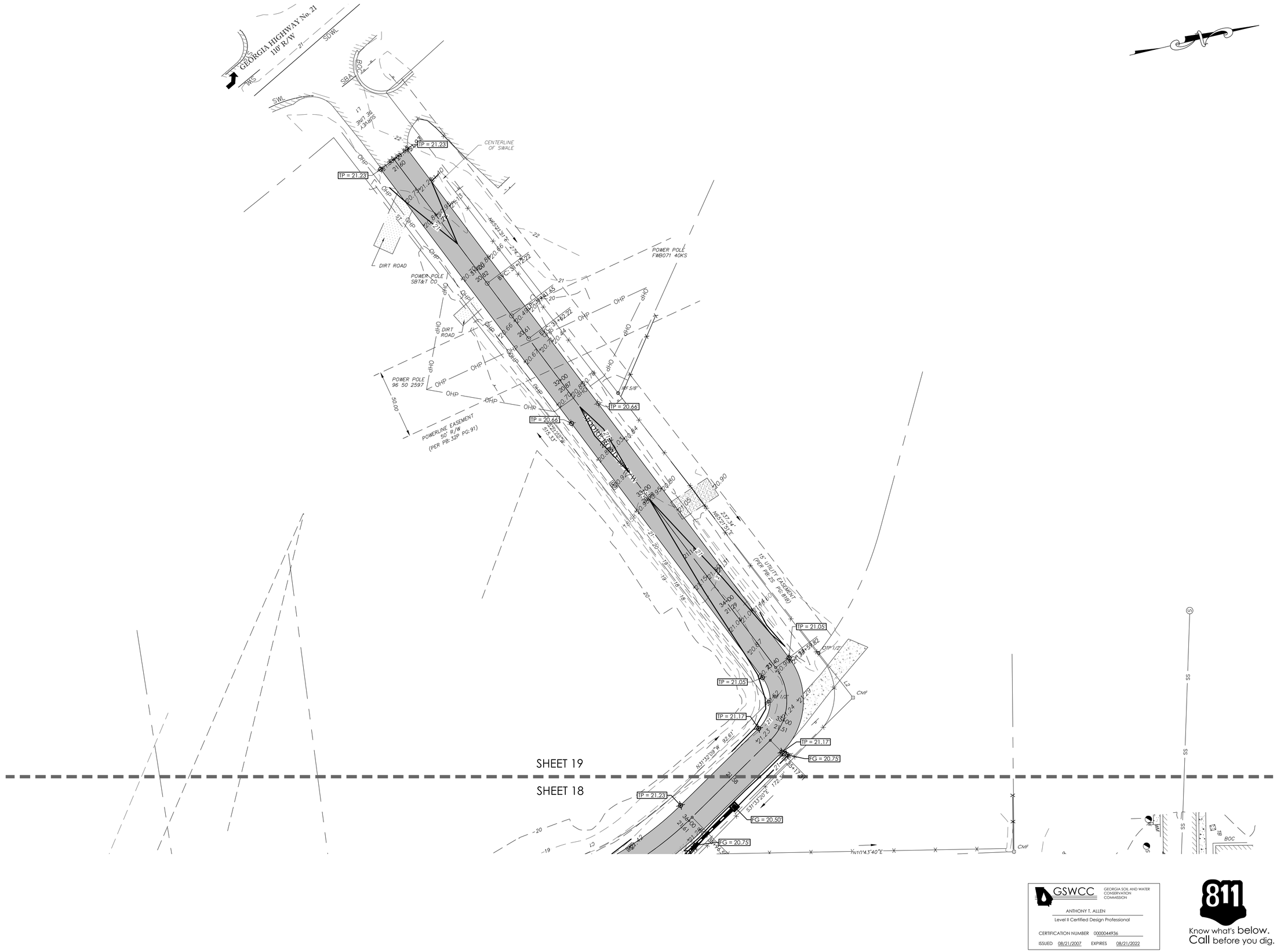
DESIGNED	ATA		
DRAWN	ATA		
CHECKED	ATA		
DTATE	04/01/2022		
JOB NO.	21-015		
SCALE	1" = 30'		

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

PAVING AND GRADING PLAN

SHEET NUMBER
18
OF 45



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

PAVING AND GRADING PLAN

SHEET NUMBER
19
OF 45

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

OWNER/ PRIMARY PERMITEE

DESIGN PROFESSIONAL'S CERTIFICATION:

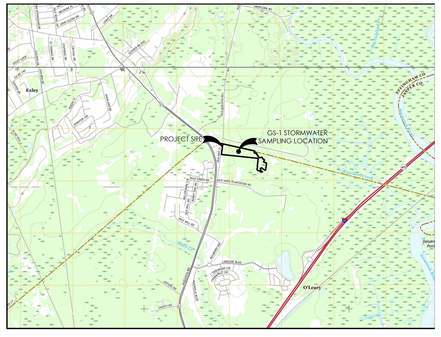
"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen

ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

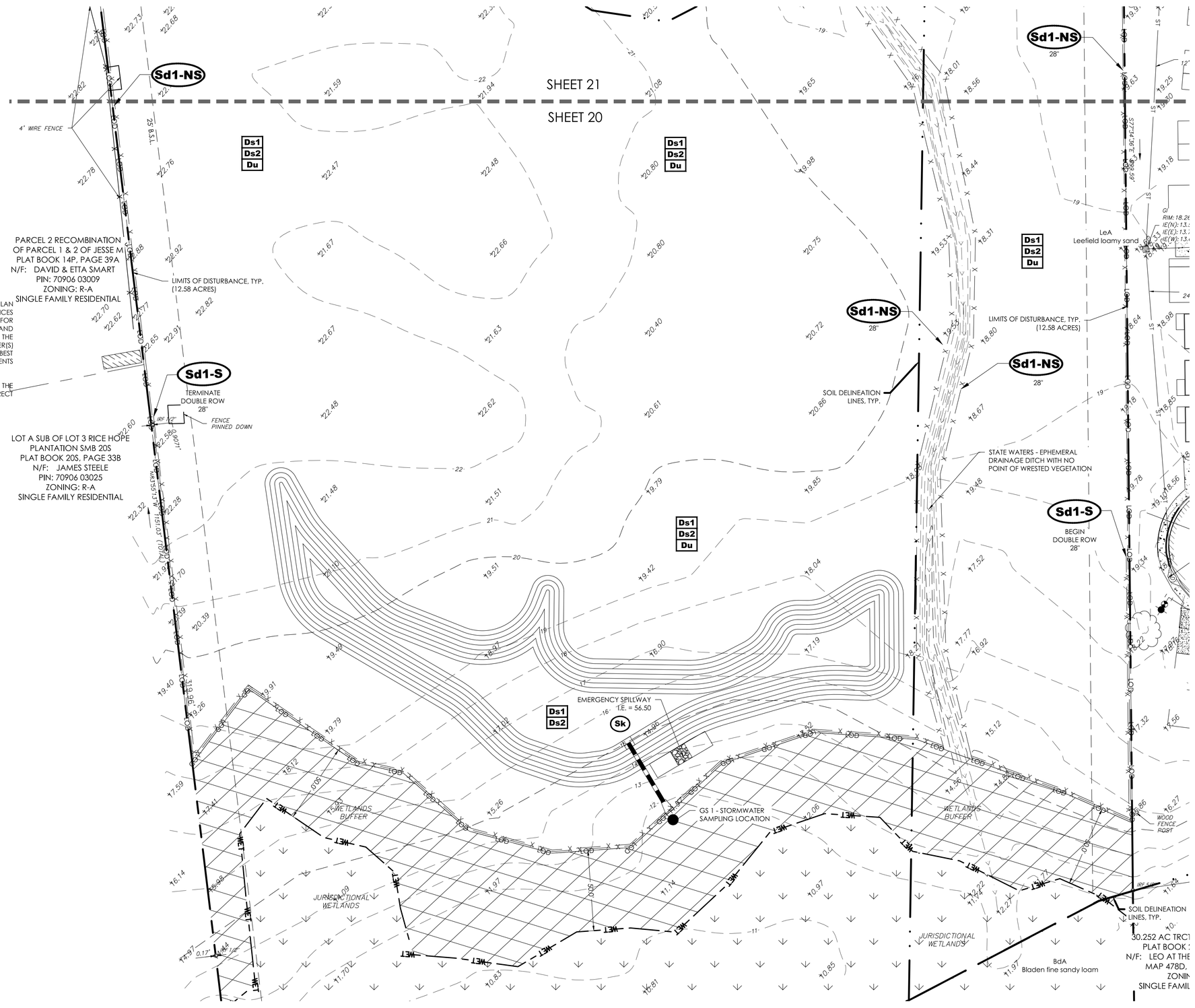
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT.
  PAVED ROADWAYS
  SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK.
  TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC
GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811
Know what's below.
Call before you dig.



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
Anthony Allen
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA	
DRAWN	ATA	
CHECKED	ATA	
DTAIE	04/01/2022	
JOB NO.	21-015	
SCALE	1" = 30'	

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INITIAL EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
20
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

_____
OWNER/ PRIMARY PERMITEE

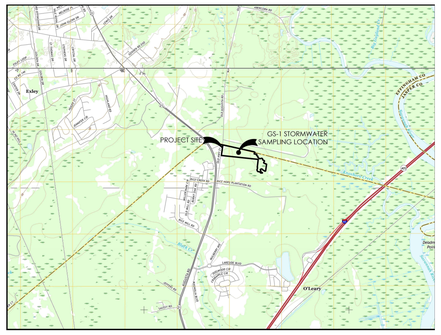
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

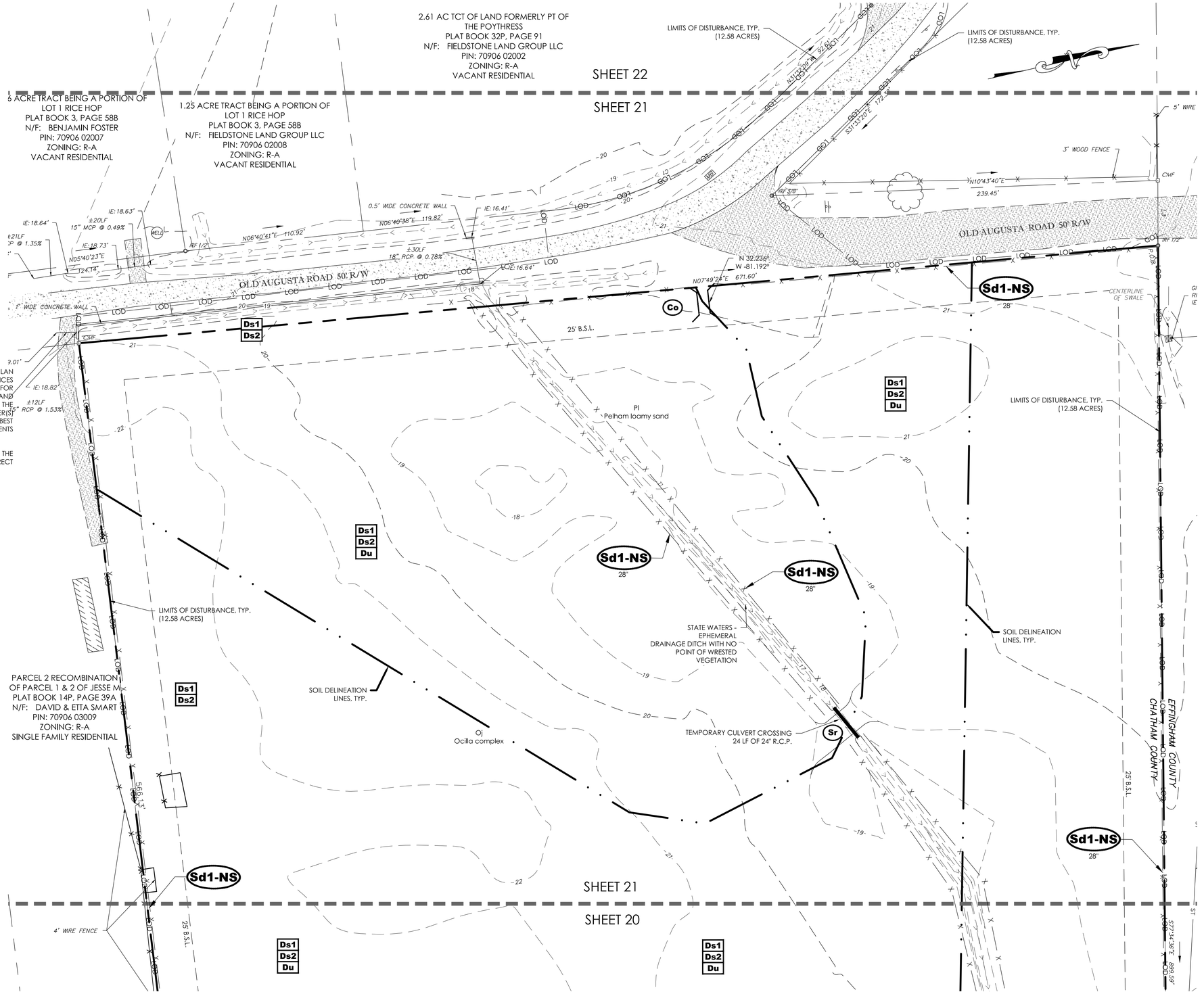
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT.
  PAVED ROADWAYS
  SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
Anthony Allen 04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS						
NO.	-	-	-	-	-	-
DATE	-	-	-	-	-	-
REQ. BY						

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INITIAL EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
21
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

OWNER/ PRIMARY PERMITEE

DESIGN PROFESSIONAL'S CERTIFICATION:

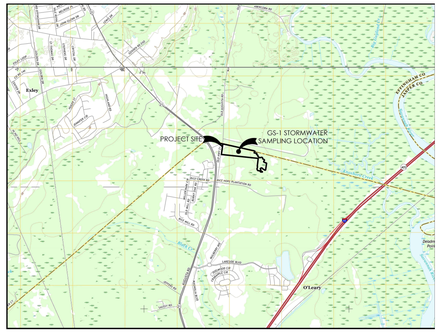
"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen

ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT.
  PAVED ROADWAYS
  SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK.
  TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

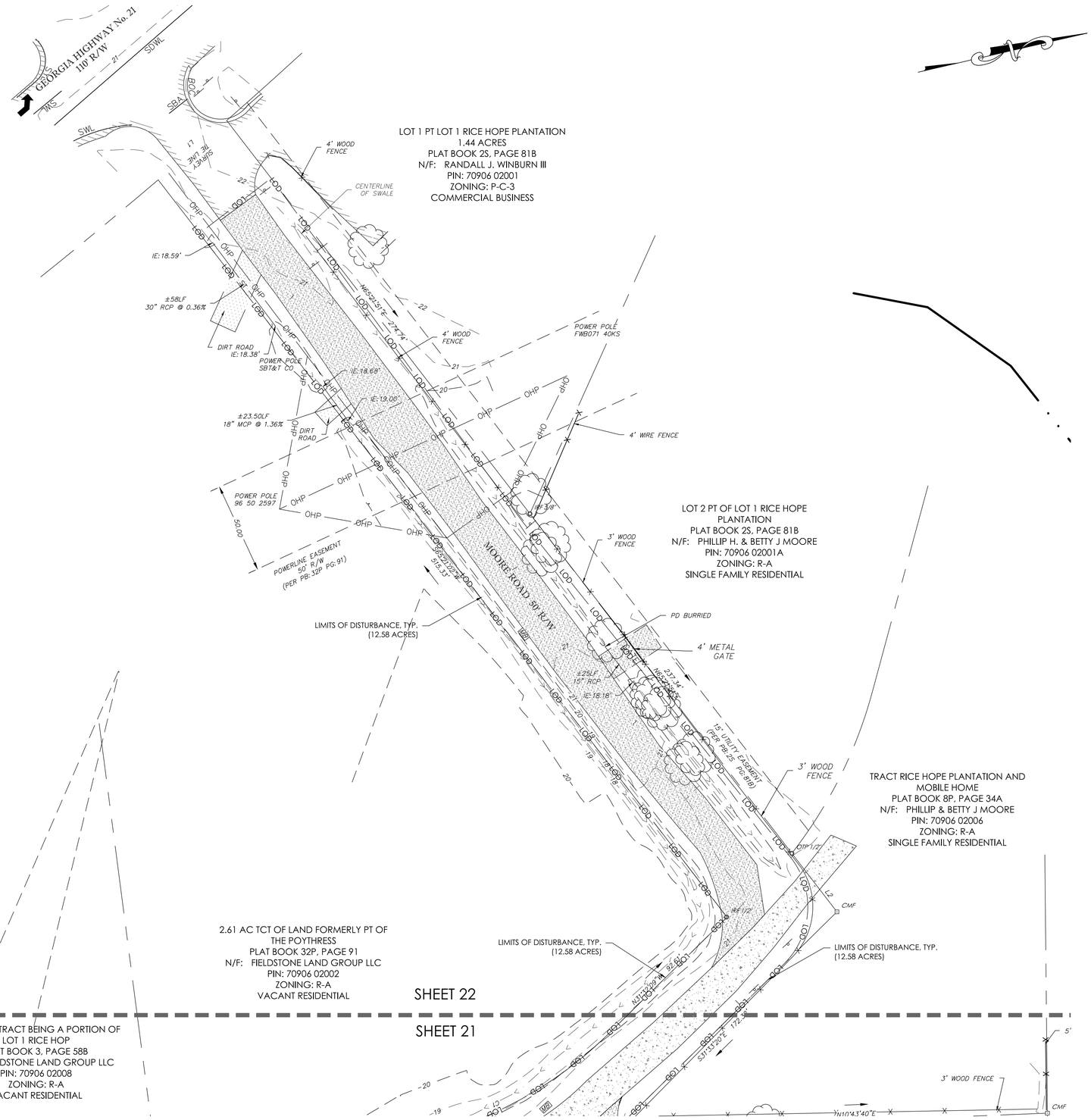
GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional

CERTIFICATION NUMBER 0000044936

ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GRAPHIC SCALE: 1"=30'-0"

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INITIAL EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
22
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

OWNER/ PRIMARY PERMITEE

DESIGN PROFESSIONAL'S CERTIFICATION:

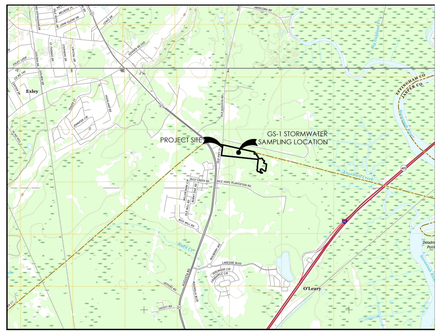
"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen

ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

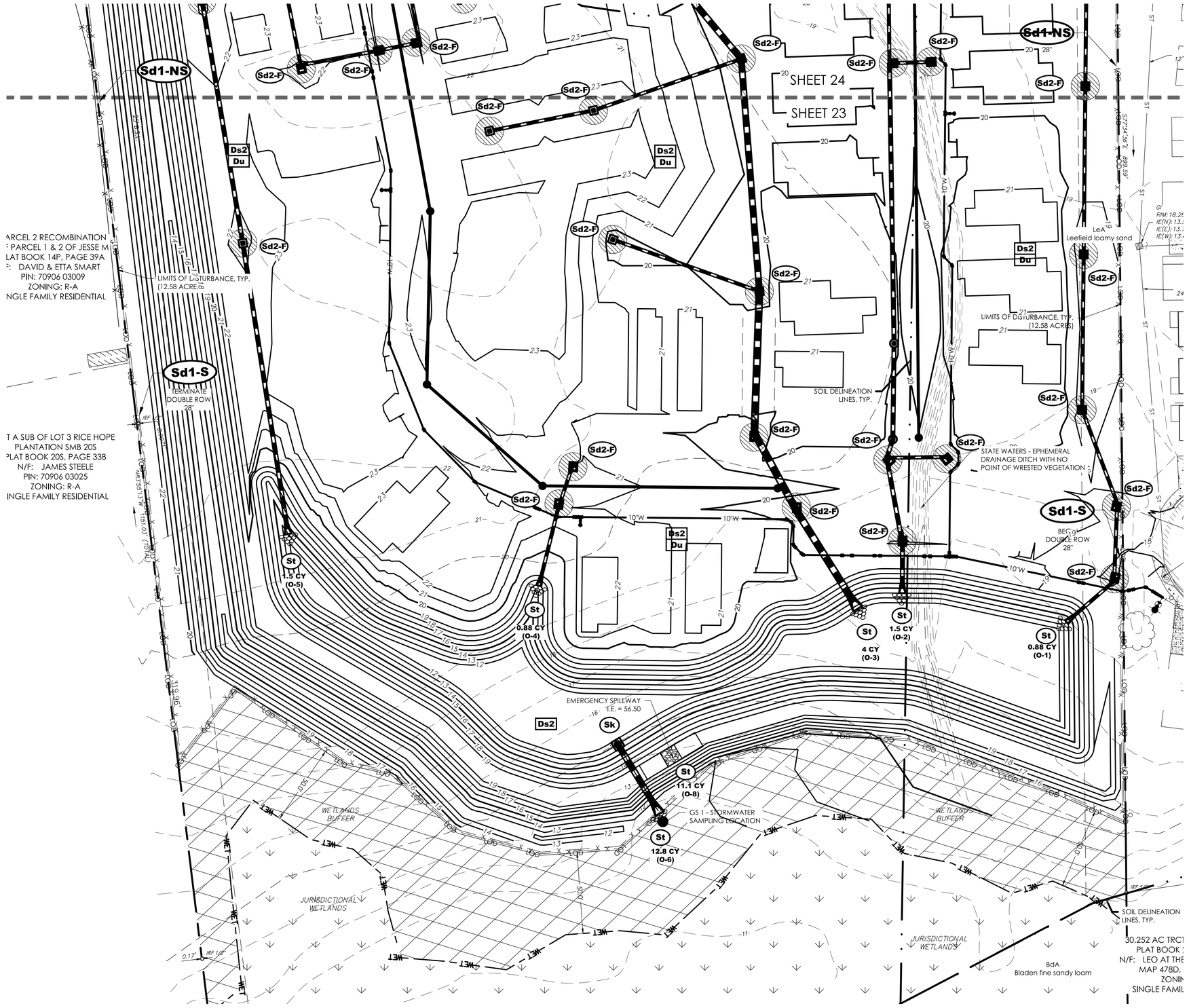
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT.
  PAVED ROADWAYS
  SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC — GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GRAPHIC SCALE: 1"=30'-0"

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
Anthony Allen
04/01/2021

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
23
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

_____
OWNER/ PRIMARY PERMITEE

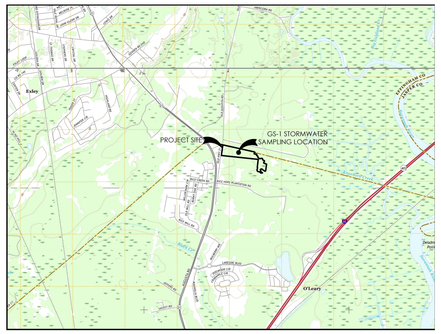
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

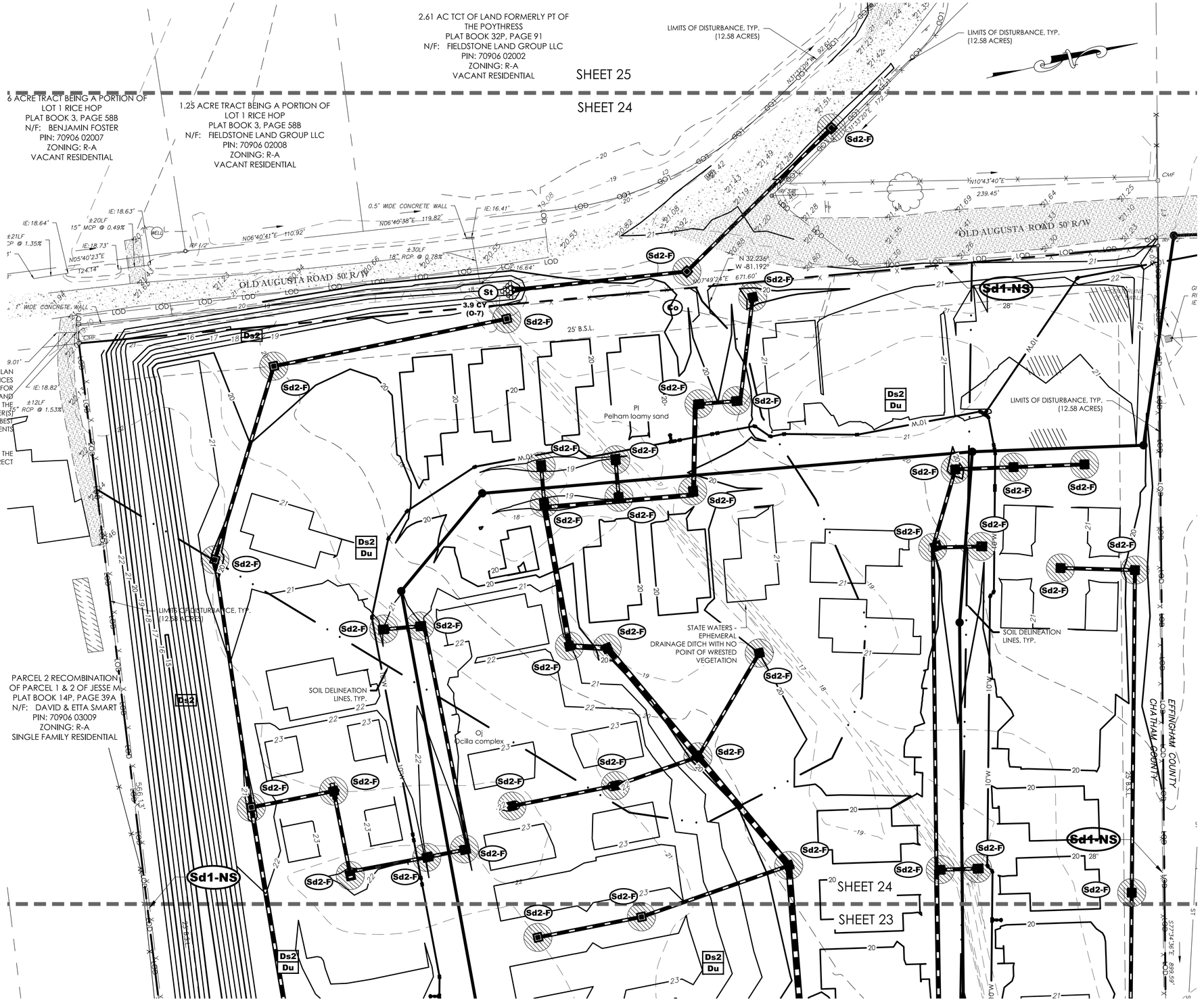
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT. PAVED ROADWAYS SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
Anthony Allen 04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS						
NO.	-	-	-	-	-	-
DATE	-	-	-	-	-	-
REQ. BY	-	-	-	-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INTERMEDIATE EROSION AND SEDIMENTATION PLAN

SHEET NUMBER
24
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

_____
OWNER/ PRIMARY PERMITEE

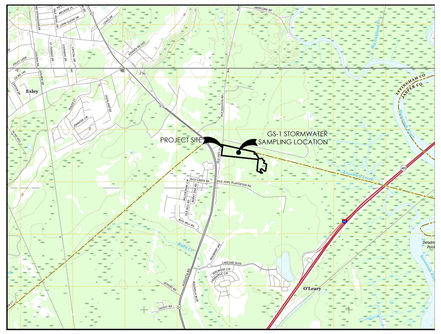
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

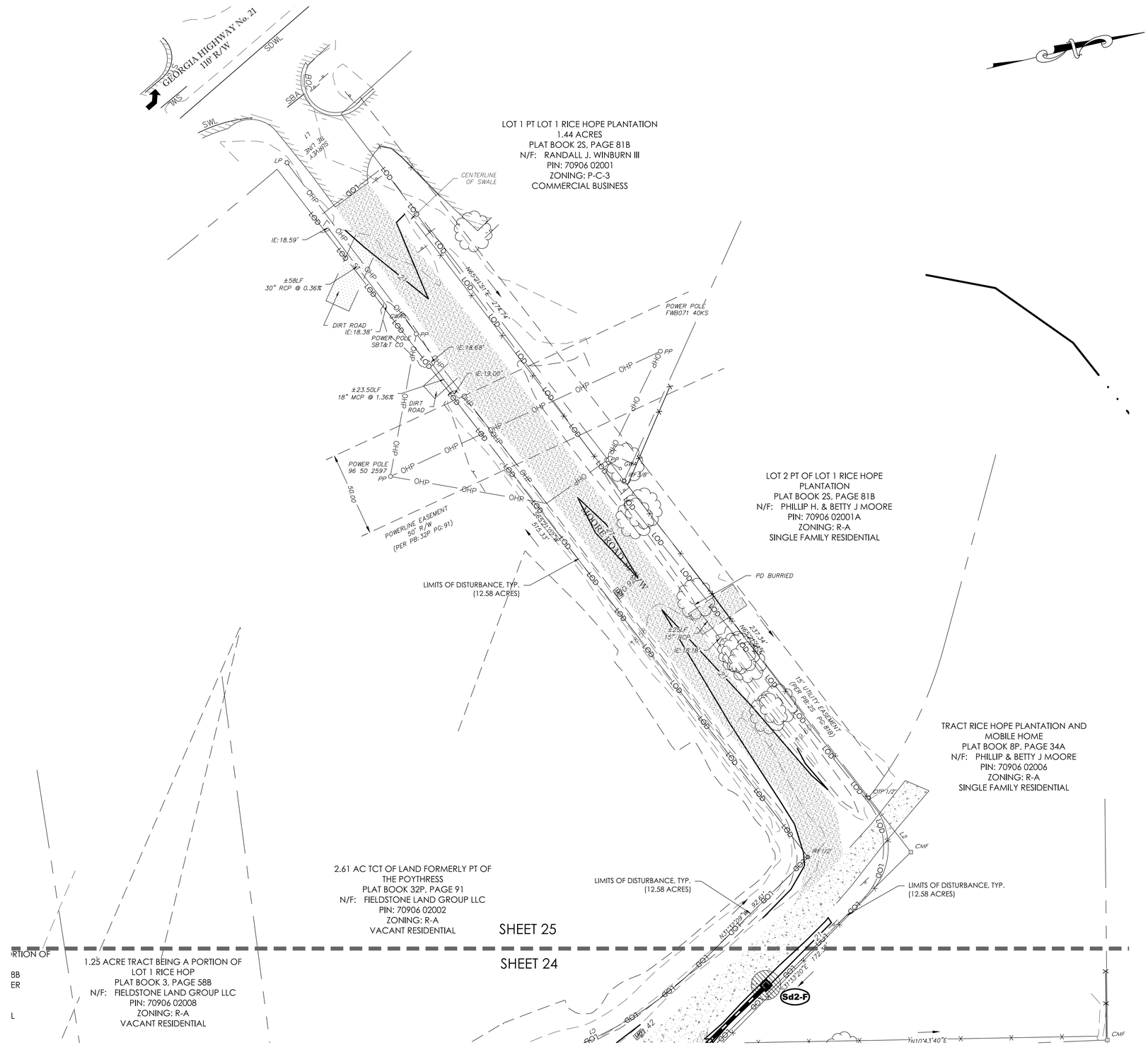
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT. PAVED ROADWAYS SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
25
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

_____
OWNER/ PRIMARY PERMITEE

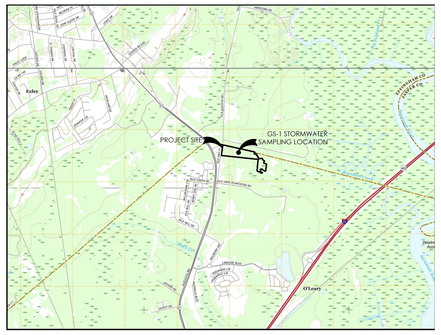
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT. PAVED ROADWAYS SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



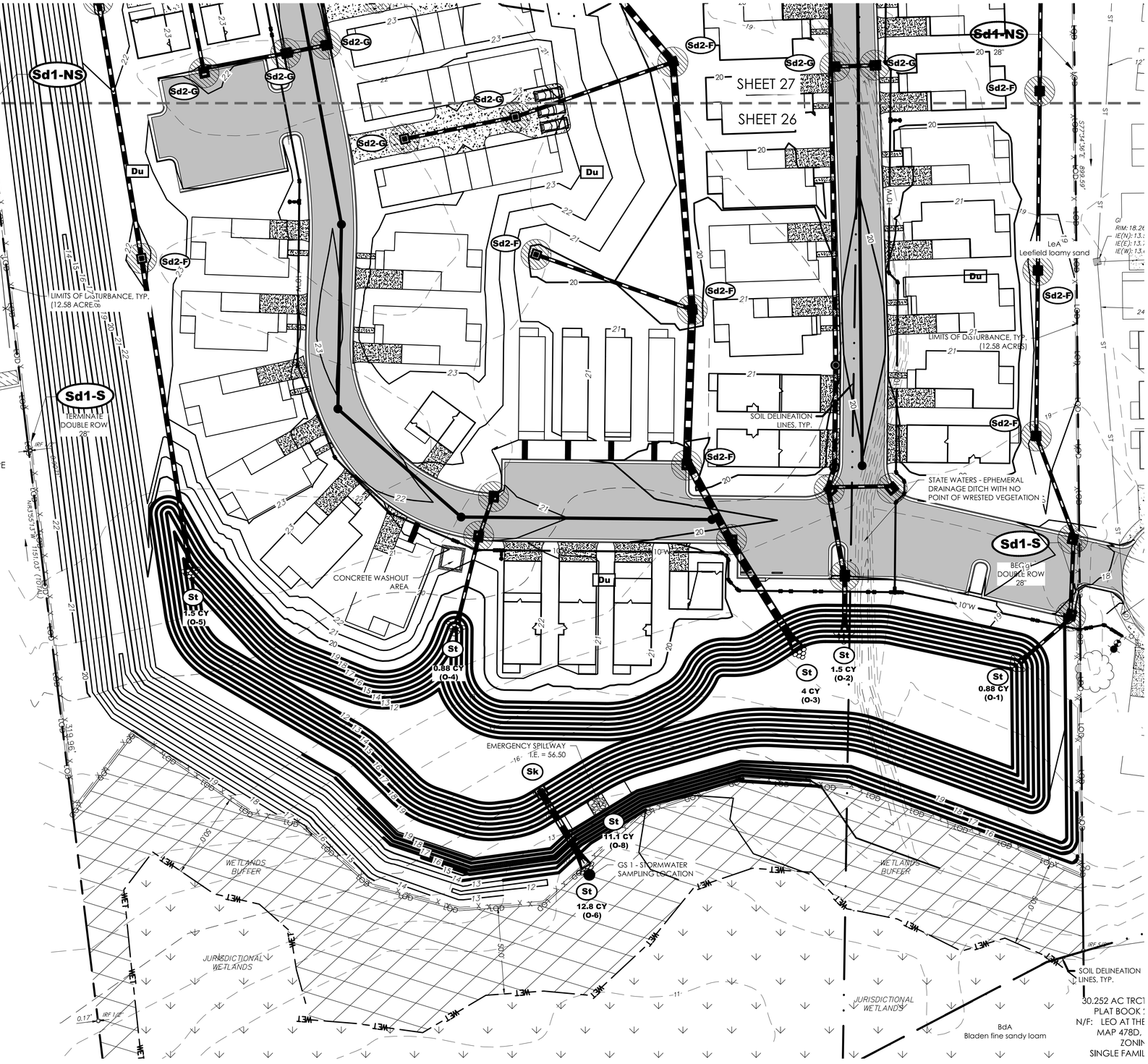
QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

PARCEL 2 RECOMBINATION OF PARCEL 1 & 2 OF JESSE M PLAT BOOK 14P, PAGE 39A
N/F: DAVID & ETTA SMART
PIN: 70906 03009
ZONING: R-A
SINGLE FAMILY RESIDENTIAL

LOT A SUB OF LOT 3 RICE HOPE PLANTATION SMB 20S PLAT BOOK 20S, PAGE 33B
N/F: JAMES STEELE
PIN: 70906 03025
ZONING: R-A
SINGLE FAMILY RESIDENTIAL



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
Anthony Allen 04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

FINAL EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
26
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

Anthony Allen
OWNER/ PRIMARY PERMITEE

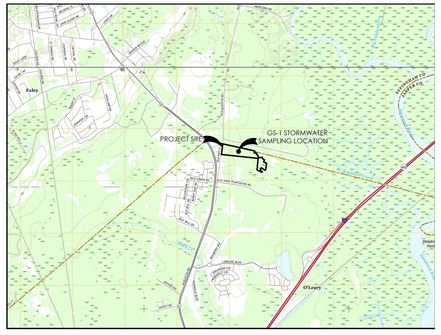
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC., SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT. PAVED ROADWAYS SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK. TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TODD ALLEN
Anthony Allen
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS
INTERMEDIATE EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
27
OF 45

SPECIAL NOTES:

1. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL PREVENTED BY THE INSTALLATION OF EROSION CONTROL AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.

2. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

3. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

4. THERE ARE STATE WATERS LOCATED WITHIN 200' OF THIS SITE.

5. THERE ARE WETLANDS LOCATED ON THIS SITE.

6. THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

7 WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

8. AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMPs WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL..

"I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED UPON MY INQUIRY OF THE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

_____
OWNER/ PRIMARY PERMITEE

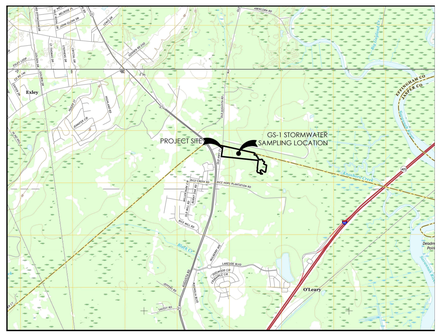
DESIGN PROFESSIONAL'S CERTIFICATION:

"I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF RECEIVING WATER(S) OR THE SAMPLING OF STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

"I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION."

Anthony Allen
ANTHONY T. ALLEN, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000044936

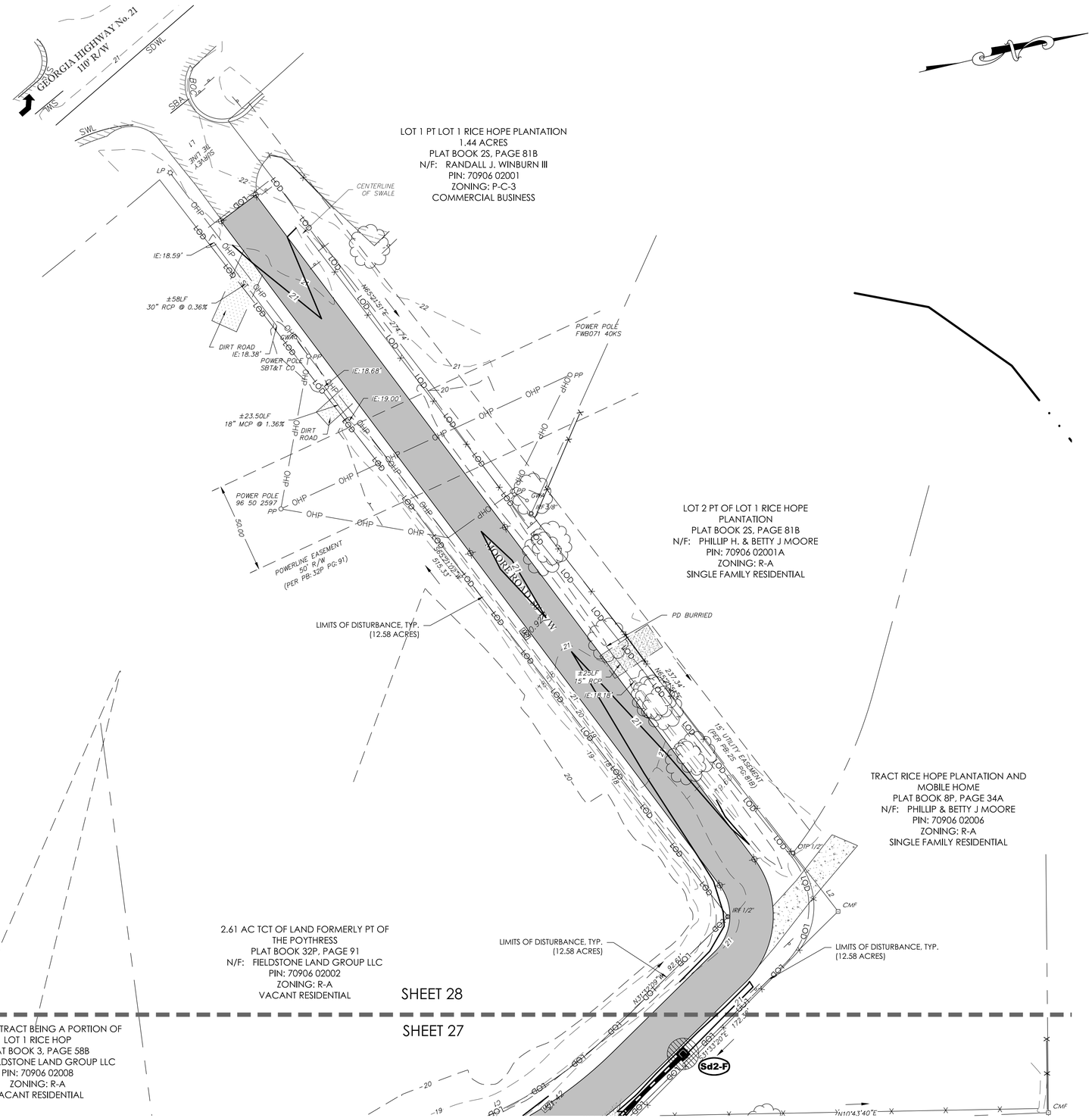
- ALL CLEARING SHALL CONFORM TO LOCAL CODES AND SPECIFICATIONS AND/OR SPECIFICATIONS PROVIDED WITH CONSTRUCTION DOCUMENTS.
- LIMITS OF DISTURBANCE SHALL BE AS SHOWN IN EACH PHASE.
- THERE ARE STATE WATERS ON OR WITHIN 200 FEET OF THE PROJECT SITE.
- THERE ARE NO TROUT STREAMS LOCATED ON OR WITHIN 200 FEET OF PROJECT SITE.
- THERE ARE WETLANDS ON THIS PROJECT SITE.
- THERE ARE NO NEIGHBORING AREAS THAT MIGHT BE AFFECTED FROM THIS PROPOSED PROJECT.
- SILT FENCE SHALL BE TYPE "NS" UNLESS OTHERWISE NOTED.
- SILT FENCE SHALL BE REMOVED ONCE PROJECT SITE HAS REACHED FINAL STABILIZATION.
- STABILIZED CONSTRUCTION EXITS, TIRE WASH AREAS, ETC. SHALL BE PROVIDED AS NEEDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT.
  PAVED ROADWAYS
  SHALL BE INSPECTED DAILY FOR THE TRACKING OF MUD, DIRT, OR ROCK.
  TRUCKS HAULING MATERIAL FROM THE PROJECT SITE SHALL BE COVERED.



QUAD MAP

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

811 Know what's below. Call before you dig.



GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2021

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

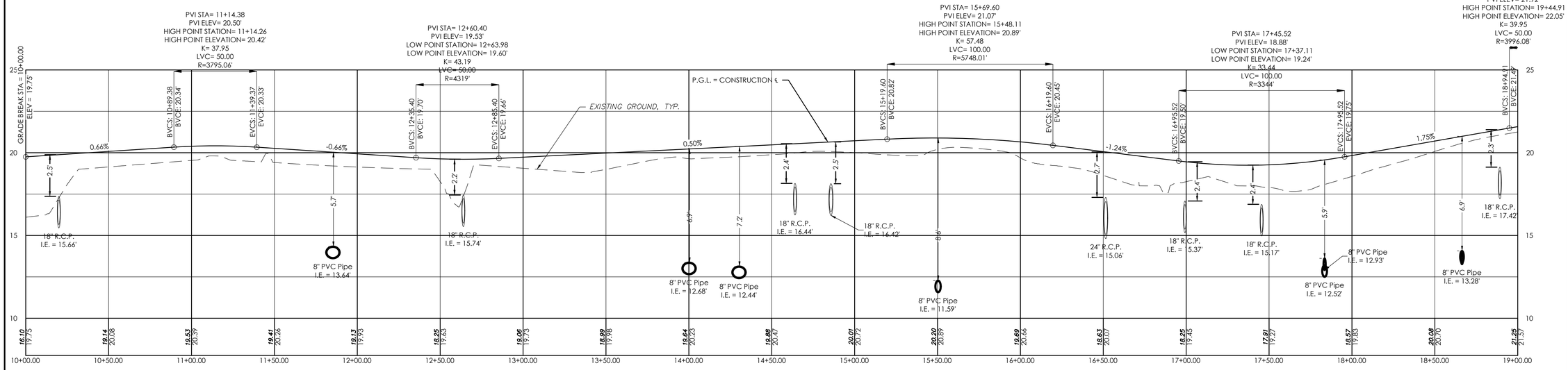
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	1" = 30'

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

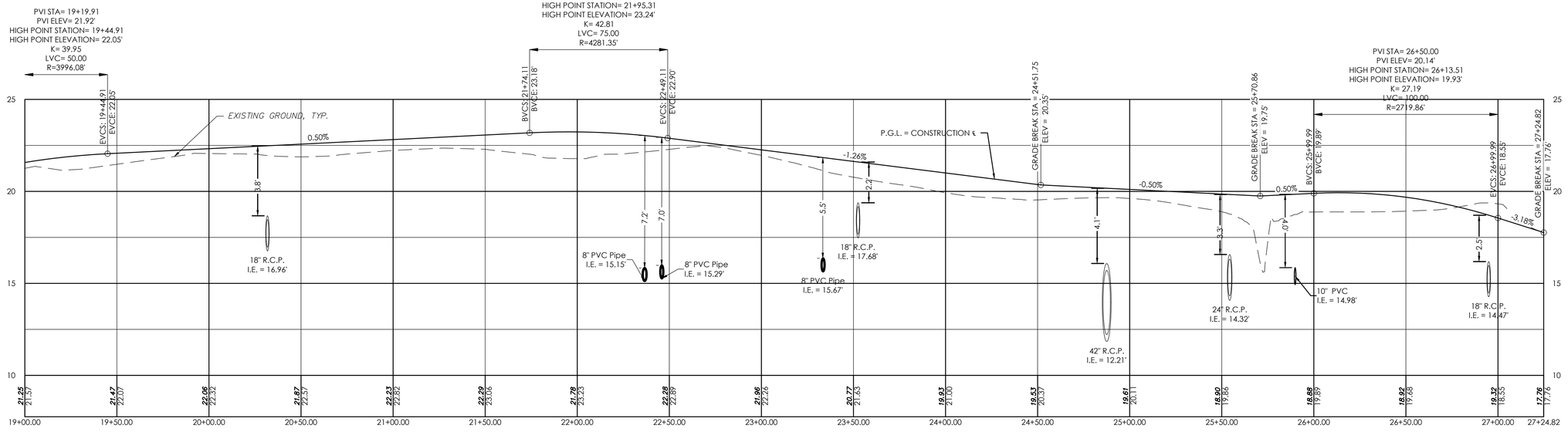
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

FINAL EROSION AND SEDIMENTATION CONTROL PLAN

SHEET NUMBER
28
OF 45



JASPER CIRCLE PROFILE
STATIONS 10+00.00 TO 19+00.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



JASPER CIRCLE PROFILE
STATIONS 19+00.00 TO 27+24.82
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

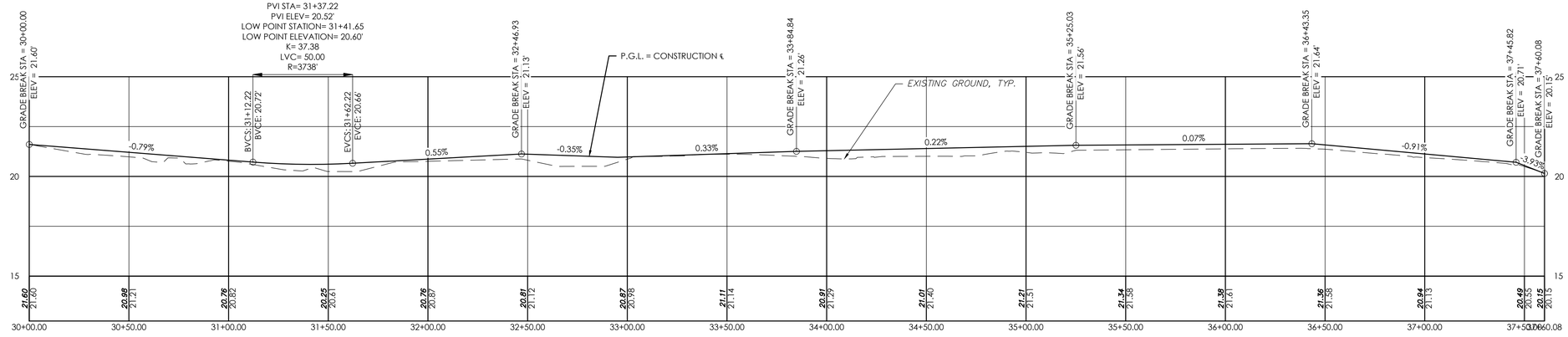
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

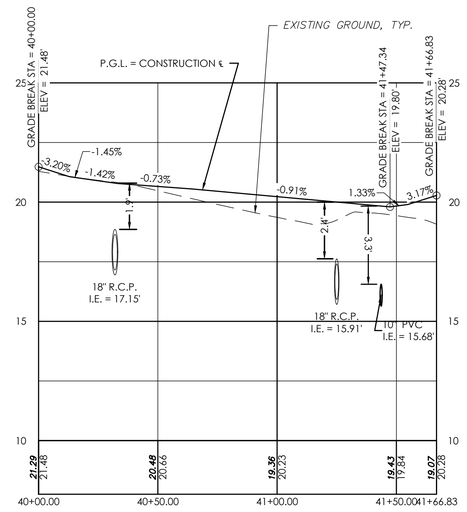
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

ROADWAY PROFILES

SHEET NUMBER
29
OF 45



MOORE ROAD PROFILE
STATIONS 30+00.00 TO 37+60.08
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



ELLIOT WAY PROFILE
STATIONS 40+00.00 TO 41+66.83
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA
REGISTERED
PROFESSIONAL
ENGINEER
ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen
ENGINEERING SERVICES

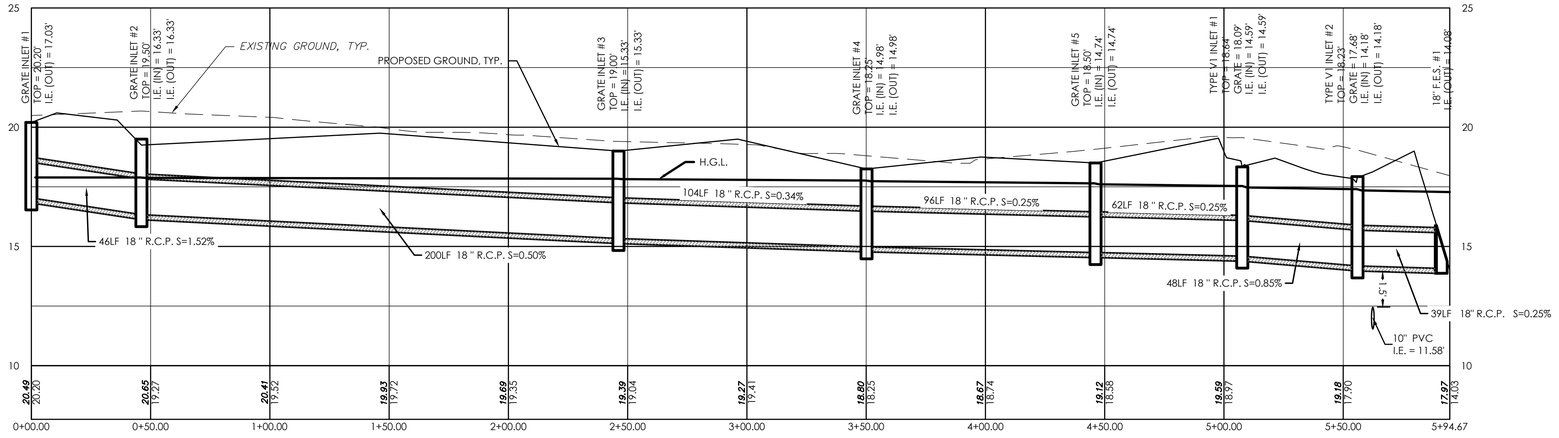
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

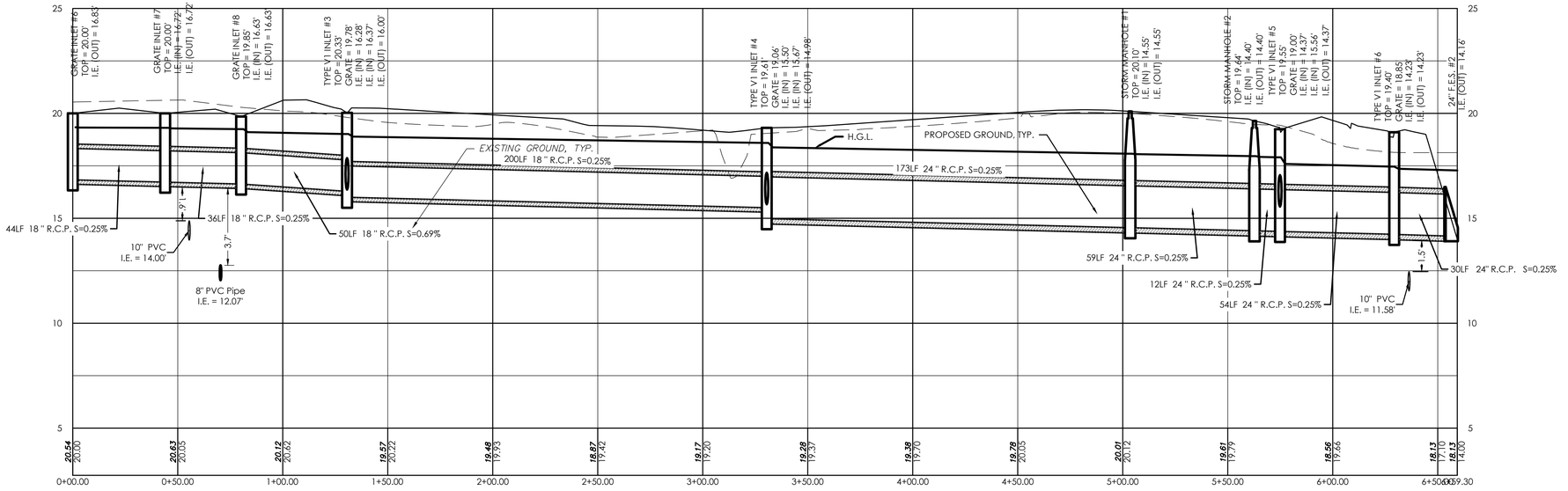
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

ROADWAY PROFILES

SHEET NUMBER
30
OF 45



GRATE INLET #1 TO F.E.S. #1 PROFILE
STATIONS 0+00.00 TO 5+94.67
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



GRATE INLET #6 TO F.E.S. #2 PROFILE
STATIONS 0+00.00 TO 6+59.30
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

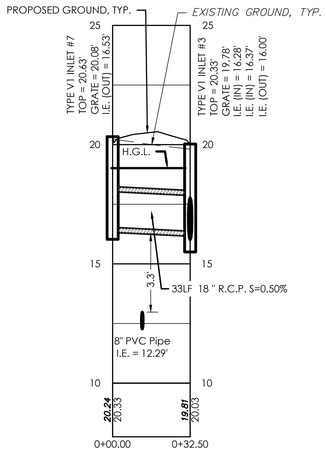
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

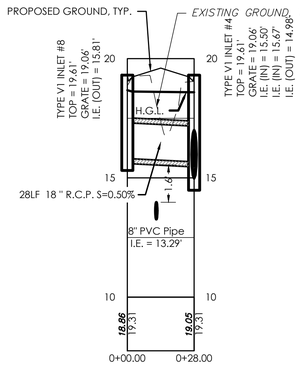
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STORM DRAINAGE PROFILES

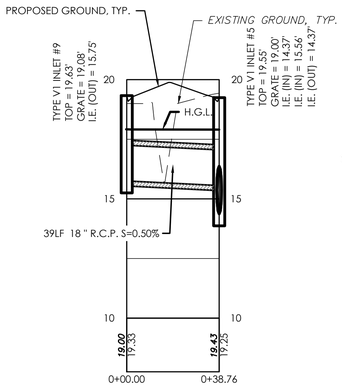
SHEET NUMBER
31
OF 45



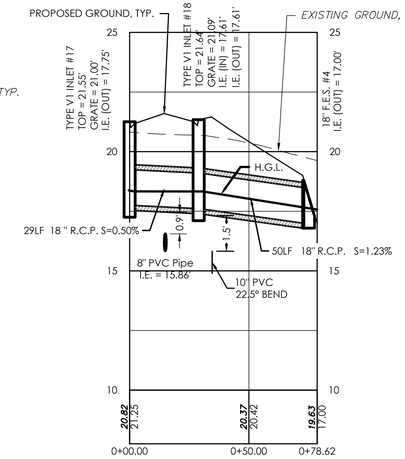
TYPE V1 INLET #7 TO TYPE V1 INLET #3 PROFILE
STATIONS 0+00.00 TO 0+32.50
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



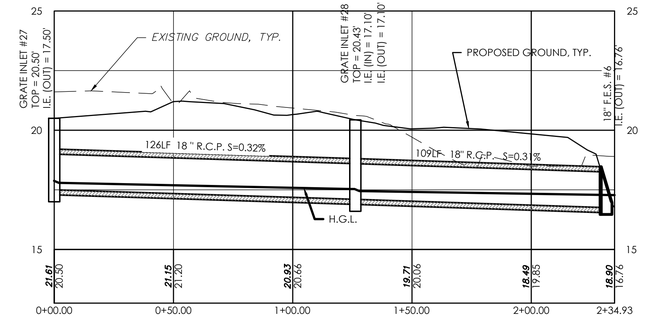
TYPE V1 INLET #8 TO TYPE V1 INLET #4 PROFILE
STATIONS 0+00.00 TO 0+28.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



TYPE V1 INLET #9 TO TYPE V1 INLET #5 PROFILE
STATIONS 0+00.00 TO 0+38.76
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



TYPE V1 INLET #17 TO F.E.S. #4 PROFILE
STATIONS 0+00.00 TO 0+78.62
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

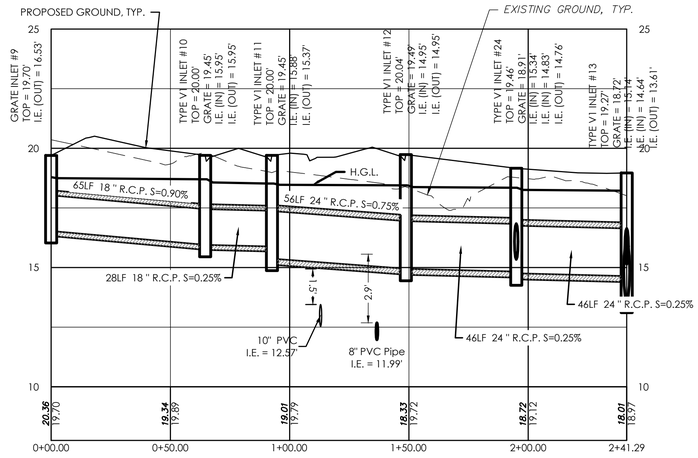


GRATE INLET #27 TO F.E.S. #6 PROFILE
STATIONS 0+00.00 TO 2+34.93
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

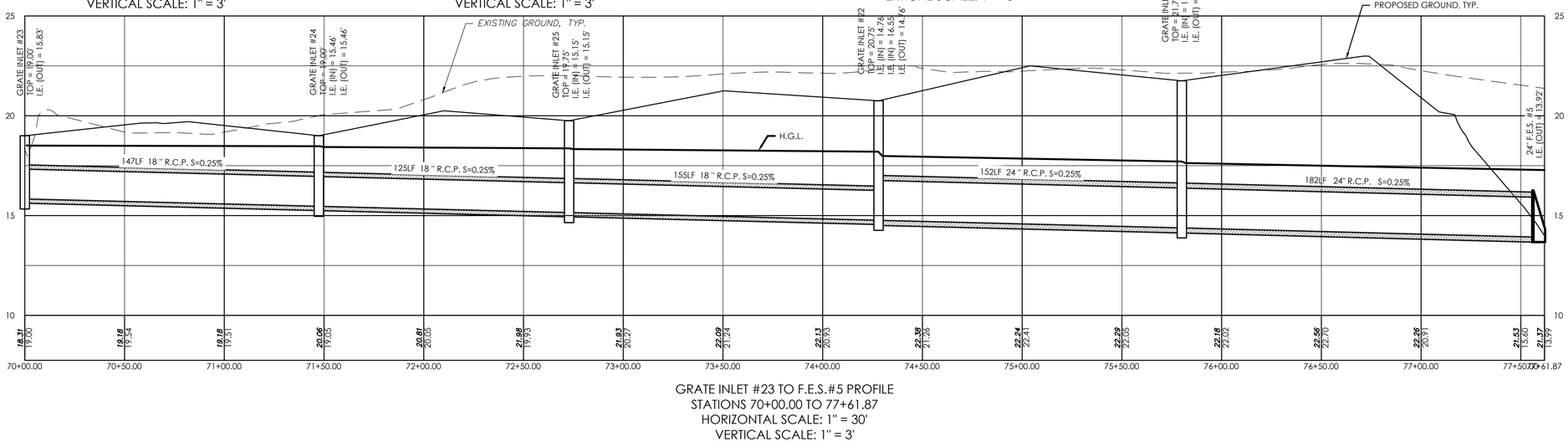
GRATE INLET #15 TO GRATE INLET #12 PROFILE
STATIONS 0+00.00 TO 0+74.71
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GRATE INLET #20 TO GRATE INLET #14 PROFILE
STATIONS 0+00.00 TO 0+96.03
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

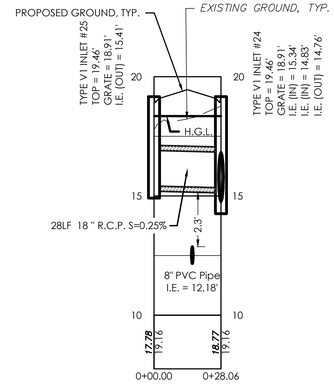
GRATE INLET #16 TO GRATE INLET #12 PROFILE
STATIONS 0+00.00 TO 1+19.56
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



GRATE INLET #9 TO TYPE V1 INLET #13 PROFILE
STATIONS 0+00.00 TO 2+41.29
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



GRATE INLET #23 TO F.E.S.#5 PROFILE
STATIONS 70+00.00 TO 77+61.87
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



TYPE V1 INLET #25 TO TYPE V1 INLET #24 PROFILE
STATIONS 0+00.00 TO 0+28.06
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022
P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

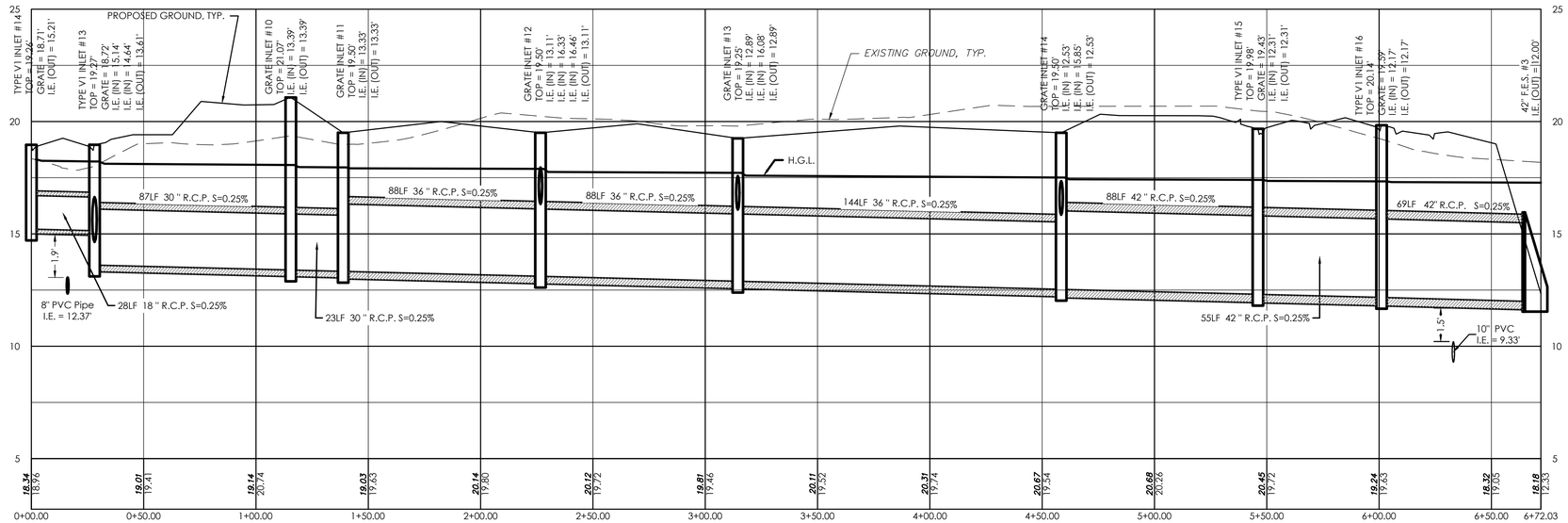
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

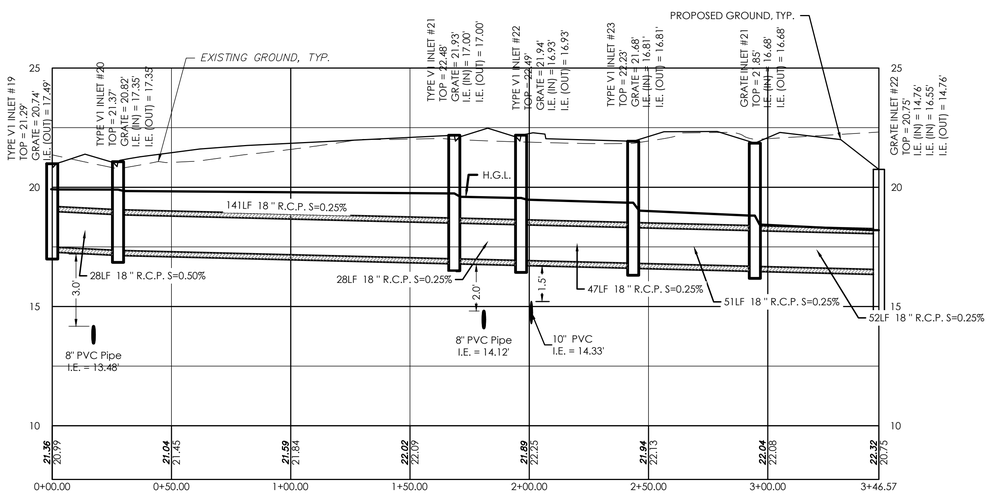
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STORM DRAINAGE PROFILES

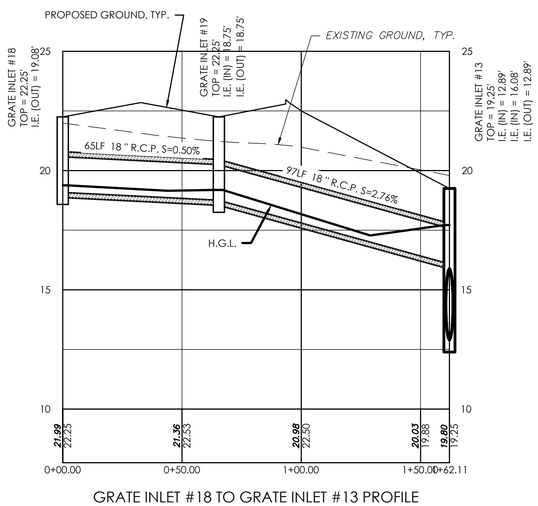
SHEET NUMBER
32
OF 45



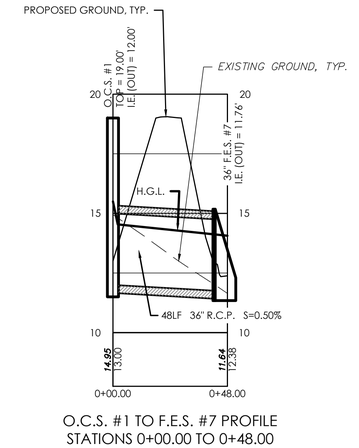
TYPE V1 INLET #14 TO F.E.S. #3 PROFILE
STATIONS 0+00.00 TO 6+72.03
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



TYPE V1 INLET #19 TO GRATE INLET #22 PROFILE
STATIONS 0+00.00 TO 3+46.57
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



GRATE INLET #18 TO GRATE INLET #13 PROFILE
STATIONS 0+00.00 TO 1+62.11
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



O.C.S. #1 TO F.E.S. #7 PROFILE
STATIONS 0+00.00 TO 0+48.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

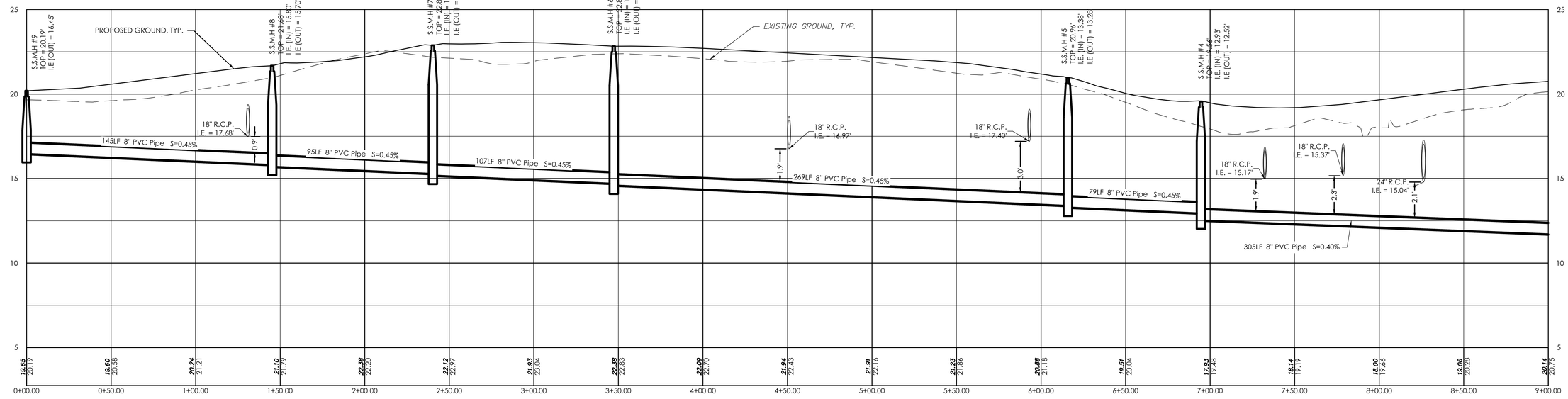
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

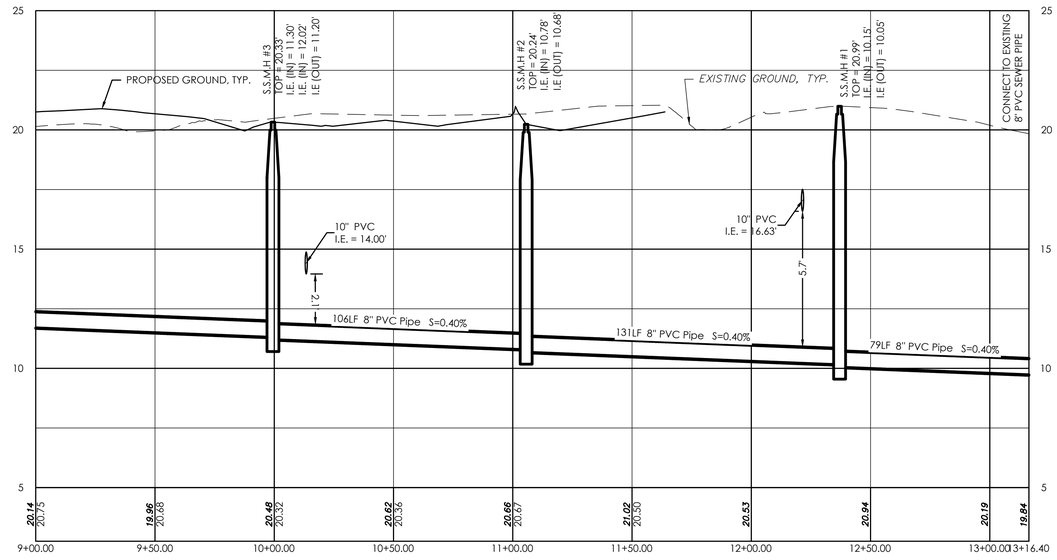
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

STORM DRAINAGE PROFILES

SHEET NUMBER
33
OF 45



S.S.M.H. #9 TO S.S.M.H. #1 PROFILE
STATIONS 0+00.00 TO 9+00.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



S.S.M.H. #9 TO S.S.M.H. #1 PROFILE
STATIONS 9+00.00 TO 13+16.40
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

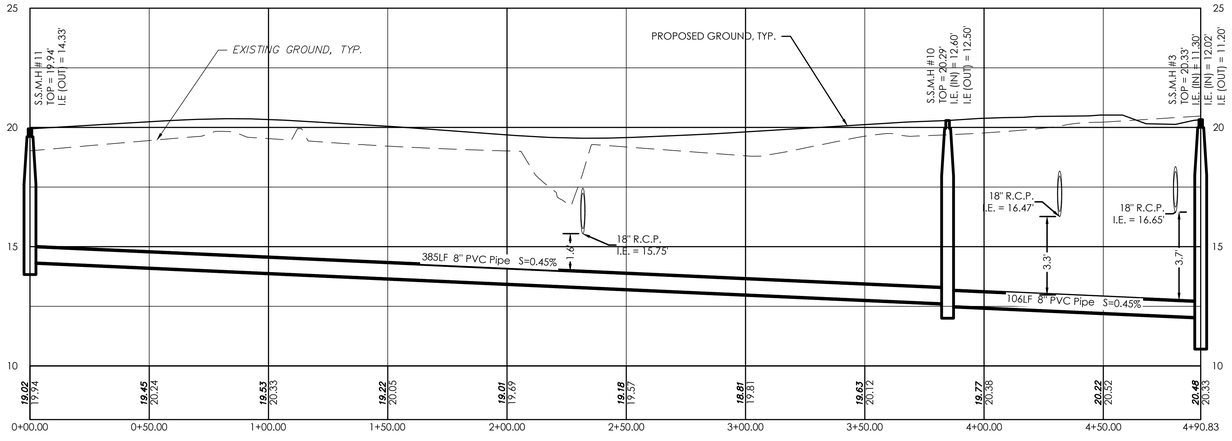
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

SANITARY SEWER PROFILES

SHEET NUMBER
34
OF 45



S.S.M.H #11 TO S.S.M.H. #3 PROFILE
STATIONS 0+00.00 TO 4+90.83
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

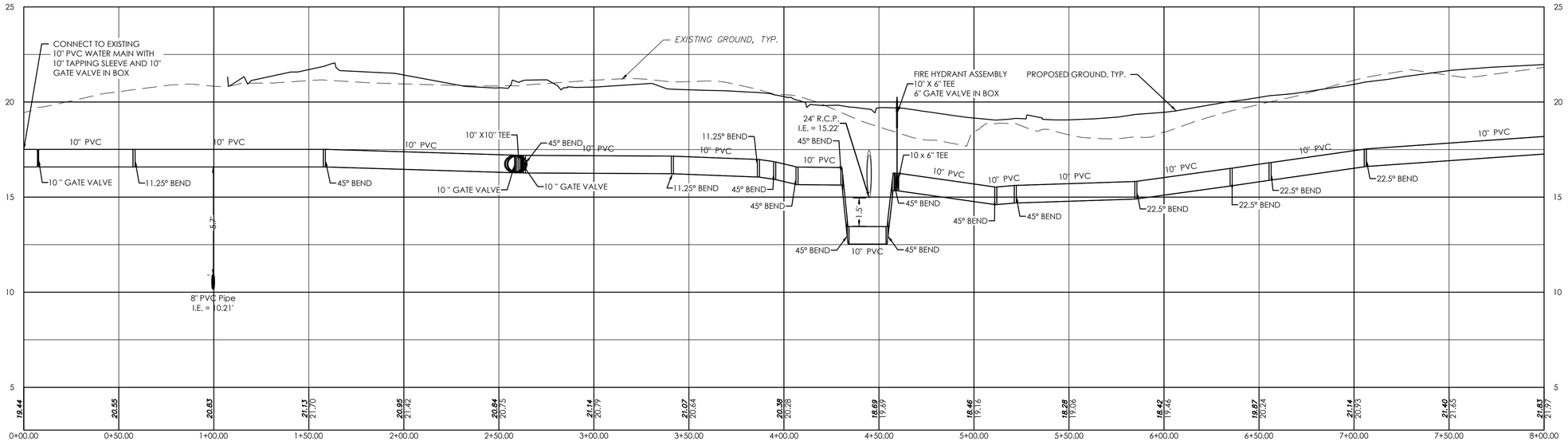
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

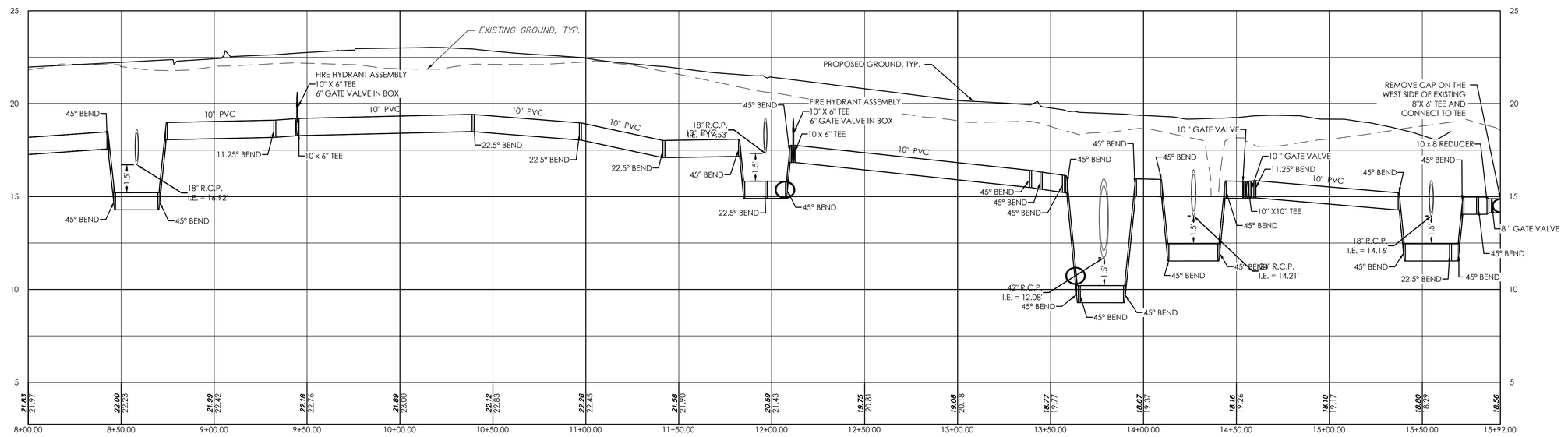
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

SANITARY SEWER PROFILES

SHEET NUMBER
35
OF 45



WATERMAIN PROFILE
STATIONS 0+00.00 TO 8+00.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



WATERMAIN PROFILE
STATIONS 8+00.00 TO 15+92.00
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

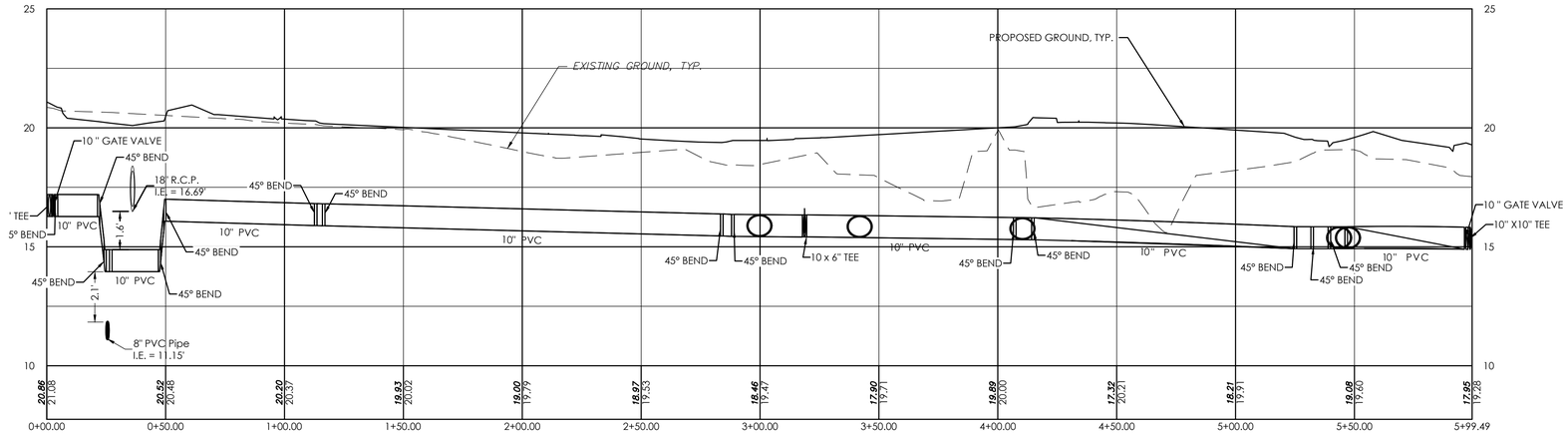
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

WATER PROFILES

SHEET NUMBER
36
OF 45



10" WATERMAIN LOOP PROFILE
STATIONS 0+00.00 TO 5+99.49
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

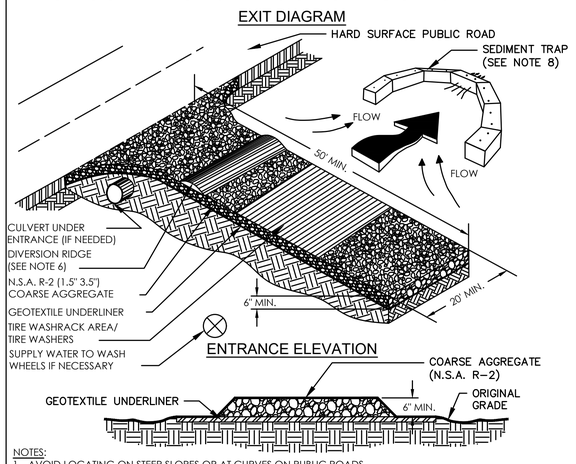
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	AS SHOWN

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

WATER PROFILES

SHEET NUMBER
37
OF 45

CRUSHED STONE CONSTRUCTION EXIT



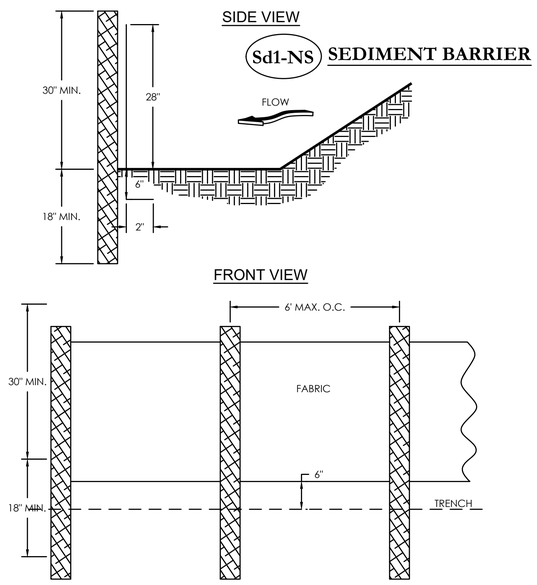
NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%..
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

MAINTENANCE

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 1.5 - 3.5 INCH STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANOUT OF ANY STRUCTURES TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES OR SITE ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.

Co **CONSTRUCTION EXIT**

SILT FENCE - TYPE NON-SENSITIVE

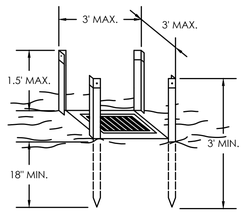


NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

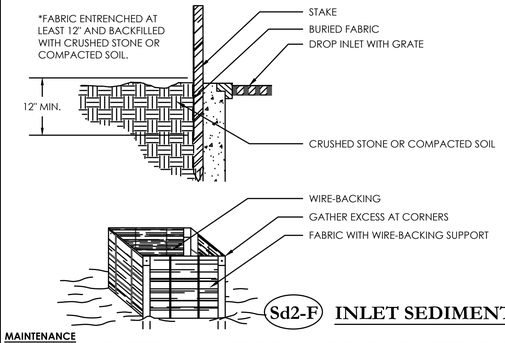
MAINTENANCE
- SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER.
- SEDIMENT BARRIERS SHALL BE REPLACED WHENEVER THEY HAVE DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF THE PRODUCT IS REDUCED (APPROXIMATELY SIX MONTHS) OR THE HEIGHT OF THE PRODUCT IS NOT MAINTAINING 80% OF ITS PROPERLY INSTALLED HEIGHT.
- TEMPORARY SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATED AT THE BARRIER SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE BARRIER IS REMOVED.

FABRIC AND SUPPORTING FRAME FOR INLET PROTECTION

STEEL FRAME AND SILT FENCE INSTALLATION



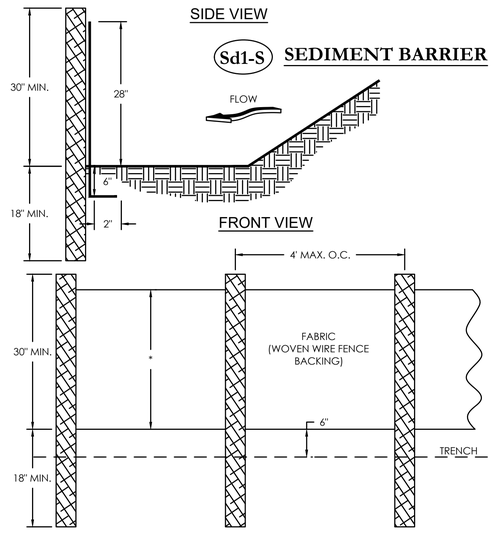
NOTES
1. DESIGN IS FOR SLOPES NO GREATER THAN 5% (NOT DESIGNED FOR CONCENTRATED FLOWS).
2. THE STEEL POSTS SUPPORTING THE SILT FENCE MATERIAL SHOULD BE SPACED EVENLY AROUND THE PERIMETER OF THE INLET (MAXIMUM OF 3' APART).
3. THE STEEL POSTS SHOULD BE SECURELY DRIVEN AT LEAST 18" DEEP.
4. THE FABRIC SHOULD BE ENTRENCHED AT LEAST 12" AND THEN BACKFILLED WITH CRUSHED STONE OR COMPACTED SOIL.



Sd2-F **INLET SEDIMENT TRAP**

MAINTENANCE
- THE TRAP SHALL BE INSPECTED DAILY AND AFTER EACH RAIN, AND REPAIRS MADE AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE HEIGHT OF THE TRAP. SEDIMENT SHALL BE REMOVED FROM CURB INLET PROTECTION IMMEDIATELY. FOR EXCAVATED INLET SEDIMENT TRAPS, SEDIMENT SHALL BE REMOVED WHEN ONE-HALF OF THE SEDIMENT STORAGE CAPACITY HAS BEEN LOST TO SEDIMENT ACCUMULATION. SOD INLET PROTECTION SHALL BE MAINTAINED AS SPECIFIED IN DS4- DISTURBED AREA STABILIZATION (WITH SODDING).
- SEDIMENT SHALL NOT BE WASHED INTO THE INLET. IT SHALL BE REMOVED FROM THE SEDIMENT TRAP, DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLET AGAIN.
- WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, ALL MATERIALS AND ANY SEDIMENT SHALL BE REMOVED, AND EITHER SALVAGED OR DISPOSED OF PROPERLY. THE DISTURBED AREA SHALL BE BROUGHT BACK TO PROPER GRADE, THEN SMOOTHED AND COMPACTED. APPROPRIATELY STABILIZE ALL DISTURBED AROUND THE INLET.

SILT FENCE - TYPE SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

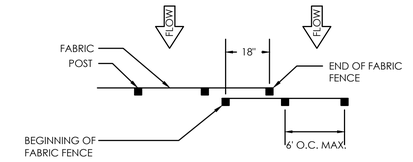
MAINTENANCE
- SEDIMENT SHALL BE REMOVED ONCE IT HAS ACCUMULATED TO ONE-HALF THE ORIGINAL HEIGHT OF THE BARRIER.
- SEDIMENT BARRIERS SHALL BE REPLACED WHENEVER THEY HAVE DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF THE PRODUCT IS REDUCED (APPROXIMATELY SIX MONTHS) OR THE HEIGHT OF THE PRODUCT IS NOT MAINTAINING 80% OF ITS PROPERLY INSTALLED HEIGHT.
- TEMPORARY SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. ALL SEDIMENT ACCUMULATED AT THE BARRIER SHALL BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE BARRIER IS REMOVED.

FASTENERS FOR SILT FENCES

OVERLAP AT FABRIC ENDS

TABLE 6-27.2 POST SIZE			
TYPE	MIN. LENGTH	TYPE OF POST	SIZE OF POST
NS	4'	SOFT WOOD OAK STEEL	3" DIA OR 2X4 1.5" X 1.5" 1.15LB./FT. MIN.
S	4'	STEEL OAK	1.15-1.25 LB./FT. MIN. 2"X2"

TABLE 6-27.3 FASTENERS FOR WOOD POSTS				
	GAUGE	CROWN	LEGS	STAPLES / POST
WIRE STAPLES	17 MIN.	3/4" WIDE	1/2" LONG	5 MIN.
	GAUGE	LENGTH	BUTTON HEADS	NAIL/POST
NAILS	14 MIN.	1"	3/4"	4 MIN.
NOTE: FILTER FABRIC MAY ALSO BE ATTACHED TO THE POLE BY WIRE, CORD, AND POCKETS.				



TOP VEIW - NOT TO SCALE

FRONT VIEWS - NOT TO SCALE

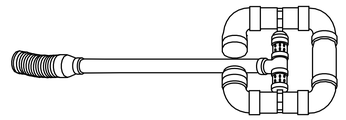
NOTES
1. THE FABRIC AND WIRE SHOULD BE SECURELY FASTENED TO POSTS AND FABRIC ENDS MUST BE OVERLAPPED A MINIMUM OF 18" OR WRAPPED TOGETHER AROUND A POST TO PROVIDE A CONTINUOUS FABRIC BARRIER AROUND THE INLET.

Sd1 **SEDIMENT BARRIER**

TEMPORARY SEDIMENT POND

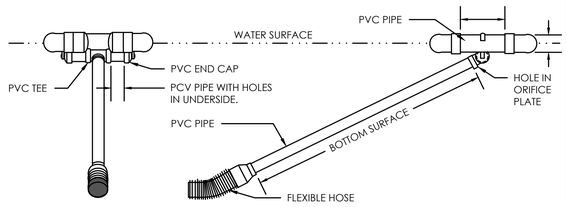
NOTE:
SKIMMER CONFIGURATION SHOWN IS TYPICAL. THE DESIGNER/ENGINEER MAY SUBMIT AN ALTERNATE SKIMMER DETAIL FOR REVIEW.

SKIMMER PERSPECTIVE



SKIMMER FRONTAL SECTION VIEW

SKIMMER SIDE SECTION VIEW



MAINTENANCE
- INSPECT FLOATING SKIMMERS TOGETHER WITH THE SEDIMENT BASIN INSPECTIONS. INSPECT THE FLOATING SURFACE SKIMMER FOR ANY STRUCTURAL DAMAGE, CLOGGING, OR EXCESSIVE SEDIMENT ACCUMULATION.
- WHILE DRAINING THE BASIN, THE TRASH GUARD OF THE SKIMMER MAY CLOG WITH DEBRIS. TYPICALLY, A FEW JERKS ON THE MAINTENANCE ROPE WILL CLEAR THE SKIMMER OF DEBRIS AND RESTORE FLOW. IF JERKING THE MAINTENANCE ROPE DOES NOT WORK, PULL THE SKIMMER TO THE EMBANKMENT WITH THE MAINTENANCE ROPE AND MANUALLY REMOVE ALL DEBRIS FROM THE TRASH GUARD. AN INTERNAL CLOG OR BLOCKAGE MAY REQUIRE THE DEVICE TO BE DISASSEMBLED AND REPAIRED.
- IF THE SKIMMER BECOMES STUCK IN THE MUD AT THE BOTTOM OF THE BASIN IT MUST BE FREED TO ALLOW FOR NORMAL OPERATION. THIS CAN TYPICALLY BE DONE BY USE OF THE MAINTENANCE ROPE.
- REMOVE SEDIMENT DEPOSITS FROM THE BASIN WHEN APPROXIMATELY ONE-THIRD OF THE STORAGE VOLUME HAS BEEN LOST TO SEDIMENT ACCUMULATION OR WHEN THE FLOATING SKIMMER CANNOT SETTLE LOW ENOUGH TO DRAIN THE ENTIRE BASIN. REMOVE OR PULL THE SKIMMER TO A SIDE EMBANKMENT USING THE MAINTENANCE ROPE AND REMOVE SEDIMENT FROM THE SKIMMER PIT.

Sk **FLOATING SURFACE SKIMER**

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

GEORGIA REGISTERED PROFESSIONAL ENGINEERS ANTHONY TOSS ALLEN
04/01/2021

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

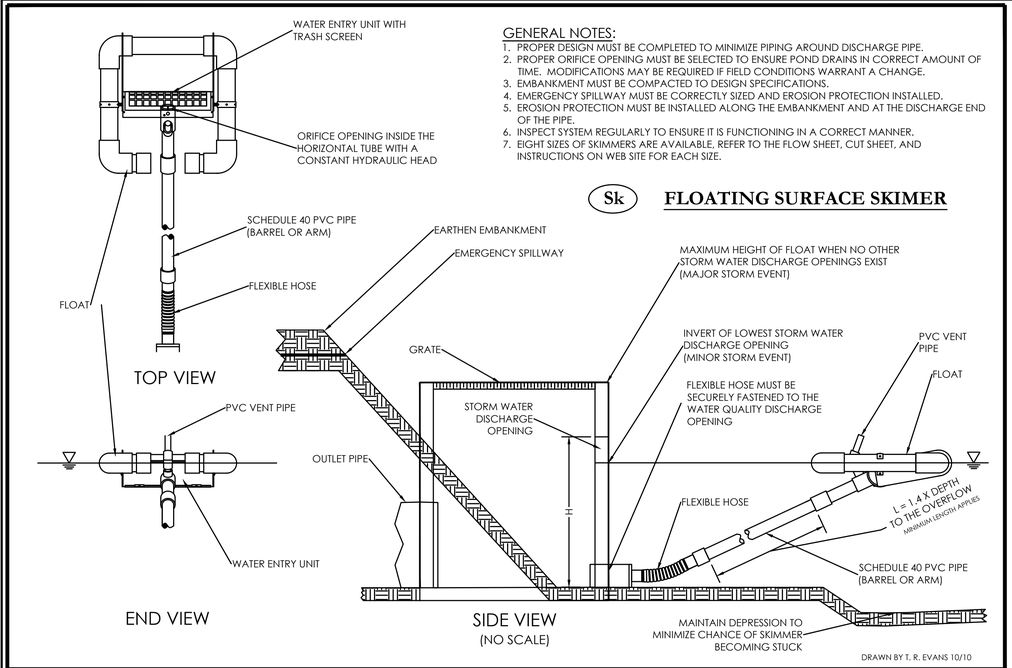
REVISIONS		
NO.	DATE	REQ. BY
'	'	'
'	'	'
'	'	'
'	'	'

DESIGNED	A/A
DRAWN	A/A
CHECKED	A/A
DTAIE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL DETAILS

SHEET NUMBER
38
OF 45



GENERAL NOTES:

1. PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
2. PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
3. EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
4. EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
5. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
6. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
7. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

Sk FLOATING SURFACE SKIMMER

DRAWN BY T. R. EVANS 10/10

FAIRCLOTH SKIMMER DISCHARGE SYSTEM WITH OUTLET STRUCTURE

J. W. FAIRCLOTH & SON INC.
WWW.FAIRCLOTHSKIMMER.COM
TELEPHONE: (919) 732-1244
FAX: (919) 732-1266
EMAIL: WARREN@FAIRCLOTHSKIMMER.COM

TO BE SHOWN ON THE EROSION, SEDIMENT AND POLLUTION CONTROL PLAN

WHEN A FLOATING SURFACE SKIMMER IS USED, SHOW THE FOLLOWING INFORMATION ALONG WITH SEDIMENT POND, TRAP OR BASIN BEING USED ON SITE

1. POND, TRAP OR BASIN SIZE, LENGTH* (TOP AND BOTTOM) AND DEPTH = BASIN SIZE = 169,910 CF (HYDRAFLOW HYDROGRAPHS REPORT) POND #1
2. TIME TO DRAIN (HRS) = 72 HRS.
3. SKIMMER DIMENSIONS (ORFICE AND HEAD SIZE)** = 6.0" ORIFICE - 8" HEAD
4. MANUFACTURER'S NAME: FAIRCLOTH OR APPROVED EQUAL

* FEET, **INCHES

DEFINITION

Applying plant residues or other suitable materials, produced on the site if possible, to the soil surface.

CONDITIONS

Mulch or temporary grassing shall be applied to all exposed areas within 14 days of disturbance. Mulch can be used as a singular erosion control device for up to six months, but it shall be applied at the appropriate depth, depending on the material used, anchored, and have a continuous 90% cover or greater of the soil surface. Maintenance shall be required to maintain appropriate depth and 90% cover. Temporary vegetation may be employed instead of mulch if the area will remain undisturbed for less than six months. If an area will remain undisturbed for greater than six months, permanent vegetative techniques shall be employed.

SPECIFICATIONS

MULCHING WITHOUT SEEDING
This standard applies to grades or cleared areas where seedings may not have a suitable growing season to produce an erosion retardant cover, but can be stabilized with a mulch cover.

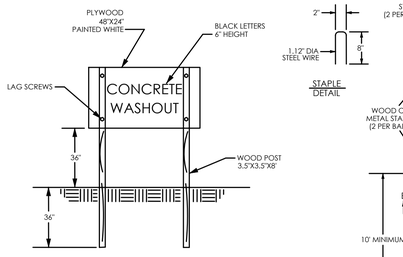
Site Preparation
1. Grade to permit the use of equipment for applying andanchoring mulch.
2. Install needed erosion control measures as requiredsuch as dikes, diversions, berms, terraces and sedimentbarriers.
3. Loosen compact soil to a minimum depth of 3 inches.

Mulching Materials
Select one of the following materials and apply at the depthindicated:
1. Dry straw or hay shall be applied at a depth of 2 to 4inches providing complete soil coverage. One advantage of this material is easy application.
2. Wood waste (chips, sawdust or bark) shall be applied at adepth of 2 to 3 inches. Organic material from the clearingstage of development should remain on site, be chipped,and applied as mulch. This method of mulching can greatlyreduce erosion control costs.
3. Cutback asphalt (slow curing) shall be applied at 1200gallons per acre (or 1/4 gallon per sq.yd.).
4. Polyethylene film shall be secured over banks or stockpiled soil material for temporary protection. This material can be salvaged and reused.

Applying Mulch
When mulch is used without seeding, mulch shall be applied to provide full coverage of the exposed area.
1. Dry straw or hay mulch and wood chips shall be applieduniformly by hand or by mechanical equipment.
2. If the area will eventually be covered with perennial vegetation, 20-30 pounds of nitrogen per acre in addition to the normal amount shall be applied to offset the uptake of nitrogen caused by the decomposition of the organic mulches.
3. Cutback asphalt shall be applied uniformly. Care should be taken in areas of pedestrian traffic due to problems of "tracking in" or damage to shoes, clothing, etc.
4. Apply polyethylene film on exposed areas.

Anchoring Mulch
1. Straw or hay mulch can be pressed into the soil with a disk harrow with the disk set straight or with a special"packer disk." Disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart.The edges of the disk should be dull enough not to cut the mulch but to press it into the soil leaving much of it in an erect position. Straw or hay mulch shall be anchored immediately after application. Straw or hay mulch spread with special blower-type equipment may be anchored with emulsified asphalt (Grade AE-5 or SS-1). The asphalt emulsion shall be sprayed onto the mulch as it is ejected from the machine. Use100 gallons of emulsified asphalt and 100 gallons of water per ton of mulch. Tackifers and binders can be substituted for emulsified asphalt. Please refer to specification Tb-Tackifers and Binders. Plastic mesh or netting with mesh no larger than one inch by one inch shall be installed according to manufacturer's specifications.
2. Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips.
3. Polyethylene film shall be anchor trenched at the top as well as incrementally as necessary.

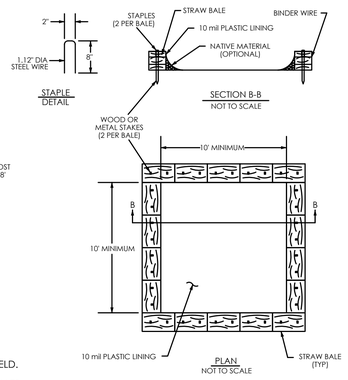
Ds1 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)



CONCRETE WASHOUT SIGN DETAIL (OR EQUIVALENT)

NOTES:

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD.
2. A CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF OR RECYCLED.
4. HOLES, DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE BACKFILLED, REPAIRED, AND STABILIZED TO PREVENT EROSION.
5. MUST BE LOCATED >50 FT AWAY FROM INLETS/WATERWAYS UNLESS THERE IS NO OTHER PRACTICAL ALTERNATIVE.

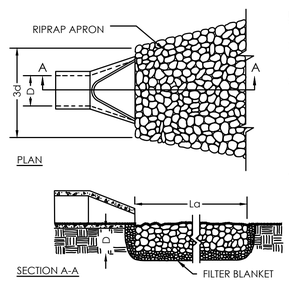


TYPE "ABOVE GRADE" WITH STRAW BALES

CONCRETE WASHOUT

RIPRAP OUTLET PROTECTION

PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL

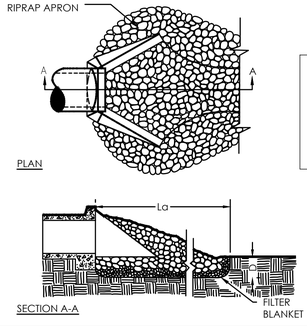


NOTES:

1. La IS THE LENGTH OF THE RIPRAP APRON.
2. D = 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
3. IN A WELL-DEFINED CHANNEL, EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

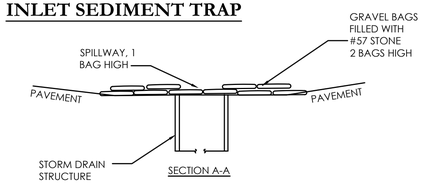
MAINTENANCE
INSPECT RIPRAP OUTLET STRUCTURES AFTER HEAVY RAINS TO SEE IF ANY EROSION AROUND OR BELOW THE RIPRAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

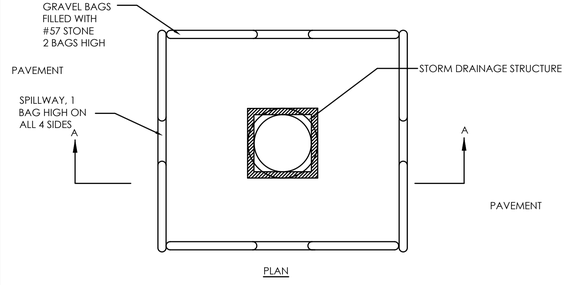
PIPE OUTLET TO WELL DEFINED CHANNEL



GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION
ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

Sd2-G INLET SEDIMENT TRAP





PLAN

TEMPORARY SEDIMENT TRAP Sd2-GRAVEL BAG
NOT TO SCALE

MAINTENANCE

- THE TRAP SHALL BE INSPECTED DAILY AND AFTER EACH RAIN, AND REPAIRS MADE AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE HEIGHT OF THE TRAP. SEDIMENT SHALL BE REMOVED FROM CURB INLET PROTECTION IMMEDIATELY. FOR EXCAVATED INLET SEDIMENT TRAPS, SEDIMENT SHALL BE REMOVED WHEN ONE-HALF OF THE SEDIMENT STORAGE CAPACITY HAS BEEN LOST TO SEDIMENT ACCUMULATION. SOD INLET PROTECTION SHALL BE MAINTAINED AS SPECIFIED IN DS4- DISTURBED AREA STABILIZATION (WITH SODDING).
- SEDIMENT SHALL NOT BE WASHED INTO THE INLET. IT SHALL BE REMOVED FROM THE SEDIMENT TRAP, DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLET AGAIN.
- WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, ALL MATERIALS AND ANY SEDIMENT SHALL BE REMOVED, AND EITHER SALVAGED OR DISPOSED OF PROPERLY. THE DISTURBED AREA SHALL BE BROUGHT BACK TO PROPER GRADE, THEN SMOOTHED AND COMPACTED. APPROPRIATELY STABILIZE ALL DISTURBED AROUND THE INLET.

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TODD ALLEN
04/01/2021

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL DETAILS

SHEET NUMBER
39
OF 45

DEFINITION

The establishment of temporary vegetative cover with fast growing seedings for seasonal protection on disturbed or denuded areas.

CONDITIONS

Temporary grassing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established.

SEEDING RATES FOR TEMPORARY SEEDING

SPECIES	RATE Per 1,000 sq. ft.	RATE Per Acre *	PLANTING DATES**
RYE	3.9 pounds	3 bu.	9/1-3/1
RYEGRASS	0.9 pounds	40 lbs.	8/15-4/1
ANNUAL LESPEDEZA	0.9 pounds	40 lbs.	1/15-3/15
WEEPING LOVEGRASS	0.1 pound	4 lbs.	2/15-6/15
SUDANGRASS	1.4 pounds	60 lbs.	3/1-8/1
BROWNTOP MILLET	0.9 pound	40 lbs.	4/1-7/15
PEARL MILLET	1.1 pounds	50 lbs.	4/1-9/1
WHEAT	4.1 pounds	3 bu.	9/15-2/1
OATS	2.9 pounds	4 bu.	9/1-12/1
BARLEY	3.3 pounds	3 bu.	9/1-11/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperture variations and conditions.

Ds2 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

SPECIFICATIONS

Grading and Shaping

Excessive water run-off shall be reduced by properly designed and installed erosion control practices such as closed drains, ditches, dikes, diversions, sediment barriers and others.

No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used.

Seedbed Preparation

When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or handseeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall.

When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.

Lime and Fertilizer

Agricultural lime is required unless soil tests indicate otherwise. Apply agricultural lime at a rate of one ton per acre. Graded areas require lime application. Soils can be tested to determine if fertilizer is needed. On reasonably fertile soils or soil material, fertilizer is not required. For soils with very low fertility, 500 to 700 pounds of 10-10-10 fertilizer or the equivalent per acre (12-16 lbs./1,000 sq. ft.) shall be applied. Fertilizer should be applied before land preparation and incorporated with a disk, ripper or chisel.

Seeding

Select a grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, cultipacker seeder, or hydraulic seeder (slurry including seed and fertilizer). Drill or cultipacker seeders should normally place seed one-quarter to one-half inch deep. Appropriate depth of planting is ten times the seed diameter. Soil should be "raked" lightly to cover seed with soil if seeded by hand.

Mulching

Temporary vegetation can, in most cases, be established without the use of mulch. Mulch without seeding should be considered for short term protection. Refer to Ds1 - Disturbed Area Stabilization (With Mulching Only).

Irrigation

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will insure germination of the seed. Subsequent applications should be made when needed.

DEFINITION

A permanent vegetation using sods on highly erodible or critic cally eroded lands.

CONDITIONS

This application is appropriate for areas which require immediate vegetative covers, drop inlets, grass swales, and waterways with intermittent flow .

CONSTRUCTION SPECIFICATIONS INSTALLATION

Soil Preparation

- Bring soil surface to final grade. Clear surface of trash, woody debris, stones and clods larger than 1". Apply sod to soil surfaces only and not frozen surfaces, or gravel type soils.
- Topsoil properly applied will help guarantee stand. Don't use topsoil recently

treated with herbicides or soil sterilants.

- Mix fertilizer into soil surface. Fertilize based on soil tests or Table 6-6.1. For fall planting of warm season species, half the fertilizer should be applied at planting and the other half in the spring.

Table 6-6.1. Fertilizer for Soil Surface Application

Fertilizer Type (lbs./acre)	Fertilizer Rate (lbs./acre)	Fertilizer Rate	Season
10-10-10	1000	.025	Fall

- Agricultural lime should be applied based on soil tests or at a rate of 1 to 2 tons per acre.

Installation

- Lay sod with tight joints and in straight lines. Don't overlap joints. Stagger joints and do not stretch sod.
- On slopes steeper than 3:1, sod should be anchored with wooden or biodegradable pins or other approved methods.
- Installed sod should be rolled or tamped to provide good contact between sod and soil.
- Irrigate sod and soil to a depth of 4" immediately after installation.
- Sod should not be cut or spread in extremely wet or dry weather.
- Irrigation should be used to supplement rainfall for a minimum of 2-3 weeks.

Ds4 DISTURBED AREA STABILIZATION (WITH SODDING)

MATERIALS

- Sod selected should be certified. Sod grown in the general area of the project is desirable.
- Sod should be machine cut and contain 3/4" ±1/4" of soil, not including shoots or thatch.
- Sod should be cut to the desired size within ±5%. Torn or uneven pads should be rejected.
- Sod should be cut and installed within 36 hours of digging.
- Avoid planting when subject to frost heave or hot weather if irrigation is not available.
- The sod type should be shown on the plans or installed according to Table 6-6.2. See Figure 6-4.1 for your Resource Area.

Table 6-6.2. Sod Planting Requirements

Grass	Varieties	Resource Area	Growing Season
Bermudagrass	Common Tifway Tifgreen Tiflawn	M-L,P,C P,C P,C P,C	Warm Weather
Bahiagrass	Pensacola	P,C	Warm Weather
Centipede	_	P,C	Warm Weather
St. Augustine	Common Bitterblue Raleigh	C	Warm Weather
Zoysia	Emerald Myer	P,C	Warm Weather
Tall Fescue	Kentucky	M-L,P	Cool Weather

MAINTENANCE

- Re-sod areas where an adequate stand of sod is not obtained.
- New sod should be mowed sparingly. Grass height should not be cut less than 2"-3" or as specified.
- Apply one ton of agricultural lime as indicated by soil test or every 4-6 years.
- Fertilize grasses in accordance with soil tests or Table 6-6.3.

Table 6-6.3. Fertilizer Requirements for Sod

Types of Species	Planting Year	Fertilizer (N-P-K)	Rate (lbs./acre)	Nitrogen Top Dressing Rate (lbs./acre)
Cool	First	6-12-12	1500	50-100
Season	Second	6-12-12	1000	-
Grasses	Maintenance	10-10-10	400	30
Warm	First	6-12-12	1500	50-100
Season	Second	6-12-12	800	50-100
Grasses	Maintenance	10-10-10	400	30

DEFINITION

Controlling surface and air movement of dust on construction sites, roads, and demolition sites.

CONDITIONS

This practice is applicable to areas subject to surface and air movement of dust where on and off-site damage may occur without treatment.

METHOD AND MATERIALS

A. TEMPORARY METHODS

Mulches. See standard Ds1 - Disturbed Area Stabilization (With Mulching Only). Synthetic resins may be used instead of asphalt to bind mulch material. Refer to standard Tb-Tackifiers and Binders. Resins such as Curasol or Terratack should be used according to manufacturer's recommendations.

Vegetative Cover. See standard Ds2 - Disturbed Area Stabilization (With Temporary Seeding).

Spray-on Adhesives. These are used on mineral soils (not effective on muck soils). Keep traffic off these areas. Refer to standard Tb-Tackifiers and Binders.

Tillage. This practice is designed to roughen and bring clods to the surface. It is an emergency measure which should be used before wind erosion starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.

Irrigation. This is generally done as an emergency treatment. Site is sprinkled with water until the surface is wet. Repeat as needed.

Barriers. Solid board fences, snow fences, burlap fences, crate walls, bales of hay and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 15 times their height are effective in controlling wind erosion.

Calcium Chloride. Apply at rate that will keep surface moist. May need retreatment.

B. PERMANENT METHODS

Permanent Vegetation. See standard Ds3 -Disturbed Area Stabilization (With Permanent Vegetation). Existing trees and large shrubs may afford valuable protection if left in place.

Topsoiling. This entails covering the surface with less erosive soil material. See standard Tp - Topsoiling.

Stone. Cover surface with crushed stone or coarse gravel. See standard Cr-Construction Road Stabilization

Du DUST CONTROL ON DISTURBED AREAS

DEFINITION

The planting of perennial vegetation such as trees, shrubs, vines, grasses, or legumes on exposed areas for final permanent stabilization. Permanent perennial vegetation shall be used to achieve final stabilization.

CONDITIONS

Permanent perennial vegetation is used to provide a protective cover for exposed areas including cuts, fills, dams, and other denuded areas.

SPECIFICATIONS

Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment.

When conventional seeding and fertilizing are to be done, grade and shape where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation.

Concentrations of water that will cause excessive soil erosion shall be diverted to a safe outlet. Diversions and other treatment practices shall conform with the appropriate standards and specifications.

Lime Rates and Analysis

Agricultural lime is required at the rate of one to two tons per acre unless soil tests indicate otherwise. Graded areas require lime application. If lime is applied within six months of planting permanent perennial vegetation, additional lime is not required. Agricultural lime shall be within the specifications of the Georgia Department of Agriculture.

Lime spread by conventional equipment shall be "ground limestone." Ground limestone is calcitic or dolomitic limestone ground so that 90 percent of the material will pass through a 10-mesh sieve, not less than 50 percent will pass through a 50-mesh sieve and not less than 25 percent will pass through a 100-mesh sieve.

Fast-acting lime spread by hydraulic seeding equipment should be "finely ground limestone" spanning from the 180 micron size to the 5 micron size. Finely ground limestone is calcitic or dolomitic limestone ground so that 95 percent of the material will pass through a 100-mesh sieve.

Ds3 DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)

Dolomitic limestone shall be used for all limestone applications.

Lime and Fertilizer Application

When *hydraulic seeding* equipment is used, the initial fertilizer shall be mixed with seed, innoculant (if needed), and wood cellulose or wood pulp fiber mulch and applied in a slurry. The innoculant, if needed, shall be mixed with the seed prior to being placed into the hydraulic seeder. The slurry mixture will be agitated during application to keep the ingredients thoroughly mixed. The mixture will be spread uniformly over the area within one hour after being placed in the hydroseeder.

Finely ground limestone can be applied in the mulch slurry or in combination with the top dressing.

When *conventional planting* is to be done, lime and fertilizer shall be applied uniformly in one of the following ways:

1. Apply before land preparation so that it will be mixed with the soil during seedbed preparation.
2. Mix with the soil used to fill the holes, distribute in furrows.
3. Broadcast after steep surfaces are scarified, pitted or trenched.
4. A fertilizer pellet shall be placed at root depth in the closing hole beside each pine tree seedling.

Seedbed Preparation

Seedbed preparation may not be required where hydraulic seeding and fertilizing equipment is to be used. When conventional seeding is to be used, seedbed preparation will be done as follows:

Broadcast plantings

1. Tillage at a minimum, shall adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate lime and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a disk is to be used.
2. Tillage may be done with any suitable equipment.
3. Tillage should be done on the contour where feasible.
4. On slopes too steep for the safe operation of tillage equipment, the soil surface shall be pitted or trenched across the slope with appropriate hand tools to provide two places 6 to 8 inches apart in which seed may lodge and germinate. Hydraulic seeding may also be used.

Individual Plants

1. Where individual plants are to be set, the soil shall be prepared by excavating holes, opening furrows, or dibble planting.
2. For nursery stock plants, holes shall be large enough to accommodate roots without crowding.
3. Where pine seedlings are to be planted, subsoil under the row 36 inches deep on the contour four to six months prior to planting. Subsoiling should be done when the soil is dry, preferably in August or September.

Planting

Hydraulic Seeding

Mix the seed (innoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.

Conventional Seeding

Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a cultipacker seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

Individual Plants

Shrubs, vines and sprigs may be planted with appropriate planters or hand tools. Pine trees shall be planted manually in the subsoil furrow. Each plant shall be set in a manner that will avoid crowding the roots. Nursery stock plants shall be planted at the same depth or slightly deeper than they grew at the nursery. The tips of vines and sprigs must be at or slightly above the ground surface. Where individual holes are dug, fertilizer shall be placed in the bottom of the hole, two inches of soil shall be added and the plant shall be set in the hole.

Mulching

Mulch is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75% soil cover. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.
2. Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Drystraw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.
3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.
4. Sericea lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.
5. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantity may be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.
6. When using temporary erosion control blankets or block sod, mulch is not required.
7. Bituminous treated roving may be applied on planted areas on slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

Applying Mulch

Straw or hay mulch will be spread uniformly within 24 hours after seeding and/or planting. The mulch may be spread by blower-type spreading equipment, other spreading equipment or by hand. Mulch shall be applied to cover 75% of the soil surface.

Wood cellulose or wood fiber mulch shall be applied uniformly with hydraulic seeding equipment.

Anchoring Mulch

Anchor straw or hay mulch immediately after application by one of the following methods:

1. Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or (b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment.

The combination of asphalt emulsion and water shall consist of a homogeneous mixture satisfactory for spraying. The mixture shall consist of 100 gallons of grade SS-1h or CSS-1h emulsified asphalt and 100 gallons of water per ton of mulch. Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs, sidewalks, and all other structures from asphalt discoloration.

2. Hay and straw mulch shall be pressed into the soil immediately after the mulch is spread. A special "packer disk"' or disk harrow with the disks set straight may be used. The disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting it, leaving much of it in an erect position. Mulch shall not be plowed into the soil.
3. Synthetic tackifiers or binders approved by GDOT shall be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers shall be mixed and applied according to manufacturer's specifications. Refer to Tb - Tackifiers and Binders.
4. Rye or wheat can be included with Fall and Winter plantings to stabilize the mulch. They shall be applied at a rate of one-quarter to one half bushel per acre.
5. Plastic mesh or netting with mesh no larger than one inch by one inch may be needed to anchor straw or hay mulch on unstable soils and concentrated flow areas. These materials shall be installed and anchored according to manufacturer's specifications.

Irrigation

Irrigation shall be applied at a rate that will not cause runoff.

SEEDING RATES FOR PERMANENT SEEDING

SPECIES	RATE Per 1,000 sq. ft.	RATE Per Acre *	PLANTING DATES**
BAHIA	1.4 POUNDS	60 LBS.	1/1-12/31
BERMUDA	0.2 POUND	10 LBS.	2/15-7/1
CENTIPEDE	BLOCK SOD ONLY	BLOCK SOD ONLY	4/1-7/1
UNSCARIFIED LESPEDEZA	1.7 POUNDS	75 LBS.	1/1-12/31
WEEPING LOVEGRASS	0.1 POUND	40 LBS.	2/1-6/15
SWITCH GRASS	0.9 POUND	40 LBS.	3/15-6/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperature variations and conditions.

Topdressing

Topdressing will be applied on all temporary and permanent (perennial) species planted alone or in mixtures with other species.

Table 6-5.1. Fertilizer Requirements

Types of Species	Planting Year	Fertilizer (N-P-K)	Rate (lbs./acre)	Nitrogen Top Dressing Rate (lbs./acre)
Cool	First	6-12-12	1500	50-100
Season	Second	6-12-12	1000	-
Grasses	Maintenance	10-10-10	400	30
Warm	First	6-12-12	1500	50-100
Season	Second	6-12-12	800	50-100
Grasses	Maintenance	10-10-10	400	30

GSWCC GEORGIA SOIL AND WATER CONSERVATION COMMISSION

ANTHONY T. ALLEN
Level II Certified Design Professional
CERTIFICATION NUMBER 0000044936
ISSUED 08/21/2007 EXPIRES 08/21/2022

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

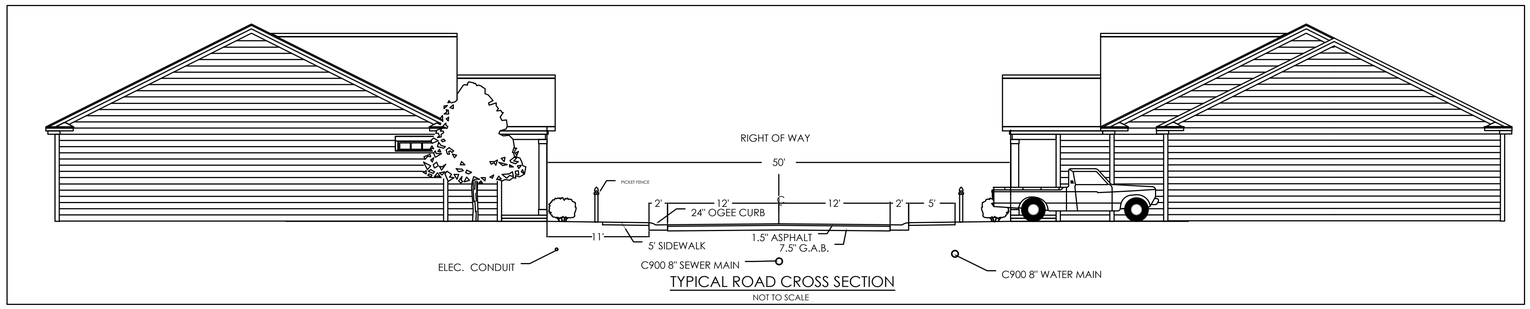
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

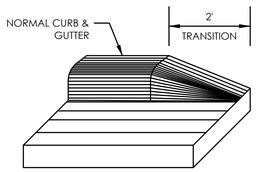
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

EROSION AND SEDIMENTATION CONTROL DETAILS

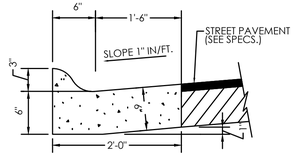
SHEET NUMBER
40
OF 45



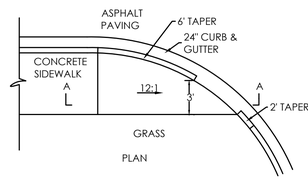
TYPICAL ROAD CROSS SECTION
NOT TO SCALE



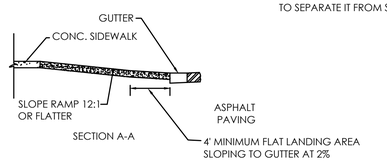
CURB AND GUTTER TRANSITION
NOT TO SCALE



24" CURB AND GUTTER
NOT TO SCALE

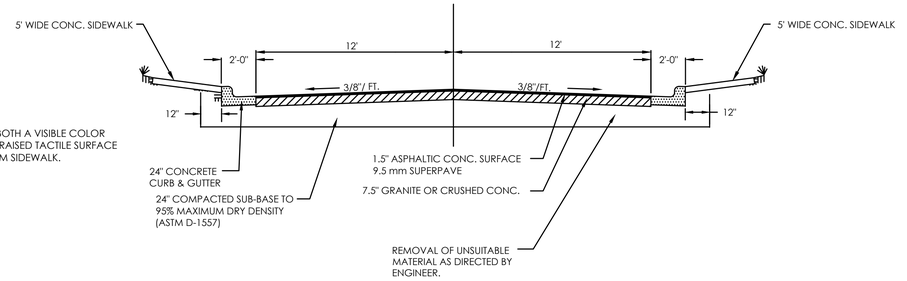


NOTE:
RAMP SHALL HAVE BOTH A VISIBLE COLOR DIFFERENCE AND A RAISED TACTILE SURFACE TO SEPARATE IT FROM SIDEWALK.

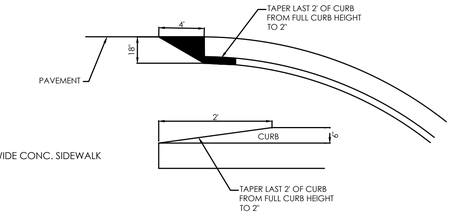


HANDICAP RAMP
NOT TO SCALE

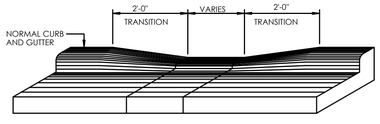
NOTE:
1. BITUMINOUS PRIME AND TACK COATS WILL BE APPLIED AS LISTED BELOW:
A. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLON PER SQUARE YARD TO THE SURFACE OF ALL GRANITE BASE COURSES.
B. TACK COAT SHALL BE APPLIED AT A RATE OF 0.10 GALLONS PER SQUARE YARD TO THE SURFACE OF THE BINDER COURSE BEFORE PLACEMENT OF SURFACE COURSE.



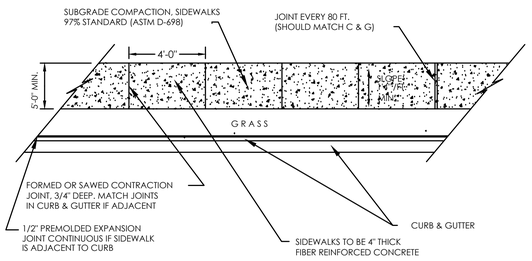
TYPICAL SECTION THROUGH ROADWAY
NOT TO SCALE



PAVEMENT / CURB TERMINATION
NOT TO SCALE

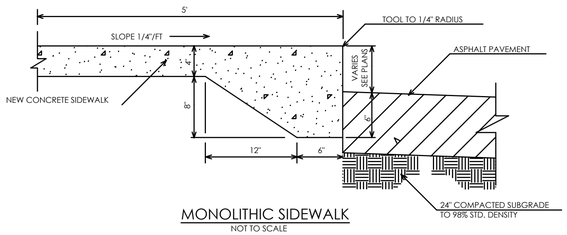


DEPRESSED CURB
NOT TO SCALE



NOTE:
CONTRACTION JOINTS SPACING TO BE THE SAME AS WIDTH OF WALK.

SIDEWALK AND WALKWAY DETAILS
NOT TO SCALE



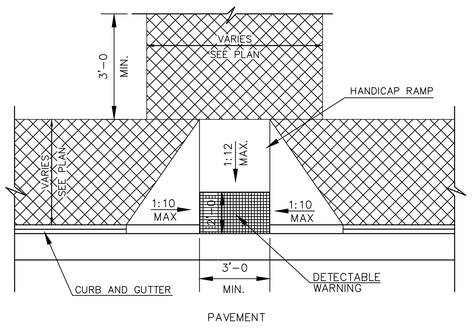
MONOLITHIC SIDEWALK
NOT TO SCALE

DETECTABLE WARNINGS ON WALKING SURFACE OF HANDICAP RAMP

DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN (23mm). A HEIGHT OF NOMINAL 0.2 IN (5mm) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN (60mm) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE

SURFACES SHALL MEET THE ADA ACCESSIBILITY GUIDELINES SECTION 4.29.2.



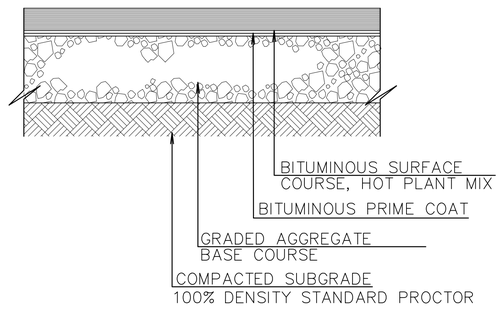
HANDICAP RAMP TYPE "A"

City of Port Wentworth
TECHNICAL DETAILS

P-4

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



TYPICAL BITUMINOUS PAVING SECTION

City of Port Wentworth
TECHNICAL DETAILS

P-1

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

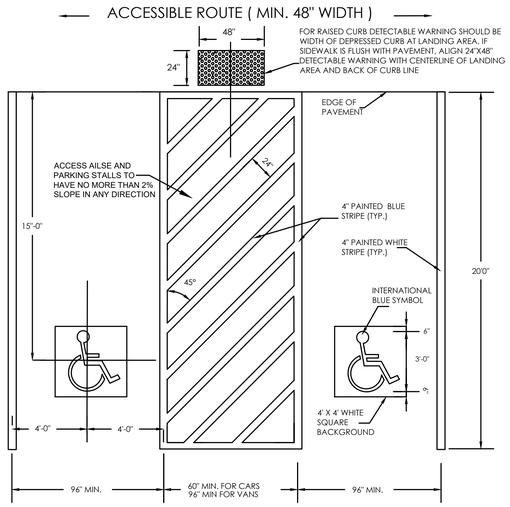
REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

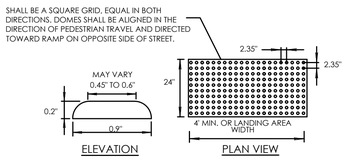
CONSTRUCTION DETAILS

SHEET NUMBER
41
OF 45



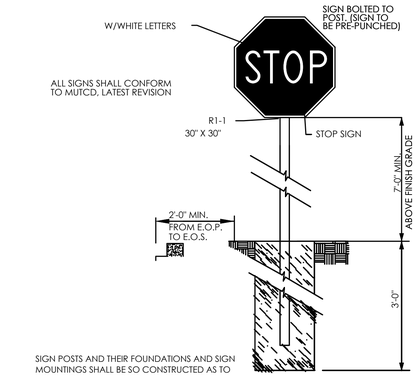
NOTE:
STRIPING AND CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND SPECIFICATIONS.

HANDICAP PARKING SPACE STRIPING
NOT TO SCALE

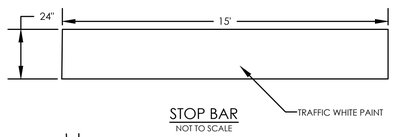


DETECTABLE WARNING DETAIL
NOT TO SCALE

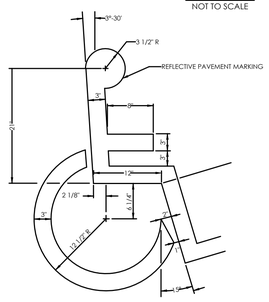
NOTES:
1. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCHES, A HEIGHT OF NOMINAL 0.2 INCHES AND A CENTER TO CENTER SPACING OF NOMINAL 2.35 INCHES AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES. IF THE SIDEWALK AND RAMP ARE CONSTRUCTED OF CONCRETE, THE WARNING AREA SHALL BE RED BRICK IN COLOR. IF THE SIDEWALK AND RAMP ARE CONSTRUCTED OF RED BRICK, THE WARNING ARE SHALL BE GREY IN COLOR. THE COLOR USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.
2. BRICK PAVERS SHALL BE SET IN A WET MORTAR BED. THE BED SHALL BE PLACED ON CONCRETE. THE CONCRETE SHALL BE A MINIMUM OF FOUR INCHES THICK.



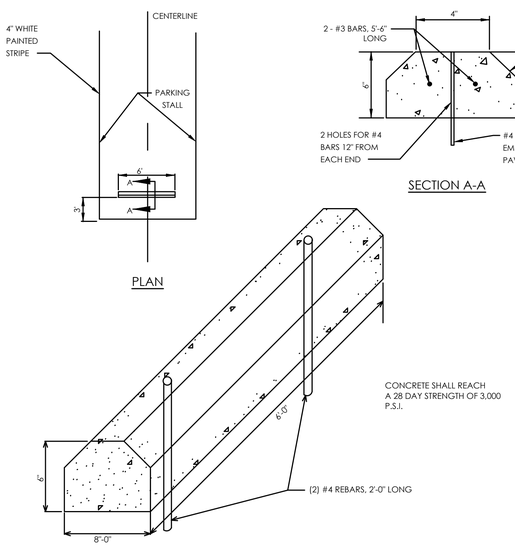
STOP SIGN
NOT TO SCALE



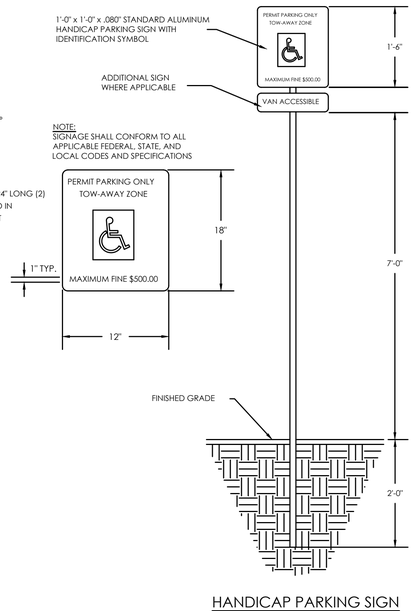
STOP BAR
NOT TO SCALE



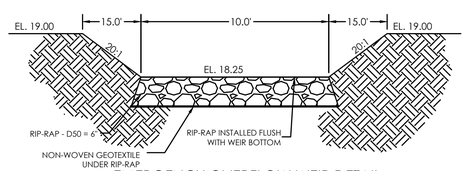
WHEELCHAIR SYMBOL
NOT TO SCALE



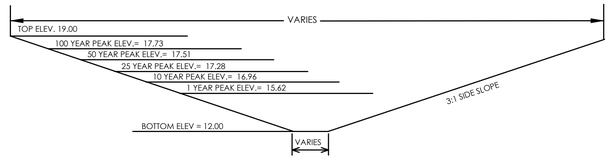
PRECAST CONCRETE WHEELSTOP
NOT TO SCALE



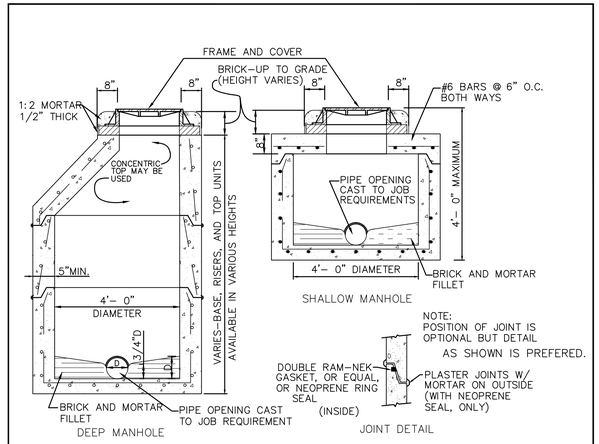
HANDICAP PARKING SIGN
NOT TO SCALE

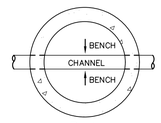


EMERGENCY OVERFLOW WEIR DETAIL
NOT TO SCALE



POND #1 CROSS SECTION
NOT TO SCALE





PLAN

PRECAST STORM MANHOLE

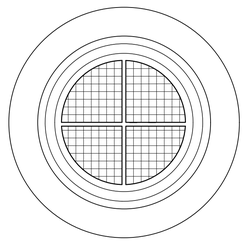
City of Port Wentworth

TECHNICAL DETAILS

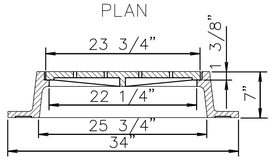
SD-12

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



PLAN



SECTION

NOTE:

MANHOLE RIM & COVER SIMILAR TO NEENAH FOUNDRY CO. R-1412-A4. TOTAL WEIGHT 310#. TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED "STORM",

STORM MANHOLE RING & COVER

City of Port Wentworth

TECHNICAL DETAILS

SD-14

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN 04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

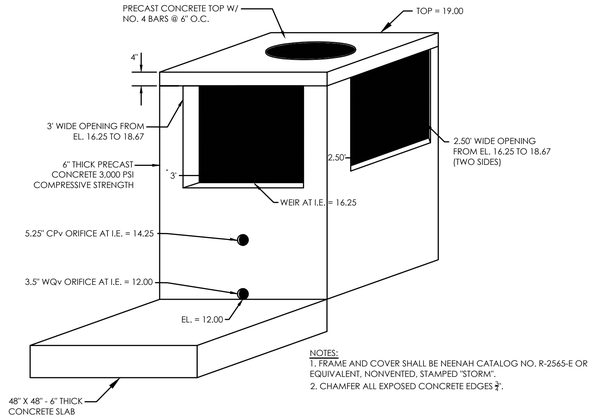
REVISIONS	NO.	DATE	REQ. BY
	-	-	-
	-	-	-
	-	-	-
	-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

CONSTRUCTION DETAILS

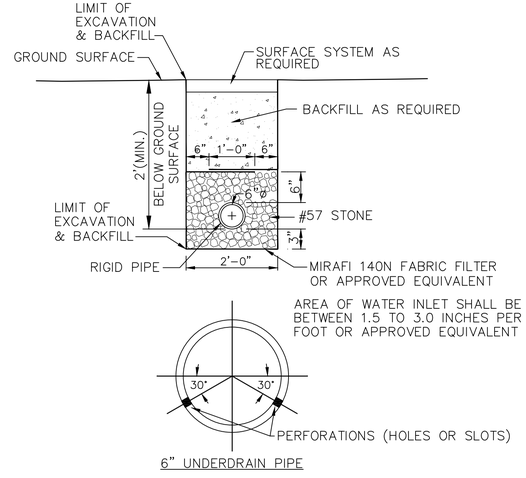
SHEET NUMBER
42
OF 45



NOTES:
1. FRAME AND COVER SHALL BE NEENAH CATALOG NO. R-2565-E OR EQUIVALENT, NONVENTED, STAMPED "STORM".
2. CHAMFER ALL EXPOSED CONCRETE EDGES ¾".

OUTFALL STRUCTURE POND #1
MODIFIED ROOF INLET W/ RECTANGULAR WEIR

NOT TO SCALE



6" UNDERDRAIN PIPE

6" UNDERDRAIN PIPE

City of Port Wentworth

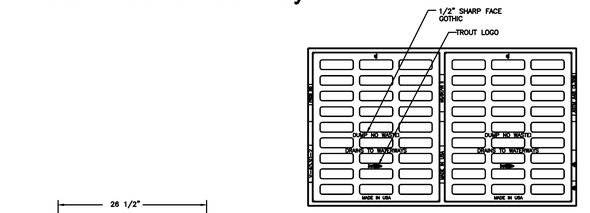
TECHNICAL DETAILS

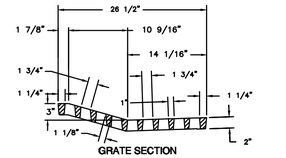
SD–10

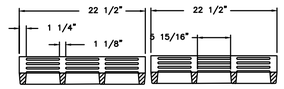
PREPARED BY SAUSSY ENGINEERING, LLC.

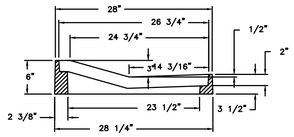
SCALE: N.T.S.
DATED: FEBRUARY 2007

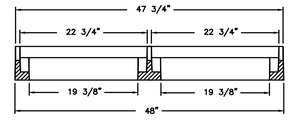
V4530 V4530-2 Assembly











Product Number
44530201

Design Features
-Materials
Grate
Gray Iron (CL35B)
Curb Inlet Frame
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
544 Sq. Inches
-Coating
Undipped
-√Designates Machined Surface

Certification
- ASTM A48
-
-Country of Origin:USA

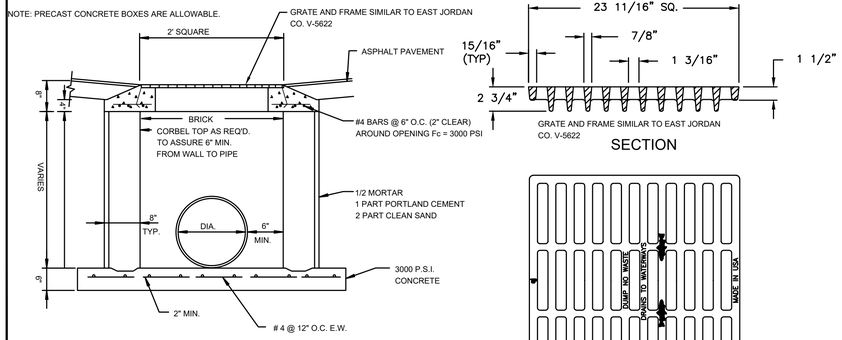
Major Components
44530030
44530210

Drawing Revision
8/25/2004 Designer: DEW
10/16/2018 Revised By: MAH

Disclaimer
Weights (lbs./kgs)/dimensions (inches/mm) are approximate and provided for your guidance. We reserve the right to modify specifications without prior notice.

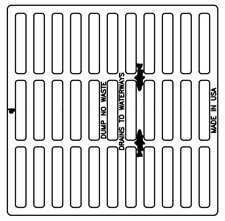
CONFIDENTIAL: This drawing is the property of EJ GROUP, Inc., and embodies confidential information, registered designs, patents, trade secrets and/or know-how that is the property of EJ GROUP, Inc. Copyright © 2019 EJ GROUP, Inc. All rights reserved.

Contact
800 626 4653
ejco.com



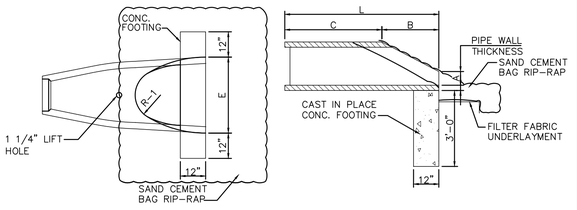
GRATE INLET

SECTION



PLAN

GRATE INLET WITH FRAME
NOT TO SCALE



PLAN SECTION

FLARE DIMENSIONS						
PIPE DIA.	A	B	C	L	E	R–1
15"	6"	2'–3"	3'–10"	6'–1"	2'–6"	1'–0"
18"	9"	2'–3"	3'–10"	6'–1"	3'–0"	1'–4"
24"	10"	3'–8"	2'–6"	6'–2"	4'–0"	1'–5"
30"	12"	4'–6"	1'–8"	6'–2"	5'–0"	1'–6"
36"	16"	5'–3"	2'–11"	8'–2"	6'–0"	2'–0"
42"	21"	5'–3"	2'–11"	8'–2"	6'–6"	2'–4"
REINFORCEMENT CONFORMS TO ASTM A–82						

FLARED END SECTION

City of Port Wentworth

TECHNICAL DETAILS

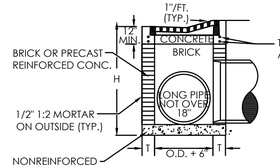
SD–11

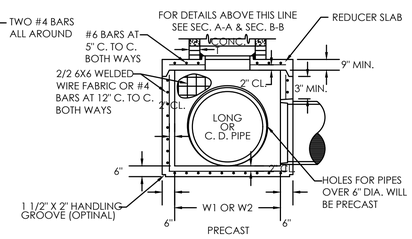
PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

DROP INLET TYPE V-1

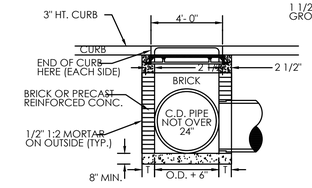
DROP INLET TYPE V-1 OR V-2:
REDUCER SLABS ARE FOR USE WITH LARGER PIPES. IN GENERAL THIS WILL BE CROSS DRAIN PIPES OVER 24", LONGITUDINAL PIPES OVER 18" (TYPE V-1) AND LONGITUDINAL PIPES OVER 15" (TYPE V-2).

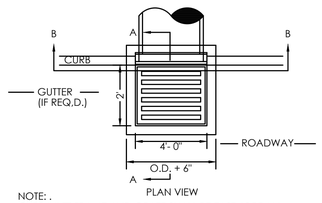




W1 OR W2 DIMENSIONS WITH REDUCER SLAB

BRICK WALL THICKNESS	
H	T (MIN.)
TO 10'	8"
10' TO 20'	12"
20' TO 30'	16"





NOTE: .
CURB INLET FRAME AND GRATE SHALL BE EAST JORDAN V-4530-2 ASSEMBLY OR APPROVED EQUIVALENT.

DROP INLET TYPE V-1 OR V-2
NOT TO SCALE

P.O. BOX 1749
RINCON, GA 31326
PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

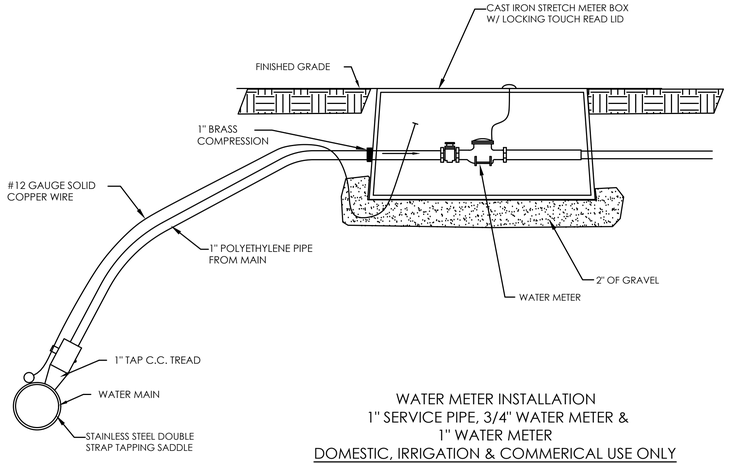
DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DIATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

30' 15' 0' 30'
GRAPHIC SCALE: 1"=30'-0"

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

CONSTRUCTION DETAILS

SHEET NUMBER
43
OF 45

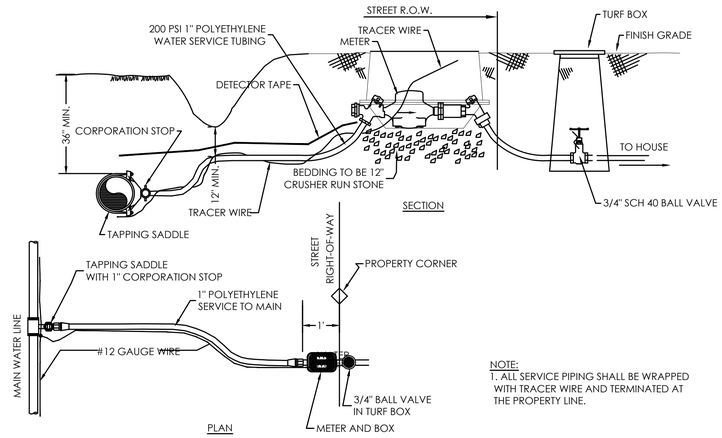


WATER METER INSTALLATION
1" SERVICE PIPE, 3/4" WATER METER &
1" WATER METER
DOMESTIC, IRRIGATION & COMMERICAL USE ONLY

NOT TO SCALE

GENERAL NOTES:

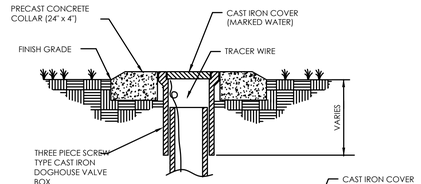
1. WATER METER AND STRETCH BOX FOR THE 3/4" & 1" WATER METERS SHALL BE PURCHASED FROM EFFINGHAM COUNTY.
2. THE INSTALLATION OF THE METER AND BOX SHALL BE DONE BY THE CUSTOMER REQUIRING SERVICE.
3. IF A WATER TAP IS REQUIRED FOR THE WATER SERVICE IT SHALL BE THE RESPONSIBILITY OF THE CUSTOMER REQUIRING SERVICE TO EXCAVATE THE WATER MAIN, EFFINGHAM COUNTY SHALL TAP THE WATER MAIN ONLY.
4. THE CUSTOMER REQUIRING SERVICE SHALL BE RESPONSIBLE FOR ALL BACKFILLING AND/OR REPAIRS OF EXCAVATED AREAS.

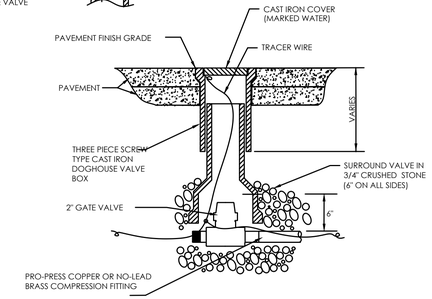


NOTE:
1. ALL SERVICE PIPING SHALL BE WRAPPED WITH TRACER WIRE AND TERMINATED AT THE PROPERTY LINE.

SERVICE CONNECTION

NOT TO SCALE

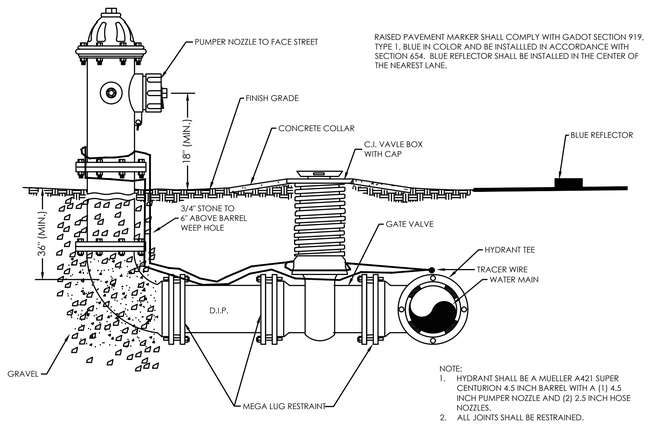




NOTES:
1. THIS DETAIL APPLIES TO 2" VALVES IN WATER MAINS AND LATERALS.
2. IN UNPAVED AREAS, PROPERLY BED AND SET EDGE OF PRECAST CONCRETE COLLAR FLUSH WITH FINISHED GRADE. NO COLLAR REQUIRED IN PAVED AREAS. SET VALVE BOX FLUSH WITH PAVEMENT.
3. VALVE BOX SHALL NOT REST ON THE VALVE OR ON THE LINE.
4. CONNECT THE TRACER WIRE ON THE VALVE TO THE TRACER WIRE ON THE LINE WITH SPLICE CONNECTOR.

2" WATER VALVE AND VALVE BOX

NOT TO SCALE

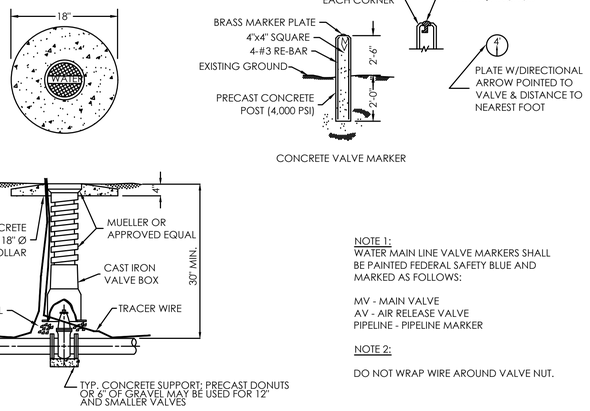


RAISED PAVEMENT MARKER SHALL COMPLY WITH GADOT SECTION 919, TYPE 1. BLUE IN COLOR AND BE INSTALLED IN ACCORDANCE WITH SECTION 654. BLUE REFLECTOR SHALL BE INSTALLED IN THE CENTER OF THE NEAREST LANE.

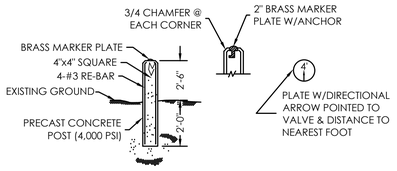
NOTE:
1. HYDRANT SHALL BE A MUELLER A421 SUPER CENTURION 4.5 INCH BARREL WITH A (1) 4.5 INCH PUMPER NOZZLE AND (2) 2.5 INCH HOSE NOZZLES.
2. ALL JOINTS SHALL BE RESTRAINED.

FIRE HYDRANT DETAIL

NOT TO SCALE



VALVE AND VALVE BOX



CONCRETE VALVE MARKER

NOTE 1:
WATER MAIN LINE VALVE MARKERS SHALL BE PAINTED FEDERAL SAFETY BLUE AND MARKED AS FOLLOWS:

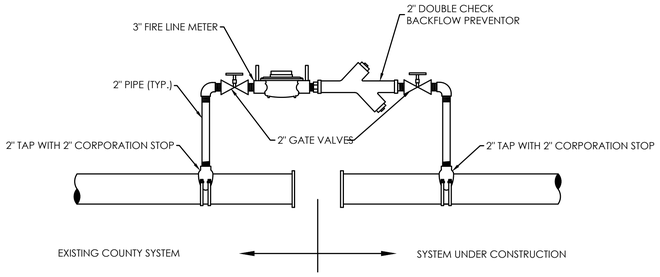
MV - MAIN VALVE
AV - AIR RELEASE VALVE
PIPELINE - PIPELINE MARKER

NOTE 2:

DO NOT WRAP WIRE AROUND VALVE NUT.

WATER VALVE

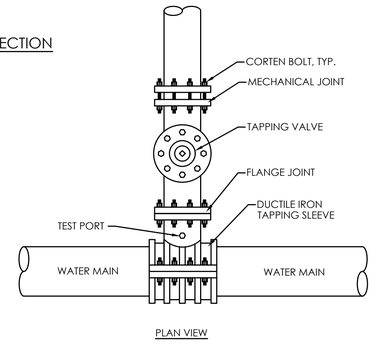
NOT TO SCALE



NOTES:
1. ALL WATERLINE EXTENSIONS MUST CONTAIN A MINIMUM OF 1 JUMPER CONNECTION FOR FILLING/FLUSHING REQUIREMENTS.
2. FIRE LINE METER SHALL BE OBTAINED FROM EFFINGHAM COUNTY UPON PAYMENT OF APPROPRIATE DEPOSIT.
3. TAPPING SADDLES AND CORPORATION STOPS SHALL COMPLY WITH EFFINGHAM COUNTY SPECIFICATIONS.
4. CORPORATION STOPS ARE TO BE CLOSED AND PLUGGED WITH A BRASS PLUG AFTER REMOVAL OF JUMPER PIPING.

JUMPER CONNECTION

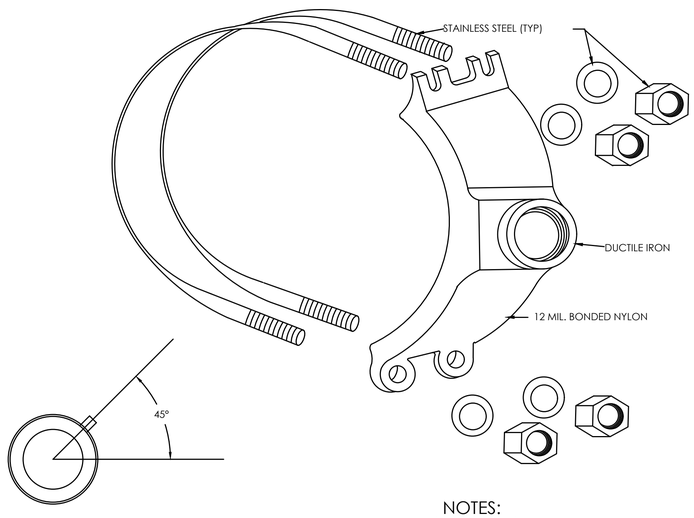
NOT TO SCALE



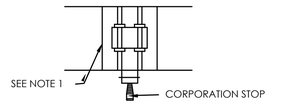
PLAN VIEW

TAPPING SLEEVE & TAPPING VALVE

NOT TO SCALE



NOTES:
1. TAPPING SADDLE TO BE DUCTILE IRON WITH TYPE 304 STAINLESS STEEL FORGED DOUBLE STRAPS, STAINLESS STEEL BOLTS, NUTS, AND WASHERS. FINISH IS FUSION BONDED NYLON TO AVERAGE THICKNESS OF 12MILS.
2. ALL TAPS ON WATER LINES WILL REQUIRE A TAPPING SADDLE.



1" & 2" TAPPING SADDLE

NOT TO SCALE

GEORGIA
REGISTERED
PROFESSIONAL
ENGINEER
ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen
ENGINEERING SERVICES

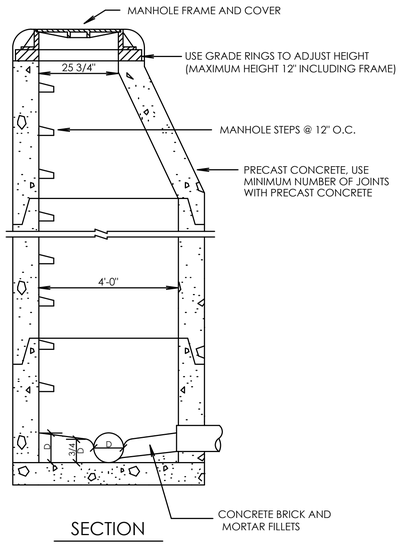
REVISIONS	NO.	DATE	REQ. BY
	-	-	-
	-	-	-
	-	-	-
	-	-	-
	-	-	-

DESIGNED	ATA
DRAWN	ATA
CHECKED	ATA
DTATE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

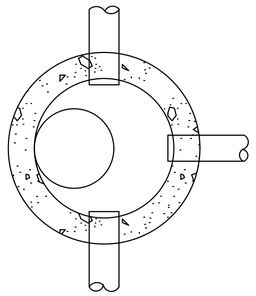
JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

CONSTRUCTION DETAILS

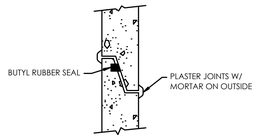
SHEET NUMBER
44
OF 45



SECTION

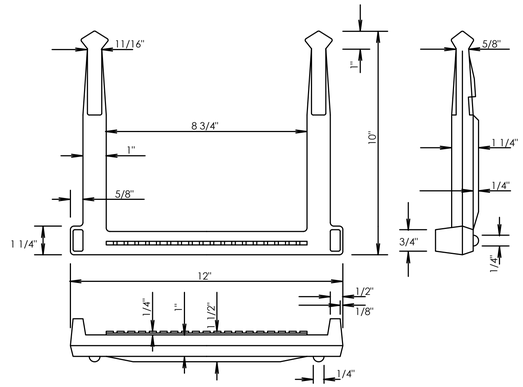


PLAN

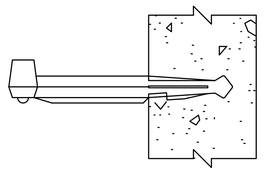


JOINT DETAIL

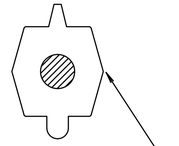
STANDARD MANHOLE
NOT TO SCALE



MANHOLE STEPS SHALL BE M.A. IND.,INC. MODEL NO. PS1 OR AN APPROVED EQUAL

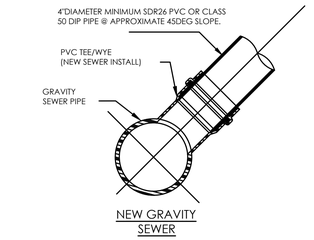


STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE, OR HAND DRIVEN INTO PREFORMED HOLES AFTER CONCRETE HAS CURED.

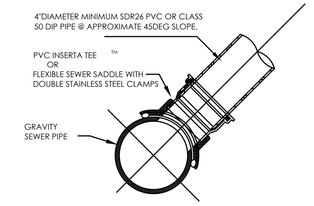


POLYPROPYLENE PLASTIC W/ NO. 3 DEFORMED STEEL ROD

MANHOLE STEP DETAIL
NOT TO SCALE



NEW GRAVITY SEWER

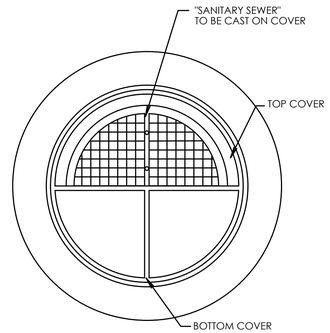


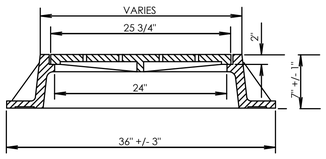
EXISTING GRAVITY SEWER

NOTES:

1. THE TEE-WYE SHALL BE SET AT THE PROPER DEPTH TO ACCOMMODATE THE PROPOSED OR EXISTING LATERAL.
2. CONNECT TRACER WIRE ON LATERAL TO TRACER WIRE ON MAIN WITH SPLICE CONNECTOR.

SANITARY SERVICE LATERAL CONNECTION
NOT TO SCALE





NOTES:

1: CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE, DISTORTION OR OTHER DEFECTS. THEY SHALL BE SMOOTH AND WELL CLEANED BY SHOT BLASTING OR BY SOME OTHER APPROVED METHOD. CASTING SHALL NOT BE PAINTED.

2: MATERIALS USED IN THE MANUFACTURE OF CASTINGS SHOULD CONFORM TO AASHO M105/ASTM A48, CLASS 35B OR ASTM A48, CLASS 30, FOR GRAY IRON.

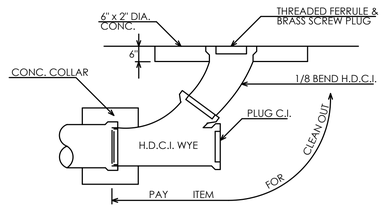
3: ALL CASTINGS SHALL BE MANUFACTURED TRUE TO PATTERN; COMPONENT PARTS SHALL FIT TOGETHER IN A SATISFACTORY MANNER, ROUND FRAMES AND COVERS SHALL BE OF NON-ROCKING DESIGN, OR SHALL HAVE MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING UNDER TRAFFIC. FRAME SHALL BE SUITABLE FOR CAST IRON OR STEEL RISER RING FOR UPWARD ADJUSTMENT OF COVER. CLEAR OPENING SHALL BE 24".

4: MANHOLE COVER SHALL BE 25-3/4" IN DIAMETER AND SHALL BE 2-INCHES THICK AT THE BEARING SURFACE.

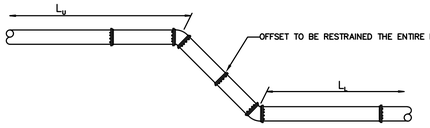
5: CASTINGS SHALL BE PROVIDED WITH THE INSCRIPTION "SANITARY SEWER" CAST INTO THE COVER IN LETTERING AT LEST 2-INCHES HIGH. MANUFACTURER'S NAME , IF IT APPEARS ON THE COVER, SHALL BE CONFINED TO THE PERIPHERY.

6: MANHOLE COVERS AND FRAMES SHALL BE USF 227, OR EQUAL AND SHALL BE THE TYPE SHOWN ON THIS DETAIL.

MANHOLE COVER & FRAME DETAIL
NOT TO SCALE



SANITARY SEWER CLEANOUT
NOT TO SCALE



PVC LINE

PIPE DIA.	BEND ANGLE 11 1/4°		22 1/2°		45°	
	L_U	L_L	L_U	L_L	L_U	L_L
4	4	1	8	2	17	3
6	6	1	11	2	23	4
8	8	2	15	3	30	6
10	9	2	18	4	36	7
12	11	2	21	4	43	8
16	10	3	21	5	42	10
20	13	3	25	6	51	12
24	15	4	29	7	60	15

PVC DESIGN:
SOIL TYPE: SM
TRENCH TYPE: 3
COVER: 3' ≤12" DIA.
4' >12" DIA.
TEST PRESSURE: 150 PSI

POLYETHELYNE WRAPPED DUCTILE IRON LINE

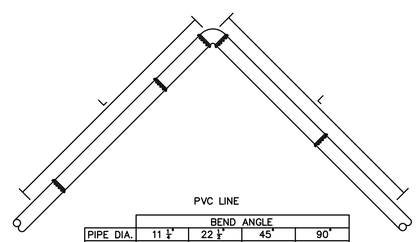
PIPE DIA.	BEND ANGLE 11 1/4°		22 1/2°		45°	
	L_U	L_L	L_U	L_L	L_U	L_L
4	6	1	12	2	24	4
6	9	2	17	3	34	5
8	11	2	22	3	45	7
10	13	2	26	4	53	8
12	15	3	30	5	63	9
16	19	3	39	6	80	12
20	23	4	47	7	97	15
24	27	4	55	8	113	17

PE WRAPPED DIP:
SOIL TYPE: SM
TRENCH TYPE: 3
COVER: 3'
TEST PRESSURE: 150 PSI

NOTES:

1. LENGTH OF RESTRAINT SHOWN IS IN FEET. PIPE DIA. IS IN INCHES
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. INFORMATION IN THE TABLES ABOVE ARE BASED ON THE DESIGN INFORMATION SHOWN. THE ENGINEER SHALL PROVIDE AMENDED RESTRAINT LENGTHS IF SITE CONDITIONS DIFFER

VERTICAL BEND RESTRAINT



PVC LINE

PIPE DIA.	BEND ANGLE 11 1/4°	22 1/2°	45°	90°
4	2	4	8	18
6	3	5	11	25
8	4	7	14	33
10	4	8	16	39
12	5	9	19	45
16	5	9	19	45
20	6	11	23	54
24	8	16	26	62

PVC DESIGN:
SOIL TYPE: SM
TRENCH TYPE: 3
COVER: 3' ≤12" DIA.
4' >12" DIA.
TEST PRESSURE: 150 PSI

POLYETHYLENE WRAPPED DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE 11 1/4°	22 1/2°	45°	90°
4	3	5	9	20
6	3	6	12	28
8	4	8	16	36
10	5	9	19	43
12	6	11	22	51
16	7	14	28	65
20	8	16	33	79
24	9	19	38	92

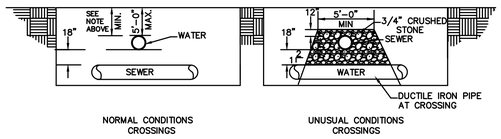
PE WRAPPED DIP:
SOIL TYPE: SM
TRENCH TYPE: 3
COVER: 3'
TEST PRESSURE: 150 PSI

MINIMUM RESTRAINED LENGTH (L)

NOTES:

1. LENGTH OF RESTRAINT SHOWN IS IN FEET. PIPE DIAMETERS ARE IN INCHES.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. INFORMATION IN THE TABLES ABOVE ARE BASED ON THE DESIGN INFORMATION SHOWN. THE ENGINEER SHALL PROVIDE AMENDED RESTRAINT LENGTHS IF SITE CONDITIONS DIFFER

HORIZONTAL BEND RESTRAINT



NORMAL CONDITIONS CROSSINGS

UNUSUAL CONDITIONS CROSSINGS

MINIMUM WATER AND SEWER PIPE SEPARATION REQUIREMENTS FOR CROSSINGS

GEORGIA REGISTERED PROFESSIONAL ENGINEER ANTHONY TOSS ALLEN
04/01/2022

P.O. BOX 1749
RINCON, GA 31326

PH:(912) 667-2667
E-MAIL: tallen@allenengineering.org

allen ENGINEERING SERVICES

REVISIONS		
NO.	DATE	REQ. BY
-	-	-
-	-	-
-	-	-
-	-	-

DESIGNED	A.T.A.
DRAWN	A.T.A.
CHECKED	A.T.A.
DTAE	04/01/2022
JOB NO.	21-015
SCALE	N.T.S.

JASPER VILLAGE PHASE 2
PREPARED FOR:
NEXT CHAPTER NEIGHBORHOODS

CONSTRUCTION DETAILS

SHEET NUMBER
45
OF 45

Geotechnical Engineering Report

Roadways and Pond for Jasper Village Phase II
Port Wentworth, Georgia

August 3, 2021
Terracon Project No. ES215158

Prepared for:

Allen Engineering & Science Inc.
Rincon, Georgia

Prepared by:

Terracon Consultants, Inc.
Savannah, Georgia

August 3, 2021

Allen Engineering & Science Inc.
P.O. Box 1749
Rincon, Georgia 31326

Attn: Mr. Toss Allen
P: (912) 667-2667
E: tallen@allenengineering.org

Re: Geotechnical Engineering Report
Roadways and Pond for Jasper Village Phase II
Port Wentworth, Georgia
Terracon Project No. ES215158

Dear Mr. Allen:

We have completed the Geotechnical Engineering services for the above referenced project in general accordance with Terracon Proposal No. PES215158, dated May 24, 2021. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavements for the proposed development.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report, please contact us at your earliest convenience.

Sincerely,
Terracon Consultants, Inc.

John C. Mikels
Staff Geotechnical Engineer

Guoming Lin, Ph.D., P.E., D.GE
Senior Principal

REPORT TOPICS

INTRODUCTION 1

SITE CONDITIONS 1

PROJECT DESCRIPTION 2

GEOTECHNICAL CHARACTERIZATION 2

RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION 3

EARTHWORK 4

PAVEMENTS 5

GENERAL COMMENTS 8

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the Terracon GeoReport logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

EXHIBITS

EXHIBIT A: Exploration Plan and Procedures

EXHIBIT B: Exploration and Testing Results

EXHIBIT C: Supporting Information

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report
Roadways and Pond for Jasper Village Phase II
Port Wentworth, Georgia

Terracon Project No. ES215158
August 3, 2021

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed development to be located at in Port Wentworth, Georgia. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Pavement design and construction

The geotechnical engineering scope of services for this project included the advancement of eleven (11) hand auger borings to a maximum depth of 10 feet below ground surface (BGS). Maps showing the site and boring locations are shown in **Exhibit A**.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located northwest of the intersection of Old Highway 21 near the intersection with Moore Road in Port Wentworth, Georgia. Latitude: 30.7767°, Longitude: -81.6749° See **Exhibit A-1**
Existing Improvements	None.
Current Ground Cover	Wooded area.
Existing Topography	Relatively level.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed in the project planning stage. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Proposed Structures	We understand the project is for a planned residential development. Terracon's investigation is only for the roadway corridors, ponds, and utility trenches. No test was performed at individual lots and this report should not be used for home design or construction.
Pavements	We assume **flexible (asphalt)** pavement sections should be considered. Please confirm this assumption. Anticipated **(please confirm)** traffic is as follows: ▪ Autos/light trucks: **500** vehicles per day ▪ Delivery/trash trucks: **35** per week The pavement design period is assumed for **20** years.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

The subsurface conditions within the existing were explored with a total of ten (10) hand auger borings to a maximum depth of about 10 feet below ground surface (BGS). HA3 was omitted from the scope due to standing water in the area surrounding the boring location.

Based on the findings from the hand auger borings, the soils in the upper 10 feet at the site predominantly consist of clayey sands to sandy clays. The upper 6 inches of the site generally consists of silty sands with grass roots.

Groundwater Conditions

The hand auger borings were observed while drilling and after completion for the presence and level of groundwater. **Groundwater was encountered in three hand auger borings at approximately 24 to 42 inches BGS.**. The water levels observed in the borings can be found on the boring logs in **Exhibit B-1**, and are summarized in the following table:

Boring Label	Groundwater Depth (in.)	Remark
HA2	30	GWT measured during drilling.
HA8	42	
HA10	24	

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

RECOMMENDATIONS FOR DESIGN AND CONSTRUCTION

Geotechnical Considerations

Based on the findings from the subsurface investigation, we have provided the following considerations for using the onsite soils as structural fill materials, general earthwork recommendations, and pavement considerations.

As discussed above, in a majority of the site, clayey sands (SC) to sandy clays (CL) were encountered. For the roadways, the clayey soils are not suitable for pavement support. Granular fill (sands) should be used below the pavements along the roads. For the materials in ponds for on-site fill, hand auger borings HA7 to HA11 encountered predominately clayey sands. These materials are considered marginally suitable to be used as structural fill. Extra effort may be required to adjust the moisture before they can be compacted. The suitability of using onsite soils as structural fill material can be further evaluated during construction with review from a Terracon representative in the field. We anticipate that the site will not be excavated unless for detention pond construction. A majority of the insitu soils should be suitable subgrade material as long as the subgrade is in stable condition based on proofrolling. An unstable subgrade should be improved and stabilized before receiving additional fill. The stability condition of the subgrade will be influenced by the water content. Undercut and backfill is the most commonly used method to stabilize subgrade.

The contractor should expect undercutting and backfilling of subgrade soils in such isolated weak/soft areas to achieve stable subgrade. The need for undercutting or the extent and depth of undercut should be determined in the field during subgrade preparation. It is anticipated that deep undercut may require dewatering and backfilling with #57 stone.

The following sections present earthwork and pavement construction considerations.

EARTHWORK

Site preparation should include the installation of a site drainage system, topsoil stripping and grubbing, subgrade preparation, densification, and proofrolling. **Please bear in mind,** due to the uneven ground surface of the site, the volume of topsoil and organics may be significantly greater than the area times the topsoil/organics thickness indicated in the boring logs. Rutting of the subgrade can also cause the mixing of topsoil/organics with underlying soils, which will result in additional required topsoil/organics stripping. Deeper undercuts may be needed in some localized areas to remove unsuitable materials.

Densification and Proofrolling

Prior to fill placement on the subgrade, the entire pavement areas should be densified with a heavy-duty vibratory roller for structural fill over the bridge lift. However, during bridge lift construction as discussed in the **Geotechnical** section, the vibration should be turned off and only static rolling or compaction by dozer should be used for the bridge lift layer to avoid water draw-up which may destabilize the subgrade. The subgrade underneath the pavement should be thoroughly proofrolled after the completion of densification. Proofrolling will help detect any isolated soft or loose areas that "pump", deflect or rut excessively, and also densify the near-surface soils for floor slab support.

A loaded tandem axle dump truck, capable of transferring a load in excess of 20 tons, should be utilized for this operation. Proofrolling should be performed under the Geotechnical Engineer's observation. Areas where pumping, excessive deflection or rutting is observed after successive passes of the proofrolling equipment should be undercut, backfilled and then properly compacted. It is anticipated that some amount of subgrade undercutting may be required under during subgrade preparation.

Fill Material Types

Fill required to achieve design grade should be classified as structural fill. Earthen materials used for structural should meet the following material property requirements:

Soil Type [1]	USCS Classification	Acceptable Parameters (for Structural Fill)
Granular	GW, GP, GM, GC, SW, SP, SM, SC	Less than 25% Passing No. 200 sieve

1. Structural should consist of approved materials free of organic matter and debris. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.

Based on the findings from our hand auger borings, the subject site mostly consists of clayey sands (SC) and sandy clays (CL) to a maximum depth of approximately 10 feet BGS. The clayey

sands may be considered marginally suitable for use as structural fill, provided that the soils are free of roots, organics or other foreign materials.

Fill Material Consideration

The properties of the fill will affect the performance of the pavements. The soils to be used as structural fill should be free of organics, roots, or other deleterious materials. It should be non-plastic granular material containing less than 25 percent fines passing the No. 200 sieve. If necessary, soils with more than 25 percent fines may be used as fill in less critical areas under close control of moisture and compaction.

All structural fills should be placed in thin (8 to 10 inches loose) lifts and compacted to a minimum of 95 percent of the soil's Modified Proctor maximum dry density (ASTM D-1557). If import fill is required, the fill brought to the site should be within 3 percent (wet or dry) of the optimum moisture content and should meet the properties as described above.

Some manipulation of the moisture content (such as wetting, drying) will be required during the filling operation to obtain the required degree of compaction. The manipulation of the moisture content is highly dependent on weather conditions and site drainage conditions. Therefore, the contractor should prepare both dry and wet fill materials to obtain the specified compaction during grading. A sufficient number of density tests should be performed to confirm the required compaction of the fill material.

Grading and Drainage

We recommend an effective drainage system be installed prior to site preparation and grading activities to intercept surface water and to improve overall shallow drainage. The drainage system may consist of perimeter ditches supplemented with parallel ditches and swales. Pumping equipment should be prepared if the above ditch system cannot effectively drain water away from the site, especially during the rainy season. The site should be graded to shed water and avoid ponding over the subgrade. The contractor should schedule the work according to the weather conditions and protect the subgrade from water damage.

PAVEMENTS

General Pavement Comments

We understand the proposed development will include an access road. This section presents thickness recommendations for asphalt concrete pavements and general considerations for the pavement construction. Pavement thickness design is dependent upon:

- Traffic volumes, loads, traffic pattern, and desired service life of the pavement;
- Subgrade conditions including soil strength and drainage characteristics;

- Paving material characteristics;
- Climatic conditions of the region.

Traffic patterns and anticipated loading conditions were not available. However, based on our experience with similar projects in the area, we anticipate the access road will be a heavy duty section.

Based on our experience with similar projects, we have assumed that the proposed asphalt pavement section will experience the following traffic loading for the **pavement design of 20 years.**

- Autos/light trucks: **500** vehicles per day
- Delivery/trash collection vehicles **35** vechicles per week

We assume car traffic and 35 delivery and trash removal trucks per week for the access roads. **If heavier/higher volume traffic loading is expected, we should be provided with the information and allowed to review these pavement sections.** As typical for pavement, maintenance repairs are typically **required** after a period of 7 to 10 years to keep the pavement in acceptable condition.

Asphalt Pavement Design Recommendations

Material	Minimum Section Thickness (inches)
Asphalt Surface Course [1]	1.5
Asphalt Intermediate Course [1]	2.0
Aggregate Base Course [1]	6.0
Total Pavement Section	**9.5**
Structural fill [2] / improved subgrade [3]	24

1. Asphalt concrete and base course materials should conform to the following GDOT material specifications:
   - Section 815 for Graded Aggregate
   - Section 828 for Hot Mix Asphalt Concrete Mixture. Surface course may use 12.5 mm Superpave for the access road section.
2. The select fill should be sands with percent **fines less than 15%.** The fill material should be compacted to a minimum of **95%** of the soil's **Modified** Proctor maximum dry density (ASTM D-1557).
3. If SP or SP-SM or SM soils exist at the proposed subgrade elevation extending to a depth at least 24 inches below the proposed subgrade level, the in-situ soils can replace the select fill and the **subgrade should be improved using densification** as discussed in **Earthwork.**

Notes:

- Proper **surface and subgrade drainage system should be installed** to avoid saturation of subgrade soils underneath the asphalt pavements. The site drainage should be designed to maintain the groundwater **at least 2 feet below** the top of the subgrade.
- Some subgrade soil undercutting and backfilling with suitable structural fill **will be required** if unstable subgrade soils are encountered during subgrade preparation. **The use of geogrid** (Tensar BX1100 or equivalent) **may be necessary to help reduce the depth of undercut** to achieve stability if the unstable subgrade soils extend to greater depths. The need for geogrid and/or the need for undercutting and backfilling should be determined in the field during subgrade preparation.

For the pavement support, the subgrade conditions can often be the overriding factor in pavement performance. The subgrade conditions will depend on the in-situ soils at the subgrade level, characteristics of fill material for the subgrade, as well as the site preparation procedures.

Assuming the finished subgrade will be near the existing ground surface, based on the hand auger borings, the near surface soils vary from silty sands to clayey sands. The silty sands are generally considered suitable for the subgrade support.

The clayey sands would have poor drainage characteristics and are not considered suitable for subgrade support. **If, during construction, clayey sands or sandy clays are encountered at the subgrade level, the upper (2) feet of the subgrade should be replaced with relatively clean sands with percent fines less than 15 percent. A California Bearing Ratio (CBR) value of 8** has been estimated based on the in-situ soils at the site, and typical imported fills available in this area.

Climatic conditions are considered in the design subgrade support value listed above and in the paving material characteristics. The recommended paving material characteristics, taken from the Georgia Department of Transportation's (GDOT) 2001 edition of *Standard Specifications for Construction of Transportation Systems,* are included for the asphalt concrete sections.

Pavement Construction Considerations

It is important to note that the above-recommended pavement section does not account the construction traffic, which can be very damaging. A construction entrance should be designed for heavy-duty construction traffic, such as earthmoving trucks and similar heavy-duty delivery trucks. We believe the construction traffic had significantly attributed significantly to the pavement damage.

In the event the project cannot set up a separate entrance for construction traffic and the main road is required to account for the construction traffic, we request traffic data from the design and construction so we can present a heavy pavement section in the design-level report.

As an alternative to the single phased construction, the pavements for this development can also be constructed in two phases. The first phase of the construction will include placement of base course and intermediate asphalt binder course which should take place after completion of

framing work. The construction traffic will be allowed to travel on the intermediate asphalt course. The surface course will be placed at the end of all construction.

The benefits of the phased construction include the use of asphalt surface by the finishing phase the construction crews. The contractor should prevent water ponding on the asphalt layer. Any damage by the construction traffic should be repaired prior to the placement of the surface course.

Pavement and Subgrade Drainage

Poor subgrade drainage is the most common cause of pavement failure. Pavement should be sloped to provide rapid drainage of surface water. **Water should not be allowed to pond on or adjacent to the pavement which would saturate the subgrade soils** and weaken the subgrade support.

Based on our hand auger logs, the groundwater depth was found to be ranging from 2 to 3.5 feet below the existing grade surface. **We recommend the site drainage be designed to maintain the groundwater at least two (2) feet below the top of the subgrade.** Pavement subgrade drainage should be installed surrounding the areas anticipated for frequent wetting or having poor natural drainage, such as landscaped islands, along curbs and gutters and around drainage structures.

All landscaped areas in or adjacent to pavements should be sealed to reduce moisture migration to subgrade soils. **Subgrade drains should be installed with the pipe bottom at least two (2) feet below the top of the structural fill.** The civil engineer should decide the placement of the subgrade drains to avoid the saturation of pavement subgrade. **In order to avoid soil erosion, water from landscaping sprinkler heads should not be directed toward curb and gutter areas.**

Pavement Maintenance

The performance of pavements will require regular maintenance. One key component of the maintenance is to minimize the infiltration of water into the pavement base and subgrade. Preventive maintenance should include crack and joint sealing and patching, as well as overall surface sealing and overlay. Additional engineering observation and evaluation is recommended prior to any major maintenance.

GENERAL COMMENTS

The geotechnical considerations presented in this report are based upon the data obtained from the explorations performed at the indicated locations and from other information discussed in this report. This report does not reflect variations that may occur between exploration locations, across the site, or may be caused due to the modifying effects of construction or weather. Bear in mind that the nature and extent of such variations may not become evident until construction

has started or until construction activities have ceased. If variations do appear, Terracon should be notified immediately so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, and bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or hazardous conditions. If the owner is concerned about the potential for such contamination or pollution, please advise so that additional studies may be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project and site discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranties, either expressed or implied, are intended or made. Site safety, excavation support and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes, and then either verifies or modifies the conclusions of this report in writing.Terracon appreciates the opportunity to provide this report. If you have any questions concerning this report, or if we may be of further service, please contact us.

EXHIBITS

EXHIBIT A: Exploration Plan and Procedures

EXHIBIT B: Exploration and Testing Results

EXHIBIT C: Supporting Information

EXHIBIT A

EXPLORATION PLAN AND PROCEDURES

- **Exhibit A-1:** Site Location Plan
- **Exhibit A-2:** Exploration Plan
- **Exhibit A-3:** Exploration and Testing Procedures

EXHIBIT A-1 - SITE LOCATION PLAN

Roadways and Pond for Jasper Village Phase II ■ Port Wentworth, Georgia
August 3, 2021 ■ Terracon Project No. ES215158

DIAGRAM IS FOR GENERAL LOCATION ONLY AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES.

MAP PROVIDED BY MICROSOFT BING MAPS

EXHIBIT A-2 - EXPLORATION PLAN

Roadways and Pond for Jasper Village Phase II ■ Port Wentworth, Georgia
August 3, 2021 ■ Terracon Project No. ES215158

DIAGRAM IS FOR GENERAL LO CATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

Field Exploration

No. of Test	Type of Test	Location	Maximum Depth (feet, below ground surface)
6	Hand Auger (HA) Boring	Roadway areas	5
4		Pond areas	10

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet).

Subsurface Exploration Procedures: Hand auger borings were conducted in general accordance with ASTM D 1452-80 to determine the subsurface conditions at shallow depths. In this test, the hand auger boring is drilled by rotating and advancing a bucket auger to the desired depths while periodically removing the auger from the hole to clear and examine the auger cuttings. The soils were visually classified by a geotechnical engineer or geologist in accordance with ASTM D-2488. Dynamic cone penetrometer tests were performed at one-foot intervals within each borehole.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples.

EXHIBIT B

EXPLORATION AND TESTING RESULTS

- **Exhibit B-1:** Hand Auger Boring Log
- **Exhibit B-2:** Summary of Laboratory Reports
- **Exhibit B-3:** Grain Size Distribution
- **Exhibit B-4:** Atterberg Limits

BORING LOG NO. HA1

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2366° Longitude: -81.1920°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots and leaf litter				
	4.0	**SANDY LEAN CLAY (CL)**, brown brown and red	1 2 3			
	5.0	**CLAYEY SAND (SC)**, medium grained, gray and red	4			
		Boring Terminated at 5 Feet	5			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 12" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-1

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA2

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2360° Longitude: -81.1921°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots and leaf litter				
	2.5	**SANDY LEAN CLAY (CL)**, dark brown	1 2	▽		
		Refusal due to cave-in at 2.5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Mottling noted @ 12" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-2

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA4

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2357° Longitude: -81.1917°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots and leaf litter				
	2.0	**CLAYEY SAND (SC)**, fine grained, light brown	1 2			
	5.0	**SANDY LEAN CLAY (CL)**, brown	3 4 5			
		Boring Terminated at 5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 24" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-3

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA5

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2364° Longitude: -81.1906°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots				
		CLAYEY SAND (SC), medium grained, brown	1			
		light brown and red	2			
	3.0					
		SANDY LEAN CLAY (CL), gray and red, Refusal @ 48" BGS due to rock debris.	3			
	4.0					
		Refusal due to rock debris at 4 Feet	4			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 24" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA6

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2356° Longitude: -81.1909°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots and leaf litter				
	2.0	**SILTY SAND (SM)**, fine grained, light brown	1 2			
	2.5	**CLAYEY SAND (SC)**, fine to medium grained, light brown				
	5.0	**SANDY LEAN CLAY (CL)**, brown and red	3 4 5			
		Boring Terminated at 5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 30" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA7

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2360° Longitude: -81.1905°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with roots and pinestraw				
	2.0	**SILTY SAND (SM)**, fine to medium grained, brown	1 2			
	5.0	**SANDY LEAN CLAY (CL)**, light brown	3 4 5			
		Boring Terminated at 5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 24" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA8

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc Rincon, GA

SITE: Old Highway 21 Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2365° Longitude: -81.1900°

DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
0.5	**TOPSOIL**, with small roots				
2.5	**POORLY GRADED SAND (SP)**, fine to medium grained, light brown	1 2			3
	CLAYEY SAND (SC), fine grained, light brown	3	▽		
	brown and red	4 5 6 7 8 9			47
10.0	***Boring Terminated at 10 Feet***	10			

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Mottling noted @ 42" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA9

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2361° Longitude: -81.1901°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with small roots				
	5.0	**CLAYEY SAND (SC)**, fine grained, light brown	1 2 3 4 5			26
		Refusal due to cave-in at 5 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 12" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA10

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc
Rincon, GA

SITE: Old Highway 21
Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2357° Longitude: -81.1901°

GRAPHIC LOG	DEPTH		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
	0.5	**TOPSOIL**, with small roots				
		CLAYEY SAND (SC), fine grained, light brown	1			
			2	▽		18
		light brown	3			
			4			
			5			20
			6			
	7.0		7			
		Refusal due to cave-in at 7 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

▽ *While drilling*

Mottling noted @ 24" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

BORING LOG NO. HA11

PROJECT: Roadways and Pond for Jasper Village Phase II

CLIENT: Allen Engineering & Science Inc Rincon, GA

SITE: Old Highway 21 Port Wentworth, GA

LOCATION See Exhibit A-2

Latitude: 32.2353° Longitude: -81.1904°

DEPTH	GRAPHIC LOG		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	PERCENT FINES
		TOPSOIL, with small roots				
0.5		**CLAYEY SAND (SC)**, fine grained, dark brown	1			
		light brown	2			
			3			16
			4			
		fine to medium grained	5			
			6			
			7			26
			8			
			9			
10.0			10			
		Boring Terminated at 10 Feet				

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Hand Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exhibit A-3 for description of field procedures.
See Appendix B for description of laboratory procedures and additional data (if any).
See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No groundwater encountered.
Mottling noted @ 12" BGS.

Terracon
2201 Rowland Ave
Savannah, GA

Boring Started: 07-16-2021	Boring Completed: 07-16-2021
Drill Rig: Hand Auger	Driller: M.A.
Project No.: ES215158	Exhibit: B-1-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

Summary of Laboratory Testing Results

Terracon Project Name: Roadways and Pond for Jasper Village Phase II

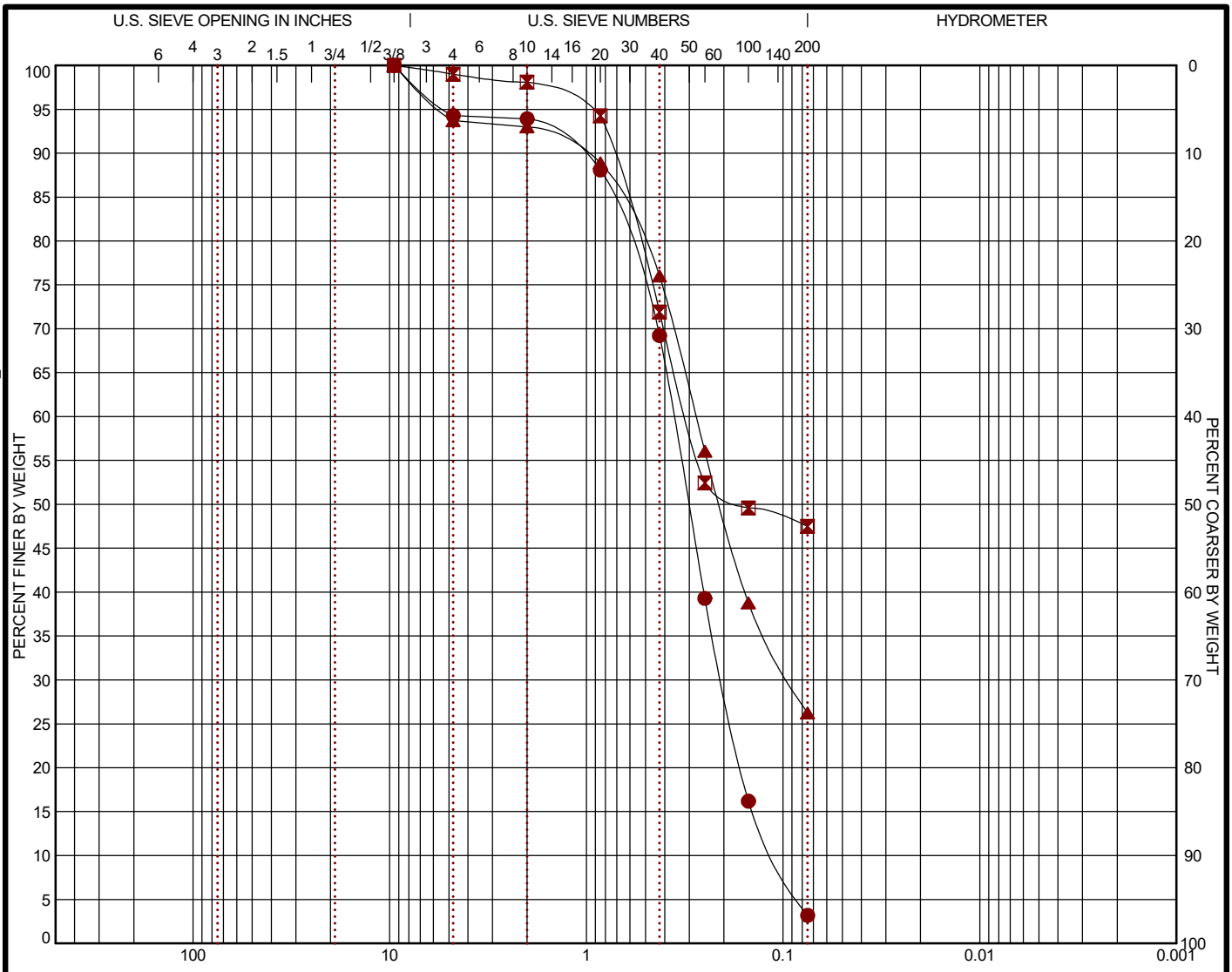
Terracon Project No.: ES215158

Project Location: Port Wentworth, Georgia

BORING ID	Depth (Ft.)	Soil Classification USCS	USCS	Water Content (%)	LL	PL	PI	Cc	Cu	% Gravel	% Sand	% Fines
HA8	2.0	POORLY GRADED SAND	SP	15.1	--	--	--	1.06	3.35	5.7	91.1	3.2
HA8	6.6	CLAYEY SAND	SC	13.3	--	--	--	--	--	1.0	51.5	47.5
HA9	2.9	CLAYEY SAND	SC	14.5	58	23	35	--	--	6.3	67.5	26.2
HA10	1.8	CLAYEY SAND	SC	13.3	--	--	--	--	--	0.7	80.9	18.4
HA10	5.0	CLAYEY SAND	SC	28.9	48	22	26	--	--	0.0	79.8	20.2
HA11	3.3	CLAYEY SAND	SC	25.0	49	21	28	--	--	0.0	84.3	15.7
HA11	7.5	CLAYEY SAND	SC	17.0	--	--	--	--	--	0.0	73.8	26.1

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	LATITUDE/LONGITUDE	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY
●	**HA8**	**32.23649 / -81.19003**	**2**	**0.0**	**5.7**	**91.1**		**3.2**	
⊠	**HA8**	**32.23649 / -81.19003**	**6.6**	**0.0**	**1.0**	**51.5**		**47.5**	
▲	**HA9**	**32.23606 / -81.19008**	**2.9**	**0.0**	**6.3**	**67.5**		**26.2**	

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.361**	**0.307**	**0.278**
D_{30}	**0.204**		**0.092**
D_{10}	**0.108**		
	COEFFICIENTS		
C_C	**1.06**		
C_U	**3.35**		

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/8"	100.0	3/8"	100.0	3/8"	100.0
#4	94.28	#4	98.99	#4	93.7
#10	93.91	#10	98.1	#10	93.0
#20	88.09	#20	94.24	#20	88.89
#40	69.22	#40	71.92	#40	76.02
#60	39.29	#60	52.44	#60	56.05
#100	16.19	#100	49.58	#100	38.78
#200	3.18	#200	47.49	#200	26.24

SOIL DESCRIPTION
- ● POORLY GRADED SAND (SP)
- ⊠ CLAYEY SAND (SC)
- ▲ CLAYEY SAND (SC)

REMARKS
- ●
- ⊠
- ▲

PROJECT: Roadways and Pond for Jasper Village Phase II

SITE: Old Highway 21
Port Wentworth, GA

Terracon
2201 Rowland Ave
Savannah, GA

PROJECT NUMBER: ES215158

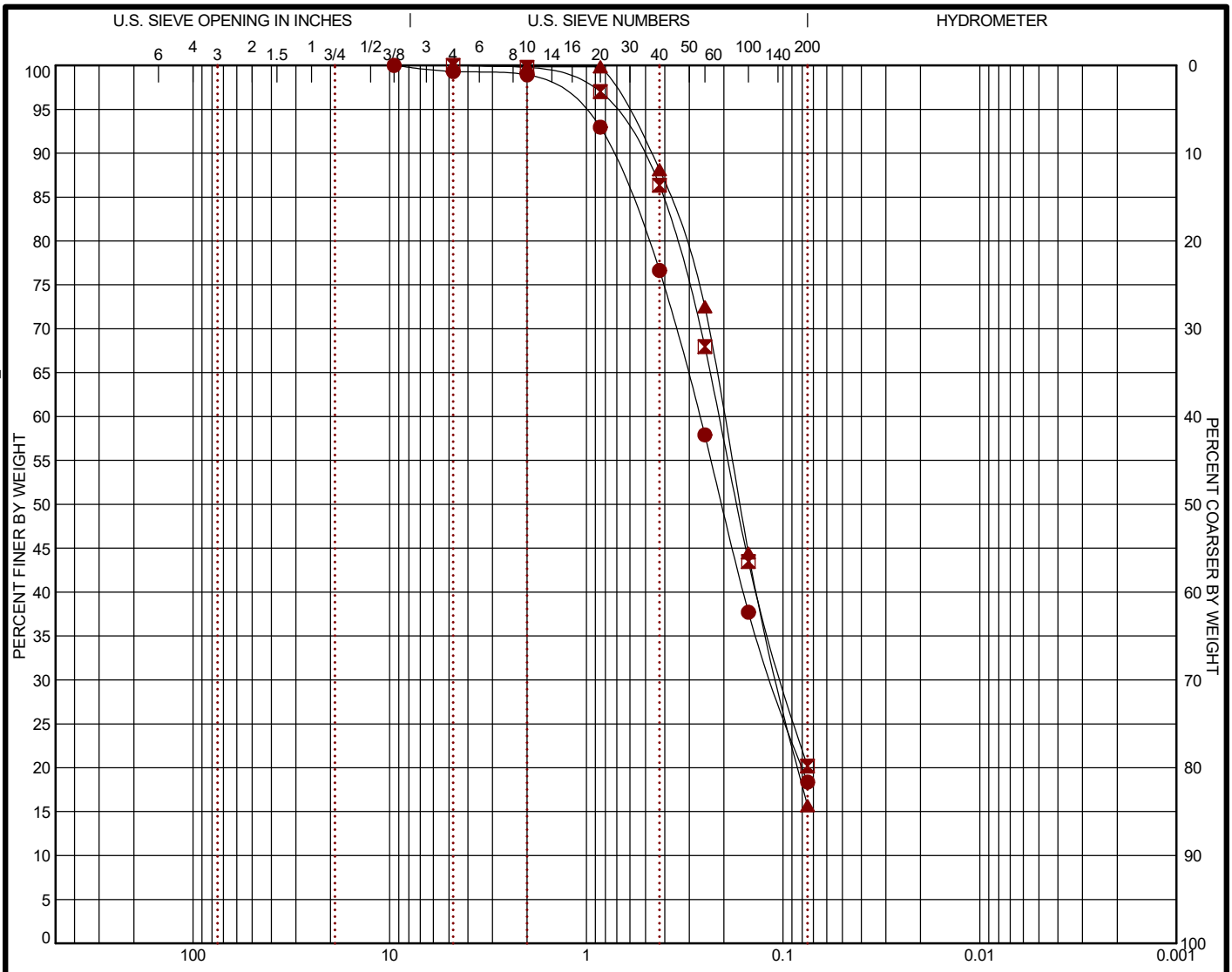
CLIENT: Allen Engineering & Science Inc
Rincon, GA

EXHIBIT: B-3-1

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 73191029-GRAIN SIZE-USCS 1 ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	LATITUDE/LONGITUDE	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY
●	**HA10**	**32.23566 / -81.19007**	**1.8**	**0.0**	**0.7**	**80.9**		**18.4**	
⊠	**HA10**	**32.23566 / -81.19007**	**5**	**0.0**	**0.0**	**79.8**		**20.2**	
▲	**HA11**	**32.23529 / -81.19041**	**3.3**	**0.0**	**0.0**	**84.3**		**15.7**	

	GRAIN SIZE		
	●	⊠	▲
D_{60}	**0.265**	**0.212**	**0.199**
D_{30}	**0.114**	**0.1**	**0.106**
D_{10}			
	COEFFICIENTS		
C_C			
C_U			

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/8"	**100.0**	**#4**	**100.0**	**#4**	**100.0**
#4	**99.3**	**#10**	**99.77**	**#10**	**99.86**
#10	**98.92**	**#20**	**97.02**	**#20**	**99.84**
#20	**92.96**	**#40**	**86.34**	**#40**	**88.13**
#40	**76.64**	**#60**	**67.98**	**#60**	**72.5**
#60	**57.91**	**#100**	**43.5**	**#100**	**44.46**
#100	**37.71**	**#200**	**20.18**	**#200**	**15.69**
#200	**18.36**				

SOIL DESCRIPTION

● CLAYEY SAND (SC)

⊠ CLAYEY SAND (SC)

▲ CLAYEY SAND (SC)

REMARKS

●

⊠

▲

PROJECT: Roadways and Pond for Jasper Village Phase II

SITE: Old Highway 21
Port Wentworth, GA

Terracon
2201 Rowland Ave
Savannah, GA

PROJECT NUMBER: ES215158

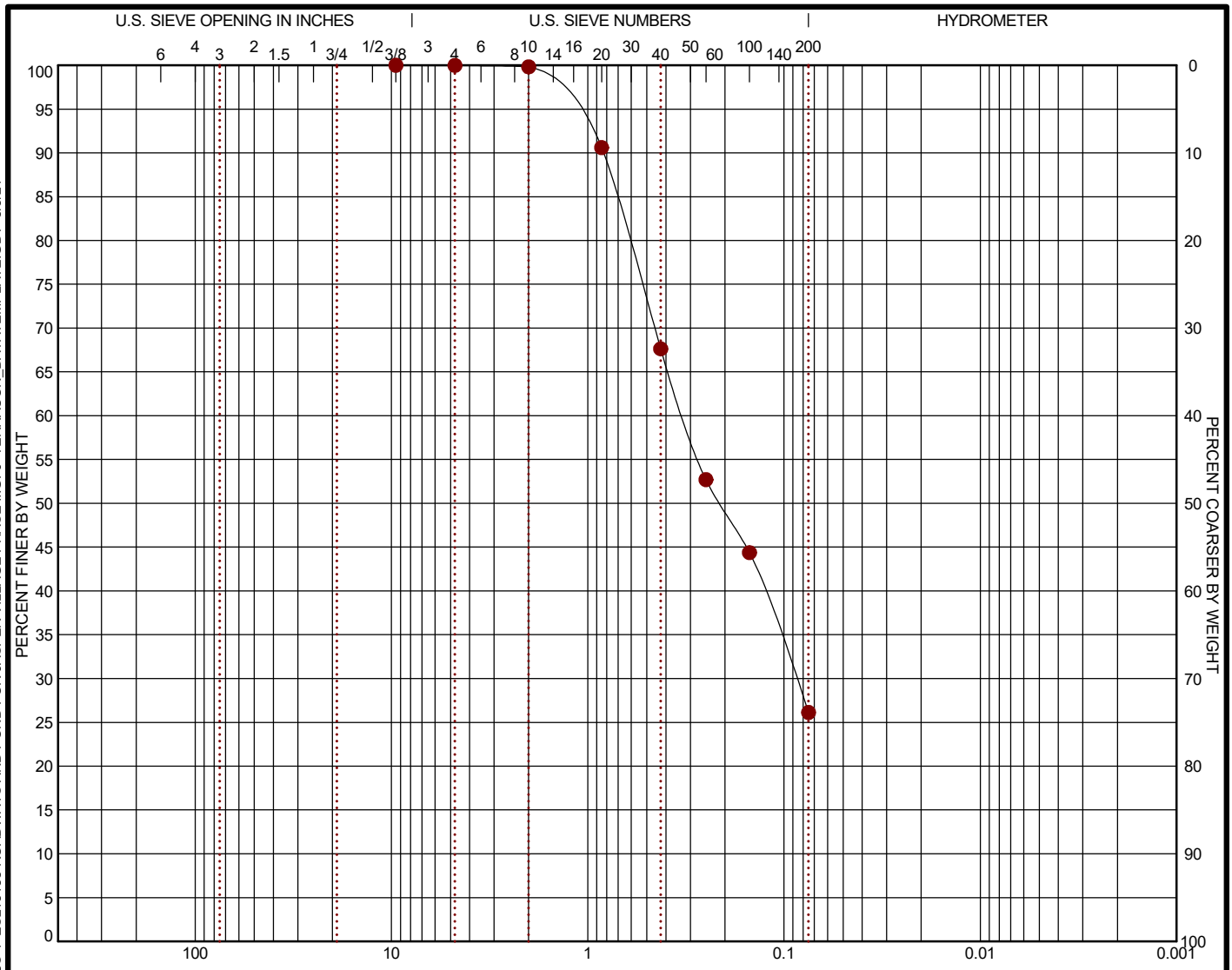
CLIENT: Allen Engineering & Science Inc
Rincon, GA

EXHIBIT: B-3-2

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 73191029-GRAIN SIZE-USCS 1 ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	LATITUDE/LONGITUDE	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY
●	**HA11**	**32.23529 / -81.19041**	**7.5**	**0.0**	**0.0**	**73.8**		**26.1**	

	GRAIN SIZE
	●
D_{60}	**0.324**
D_{30}	**0.087**
D_{10}	
	COEFFICIENTS
C_C	
C_U	

● Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/8"	**100.0**				
#4	**99.97**				
#10	**99.82**				
#20	**90.6**				
#40	**67.63**				
#60	**52.7**				
#100	**44.37**				
#200	**26.13**				

SOIL DESCRIPTION

● CLAYEY SAND (SC)

REMARKS

●

PROJECT: Roadways and Pond for Jasper Village Phase II

SITE: Old Highway 21
Port Wentworth, GA

Terracon
2201 Rowland Ave
Savannah, GA

PROJECT NUMBER: ES215158

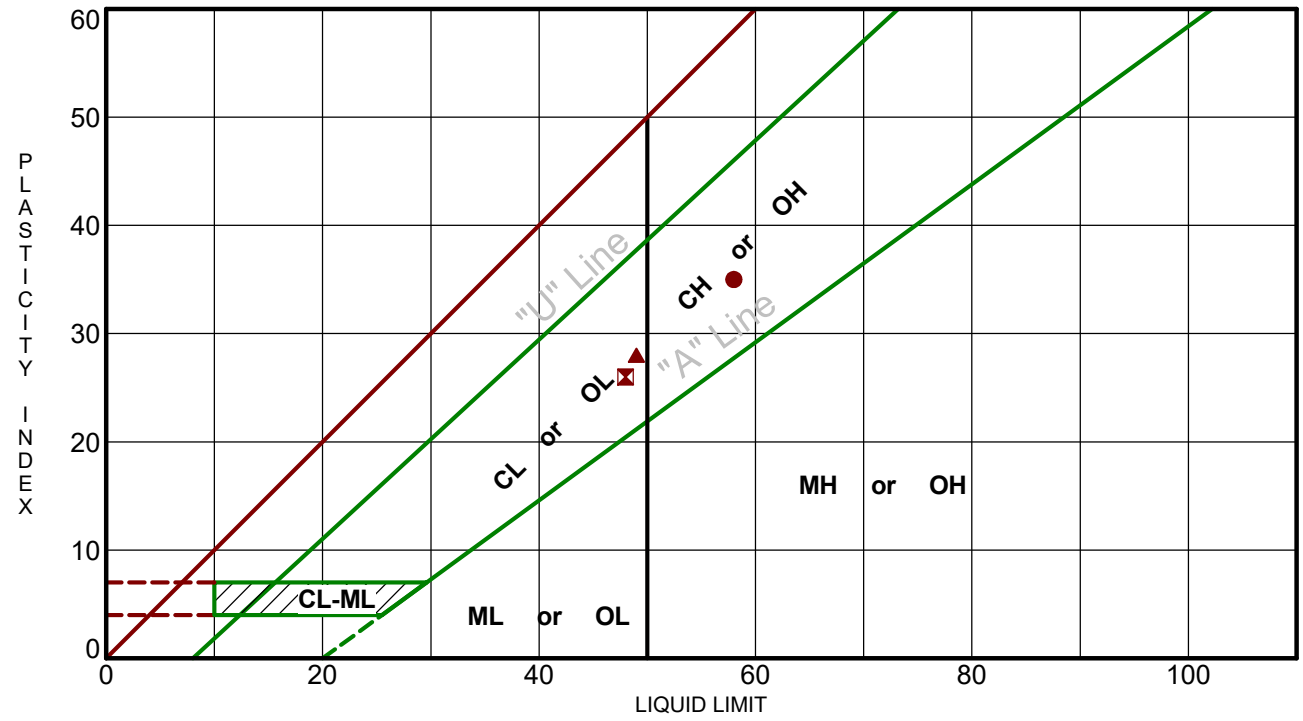
CLIENT: Allen Engineering & Science Inc
Rincon, GA

EXHIBIT: B-3-3

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. 73191029-GRAIN SIZE-USCS 1 ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth	LL	PL	PI	Fines	USCS	Description
● HA9	2.9	58	23	35	26.2	SC	CLAYEY SAND
⊠ HA10	5	48	22	26	20.2	SC	CLAYEY SAND
▲ HA11	3.3	49	21	28	15.7	SC	CLAYEY SAND

PROJECT: Roadways and Pond for Jasper Village Phase II

SITE: Old Highway 21
Port Wentworth, GA

Terracon
2201 Rowland Ave
Savannah, GA

PROJECT NUMBER: ES215158

CLIENT: Allen Engineering & Science Inc
Rincon, GA

EXHIBIT: B-4

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS ES215158 ROADWAYS AND POND FOR JASPER VILLAGE PHASE II.GPJ TERRACON_DATATEMPLATE.GDT 8/3/21

EXHIBIT C

SUPPORTING INFORMATION

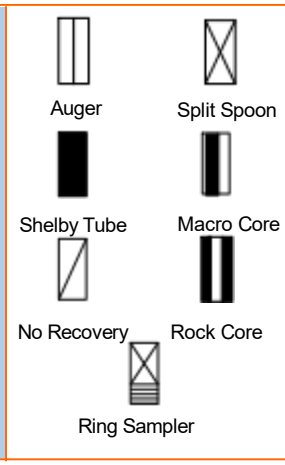
- **Exhibit C-1:** General Notes
- **Exhibit C-2:** Unified Soil Classification System

GENERAL NOTES

Terracon

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



GROUNDWATER

Groundwater Initially Encountered

Groundwater Level After a Specified Period of Time

Static Groundwater Level After a Specified Period of Time

No Groundwater Observed

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	Std. Penetration Resistance (blows per foot)	Descriptive Term (Consistency)	Undrained Shear Strength (kips per square foot)	Std. Penetration Resistance (blows per foot)
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium-Stiff	0.50 to 1.00	5 - 7
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 14
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	above 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Descriptive Term(s) of other constituents	Percent of Dry Weight
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ³ 4 and 1 £ Cc £ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ³ 6 and 1 £ Cc £ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above “A”		CL	Lean clay [K, L, M]
			PI < 4 or plots below “A” line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above “A” line		CH	Fat clay [K, L, M]
			PI plots below “A” line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add “with cobbles or boulders, or both” to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ³ 15% sand, add “with sand” to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add “with organic fines” to group name.

[I] If soil contains ³ 15% gravel, add “with gravel” to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add “with sand” or “with gravel,” whichever is predominant.

[L] If soil contains ³ 30% plus No. 200 predominantly sand, add “sandy” to group name.

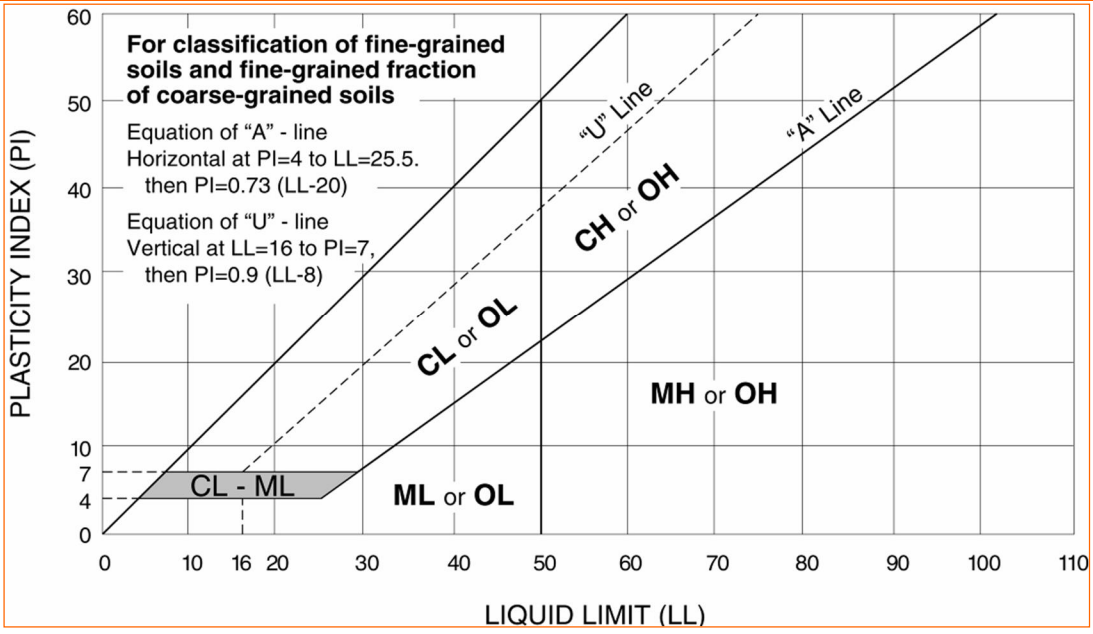
[M] If soil contains ³ 30% plus No. 200, predominantly gravel, add “gravelly” to group name.

[N] PI ³ 4 and plots on or above “A” line.

[O] PI < 4 or plots below “A” line.

[P] PI plots on or above “A” line.

[Q] PI plots below “A” line.



WATER SYSTEM DESIGN CONSIDERATIONS AND FIRE FLOW CALCULATIONS

FOR

JASPER VILLAGE PHASE 2

PREPARED FOR

NEXT CHAPTER HOLDINGS, LLC

PROJECT NO. 21-015

MARCH 2022

Project Narrative

The existing LEO at the Sanctuary (formerly Jasper Village) is located at the intersection of State Route 21 and Old August Road in Effingham County, Georgia. The project consists of approximately 215 single family units on a single parcel that will be retained and rented by the owner. The site is 30.252 acres. The water services are connected to the existing 8-inch water main within Old Augusta Road right-of-way. Jasper Village Phase 2 is located in The City of Port Wentworth, Chatham County adjacent to Leo at the Sanctuary. The project consists of approximately 70 single family units on a single parcel that will be retained and rented by the owner. The site is 36.190 acres. The water service is proposed to be connected to the existing 10-inch and 8-inch water main adjacent to Newton Court.

Supply

Potable water will be supplied to the proposed buildings by 10-inch water mains and 1-inch laterals. The buildings will not have fire sprinkler systems. Fire flow calculations are attached.

Demand

Instantaneous Peak Demand

Instantaneous Peak Demand is calculated as follows:

(Effingham County Water Use Standards)

(Grocery Stores) - 33,500 S.F. @ 20 GPD/100 S.F.	=	6,700 GPD
(Shopping Center) - 20,000 S.F. @ 10 GPD/100 S.F.	=	2,000 GPD
	Total	8,700 GPD

8,700 gal/day x 0.0833 (1 day/12hours) x 0.0167 (1 hr/min) = 12.1 GPM

Instantaneous Peak Demand is calculated by assuming a peaking factor of 4.

12.1 gal/min x 4 = 48.4 GPM

(Page 43 "GA EPD Minimum Standards for Public Water Systems")

Residential Communities

285 connections = 248 GPM

Total Peak Daily Demand: 297 GPM

Equivalent Residential Units

The ERU's anticipated for the domestic flow of this development are as follows:

	Number of Units	GPD per Unit	Total GPD	Number of ERU's
One Bedroom	16	100	1600	6
Two Bedroom	27	150	4050	14
Three Bedroom	23	300	6900	23
Four Bedroom	4	300	1200	4
			Total ERU's	**47**

Fire Protection Design Requirements

PROJECT **Jasper Village Phase 2** **DATE** 3/07/2022

PROJECT # **21-015**

WILL THE PROJECT INCLUDE A SPRINKLER SYSTEM? YES_____ NO__X___

WILL THE SPRINKLER SYSTEM INCLUDE A BOOSTER PUMP OR THE USE OF CHEMICALS? YES____ NO__X___

If yes, a reduced pressure zone (RPZ) type backflow preventer must be installed on the water service lateral that will supply the system.

1. **Needed Fire Flow (NFF)**

The Needed Fire Flow (NFF) for the proposed facility will be calculated in accordance with the Insurance Services Office (ISO) "Guide for Determination of Needed Fire Flow," current edition.

Per Chapter 7 of the Insurance Services Office (ISO) "Guide for Determination of Needed Fire Flow," current edition, the Needed Fire Flow for 1 and 2 family dwellings not exceeding 2 stories in height with 0-10 feet between buildings is 1,500 gallons per minute.

DISTANCE BETWEEN BUILDINGS	NEEDED FIRE FLOW
More than 30 feet	500 gpm
21-30 feet	750 gpm
11-20 feet	1,000 gpm
0-10 feet	1, 500 gpm

2. Available Fire Flow (AFF):

The Available Fire Flow (AFF) must be calculated based on hydrant flow testing for existing systems and hydraulic design analyses for new systems. The AFF will represent the fire flow that is available from the public water system at the existing or proposed hydrant nearest to the proposed facility at a residual pressure of 20 psi.

That information was used as part of a hydraulic model of the proposed water system within Jasper Village Phase 1 and Phase 2. The model incorporated junctions and fire hydrants spaced throughout the proposed development. The Instantaneous Peak Demand for the project was divided equally amongst all of the junctions in the model while the Needed Fire Flow was assigned to each fire hydrant. A separate scenario was modeled for each hydrant within the proposed development to ensure that a minimum of 20 psi was available at the hydrant while also providing the Peak Instantaneous Demand.

3. Hydrant Distribution Summary for Proposed Facility

The hydrant distribution in the vicinity of a proposed facility must be sufficient to ensure that the NFF can be delivered. A credit will be applied for each existing or proposed hydrant based on the following ISO 614C criteria:

DISTANCE FROM THE HYDRANT TO THE PROPOSED FACILITY (FEET)	FIRE FLOW CREDIT (GALLONS/MINUTE)
0 TO 300	1,000
301 TO 600	700
601 TO 1,000	550

The distance from the hydrant to the proposed facility must be measured as the fire hose can be laid by apparatus (i.e. along rods and driveways as a vehicle would drive). Only 50 feet of the distance can be cross-country where the fire hose would be laid by hand at the hydrant.

Fire hydrants shall be spaced at a maximum of 500 feet with additional hydrants located as necessary to obtain required coverage. The maximum distance from the nearest hydrant to the most remote exterior point of any building shall be 300 feet. The distance shall be measured on a roadway surface meeting the fire department access requirements of F602.6, Standard Fire Prevention Codes. There shall be not less than 2 hydrants accessible to buildings.

Calculated by: Toss Allen

Date: 3/07/2022

WATER FLOW TEST SUMMARY SHEET

Given: Flow During Test = **1200** gpm
Connection Point Static Head = 161.7 ' = **70** psi
Connection Point Residual Head = 127.05 ' = **55** psi
Desired Residual Head = 46.2 ' = **20** psi

Find: Calculate Flow, Q_r, to determine a third point fo the system curve and Peak Flow.

Solution: Q_r = Flow Available at Desired Fire Flow Residual Pressure
Q_f = Flow During Test
H_r = Pressure Drop to Desired Residual Pressure
H_f = Pressure Drop During Test

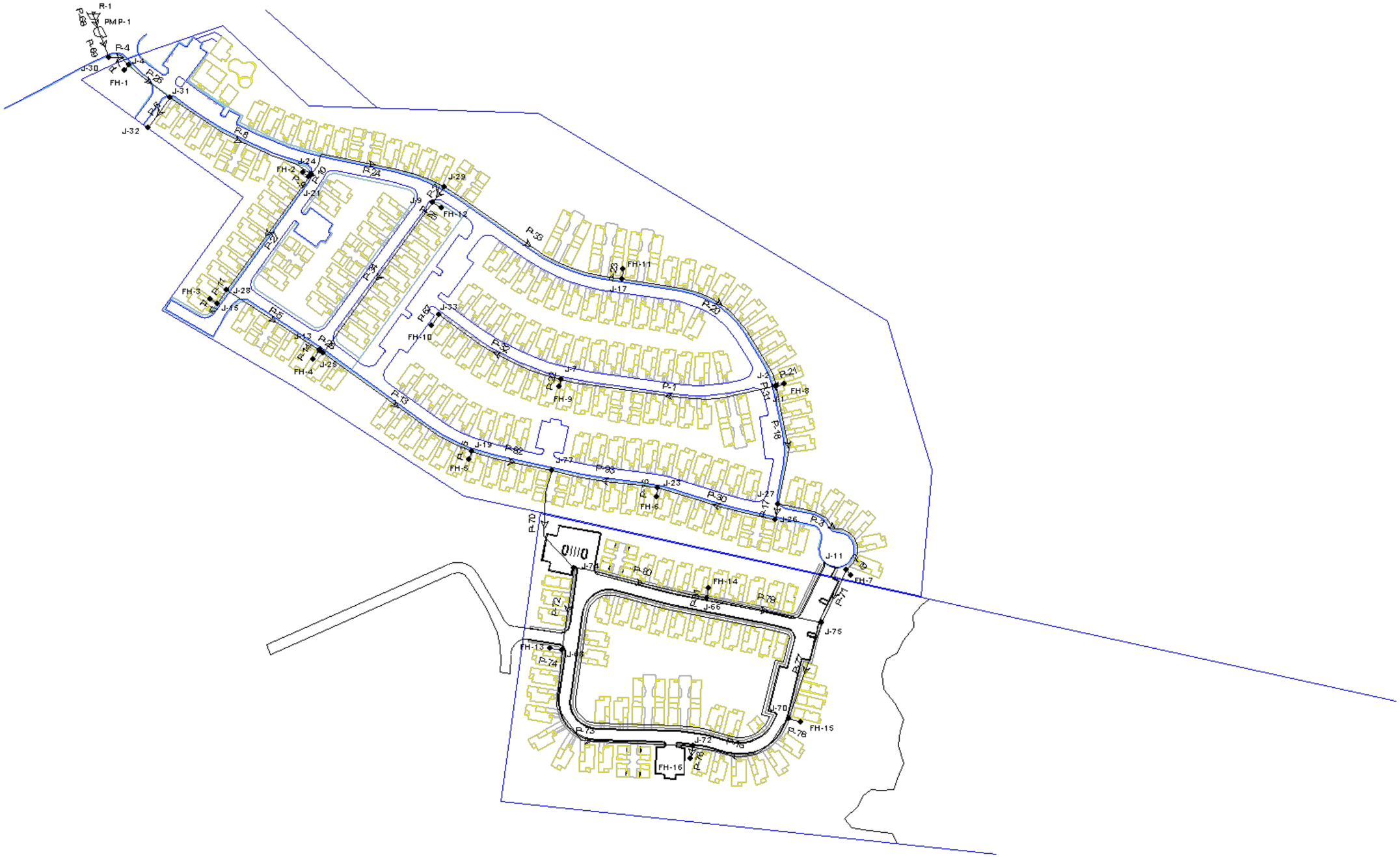
H_r = (70 psi - 20 psi) = 50 psi
H_f = (70 psi - 55 psi) = 15 psi

$Q_r = Qf*(H_r/H_f)^{0.54}$

Q_r = 1200 x (50 / 15)$^{0.54}$ = 2299 gpm @ 20 psi

POINT	FLOW (GPM)	PRESSURE (PSI)
1st POINT (@ STATIC)	0	70
2nd POINT (@ CALCULATED)	2299	20
3rd POINT (@ FLOW TEST)	1200	55

Scenario: Base



© Haestad Methods, Inc.

Scenario: Fire Flow
Fire Flow Analysis
Fire Flow Report

Label	Zone	Fire Flow Iterations	Fire Flow Balanced ?	Satisfies Fire Flow Constraints?	Needed Fire Flow (gpm)	Available Fire Flow (gpm)	Total Flow Needed (gpm)	Total Flow Available (gpm)	Residual Pressure (psi)	Calculated Residual Pressure (psi)	Minimum Zone Pressure (psi)	Calculated Minimum Zone Pressure (psi)	Minimum Zone Junction	Minimum System Pressure (psi)	Calculated Minimum System Pressure (psi)
FH-2	Zone	2	true	true	1,500.00	1,750.00	1,500.00	1,750.00	20.00	21.62	20.00	20.11	FH-16	N/A	-0.30
FH-4	Zone	4	true	true	1,500.00	1,720.60	1,500.00	1,720.60	20.00	20.70	20.00	20.00	FH-16	N/A	-0.29
FH-11	Zone	4	true	true	1,500.00	1,708.96	1,500.00	1,708.96	20.00	20.98	20.00	20.00	FH-16	N/A	-0.29
FH-6	Zone	5	true	true	1,500.00	1,685.22	1,500.00	1,685.22	20.00	20.09	20.00	20.00	FH-16	N/A	-0.28
FH-7	Zone	4	true	true	1,500.00	1,662.20	1,500.00	1,662.20	20.00	21.31	20.00	20.00	FH-16	N/A	-0.27
FH-8	Zone	3	true	true	1,500.00	1,690.89	1,500.00	1,690.89	20.00	20.01	20.00	20.17	FH-16	N/A	-0.28
FH-5	Zone	4	true	true	1,500.00	1,694.12	1,500.00	1,694.12	20.00	20.71	20.00	20.00	FH-16	N/A	-0.28
FH-1	Zone	2	true	true	1,500.00	1,750.00	1,500.00	1,750.00	20.00	26.57	20.00	24.76	FH-16	N/A	-0.30
FH-12	Zone	4	true	true	1,500.00	1,728.16	1,500.00	1,728.16	20.00	20.95	20.00	20.00	J-72	N/A	-0.29
FH-3	Zone	3	true	true	1,500.00	1,683.86	1,500.00	1,683.86	20.00	20.01	20.00	20.35	J-15	N/A	-0.28
FH-9	Zone	5	true	true	1,500.00	1,636.20	1,500.00	1,636.20	20.00	20.02	20.00	20.00	FH-10	N/A	-0.27
FH-10	Zone	2	true	true	1,500.00	1,512.59	1,500.00	1,512.59	20.00	20.00	20.00	20.34	J-33	N/A	-0.24
FH-16	Zone	3	true	true	1,500.00	1,553.53	1,500.00	1,553.53	20.00	20.00	20.00	23.70	J-72	N/A	-0.25
FH-14	Zone	3	true	true	1,500.00	1,582.46	1,500.00	1,582.46	20.00	20.00	20.00	23.60	FH-16	N/A	-0.25
FH-13	Zone	3	true	true	1,500.00	1,589.63	1,500.00	1,589.63	20.00	20.00	20.00	22.89	FH-16	N/A	-0.26
FH-15	Zone	3	true	true	1,500.00	1,566.17	1,500.00	1,566.17	20.00	20.00	20.00	23.69	FH-16	N/A	-0.25

Scenario: Peak Daily Demand
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	173.60	67.54
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	173.60	68.18
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	173.67	68.47
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	173.59	68.75
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	173.61	67.84
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	173.63	67.83
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	173.59	68.70
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	173.62	68.76
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	173.60	67.75
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	173.60	68.18
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	173.63	68.09
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.54
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	173.59	68.35
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	173.60	67.56
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	173.81	68.71
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	173.64	68.44
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	173.63	68.09
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	173.59	68.79
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.54
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	173.67	68.60
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	173.62	68.93
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	173.61	67.84
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	173.89	68.74
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	173.81	68.60
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	173.63	68.55
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	173.89	68.74
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	173.63	68.87
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	173.64	68.44
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	173.67	68.65
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	173.64	68.35
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	173.59	68.49
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	173.63	68.72
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	173.93	69.84
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	173.59	68.22
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.97
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.10
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.97
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	173.59	66.67
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	173.59	67.75
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	173.59	68.18
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.97
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	173.59	66.67
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	173.59	67.32
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.10
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	173.59	67.75

© Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA +1-203-755-1666

Scenario: Peak Daily Demand
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.61	173.61	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.64	173.64	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-19.18	0.08	173.60	173.60	0.00	0.00
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	71.03	0.29	173.63	173.61	0.02	0.05
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	173.81	173.81	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	173.67	173.64	0.03	0.08
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	173.63	173.63	0.00	0.05
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	173.62	173.63	0.02	0.04
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	173.63	173.63	0.00	0.01
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.63	173.63	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	173.60	173.59	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.67	173.67	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	173.63	173.63	0.01	0.01
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.60	173.60	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	173.67	173.67	0.00	0.08
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.60	173.60	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-20.06	0.13	173.59	173.60	0.00	0.01
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-106.51	0.44	173.63	173.67	0.03	0.10
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	173.64	173.63	0.01	0.05
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	173.59	173.59	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	298.05	1.22	173.89	173.81	0.08	0.65
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-19.18	0.12	173.60	173.60	0.00	0.01
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.64	173.64	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	225.50	0.92	173.81	173.67	0.15	0.39
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.62	173.62	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.89	173.89	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.63	173.63	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	173.60	173.62	0.02	0.04
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	298.05	1.22	173.93	173.89	0.04	0.65
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	298.05	1.90	15.00	14.98	0.02	1.94
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	298.05	1.90	174.05	173.93	0.12	1.94
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	173.59	173.59	0.00	0.00
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00

Scenario: Peak Daily Demand
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	47.59	0.19	173.60	173.59	0.01	0.02
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-7.49	0.03	173.59	173.59	0.00	0.00
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	20.06	0.08	173.59	173.59	0.00	0.00
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	173.59	173.59	0.00	0.00
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-9.98	0.06	173.59	173.59	0.00	0.00
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-7.49	0.03	173.59	173.59	0.00	0.00
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-9.98	0.04	173.59	173.59	0.00	0.00
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	71.02	0.29	173.61	173.60	0.01	0.05
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01

Scenario: Peak Daily Demand
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.98	174.05	298.05	159.07	11.97

Scenario: Peak Daily Demand
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-298.05	15.00

Scenario: Fire at FH-1
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	98.09	34.87
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	98.09	35.52
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	98.16	35.81
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	98.08	36.08
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	98.10	35.17
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	98.12	35.16
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	98.09	36.03
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	98.11	36.09
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	98.09	35.08
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	98.09	35.52
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	98.12	35.42
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	98.09	34.87
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	98.08	35.69
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	98.09	34.89
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	98.30	36.04
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	98.13	35.77
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	98.12	35.42
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	98.08	36.12
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	98.09	34.87
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	98.16	35.94
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	98.11	36.26
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	98.10	35.17
FH-1	15.00	Zone	Demand	1,500.00	Fixed	1,500.00	97.91	35.87
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	98.30	35.93
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	98.12	35.88
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	98.12	36.20
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	98.13	35.77
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	98.16	35.98
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	98.13	35.69
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	98.09	35.82
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	98.12	36.05
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	98.08	35.56
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	98.09	35.30
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	98.08	34.43
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	98.08	35.30
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	98.08	34.00
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	98.08	35.08
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	98.08	35.51
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	98.08	35.30
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	98.08	34.00
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	98.08	34.65
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	98.08	34.43
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	98.08	35.08

Scenario: Fire at FH-1
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.10	98.10	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.13	98.13	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-19.18	0.08	98.09	98.09	0.00	0.00
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	71.02	0.29	98.12	98.10	0.02	0.05
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	98.09	98.09	0.00	0.01
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	98.30	98.30	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	98.16	98.13	0.03	0.08
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	98.12	98.12	0.00	0.05
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	98.11	98.12	0.02	0.04
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	98.12	98.12	0.00	0.01
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.12	98.12	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	98.09	98.09	0.00	0.01
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	98.09	98.09	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.16	98.16	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	98.12	98.12	0.01	0.01
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.09	98.09	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	98.16	98.16	0.00	0.08
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.09	98.09	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-20.06	0.13	98.08	98.09	0.00	0.01
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-106.51	0.44	98.12	98.16	0.03	0.10
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	98.13	98.12	0.01	0.05
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	98.09	98.08	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	298.05	1.22	98.38	98.30	0.08	0.65
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-19.18	0.12	98.09	98.09	0.00	0.01
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.13	98.13	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	225.50	0.92	98.30	98.16	0.15	0.39
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.11	98.11	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	97.91	98.38	0.47	157.16
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.12	98.12	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.09	98.09	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	98.09	98.11	0.02	0.04
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.08	98.08	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.08	98.08	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	98.08	98.08	0.00	0.00
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	98.08	98.08	0.00	0.00

Scenario: Fire at FH-1
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	98.08	98.08	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	47.59	0.19	98.09	98.08	0.01	0.02
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-7.49	0.03	98.08	98.08	0.00	0.00
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	20.06	0.08	98.08	98.08	0.00	0.00
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	98.08	98.08	0.00	0.00
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-9.98	0.06	98.08	98.08	0.00	0.00
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	98.08	98.08	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	98.08	98.08	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-7.49	0.03	98.08	98.08	0.00	0.00
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-9.98	0.04	98.08	98.08	0.00	0.00
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	71.02	0.29	98.10	98.09	0.01	0.05
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	98.09	98.09	0.00	0.01

Scenario: Fire at FH-1
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-1
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-2
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	89.75	31.26
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	89.75	31.91
FH-2	15.40	Zone	Demand	1,500.00	Fixed	1,500.00	89.30	31.97
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	89.74	32.47
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	89.75	31.56
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	89.76	31.55
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	89.75	32.43
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	89.78	32.48
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	89.75	31.47
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	89.75	31.91
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	89.76	31.81
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	89.75	31.26
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	89.74	32.08
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	89.75	31.28
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	89.76	32.15
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	89.76	31.81
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	89.74	32.51
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	89.75	31.26
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.77	32.31
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	89.78	32.66
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	89.75	31.56
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	89.80	32.28
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	89.81	32.60
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	89.76	32.15
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	89.76	32.07
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	89.75	32.21
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	89.80	32.45
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	89.74	31.95
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	89.75	31.69
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	89.74	30.82
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	89.74	31.69
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	89.74	30.39
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	89.74	31.47
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	89.74	31.90
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	89.74	31.69
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	89.74	30.39
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	89.74	31.04
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	89.74	30.82
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	89.74	31.47

Scenario: Fire at FH-2
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.75	89.75	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.76	89.76	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-36.79	0.15	89.75	89.75	0.00	0.01
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	53.41	0.22	89.76	89.75	0.01	0.03
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	9.24	0.04	89.75	89.75	0.00	0.00
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	41.43	0.17	89.77	89.76	0.01	0.02
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	18.88	0.08	89.76	89.76	0.00	0.00
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-81.89	0.33	89.78	89.81	0.03	0.06
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	57.08	0.36	89.81	89.80	0.00	0.09
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.76	89.76	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	9.24	0.04	89.75	89.75	0.00	0.00
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	89.75	89.75	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	89.30	89.77	0.47	157.16
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	57.08	0.36	89.80	89.76	0.04	0.09
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.75	89.75	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	1,541.43	6.30	89.88	89.77	0.11	13.73
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.75	89.75	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-23.48	0.15	89.74	89.75	0.00	0.02
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-161.52	0.66	89.81	89.88	0.07	0.21
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	18.88	0.08	89.76	89.76	0.00	0.00
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	89.75	89.74	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-36.79	0.23	89.75	89.75	0.00	0.04
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.76	89.76	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.78	89.78	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.80	89.80	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.75	89.75	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-81.89	0.33	89.75	89.78	0.03	0.06
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.74	89.74	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.74	89.74	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	13.63	0.06	89.74	89.74	0.00	0.00
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	89.74	89.74	0.00	0.00

Scenario: Fire at FH-2
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	89.74	89.74	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	44.17	0.18	89.75	89.74	0.01	0.02
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-8.92	0.04	89.74	89.74	0.00	0.00
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	23.48	0.10	89.74	89.74	0.00	0.01
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	13.63	0.06	89.74	89.74	0.00	0.00
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-7.98	0.05	89.74	89.74	0.00	0.00
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	89.74	89.74	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	89.74	89.74	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-8.92	0.04	89.74	89.74	0.00	0.00
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-7.98	0.03	89.74	89.74	0.00	0.00
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	53.41	0.22	89.75	89.75	0.01	0.03
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	9.24	0.04	89.75	89.75	0.00	0.00

Scenario: Fire at FH-2
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-2
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-3
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	88.33	30.64
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	88.19	31.23
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.82	32.20
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	88.12	31.77
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	88.05	30.83
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.95	30.76
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	88.32	31.81
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	88.64	31.99
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	88.14	30.78
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	88.18	31.23
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.95	31.02
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	88.32	30.64
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	88.32	31.46
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	88.14	30.58
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	81.61	28.62
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.96	31.03
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	88.12	31.81
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	88.32	30.64
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.82	32.33
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	88.64	32.16
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	88.05	30.83
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.86	31.87
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.96	32.24
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	87.58	31.21
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	1,500.00	Fixed	1,500.00	81.14	28.33
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	88.32	31.59
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.86	32.04
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	88.32	31.33
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	88.10	30.98
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	88.11	30.12
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	88.10	30.98
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	88.10	29.68
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	88.10	30.76
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	88.11	31.20
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	88.10	30.98
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	88.10	29.68
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	88.10	30.33
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	88.11	30.12
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	88.10	30.76

© Haestad Methods, Inc.

Scenario: Fire at FH-3
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.05	88.05	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	81.14	81.61	0.47	157.16
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-256.55	1.05	88.19	88.32	0.14	0.50
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	-166.35	0.68	87.96	88.05	0.09	0.22
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-139.22	0.57	88.14	88.18	0.04	0.16
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	1,068.18	4.36	89.82	87.58	2.24	6.96
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	-454.37	1.86	87.95	87.96	0.02	1.43
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-301.65	1.23	88.64	88.96	0.31	0.67
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	310.57	1.98	88.96	88.86	0.09	2.09
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.95	87.95	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-139.22	0.57	88.18	88.19	0.01	0.16
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	88.33	88.32	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.82	89.82	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	310.57	1.98	88.86	87.96	0.90	2.09
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.14	88.14	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	1,068.18	4.36	89.88	89.82	0.06	6.96
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.32	88.32	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-94.78	0.60	88.12	88.19	0.07	0.23
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-634.77	2.59	88.96	89.88	0.92	2.65
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	-454.37	1.86	87.58	87.95	0.36	1.43
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	88.32	88.32	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-256.55	1.64	88.32	88.33	0.00	1.47
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	1,500.00	17.02	87.58	81.61	5.97	157.16
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.64	88.64	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.86	88.86	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.32	88.32	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-301.65	1.23	88.33	88.64	0.31	0.67
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.12	88.12	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.32	88.32	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	-17.44	0.07	88.10	88.10	0.00	0.00
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	88.10	88.10	0.00	0.00

Scenario: Fire at FH-3
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	88.11	88.11	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	-27.13	0.11	88.10	88.10	0.00	0.01
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-39.99	0.16	88.10	88.11	0.01	0.02
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	94.78	0.39	88.12	88.11	0.01	0.08
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	-17.44	0.07	88.10	88.10	0.00	0.00
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	32.24	0.21	88.11	88.10	0.01	0.03
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	88.10	88.10	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	88.10	88.10	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-39.99	0.16	88.11	88.11	0.00	0.02
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	32.24	0.13	88.10	88.10	0.00	0.01
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	-166.35	0.68	88.05	88.10	0.04	0.22
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-139.22	0.57	88.10	88.14	0.04	0.16

Scenario: Fire at FH-3
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-3
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.02	15.00

Scenario: Fire at FH-4
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	87.56	30.31
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	87.34	30.87
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.84	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	87.24	31.38
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	87.11	30.42
FH-4	16.85	Zone	Demand	1,500.00	Fixed	1,500.00	86.43	30.11
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	87.56	31.48
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	88.03	31.72
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	87.26	30.40
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	87.33	30.86
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	86.90	30.57
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	87.56	30.31
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	87.55	31.13
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	87.26	30.20
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.17	31.46
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	86.93	30.58
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	87.24	31.43
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	87.56	30.31
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.84	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	88.03	31.90
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	87.11	30.42
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.35	31.65
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.49	32.03
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.17	31.46
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.17	31.37
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	87.56	31.26
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.35	31.82
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	87.55	31.00
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	87.19	30.58
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	87.21	29.73
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	87.20	30.59
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	87.20	29.29
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	87.20	30.37
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	87.22	30.81
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	87.20	30.59
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	87.20	29.29
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	87.20	29.94
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	87.21	29.73
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	87.20	30.37

Scenario: Fire at FH-4
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.11	87.11	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.17	88.17	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-327.47	1.34	87.34	87.56	0.22	0.78
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	-237.27	0.97	86.93	87.11	0.18	0.43
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-183.67	0.75	87.26	87.33	0.08	0.27
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	911.59	3.72	89.84	88.17	1.67	5.19
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	-610.96	2.50	86.90	86.93	0.03	2.47
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-372.57	1.52	88.03	88.49	0.46	0.99
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	396.24	2.53	88.49	88.35	0.14	3.29
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	86.43	86.90	0.47	157.16
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-183.67	0.75	87.33	87.34	0.01	0.27
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	87.56	87.56	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.84	89.84	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	396.24	2.53	88.35	86.93	1.41	3.29
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.26	87.26	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	911.59	3.72	89.88	89.84	0.04	5.19
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.56	87.56	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-121.25	0.77	87.24	87.34	0.10	0.37
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-791.36	3.23	88.49	89.88	1.39	3.99
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	889.04	3.63	88.17	86.90	1.26	4.95
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	87.56	87.55	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-327.47	2.09	87.56	87.56	0.00	2.31
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.17	88.17	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.03	88.03	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.35	88.35	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.56	87.56	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-372.57	1.52	87.56	88.03	0.47	0.99
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.24	87.24	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.55	87.55	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	-30.42	0.12	87.20	87.20	0.00	0.01
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.20	87.20	0.00	0.00

Scenario: Fire at FH-4
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.21	87.21	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	-53.60	0.22	87.19	87.20	0.01	0.03
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-52.97	0.22	87.20	87.21	0.01	0.03
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	121.25	0.50	87.24	87.22	0.02	0.12
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	-30.42	0.12	87.20	87.20	0.00	0.01
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	45.73	0.29	87.22	87.20	0.02	0.06
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.20	87.20	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.20	87.20	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-52.97	0.22	87.21	87.22	0.01	0.03
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	45.73	0.19	87.20	87.20	0.01	0.02
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	-237.27	0.97	87.11	87.19	0.08	0.43
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-183.67	0.75	87.19	87.26	0.07	0.27

Scenario: Fire at FH-4
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-4
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-5
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.96	29.62
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	85.39	30.02
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	85.12	30.47
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	84.68	29.37
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.45	30.55
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.96	30.79
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	87.07	31.31
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	85.14	29.48
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	85.36	30.01
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.45	30.81
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.95	29.61
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.95	30.44
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	85.14	29.29
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.48	31.60
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.41	30.79
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	85.12	30.51
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.95	29.61
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	87.07	31.48
FH-5	16.80	Zone	Demand	1,500.00	Fixed	1,500.00	84.21	29.16
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.10	31.54
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.17	31.89
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.48	31.60
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.48	31.51
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.96	30.57
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.10	31.71
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.95	30.31
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.95	29.62
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	85.05	28.80
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	85.01	29.64
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	85.03	28.35
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	85.02	29.43
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	85.07	29.89
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	85.01	29.64
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	85.03	28.35
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	85.00	28.99
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	85.05	28.80
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	85.02	29.43

Scenario: Fire at FH-5
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	84.21	84.68	0.47	157.16
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.48	88.48	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-549.38	2.24	85.39	85.95	0.56	2.03
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	1,040.82	4.25	87.41	84.68	2.73	6.63
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-324.12	1.32	85.14	85.36	0.21	0.76
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	817.37	3.34	89.85	88.48	1.37	4.24
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	794.82	3.25	87.45	87.41	0.04	4.03
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-594.48	2.43	87.07	88.17	1.10	2.35
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	268.55	1.71	88.17	88.10	0.07	1.60
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.45	87.45	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-324.12	1.32	85.36	85.39	0.03	0.76
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.96	85.96	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	268.55	1.71	88.10	87.41	0.69	1.60
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.14	85.14	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	817.37	3.34	89.88	89.85	0.03	4.24
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.95	85.95	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-202.70	1.29	85.12	85.39	0.27	0.95
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-885.58	3.62	88.17	89.88	1.71	4.92
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	794.82	3.25	88.48	87.45	1.03	4.03
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.96	85.95	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-549.38	3.51	85.95	85.96	0.01	6.02
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.48	88.48	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.07	87.07	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.10	88.10	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.96	85.96	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-594.48	2.43	85.96	87.07	1.11	2.35
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.12	85.12	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.95	85.95	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	-69.79	0.29	85.01	85.03	0.02	0.05
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.01	85.01	0.00	0.00

Scenario: Fire at FH-5
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.05	85.05	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	-135.05	0.55	84.95	85.00	0.04	0.17
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-92.34	0.38	85.03	85.05	0.03	0.08
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	202.70	0.83	85.12	85.07	0.04	0.32
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	-69.79	0.29	85.00	85.01	0.01	0.05
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	87.81	0.56	85.07	85.02	0.05	0.20
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.02	85.02	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-92.34	0.38	85.05	85.07	0.02	0.09
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	87.81	0.36	85.02	85.00	0.02	0.07
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	-459.18	1.88	84.68	84.95	0.28	1.46
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-324.12	1.32	84.95	85.14	0.19	0.76

Scenario: Fire at FH-5
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-5
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-6
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.05	29.22
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.25	29.53
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	84.27	30.10
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	85.37	29.67
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.65	30.63
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.04	30.39
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.54	31.08
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	83.28	28.68
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.14	29.48
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.65	30.89
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.03	29.22
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.04	30.04
FH-6	17.45	Zone	Demand	1,500.00	Fixed	1,500.00	82.81	28.28
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.59	31.64
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.61	30.87
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	84.27	30.14
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.03	29.22
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	86.54	31.26
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	85.37	29.67
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.00	31.50
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.04	31.84
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.59	31.64
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.59	31.56
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.04	30.18
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.00	31.67
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.04	29.91
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.33	29.35
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	84.28	28.46
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	84.29	29.33
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	84.28	28.03
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	84.29	29.11
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	84.28	29.54
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	84.29	29.33
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	84.28	28.03
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	84.30	28.68
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	84.28	28.46
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	84.29	29.11

© Haestad Methods, Inc.

Scenario: Fire at FH-6
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.37	85.37	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-655.40	2.68	84.25	85.03	0.78	2.82
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	934.80	3.82	87.61	85.37	2.24	5.44
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-683.74	2.79	83.28	84.14	0.86	3.05
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	781.84	3.19	89.85	88.59	1.26	3.91
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	759.29	3.10	87.65	87.61	0.04	3.70
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-700.50	2.86	86.54	88.04	1.49	3.19
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	198.06	1.26	88.04	88.00	0.04	0.91
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.65	87.65	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-683.74	2.79	84.14	84.25	0.12	3.05
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.05	85.04	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	198.06	1.26	88.00	87.61	0.39	0.91
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	82.81	83.28	0.47	157.16
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	781.84	3.19	89.88	89.85	0.03	3.91
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	50.90	0.32	84.27	84.25	0.02	0.07
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-921.11	3.76	88.04	89.88	1.84	5.29
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	759.29	3.10	88.59	87.65	0.94	3.70
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.04	85.04	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-655.40	4.18	85.03	85.05	0.02	8.35
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.54	86.54	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.00	88.00	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.04	85.04	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-700.50	2.86	85.05	86.54	1.50	3.19
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.27	84.27	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.04	85.04	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	50.93	0.21	84.29	84.28	0.01	0.03
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	84.29	84.29	0.00	0.00

Scenario: Fire at FH-6
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	84.28	84.28	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	118.55	0.48	84.33	84.30	0.03	0.14
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	28.38	0.12	84.28	84.28	0.00	0.01
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-50.90	0.21	84.27	84.28	0.00	0.02
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	50.93	0.21	84.30	84.29	0.01	0.03
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-45.07	0.29	84.28	84.29	0.02	0.06
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	84.29	84.29	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	84.28	84.28	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	28.38	0.12	84.28	84.28	0.00	0.01
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-45.07	0.18	84.29	84.30	0.01	0.02
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	934.80	3.82	85.37	84.33	1.03	5.44
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	816.26	3.33	84.33	83.28	1.05	4.23

Scenario: Fire at FH-6
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-6
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-7
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.05	29.23
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.26	29.53
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	81.21	28.78
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	85.36	29.66
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.65	30.63
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.05	30.39
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.55	31.09
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	84.30	29.12
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.27	29.54
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.65	30.89
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.04	29.22
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.05	30.05
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	84.30	28.92
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.59	31.64
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.61	30.87
FH-7	14.60	Zone	Demand	1,500.00	Fixed	1,500.00	80.74	28.62
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.04	29.22
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	86.55	31.26
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	85.36	29.66
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.00	31.50
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.04	31.84
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.59	31.64
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.59	31.56
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.05	30.18
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.00	31.67
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.05	29.92
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.33	29.35
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	81.96	27.46
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	82.82	28.69
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	82.29	27.17
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	82.65	28.40
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	81.70	28.42
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	82.82	28.69
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	82.29	27.17
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	83.03	28.14
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	81.96	27.46
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	82.65	28.40

Scenario: Fire at FH-7
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.36	85.36	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-654.66	2.67	84.26	85.04	0.78	2.81
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	935.54	3.82	87.61	85.36	2.24	5.45
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	118.15	0.48	84.30	84.27	0.03	0.12
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	782.07	3.19	89.85	88.59	1.26	3.91
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	759.52	3.10	87.65	87.61	0.04	3.70
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-699.76	2.86	86.55	88.04	1.49	3.18
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	198.57	1.27	88.04	88.00	0.04	0.91
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.65	87.65	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	118.15	0.48	84.27	84.26	0.00	0.12
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.05	85.05	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	198.57	1.27	88.00	87.61	0.39	0.91
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.30	84.30	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	782.07	3.19	89.88	89.85	0.03	3.91
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.04	85.04	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-750.26	4.79	81.21	84.26	3.05	10.73
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-920.88	3.76	88.04	89.88	1.84	5.29
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	759.52	3.10	88.59	87.65	0.94	3.70
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.05	85.05	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-654.66	4.18	85.04	85.05	0.02	8.34
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.55	86.55	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.00	88.00	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.05	85.05	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-699.76	2.86	85.05	86.55	1.49	3.18
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	80.74	81.21	0.47	157.16
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.05	85.05	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	385.89	1.58	82.82	82.29	0.53	1.08
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.82	82.82	0.00	0.00

Scenario: Fire at FH-7
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	81.96	81.96	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	817.39	3.34	84.33	83.03	1.29	5.12
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	363.34	1.48	82.29	81.96	0.33	0.98
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-749.74	3.06	81.21	81.70	0.48	3.61
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	385.89	1.58	83.03	82.82	0.22	1.13
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-408.95	2.61	81.70	82.65	0.95	3.49
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.65	82.65	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.29	82.29	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	363.34	1.48	81.96	81.70	0.26	1.13
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-408.95	1.67	82.65	83.03	0.39	1.22
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	935.54	3.82	85.36	84.33	1.03	5.45
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	118.15	0.48	84.33	84.30	0.03	0.12

Scenario: Fire at FH-7
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-7
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-8
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	83.67	28.63
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.52	29.65
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	84.92	30.38
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	86.16	30.01
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.84	30.71
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	83.67	29.80
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	85.79	30.76
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	85.02	29.43
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.58	29.67
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.84	30.97
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	83.65	28.62
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	83.66	29.45
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	85.02	29.23
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.70	31.69
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.80	30.96
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	84.92	30.42
FH-8	17.50	Zone	Demand	1,500.00	Fixed	1,500.00	83.17	28.41
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	85.79	30.93
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	86.16	30.01
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	87.89	31.45
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	87.90	31.78
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.70	31.69
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.70	31.61
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	83.67	29.58
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	87.89	31.62
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	83.66	29.32
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	85.40	29.81
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	85.02	28.78
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	85.15	29.70
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	85.06	28.37
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	85.13	29.47
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	84.98	29.85
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	85.15	29.70
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	85.06	28.37
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	85.18	29.07
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	85.02	28.78
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	85.13	29.47

Scenario: Fire at FH-8
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.16	86.16	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	700.30	2.86	84.52	83.65	0.88	3.18
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	790.50	3.23	87.80	86.16	1.64	3.99
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	473.99	1.94	85.02	84.58	0.43	1.55
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	745.47	3.05	89.85	88.70	1.15	3.58
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	722.92	2.95	87.84	87.80	0.04	3.38
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-844.80	3.45	85.79	87.90	2.11	4.51
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	90.13	0.58	87.90	87.89	0.01	0.21
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.84	87.84	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	473.99	1.94	84.58	84.52	0.06	1.55
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	83.67	83.67	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	90.13	0.58	87.89	87.80	0.09	0.21
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.02	85.02	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	745.47	3.05	89.88	89.85	0.03	3.58
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	83.17	83.65	0.47	157.16
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	248.86	1.59	84.92	84.52	0.39	1.39
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-957.48	3.91	87.90	89.88	1.98	5.68
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	722.92	2.95	88.70	87.84	0.86	3.38
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	83.67	83.66	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-799.70	5.10	83.65	83.67	0.02	12.07
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.79	85.79	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.89	87.89	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	83.67	83.67	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-844.80	3.45	83.67	85.79	2.12	4.51
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.92	84.92	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	83.66	83.66	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	146.29	0.60	85.15	85.06	0.09	0.18
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.15	85.15	0.00	0.00

Scenario: Fire at FH-8
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.02	85.02	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	316.51	1.29	85.40	85.18	0.22	0.86
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	123.74	0.51	85.06	85.02	0.04	0.13
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-248.86	1.02	84.92	84.98	0.06	0.47
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	146.29	0.60	85.18	85.15	0.04	0.19
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-147.67	0.94	84.98	85.13	0.14	0.53
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.13	85.13	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.06	85.06	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	123.74	0.51	85.02	84.98	0.04	0.15
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-147.67	0.60	85.13	85.18	0.06	0.18
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	790.50	3.23	86.16	85.40	0.76	3.99
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	473.99	1.94	85.40	85.02	0.38	1.55

Scenario: Fire at FH-8
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-8
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-9
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	83.65	28.62
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.54	29.65
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	84.93	30.39
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	86.17	30.01
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.84	30.71
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	76.90	26.87
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	85.78	30.75
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	85.03	29.43
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.60	29.68
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.84	30.97
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	83.67	28.63
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	76.89	26.52
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	85.03	29.24
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.70	31.69
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.80	30.96
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	84.93	30.43
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	83.67	28.63
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	85.78	30.92
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	86.17	30.01
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	87.89	31.45
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	87.90	31.78
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.70	31.69
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.70	31.61
FH-9	15.30	Zone	Demand	1,500.00	Fixed	1,500.00	76.43	26.45
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	87.89	31.62
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	76.89	26.39
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	85.42	29.82
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	85.03	28.79
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	85.16	29.71
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	85.08	28.37
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	85.14	29.48
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	85.00	29.85
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	85.16	29.71
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	85.08	28.37
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	85.20	29.07
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	85.03	28.79
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	85.14	29.48

Scenario: Fire at FH-9
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.17	86.17	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	698.26	2.85	84.54	83.67	0.87	3.17
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	788.46	3.22	87.80	86.17	1.63	3.97
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	85.03	84.60	0.43	1.54
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	745.10	3.04	89.85	88.70	1.15	3.57
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	722.55	2.95	87.84	87.80	0.04	3.37
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-846.84	3.46	85.78	87.90	2.12	4.53
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	88.47	0.56	87.90	87.89	0.01	0.20
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.84	87.84	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	84.60	84.54	0.06	1.54
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	1,522.55	6.22	83.65	76.90	6.75	13.42
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	88.47	0.56	87.89	87.80	0.09	0.20
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	745.10	3.04	89.88	89.85	0.03	3.57
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	83.67	83.67	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	248.12	1.58	84.93	84.54	0.39	1.38
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-957.85	3.91	87.90	89.88	1.98	5.69
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	722.55	2.95	88.70	87.84	0.86	3.37
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	76.90	76.89	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	698.26	4.46	83.67	83.65	0.02	9.39
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.78	85.78	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.89	87.89	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	76.43	76.90	0.47	157.16
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-846.84	3.46	83.65	85.78	2.13	4.53
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.93	84.93	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	76.89	76.89	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	145.94	0.60	85.16	85.08	0.09	0.18
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.16	85.16	0.00	0.00

Scenario: Fire at FH-9
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	315.77	1.29	85.42	85.20	0.22	0.86
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	123.39	0.50	85.08	85.03	0.04	0.13
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-248.12	1.01	84.93	85.00	0.06	0.47
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	145.94	0.60	85.20	85.16	0.04	0.18
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-147.28	0.94	85.00	85.14	0.14	0.53
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.14	85.14	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	123.39	0.50	85.03	85.00	0.03	0.15
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-147.28	0.60	85.14	85.20	0.06	0.18
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	788.46	3.22	86.17	85.42	0.75	3.97
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	85.42	85.03	0.38	1.54

Scenario: Fire at FH-9
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-9
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-10
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	83.65	28.62
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.54	29.65
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	84.93	30.39
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	86.17	30.01
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.84	30.71
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	76.90	26.87
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	85.78	30.75
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	85.03	29.43
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.60	29.68
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.84	30.97
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	83.67	28.63
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	64.13	21.00
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	85.03	29.24
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.70	31.69
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.80	30.96
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	84.93	30.43
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	83.67	28.63
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	85.78	30.92
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	86.17	30.01
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	87.89	31.45
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	87.90	31.78
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.70	31.69
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.70	31.61
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	76.90	26.65
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	87.89	31.62
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	1,500.00	Fixed	1,500.00	63.66	20.66
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	85.42	29.82
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	85.03	28.79
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	85.16	29.71
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	85.08	28.37
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	85.14	29.48
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	85.00	29.85
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	85.16	29.71
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	85.08	28.37
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	85.20	29.07
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	85.03	28.79
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	85.14	29.48

Scenario: Fire at FH-10
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.17	86.17	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	698.26	2.85	84.54	83.67	0.87	3.17
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	788.46	3.22	87.80	86.17	1.63	3.97
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	85.03	84.60	0.43	1.54
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	745.10	3.04	89.85	88.70	1.15	3.57
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	722.55	2.95	87.84	87.80	0.04	3.37
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-846.84	3.46	85.78	87.90	2.12	4.53
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	88.47	0.56	87.90	87.89	0.01	0.20
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.84	87.84	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	84.60	84.54	0.06	1.54
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	1,522.55	6.22	83.65	76.90	6.75	13.42
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	88.47	0.56	87.89	87.80	0.09	0.20
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	745.10	3.04	89.88	89.85	0.03	3.57
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	83.67	83.67	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	248.12	1.58	84.93	84.54	0.39	1.38
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-957.85	3.91	87.90	89.88	1.98	5.69
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	722.55	2.95	88.70	87.84	0.86	3.37
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	1,522.55	9.72	76.90	64.13	12.77	39.79
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	698.26	4.46	83.67	83.65	0.02	9.39
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.70	88.70	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.78	85.78	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.89	87.89	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	76.90	76.90	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-846.84	3.46	83.65	85.78	2.13	4.53
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.93	84.93	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	1,500.00	17.02	64.13	63.66	0.47	157.16
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	145.94	0.60	85.16	85.08	0.09	0.18
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.16	85.16	0.00	0.00

Scenario: Fire at FH-10
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.03	85.03	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	315.77	1.29	85.42	85.20	0.22	0.86
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	123.39	0.50	85.08	85.03	0.04	0.13
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-248.12	1.01	84.93	85.00	0.06	0.47
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	145.94	0.60	85.20	85.16	0.04	0.18
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-147.28	0.94	85.00	85.14	0.14	0.53
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.14	85.14	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	123.39	0.50	85.03	85.00	0.03	0.15
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-147.28	0.60	85.14	85.20	0.06	0.18
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	788.46	3.22	86.17	85.42	0.75	3.97
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	472.69	1.93	85.42	85.03	0.38	1.54

Scenario: Fire at FH-10
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-10
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-11
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.45	29.40
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	85.95	30.26
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.17	30.92
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	86.92	30.34
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.94	30.76
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.45	30.57
FH-11	14.70	Zone	Demand	1,500.00	Fixed	1,500.00	84.28	30.10
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	86.24	29.96
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	85.99	30.28
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.94	31.02
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.46	29.40
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.44	30.22
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	86.24	29.76
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.76	31.72
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.90	31.00
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	86.17	30.96
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.46	29.40
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	84.75	30.48
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	86.92	30.34
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	87.83	31.42
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	87.83	31.75
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.76	31.72
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.76	31.63
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.45	30.35
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	87.83	31.60
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.44	30.09
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	86.46	30.27
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	86.22	29.30
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	86.30	30.20
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	86.25	28.88
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	86.29	29.98
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	86.20	30.37
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	86.30	30.20
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	86.25	28.88
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	86.32	29.56
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	86.22	29.30
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	86.29	29.98

Scenario: Fire at FH-11
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.92	86.92	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.76	88.76	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	510.65	2.09	85.95	85.46	0.49	1.77
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	600.85	2.45	87.90	86.92	0.99	2.40
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	353.27	1.44	86.24	85.99	0.25	0.90
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	725.53	2.96	89.85	88.76	1.09	3.40
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	702.98	2.87	87.94	87.90	0.04	3.21
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-1,034.45	4.23	84.75	87.83	3.08	6.56
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	-79.58	0.51	87.83	87.83	0.01	0.17
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.94	87.94	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	353.27	1.44	85.99	85.95	0.03	0.90
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.45	85.45	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	-79.58	0.51	87.83	87.90	0.07	0.17
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.24	86.24	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	725.53	2.96	89.88	89.85	0.03	3.40
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.46	85.46	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	179.93	1.15	86.17	85.95	0.22	0.76
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-977.42	3.99	87.83	89.88	2.05	5.91
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	702.98	2.87	88.76	87.94	0.82	3.21
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.45	85.44	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	510.65	3.26	85.46	85.45	0.01	5.26
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.76	88.76	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	84.28	84.75	0.47	157.16
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.83	87.83	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.45	85.45	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	465.55	1.90	85.45	84.75	0.70	1.50
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.17	86.17	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.44	85.44	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	113.21	0.46	86.30	86.25	0.05	0.11
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	86.30	86.30	0.00	0.00

Scenario: Fire at FH-11
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	86.22	86.22	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	247.58	1.01	86.46	86.32	0.14	0.54
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	90.66	0.37	86.25	86.22	0.02	0.07
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-179.93	0.74	86.17	86.20	0.03	0.26
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	113.21	0.46	86.32	86.30	0.02	0.12
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-111.82	0.71	86.20	86.29	0.09	0.32
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	86.29	86.29	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	86.25	86.25	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	90.66	0.37	86.22	86.20	0.02	0.08
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-111.82	0.46	86.29	86.32	0.03	0.11
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	600.85	2.45	86.92	86.46	0.46	2.40
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	353.27	1.44	86.46	86.24	0.22	0.90

Scenario: Fire at FH-11
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.54

© Haestad Methods, Inc.

Scenario: Fire at FH-11
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-12
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	87.74	30.39
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	87.79	31.06
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.86	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	87.81	31.63
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	87.94	30.78
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	88.15	30.85
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	87.74	31.56
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	87.70	31.58
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	87.83	30.64
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	87.79	31.06
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	88.15	31.11
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	87.74	30.39
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	87.73	31.21
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	87.83	30.45
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.88	31.77
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	88.12	31.10
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	87.81	31.67
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	87.74	30.39
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.86	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	87.70	31.75
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	87.94	30.78
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	1,500.00	Fixed	1,500.00	86.22	30.73
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	87.65	31.67
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.88	31.77
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.88	31.68
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	87.74	31.34
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	86.69	31.10
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	87.73	31.08
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	87.86	30.87
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	87.81	29.99
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	87.82	30.86
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	87.81	29.56
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	87.82	30.64
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	87.81	31.07
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	87.82	30.86
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	87.81	29.56
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	87.83	30.21
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	87.81	29.99
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	87.82	30.64

Scenario: Fire at FH-12
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.94	87.94	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.88	88.88	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	147.97	0.60	87.79	87.74	0.05	0.18
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	238.17	0.97	88.12	87.94	0.18	0.43
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	123.97	0.51	87.83	87.79	0.04	0.13
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	681.96	2.79	89.86	88.88	0.98	3.03
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	659.41	2.69	88.15	88.12	0.03	2.85
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	102.87	0.42	87.70	87.65	0.04	0.09
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	1,101.31	7.03	87.65	86.69	0.96	21.84
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.15	88.15	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	123.97	0.51	87.79	87.79	0.00	0.13
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	87.74	87.74	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.86	89.86	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	-398.69	2.54	86.69	88.12	1.43	3.33
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.83	87.83	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	681.96	2.79	89.88	89.86	0.02	3.03
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.74	87.74	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	46.55	0.30	87.81	87.79	0.02	0.06
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-1,020.99	4.17	87.65	89.88	2.23	6.40
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	659.41	2.69	88.88	88.15	0.73	2.85
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	87.74	87.73	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	147.97	0.94	87.74	87.74	0.00	0.53
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.88	88.88	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.70	87.70	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	-1,500.00	17.02	86.22	86.69	0.47	157.16
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.74	87.74	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	102.87	0.42	87.74	87.70	0.04	0.09
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.81	87.81	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.73	87.73	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	48.80	0.20	87.82	87.81	0.01	0.02
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.82	87.82	0.00	0.00

Scenario: Fire at FH-12
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.81	87.81	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	114.20	0.47	87.86	87.83	0.03	0.13
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	26.25	0.11	87.81	87.81	0.00	0.01
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	-46.55	0.19	87.81	87.81	0.00	0.02
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	48.80	0.20	87.83	87.82	0.00	0.02
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-42.84	0.27	87.81	87.82	0.01	0.05
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.82	87.82	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	87.81	87.81	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	26.25	0.11	87.81	87.81	0.00	0.01
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-42.84	0.18	87.82	87.83	0.01	0.02
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	238.17	0.97	87.94	87.86	0.08	0.43
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	123.97	0.51	87.86	87.83	0.03	0.13

Scenario: Fire at FH-12
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-12
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-13
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.10	29.25
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.32	29.56
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	82.64	29.39
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	85.33	29.65
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.64	30.63
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.10	30.41
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.57	31.10
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	84.30	29.12
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.32	29.56
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.64	30.89
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.08	29.24
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.09	30.07
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	84.30	28.92
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.59	31.64
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.60	30.87
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	82.64	29.44
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.08	29.24
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	86.57	31.27
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	85.33	29.65
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.00	31.50
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.05	31.84
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.59	31.64
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.59	31.56
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.10	30.20
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.00	31.67
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.09	29.94
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.29	29.33
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	81.98	27.46
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	80.86	27.84
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	81.49	26.82
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	82.33	28.26
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	82.37	28.71
FH-13	16.50	Zone	Demand	1,500.00	Fixed	1,500.00	72.87	24.39
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	81.49	26.82
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	82.31	27.83
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	81.98	27.46
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	82.33	28.26

Scenario: Fire at FH-13
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.33	85.33	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-649.45	2.65	84.32	85.08	0.76	2.77
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	940.75	3.84	87.60	85.33	2.27	5.50
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-82.27	0.34	84.30	84.32	0.02	0.06
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	783.67	3.20	89.85	88.59	1.26	3.92
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	761.12	3.11	87.64	87.60	0.04	3.72
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-694.55	2.84	86.57	88.05	1.47	3.14
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	202.18	1.29	88.05	88.00	0.04	0.95
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.64	87.64	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-82.27	0.34	84.32	84.32	0.00	0.06
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.10	85.10	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	202.18	1.29	88.00	87.60	0.41	0.95
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.30	84.30	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	783.67	3.20	89.88	89.85	0.03	3.92
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-544.63	3.48	82.64	84.32	1.68	5.93
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-919.28	3.76	88.05	89.88	1.83	5.27
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	761.12	3.11	88.59	87.64	0.95	3.72
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.10	85.09	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-649.45	4.15	85.08	85.10	0.02	8.21
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.57	86.57	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.00	88.00	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.10	85.10	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-694.55	2.84	85.10	86.57	1.47	3.14
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	82.64	82.64	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.09	85.09	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	-425.94	1.74	80.86	81.49	0.63	1.30
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	1,500.00	17.02	80.86	72.87	7.98	2,661.05

Scenario: Fire at FH-13
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	81.98	81.98	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	1,023.02	4.18	84.29	82.31	1.97	7.80
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-448.49	1.83	81.49	81.98	0.49	1.45
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	544.63	2.22	82.64	82.37	0.27	2.00
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	1,074.06	4.39	82.31	80.86	1.45	7.58
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	73.59	0.47	82.37	82.33	0.04	0.15
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.33	82.33	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	81.49	81.49	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-448.49	1.83	81.98	82.37	0.39	1.68
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	73.59	0.30	82.33	82.31	0.02	0.05
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	940.75	3.84	85.33	84.29	1.05	5.50
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-82.27	0.34	84.29	84.30	0.02	0.06

Scenario: Fire at FH-13
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-13
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-14
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	173.60	67.54
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	173.60	68.18
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	173.67	68.47
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	173.59	68.75
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	173.61	67.84
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	173.63	67.83
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	173.59	68.70
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	173.62	68.76
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	173.60	67.75
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	173.60	68.18
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	173.63	68.09
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.54
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	173.59	68.35
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	173.60	67.56
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	173.81	68.71
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	173.64	68.44
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	173.63	68.09
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	173.59	68.79
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.54
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	173.67	68.60
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	173.62	68.93
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	173.61	67.84
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	173.89	68.74
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	173.81	68.60
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	173.63	68.55
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	173.89	68.74
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	173.63	68.87
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	173.64	68.44
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	173.67	68.65
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	173.64	68.35
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	173.59	68.49
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	173.63	68.72
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	173.93	69.84
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	173.59	68.22
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	173.60	67.97
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.10
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.97
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	173.59	66.67
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	173.59	67.75
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	173.59	68.18
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.97
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	173.59	66.67
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	173.59	67.32
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	173.59	67.10
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	173.59	67.75

Scenario: Fire at FH-14
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.61	173.61	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.64	173.64	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-19.18	0.08	173.60	173.60	0.00	0.00
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	71.03	0.29	173.63	173.61	0.02	0.05
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	173.81	173.81	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	173.67	173.64	0.03	0.08
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	173.63	173.63	0.00	0.05
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	173.62	173.63	0.02	0.04
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	173.63	173.63	0.00	0.01
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.63	173.63	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	173.60	173.59	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.67	173.67	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	19.69	0.13	173.63	173.63	0.01	0.01
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.60	173.60	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	96.44	0.39	173.67	173.67	0.00	0.08
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.60	173.60	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-20.06	0.13	173.59	173.60	0.00	0.01
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-106.51	0.44	173.63	173.67	0.03	0.10
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	73.89	0.30	173.64	173.63	0.01	0.05
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	173.59	173.59	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	298.05	1.22	173.89	173.81	0.08	0.65
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-19.18	0.12	173.60	173.60	0.00	0.01
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.64	173.64	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	225.50	0.92	173.81	173.67	0.15	0.39
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.62	173.62	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.89	173.89	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.63	173.63	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-64.28	0.26	173.60	173.62	0.02	0.04
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	298.05	1.22	173.93	173.89	0.04	0.65
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	298.05	1.90	15.00	14.98	0.02	1.94
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	298.05	1.90	174.05	173.93	0.12	1.94
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	173.59	173.59	0.00	0.00
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00

Scenario: Fire at FH-14
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	47.59	0.19	173.60	173.59	0.01	0.02
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-7.49	0.03	173.59	173.59	0.00	0.00
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	20.06	0.08	173.59	173.59	0.00	0.00
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	15.06	0.06	173.59	173.59	0.00	0.00
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-9.98	0.06	173.59	173.59	0.00	0.00
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	173.59	173.59	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-7.49	0.03	173.59	173.59	0.00	0.00
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-9.98	0.04	173.59	173.59	0.00	0.00
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	71.02	0.29	173.61	173.60	0.01	0.05
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	23.43	0.10	173.60	173.60	0.00	0.01

Scenario: Fire at FH-14
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-14
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-15
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.08	29.24
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.30	29.55
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	82.11	29.16
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	85.34	29.65
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.64	30.63
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.08	30.41
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.57	31.09
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	84.30	29.12
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.30	29.55
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.64	30.89
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.07	29.23
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.08	30.06
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	84.30	28.92
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.59	31.64
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.60	30.87
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	82.11	29.21
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.07	29.23
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	86.57	31.27
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	85.34	29.65
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.00	31.50
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.04	31.84
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.59	31.64
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.59	31.56
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.08	30.19
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.00	31.67
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.08	29.93
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.30	29.33
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	80.21	26.70
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	82.14	28.40
FH-16	19.50	Zone	Demand	0.00	Fixed	0.00	80.97	26.60
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	82.37	28.28
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	81.76	28.45
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	82.14	28.40
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	80.97	26.60
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	82.62	27.96
FH-15	18.50	Zone	Demand	1,500.00	Fixed	1,500.00	72.23	23.25
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	82.37	28.28

Scenario: Fire at FH-15
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.34	85.34	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-651.21	2.66	84.30	85.07	0.77	2.78
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	938.99	3.84	87.60	85.34	2.26	5.48
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-0.17	0.00	84.30	84.30	0.00	0.00
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	783.13	3.20	89.85	88.59	1.26	3.92
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	760.58	3.11	87.64	87.60	0.04	3.71
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-696.31	2.84	86.57	88.04	1.48	3.15
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	200.96	1.28	88.04	88.00	0.04	0.94
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.64	87.64	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-0.17	0.00	84.30	84.30	0.00	0.00
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.08	85.08	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	200.96	1.28	88.00	87.60	0.40	0.94
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.30	84.30	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	783.13	3.20	89.88	89.85	0.03	3.92
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.07	85.07	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-628.49	4.01	82.11	84.30	2.19	7.73
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-919.82	3.76	88.04	89.88	1.84	5.28
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	760.58	3.11	88.59	87.64	0.95	3.71
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.08	85.08	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-651.21	4.16	85.07	85.08	0.02	8.26
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.57	86.57	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.00	88.00	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-696.31	2.84	85.08	86.57	1.48	3.15
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	82.11	82.11	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	593.22	2.42	82.14	80.97	1.17	2.41
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.14	82.14	0.00	0.00

Scenario: Fire at FH-15
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	1,500.00	17.02	80.21	72.23	7.98	2,661.05
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	939.16	3.84	84.30	82.62	1.68	6.64
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	570.67	2.33	80.97	80.21	0.76	2.27
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	628.49	2.57	82.11	81.76	0.35	2.61
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	593.22	2.42	82.62	82.14	0.48	2.51
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-323.39	2.06	81.76	82.37	0.61	2.26
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.37	82.37	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	80.97	80.97	0.00	0.00
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-929.33	3.80	80.21	81.76	1.54	6.60
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-323.39	1.32	82.37	82.62	0.25	0.79
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	938.99	3.84	85.34	84.30	1.04	5.48
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-0.17	0.00	84.30	84.30	0.00	0.00

Scenario: Fire at FH-15
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

© Haestad Methods, Inc.

Scenario: Fire at FH-15
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

Scenario: Fire at FH-16
Steady State Analysis
Junction Report

Label	Elevation (ft)	Zone	Type	Base Flow (gpm)	Pattern	Demand (Calculated) (gpm)	Calculated Hydraulic Grade (ft)	Pressure (psi)
J-2	17.50	Zone	Demand	22.55	Fixed	22.55	85.09	29.24
J-27	16.00	Zone	Demand	22.55	Fixed	22.55	84.31	29.55
FH-2	15.40	Zone	Demand	0.00	Fixed	0.00	89.85	32.21
J-11	14.70	Zone	Demand	0.00	Fixed	0.00	82.41	29.30
J-19	16.80	Zone	Demand	0.00	Fixed	0.00	85.34	29.65
FH-4	16.85	Zone	Demand	0.00	Fixed	0.00	87.64	30.63
J-7	14.80	Zone	Demand	0.00	Fixed	0.00	85.09	30.41
FH-11	14.70	Zone	Demand	0.00	Fixed	0.00	86.57	31.09
J-23	17.00	Zone	Demand	0.00	Fixed	0.00	84.30	29.12
J-26	16.00	Zone	Demand	0.00	Fixed	0.00	84.31	29.55
J-13	16.25	Zone	Demand	0.00	Fixed	0.00	87.64	30.89
J-1	17.50	Zone	Demand	0.00	Fixed	0.00	85.07	29.24
J-33	15.60	Zone	Demand	22.55	Fixed	22.55	85.08	30.06
FH-6	17.45	Zone	Demand	0.00	Fixed	0.00	84.30	28.92
J-31	15.00	Zone	Demand	22.55	Fixed	22.55	96.17	35.12
J-15	15.45	Zone	Demand	0.00	Fixed	0.00	88.59	31.64
J-25	16.25	Zone	Demand	22.55	Fixed	22.55	87.60	30.87
FH-7	14.60	Zone	Demand	0.00	Fixed	0.00	82.41	29.34
FH-8	17.50	Zone	Demand	0.00	Fixed	0.00	85.07	29.24
J-21	15.10	Zone	Demand	0.00	Fixed	0.00	89.85	32.34
J-17	14.30	Zone	Demand	0.00	Fixed	0.00	86.57	31.27
FH-5	16.80	Zone	Demand	0.00	Fixed	0.00	85.34	29.65
FH-1	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-32	15.25	Zone	Demand	50.00	Fixed	50.00	96.17	35.01
FH-12	15.20	Zone	Demand	0.00	Fixed	0.00	88.00	31.50
J-4	15.00	Zone	Demand	0.00	Fixed	0.00	98.38	36.08
J-29	14.45	Zone	Demand	22.55	Fixed	22.55	88.04	31.84
J-28	15.45	Zone	Demand	22.55	Fixed	22.55	88.59	31.64
J-24	15.00	Zone	Demand	22.55	Fixed	22.55	89.88	32.40
FH-3	15.65	Zone	Demand	0.00	Fixed	0.00	88.59	31.56
FH-9	15.30	Zone	Demand	0.00	Fixed	0.00	85.09	30.19
J-9	14.80	Zone	Demand	0.00	Fixed	0.00	88.00	31.67
J-30	12.50	Zone	Demand	0.00	Fixed	0.00	99.42	37.61
FH-10	15.90	Zone	Demand	0.00	Fixed	0.00	85.08	29.93
J-77	16.50	Zone	Demand	0.00	Fixed	0.00	84.29	29.33
J-70	18.50	Zone	Demand	0.00	Fixed	0.00	81.06	27.07
J-68	16.50	Zone	Demand	0.00	Fixed	0.00	81.67	28.20
FH-16	19.50	Zone	Demand	1,500.00	Fixed	1,500.00	71.80	22.63
FH-14	17.00	Zone	Demand	0.00	Fixed	0.00	82.35	28.27
J-75	16.00	Zone	Demand	22.55	Fixed	22.55	82.11	28.60
FH-13	16.50	Zone	Demand	0.00	Fixed	0.00	81.67	28.20
J-72	19.50	Zone	Demand	22.55	Fixed	22.55	79.79	26.08
J-74	18.00	Zone	Demand	22.55	Fixed	22.55	82.45	27.88
FH-15	18.50	Zone	Demand	0.00	Fixed	0.00	81.06	27.07
J-66	17.00	Zone	Demand	0.00	Fixed	0.00	82.35	28.27

Scenario: Fire at FH-16
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-15	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.34	85.34	0.00	0.00
P-12	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-18	276.00	10.0	PVC	130.0	false	0.00	Open	-650.58	2.66	84.31	85.07	0.77	2.78
P-13	412.00	10.0	PVC	130.0	false	0.00	Open	939.62	3.84	87.60	85.34	2.26	5.49
P-30	281.00	10.0	PVC	130.0	false	0.00	Open	-47.19	0.19	84.30	84.31	0.01	0.02
P-6	88.00	8.0	PVC	130.0	false	0.00	Open	50.00	0.32	96.17	96.17	0.01	0.07
P-27	322.00	10.0	PVC	130.0	false	0.00	Open	783.32	3.20	89.85	88.59	1.26	3.92
P-28	11.00	10.0	PVC	130.0	false	0.00	Open	760.77	3.11	87.64	87.60	0.04	3.71
P-33	469.00	10.0	PVC	130.0	false	0.00	Open	-695.68	2.84	86.57	88.04	1.48	3.15
P-2	44.00	8.0	PVC	130.0	false	0.00	Open	201.40	1.29	88.04	88.00	0.04	0.94
P-14	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	87.64	87.64	0.00	0.00
P-17	38.00	10.0	PVC	130.0	false	0.00	Open	-47.19	0.19	84.31	84.31	0.00	0.02
P-1	503.00	10.0	PVC	130.0	false	0.00	Open	22.55	0.09	85.09	85.09	0.00	0.01
P-9	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	89.85	89.85	0.00	0.00
P-34	430.00	8.0	PVC	130.0	false	0.00	Open	201.40	1.29	88.00	87.60	0.40	0.94
P-16	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	84.30	84.30	0.00	0.00
P-10	8.00	10.0	PVC	130.0	false	0.00	Open	783.32	3.20	89.88	89.85	0.03	3.92
P-21	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.07	85.07	0.00	0.00
P-3	284.00	8.0	PVC	130.0	false	0.00	Open	-580.85	3.71	82.41	84.31	1.90	6.68
P-24	348.00	10.0	PVC	130.0	false	0.00	Open	-919.63	3.76	88.04	89.88	1.84	5.27
P-5	255.00	10.0	PVC	130.0	false	0.00	Open	760.77	3.11	88.59	87.64	0.95	3.71
P-32	321.00	8.0	PVC	130.0	false	0.00	Open	22.55	0.14	85.09	85.08	0.01	0.02
P-26	121.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	98.38	96.17	2.21	18.26
P-31	2.00	8.0	PVC	130.0	false	0.00	Open	-650.58	4.15	85.07	85.09	0.02	8.24
P-11	38.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.59	88.59	0.00	0.00
P-8	372.00	10.0	PVC	130.0	false	0.00	Open	1,725.50	7.05	96.17	89.88	6.29	16.92
P-23	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	86.57	86.57	0.00	0.00
P-7	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	98.38	98.38	0.00	0.00
P-25	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	88.00	88.00	0.00	0.00
P-22	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.09	85.09	0.00	0.00
P-20	470.00	10.0	PVC	130.0	false	0.00	Open	-695.68	2.84	85.09	86.57	1.48	3.15
P-19	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	82.41	82.41	0.00	0.00
P-4	57.00	10.0	PVC	130.0	false	0.00	Open	1,798.05	7.34	99.42	98.38	1.04	18.26
P-67	3.00	6.0	PVC	130.0	false	0.00	Open	0.00	0.00	85.08	85.08	0.00	0.00
P-68	10.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	15.00	14.46	0.54	54.14
P-69	64.00	8.0	PVC	130.0	false	0.00	Open	1,798.05	11.48	102.89	99.42	3.47	54.14
P-73	485.00	10.0	PVC	130.0	false	0.35	Open	767.91	3.14	81.67	79.79	1.89	3.89
P-74	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	81.67	81.67	0.00	0.00

Scenario: Fire at FH-16
Steady State Analysis
Pipe Report

Label	Length (ft)	Diameter (in)	Material	Hazen-Williams C	Check Valve?	Minor Loss Coefficient	Control Status	Discharge (gpm)	Velocity (ft/s)	Upstream Structure Hydraulic Grade (ft)	Downstream Structure Hydraulic Grade (ft)	Pressure Pipe Headloss (ft)	Headloss Gradient (ft/1000ft)
P-78	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	81.06	81.06	0.00	0.00
P-70	253.00	10.0	PVC	130.0	false	1.28	Open	986.80	4.03	84.29	82.45	1.84	7.29
P-75	335.00	10.0	PVC	130.0	false	0.35	Open	-754.64	3.08	79.79	81.06	1.28	3.81
P-71	134.00	10.0	PVC	130.0	false	0.00	Open	580.85	2.37	82.41	82.11	0.30	2.25
P-72	192.00	10.0	PVC	130.0	false	0.35	Open	767.91	3.14	82.45	81.67	0.78	4.06
P-79	272.00	8.0	PVC	130.0	false	0.00	Open	-196.34	1.25	82.11	82.35	0.24	0.90
P-81	3.00	6.0	PVC	130.0	false	1.67	Open	0.00	0.00	82.35	82.35	0.00	0.00
P-76	3.00	6.0	PVC	130.0	false	1.67	Open	1,500.00	17.02	79.79	71.80	7.98	2,661.05
P-77	234.00	10.0	PVC	130.0	false	1.28	Open	-754.64	3.08	81.06	82.11	1.04	4.46
P-80	316.00	10.0	PVC	130.0	false	0.35	Open	-196.34	0.80	82.35	82.45	0.10	0.31
P-92	190.00	10.0	PVC	130.0	false	0.00	Open	939.62	3.84	85.34	84.29	1.04	5.49
P-93	249.00	10.0	PVC	130.0	false	0.00	Open	-47.19	0.19	84.29	84.30	0.01	0.02

Scenario: Fire at FH-16
Steady State Analysis
Pump Report

Label	Elevation (ft)	Control Status	Intake Pump Grade (ft)	Discharge Pump Grade (ft)	Discharge (gpm)	Pump Head (ft)	Calculated Water Power (Hp)
PMP-1	15.00	On	14.46	102.89	1,798.05	88.43	40.14

Scenario: Fire at FH-16
Steady State Analysis
Reservoir Report

Label	Elevation (ft)	Zone	Inflow (gpm)	Calculated Hydraulic Grade (ft)
R-1	15.00	Zone	-1,798.05	15.00

HYDROLOGY AND HYDRAULIC CALCULATIONS

PREPARED FOR

NEXT CHAPTER HOLDINGS, LLC

JASPER VILLAGE PHASE II

PROJECT NO. 21-015
MARCH 2022

HYDROLOGIC AND HYDRAULIC REPORT FOR THE JASPER VILLAGE PHASE II

TABLE OF CONTENTS

I. Hydrologic Analysis

1. Professional Certification……Page 1
2. Site Overview ……Page 1
3. Pre-Development Conditions……Page 1
4. Post-Development Conditions……Page 2
5. Hydrologic Calculation Methodology……Page 4
6. Summary of Pre/Post Development Runoff Analysis……Page 5
7. Stormwater Runoff Reduction and Water Quality Volume……Page 5
8. Aquatic Resource Protection and Energy Dissipation……Page 7
9. Stream Channel Protection……Page 7
10. Overbank Flood Protection……Page 7
11. Extreme Flood Protection……Page 7
12. Construction Erosion and Sedimentation Control……Page 7
13. Downstream Analysis……Page 13
14. Stormwater Management System Operation and Maintenance……Page 10

II. Hydraulic Design

15. Site Overview……Page 11
16. Hydraulic Calculation Methodology……Page 11

III. Appendices

Site Exhibits.....Appendix A

Pre-development Drainage Exhibit (Exhibit 'A')

Post-development Drainage Exhibit (Exhibit 'B')

Storm Inlet Drainage Exhibit (Exhibit 'C')

Background Data.....Appendix B

Rainfall Data

Runoff Curve Number Chart

Roughness Coefficient Table for Manning's "n"

Runoff Coefficient Values Chart

Regulatory Data..... Appendix C

United States Geological Survey, Topographic Location Map

United States Department of Agriculture, Web Soil Survey

Federal Emergency Management Agency, Flood Insurance Rate Map

United State Fish and Wildlife Service, National Wetlands Inventory Map

Coastal Stormwater Supplement Site Planning & Design Worksheet.....Appendix D

Coastal Stormwater Supplement Site Planning & Design Worksheet

Computer Output Reports..... Appendix E

Hydraflow Hydrographs Extension Results

Hydraflow Storm Sewers Results

Hydraflow Express Extension Results

Downstream Analysis..... Appendix F

Drainage Basin Exhibit

United States Department of Agriculture, Web Soil Survey

Hydraflow Hydrographs Extension Results

I. HYDROLOGIC ANALYSIS

HYDROLOGIC AND HYDRAULIC REPORT
PROJECT NO. 21-015

1. PROFESSIONAL CERTIFICATION

"I, Anthony Allen, a Registered Professional Engineer in the State of Georgia, hereby certify that the design of the stormwater management system for the project known as Jasper Village Phase 2, lying in the 8th G.M. District, City of Port Wentworth, Chatham County, Georgia, meets the requirements of Chapter 7, Article III of the City of Port Wentworth's Code of Ordinances, the latest edition of the coastal stormwater supplement, the Georgia Stormwater Management Manual, and any relevant local addenda. This 7th day of March, 2022.

Anthony T. Allen, P.E.

"I, Shane Malek, hereby certify that all land clearing, construction, land development and drainage for the project known as Jasper Village Phase 2, lying in the 8th G.M. District, City of Port Wentworth, Chatham County, Georgia will be done according to the approved stormwater management design plan. This ____ day of March, 2022."

Shane Malek
(Owner/Developer)

2. SITE OVERVIEW

The proposed Jasper Village Phase II is located at the intersection of Old Augusta Road and Moore Road, in the city of Port Wentworth, Chatham County, Georgia. The proposed site is approximately 36.19 acres and currently partially wooded and vacant. The intention of the owner is to develop an approximately 70-unit multi-family development and the related infrastructure to serve it.

3. PRE-DEVELOPMENT CONDITIONS

The existing site is approximately 36.19 acres and is currently partially wooded and vacant. The owner intends to develop an approximately 70-unit multi-family development. The site drains to the east to wetlands and ultimately outfalls to Knoxboro Creek and then the Savannah River. According to the most recent FEMA FIRM, a portion of this site is located in Zone A, a special flood hazard, as determined by FEMA FIRM, Community No. 135162, Map 13051C, Panel No. 0030 G, map dated August 16, 2018. (See Quad Map, FEMA FIRM, Soils Map and Exhibit 'A' for existing runoff conditions).

3.1 CURVE NUMBERS

3.1 CURVE NUMBERS

Curve numbers are generated according to procedures set forth in SCS TR-55. The composite curve numbers for each drainage basin are calculated using soils information from the "Web Soil Survey for Chatham County, Georgia" as prepared by the Natural Resources Conservation Service. Pre-development curve numbers were weighted based on the type and amount of soil within the basin.

Pre-Development Basin #1				
Drainage Basin Area (Acres)	**Ground Cover Type**	**Soil Type**	**Hydrologic Soil Group**	**CN**
11.91	Wood of Forest Land – Thin Stand, Poor Cover	Pelham loamy sand (Pl), Ocilla complex (Oj), Leefield loamy sand (LeA)	B/D, C/D	83
Total Area = 11.91			Weighted CN = 83	

3.2 TIME OF CONCENTRATION

Times of concentration were calculated according to procedures set forth in SCS TR-55. The travel times (T) for overland flow, shallow concentrated flow, and channel flow are added together for the drainage basin to get the time of concentration (T_C).

Overland Flow – Pre-Development Basin #1				
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**	**Manning's Friction Factor (n)**	**2YR, 24 HR Precipitation (IN)**
100	Woods – Light Underbrush	0.92	0.40	4.80

Shallow Concentrated Flow - Pre-Development Basin #1		
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**
624	Unpaved	1.28

Pre-Development Basin #1 has a time of concentration of 30 minutes.

4. POST-DEVELOPMENT CONDITIONS

The post-developed site will be graded in such a way that the existing drainage patterns will not be changed. Post-development runoff rates will not be allowed to exceed pre-development runoff rates. The drainage system will consist of sheet flow, shallow concentrated flow and channel flow which will be routed to and detained by a "dry" detention pond located on the eastern side of the property. The pond outfall will flow to the east. The storm water flow from this pond will be restricted by a combination of a 4"

orifice to detain the water quality volume, a 4.75" orifice to detain the aquatic resource protection volume and a 9' wide rectangular weir to control the 10 YR 24 HR thru 100 YR 24 HR storm events. A small basin will be allowed to exit the site without being detained. The peak runoff rates from this basin will be subtracted from the pre-development runoff rates in order to obtain and allowable release rate for the development.

(See Exhibit B for proposed runoff conditions).

4.1 CURVE NUMBERS

Curve numbers are generated according to procedures set forth in SCS TR-55. The composite curve numbers for each drainage basin are calculated using soils information from the "Web Soil Survey for Effingham County, Georgia" as prepared by the Natural Resources Conservation Service. Pre-development curve numbers were weighted based on the type and amount of soil within the basin.

Post-Development Basin #1				
Drainage Basin Area (Acres)	**Ground Cover Type**	**Soil Type**	**Hydrologic Soil Group**	**CN**
4.78	Open Space, Lawns - Good Condition	Pelham loamy sand (Pl), Ocilla complex (Oj), Leefield loamy sand (LeA)	B/D, C/D	80
4.82	Impervious, Paved, Parking Area, Roof, Pool	-	-	98
0.86	Detention Pond	-	-	98
Total Area = 10.46			Weighted CN = 90	

Post-Development Bypass Area #1				
Drainage Basin Area (Acres)	**Ground Cover Type**	**Soil Type**	**Hydrologic Soil Group**	**CN**
1.45	Open Space, Lawns - Good Condition	Pelham loamy sand (Pl), Ocilla complex (Oj), Leefield loamy sand (LeA)	B/D, C/D	80
Total Area = 1.45			Weighted CN = 80	

4.2 TIME OF CONCENTRATION

Times of concentration were calculated according to procedures set forth in SCS TR-55. The travel times (T) for overland flow, shallow concentrated flow, and channel flow are added together for the drainage basin to get the time of concentration (T_C).

Overland Flow – Post-Development Basin #1				
Flow Path Length (FT)	Ground Cover Type	Watercourse Slope (%)	Manning's Friction Factor (n)	2YR, 24 HR Precipitation (IN)
100	Bermuda Grass	1.0	0.41	4.80

Shallow Concentrated Flow - Post-Development Basin #1		
Flow Path Length (FT)	Ground Cover Type	Watercourse Slope (%)
35	Unpaved	1

Channel Flow Post-Development Basin #1				
Flow Path Length (FT)	Chanel Slope (%)	Manning's Friction Factor (n)	Cross Sectional Area (sqft)	Wetted Perimeter (ft)
772	0.3	0.015	1.77	4.71

Post-Development Basin #1 has a time of concentration of 28.5 minutes.

Channel Flow Post-Development Bypass Basin #1				
Flow Path Length (FT)	Chanel Slope (%)	Manning's Friction Factor (n)	Cross Sectional Area (sqft)	Wetted Perimeter (ft)
996	0.41	0.05	75	31.5

A time of concentration of 8 minutes was assigned to Post-Development Bypass Basin #1.

5. HYDROLOGIC CALCULATION METHODOLOGY

The detention pond was sized by using the SCS Curve Number Method and the Hydraflow Hydrographs Extension for AutoCAD® Civil 3D 2020 by Autodesk. All curve numbers necessary to perform SCS Curve Number Method calculations are based upon acreages and cover of various soil types found on the site. Curve numbers are listed for each hydrological soil group under certain cover conditions in the "Georgia Stormwater Management Manual", Chapter 3.1.5, Table 3.1.5-1. Hydrological soil group designations were determined from the "Web Soil Survey for Chatham County, Georgia" as prepared by the Natural Resource Conservation Service.

6. SUMMARY OF PRE/POST DEVELOPMENT RUNOFF ANALYSIS

Storm Event	Pre-Development Basin #1	Post-Development Bypass Area #1	Allowable Release Rate	Post-Development Basins #1 (after detention)	Reduction
1	15.70 cfs (p. 4)	3.66 cfs (p. 8)	12.04 cfs	1.377 cfs (p. 9)	10.663 cfs
10	35.80 cfs (p. 13)	8.65 cfs (p. 15)	27.15 cfs	17.93 cfs (p. 16)	9.22 cfs
25	47.07 cfs (p. 19)	11.47 cfs (p. 21)	35.60 cfs	29.94 cfs (p. 22)	5.66 cfs
50	56.63 cfs (p. 25)	13.86 cfs (p. 27)	42.77 cfs	39.88 cfs (p. 28)	2.89 cfs
100	66.76 cfs (p. 31)	16.39 cfs (p. 33)	50.37 cfs	50.17 cfs (p. 34)	0.20 cfs

The un-detained peak flow rate from Post-Development Bypass Area #1 will be subtracted from the pre-development release rate in Pre-Development Basin #1 in order to obtain an allowable post-development release rate.

Based on the above data, storm water runoff has been detained to less than the pre-development rates for all required storm events.

Pond		
Storm Event	Max Water Elevation (Ft)	Freeboard (Ft)
1	15.62 (p. 9)	3.38
10	16.96 (p. 16)	2.04
25	17.28 (p. 22)	1.72
50	17.51 (p. 28)	1.49
100	17.73 (p. 34)	1.27

7. STORMWATER RUNOFF REDUCTION AND WATER QUALITY VOLUME

The Water Quality Volume is the treatment volume required to remove a significant percentage of the stormwater pollution load in stormwater runoff. Stormwater runoff from this site will be treated by a combination of Green Infrastructure and Stormwater Management Practices which are described in the Coastal Stormwater Supplement (CSS) to the Georgia Stormwater Management Manual. The CSS requires a reduction in the stormwater volume generated by the 85th percentile storm event, which in Coastal Georgia, equates to reducing the stormwater volume generated by the 1.2 inch rainfall event. Using the CSS Site Planning and Design Worksheet the target runoff reduction volume for the site was calculated to be 30,390 Cubic Feet.

Runoff Reduction Volume Calculation	
Runoff Reduction Rainfall Event (inches)	1.2
Post-Development Site Imperviousness (%)	60%
Post-Development Site Runoff Coefficient, Rv	0.59
Target Runoff Reduction Volume, RRv (acre-feet)	0. 70
Target Runoff Reduction Volume, RRv (cubic feet)	30,390

7.1 RUNOFF REDUCTION VOLUME TREATMENT USING GREEN INFRASTRUCTURE PRACTICES

Disturbed pervious areas will receive stormwater runoff from approximately 3.06 acres of building roofs via disconnected downspouts. According to the Soil Survey for Effingham and Chatham County, the areas receiving the runoff from the building roofs are located in Pelham loamy sand (HSG – B/D), Ocilla complex (HSG – B/D), Leefield loamy sand (HSG – C/D). Using the CSS Site Planning and Design Worksheet adjustment to the target runoff reduction volume caused by the disturbed pervious area receiving flow from the building's roof via disconnected downspouts is calculated to be 3,799 Cubic Feet.
Since the entire runoff reduction volume was not infiltrated or treated with green infrastructure practices, the remaining volume will be treated by detaining the remaining volume in the Pond and releasing it over a 24-hour period.

7.2 WATER QUALITY VOLUME TREATMENT USING STORMWATER MANAGEMENT PRACTICES

A dry detention pond will be used to treat the required runoff reduction volume. As previously mentioned, the target runoff reduction volume for the site is 30,390 Cubic Feet. The Green Infrastructure Practices provide 3,799 Cubic Feet of treatment. This leaves 26,591 Cubic Feet for the proposed pond to treat.

A water quality orifice will be placed at elevation 12.00' and sized to release the remaining runoff reduction volume over a 24-hour period.

RR_v = 26,591 CF

26,591 CF. corresponds to a pond elevation of **14.25'**

Water Quality Orifice is located at elevation **12.00'** (h1)
Channel Protection orifice to be placed at elevation **14.25'** (h2)

Water Quality Orifice Sizing

q = 30,609 CF / 86400 = **0.35 cfs**
g = 32.2 ft/sec² **t = 86,400 sec/day**
h = (h2-h1)/2 ft. = **1.125'**

$A = (V/t)/(0.6*(64.4*H/2)^{0.5})$
$A = 0.069369323$ ft.²
$A = 9.99$ in²

$A = 3.14\ D^2/4$
$D^2 = 12.73$ in²
$D = 3.57$ in

USE A 3.50" ORIFICE

8. AQUATIC RESOURCE PROTECTION AND ENERGY DISSIPATION

On-site vegetation and structural erosion control measures will be used to dissipate stormwater runoff and control its' velocity on the project site. All post construction stormwater runoff from the site will maintain existing drainage patterns and discharge into adjacent wetlands. Stone rip rap will be placed at the pond's outfall points. This BMP will provide energy dissipation and convert the point source discharge into sheet flow which will be received by the existing wetlands. The detention pond was modeled for the 1-year storm event to be released over a 24 hour period. A minimally sized 5-1/4" orifice shall slowly release the storm water for that extended storm event.

9. STREAM CHANNEL PROTECTION

On-site vegetation and structural erosion control measures will be used to dissipate stormwater runoff and control its' velocity on the project site. All post construction stormwater runoff from the site will maintain existing drainage patterns and discharge into adjacent wetlands. Stone rip rap will be placed at the pond's outfall point. This BMP will provide energy dissipation and convert the point source discharge into sheet flow which will be received by the existing drainage ditch.

10. OVERBANK FLOOD PROTECTION

Overbank flood protection is intended to prevent an increase in the frequency and magnitude of damaging out-of-bank flooding (i.e., flow events that exceed the capacity of the channel and enter the floodplain). It is intended to protect downstream properties from flooding at middle-frequency storm events. Overbank flood protection is achieved through detention of runoff from the 25 YR 24 HR storm event. The detention pond allows for peak runoff attenuation up to and including the 100 year storm event.

11. EXTREME FLOOD PROTECTION

Extreme flood protection is intended to prevent flood damage from infrequent but large storm events, maintain the boundaries of the mapped 100-year floodplain, and protect the physical integrity of the best management practices as well as downstream stormwater and flood control facilities. The detention pond allows for peak runoff attenuation up to and including the 100 year storm event.

12. CONSTRUCTION EROSION AND SEDIMENTATION CONTROL

Three phase Erosion and Sediment Control Plans have been prepared for the project to meet all Federal, State and Local regulations and requirements. These plans were developed to show the appropriate best management practices, better site design practices, green infrastructure practices and stormwater management practices to be implemented during all phases of construction. See the construction documents that were prepared for this development.

13. DOWNSTREAM ANALYSIS

A downstream analysis was conducted, comparing the Pre-Developed flow rates and times to peak with the Post-Developed flow rates and times to peak at a point where the drainage area controlled by the detention facility would comprise approximately 10% of the total drainage area. The total drainage area for this project is 10.46 acres. The area for downstream analysis is 104.6 acres. The point of interest for the analysis is located at a point south east of the site where the wetlands enter an un-named tributary of Knoxboro Creek that flows to the south and east into Knoxboro Creek, which then flows into the Savannah River. This area is approximately 104.6 acres meeting the 10% rule. The model was computed at the Pre-Developed state, Pre-Development Basin #1 to determine the peak flow from the area for downstream analysis. The proposed development was added to the model as a separate basin, and re computed. As the data shows, this development will not have a negative impact on the downstream point of interest.

Downstream Analysis Summary				
Drainage Basin		104.6 Acres		
Soil Type		C, B/D, C/D		
Basin Summary				
Pre-Development #1	Basin ID	CN	Tc	Area (Ac)
	1	81	626	104.6
Post-Development	Basin ID	CN	Tc	Area (Ac)
	1	81	626	94.14
	2	90	29	10.46

13.1 CURVE NUMBERS

Pre-Development Basin #1				
Drainage Basin Area (Acres)	Ground Cover Type	Soil Type	Hydrologic Soil Group	CN
6.0	Residential Districts – 2 Acre Lot Sizes	Pelham loamy sand (Pl), Ocilla complex (Oj)	B/D	82
3.0	Wood of Forest Land – Thin Stand, Poor Cover	Craven loamy fine sand (Cx)	C	77
95.6	Wood of Forest Land – Thin Stand, Poor Cover	Cape Fear soils (Cc), Meggett loam (Mba), Pelham loamy sand (Pl), Ocilla complex (Oj), Pooler fine sandy loam (Pn), Bladen fine sandy loam (BdA), Leefield loamy sand (LeA)	B/D C/D	83
Total Area = 104.6			Weighted CN = 83	

Post-Development Basin #1				
Drainage Basin Area (Acres)	**Ground Cover Type**	**Soil Type**	**Hydrologic Soil Group**	**CN**
4.78	Open Space, Lawns - Good Condition	Pelham loamy sand (Pl), Ocilla complex (Oj), Leefield loamy sand (LeA)	B/D, C/D	80
4.82	Impervious, Paved, Parking Area, Roof, Pool	-	-	98
0.86	Detention Pond	-	-	98
Total Area = 10.46			Weighted CN = 90	

13.2 TIME OF CONCENTRATION

Overland Flow – Pre-Development Basin #1				
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**	**Manning's Friction Factor (n)**	**2YR, 24 HR Precipitation (IN)**
100	Grass – Dense grasses	0.50	0.24	4.80

Channel Flow Pre-Development Basin #1				
Flow Path Length (FT)	**Chanel Slope (%)**	**Manning's Friction Factor (n)**	**Cross Sectional Area (sqft)**	**Wetted Perimeter (ft)**
1,207	0.45	0.015	27	16.42

Shallow Concentrated Flow - Pre-Development Basin #1		
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**
2,873	Unpaved	0.10

Pre-Development Basin #1 has a time of concentration of 116 minutes.

Overland Flow – Post-Development Basin #1				
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**	**Manning's Friction Factor (n)**	**2YR, 24 HR Precipitation (IN)**
100	Bermuda Grass	0.50	0.41	4.80
Overland Flow – Post-Development Basin #1				
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**	**Manning's Friction Factor (n)**	**2YR, 24 HR Precipitation (IN)**
100	Bermuda Grass	1.0	0.41	4.80

Shallow Concentrated Flow - Post-Development Basin #1		
Flow Path Length (FT)	**Ground Cover Type**	**Watercourse Slope (%)**
35	Unpaved	1

Channel Flow Post-Development Basin #1				
Flow Path Length (FT)	**Chanel Slope (%)**	**Manning's Friction Factor (n)**	**Cross Sectional Area (sqft)**	**Wetted Perimeter (ft)**
772	0.3	0.015	1.77	4.71

Post-Development Basin #1 has a time of concentration of 28.5 minutes.

13.3 SUMMARY OF PRE/POST DEVELOPMENT RUNOFF ANALYSIS

Storm Event	Pre-Development Basin #1	Time to Peak (min.)	Post-Development Basin #1	Post-Development Basins #2 (after detention)
1	49.30 cfs	789	44.37 cfs	1.646 cfs
10	114.72 cfs	786	103.25 cfs	10.85 cfs
25	151.76 cfs	786	136.59 cfs	14.34 cfs
50	183.28 cfs	786	164.95 cfs	16.91 cfs
100	216.78 cfs	785	195.11 cfs	20.29 cfs

The Post-Development times to peak were adjusted to the Pre-Development times to peak and the hydrograph Q's were added to determine the peak flow rates.
Based on the above data, the proposed development will NOT have an adverse hydrologic impact on the watershed

14. STORMWATER MANAGEMENT SYSTEM OPERATION AND MAINTENANCE

Routine Maintenance Activities for Grass Channels	
Activity	**Schedule**
• Water to promote plant growth and survival • Inspect grass channel following rainfall events. Plant replacement vegetation in any eroded areas.	As Needed (Following Construction)
• Inspect grass channel. Maintain vegetation (e.g., mow, prune, trim) as needed. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect grass channel for sediment accumulation. Remove sediment when it accounts for 25% or more of the original cross-section. • Inspect grass channel for erosion and the formation of rills and gullies. Plant replacement vegetation in any eroded areas. • Inspect grass channel for dead or dying vegetation. Plant replacement vegetation as needed.	Annually (Semi-Annually During First Year)

Routine Maintenance Activities for Stormwater Ponds	
Activity	**Schedule**
• Water side slopes and buffers to promote plant growth and survival • Inspect side slopes and buffers following rainfall events. Plant replacement vegetation in any eroded areas.	As Needed (Following Construction)
• Remove any accumulated sediment and debris from inlet and outlet structures.	Monthly
• Inspect side slopes and buffers for erosion. Plant replacement vegetation in any eroded areas. • Inspect side slopes and buffers for dead or dying vegetation. Plant replacement vegetation as needed. • Inspect side slopes and buffers for invasive vegetation and remove as needed. • If applicable, monitor wetland vegetation and perform replacement planting as necessary.	Annually (Semi-Annually During First Year)
• Inspect for damage, paying particular attention to the control structure and side slopes. Repair as necessary. • Inspect side slopes for erosion and undercutting and repair as needed. • Check for signs of eutrophic conditions (e.g., excessive algal growth). • Check for signs of hydrocarbon accumulation and remove appropriately. • Monitor sediment markers and sediment accumulation in forebays and permanent pools. • Examine to ensure that inlet and outlet devices are free of sediment and debris and are operational. • Check all control gates, valves and other mechanical devices.	Annually
• Remove sediment from forebay.	5 to 7 years or after 50% of the total forebay capacity has been lost.
• Monitor sediment markers for sediment accumulation and remove sediment when the permanent pool volume has become reduced significantly, or when the pond become eutrophic.	10 to 20 years or after 25% of the permanent pool volume has been lost.

II. HYDRAULIC DESIGN

15. SITE OVERVIEW

The post-developed site will be graded in such a way that the storm water will be directed to the detention ponds via sheet flow, shallow concentrated flow and channel flow. The storm drainage pipes were sized using area and cover parameters to generate the peak flow produced by the 25 YR, 24 HR storm event. Tail water conditions were taken from the peak elevation of the 25 year storm in the detention ponds. The outfall structures and outfall pipes were sized by inputting the peak flow rate that is released from the detention pond for the 100 YR, 24 HR storm event as a known flow for the system.
(See Exhibit 'C' for proposed runoff basin conditions).

16. HYDRAULIC CALCULATION METHODOLOGY

Pipes were sized using the modified rational method and the Hydraflow Storm Sewers software by Autodesk. Coefficient values are listed for certain cover conditions in the "Georgia Stormwater Management Manual", Chapter 3.1.4.6, Table 3.1.4-2.

All calculations and computer printouts are attached.

APPENDIX A

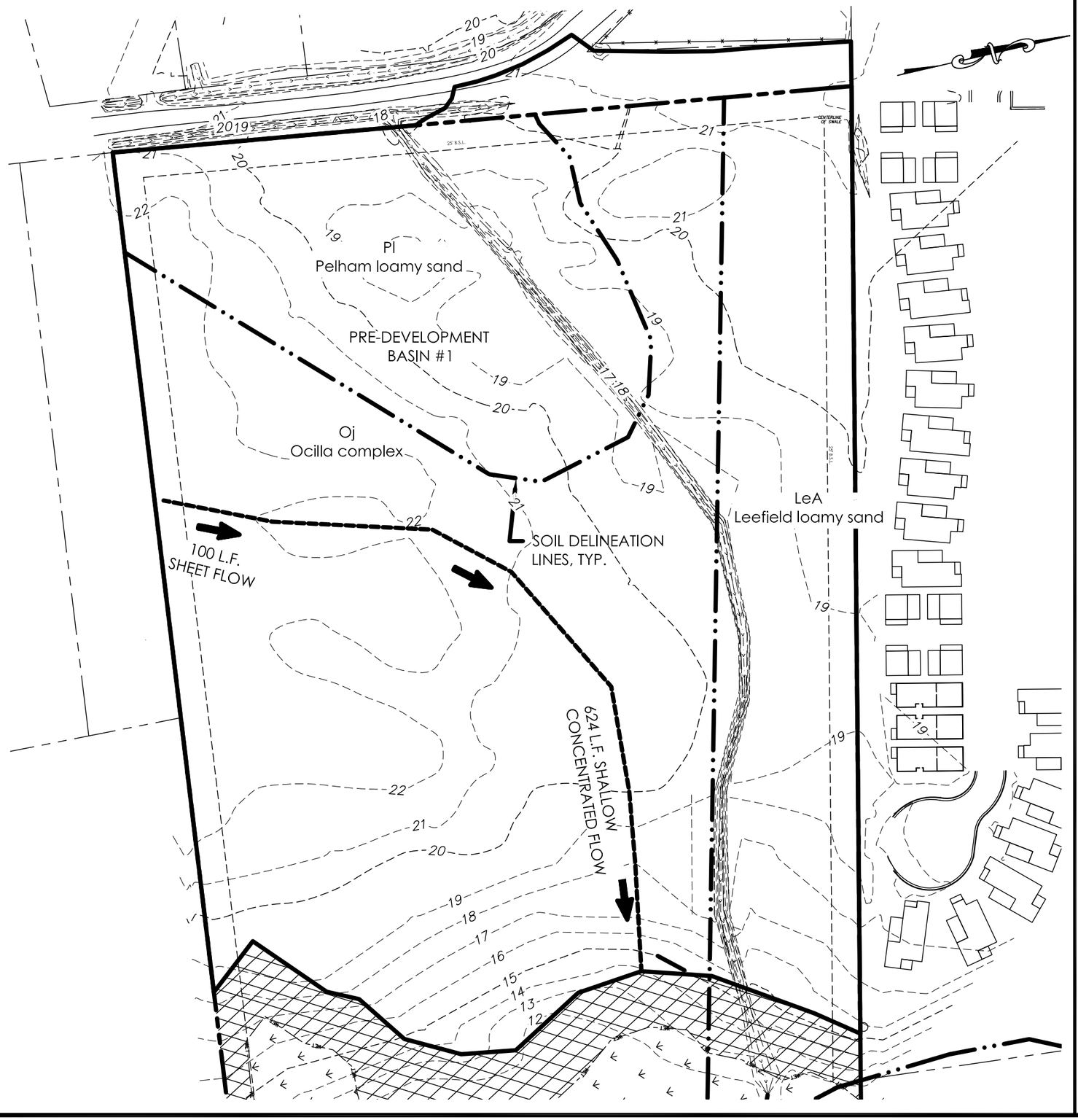
SITE EXHIBITS

PRE-DEVELOPMENT BASIN #1
AREA = 11.91 ACRES

CN = 83
11.91 AC Oj/Pl (HSG B/D) -
CN = 83 (WOOD OR FOREST LAND - THIN STAND, POOR COVER

Tc = 30 min.
100 L.F. SHEET FLOW @ 0.92% -
n = 0.40 (WOODS- LIGHT UNDERBRUSH)

624 L.F. SHALLOW CONCENTRATED FLOW @ 1.28%



allen
ENGINEERING SERVICES
P.O. BOX 1749 ♦ RINCON, GA 31326 ♦ PH:(912) 667-2667

EXHIBIT 'A'

PRE-DEVELOPMENT DRAINAGE EXHIBIT

8TH G.M.D.

CITY OF PORT WENTWORTH

Prepared for:

NEXT CHAPTER HOLDINGS, LLC

100' 50' 0' 100'
GRAPHIC SCALE: 1"=100'-0"

PROJECT NO.:	21-015
DRAWN BY:	ATA
DESIGNED BY:	ATA
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	ATA
SCALE:	1" = 100'
DATE:	03/07/2022

SHEET
1
OF 3

POST-DEVELOPMENT BASIN
AREA = 10.46 ACRES

CN = 90
4.78 AC BdA/LeA (HSG C/D) - PeA (HSG B/D)
CN = 80 (OPEN SPACE, LAWNS - GOOD CONDITION)

4.82 AC
CN = 98 (PAVED PARKING AREAS, ROADS, SIDEWALKS, ROOFS)

0.86 AC -
CN = 98 (DETENTION POND)

Tc = 28.5 min.
100 L.F. SHEET FLOW @ 1.0% -
n = 0.41 (BERMUDA GRASS)

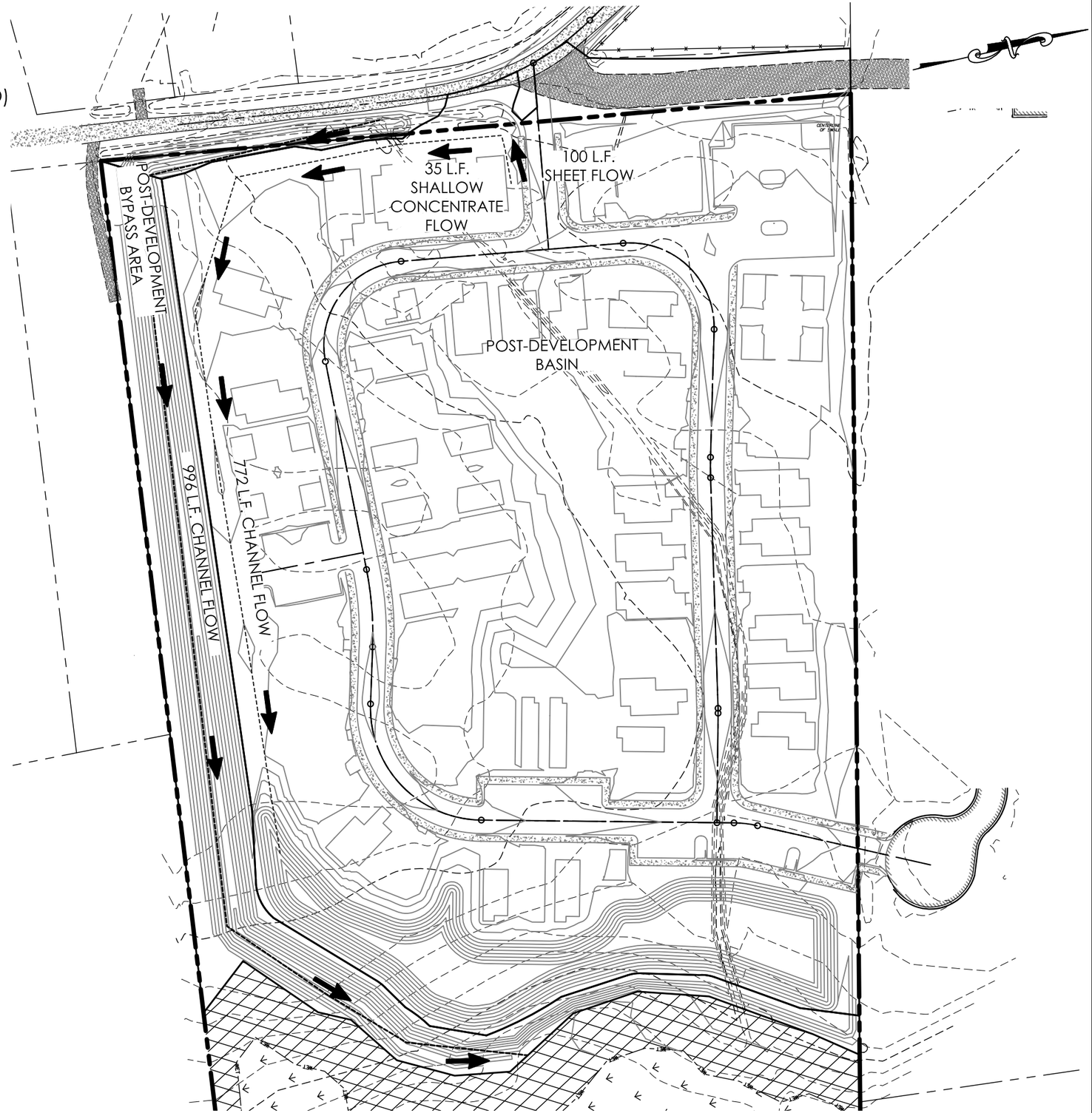
35 L.F. SHALLOW CONCENTRATED FLOW @ 1.0%

772 L.F. CHANNEL FLOW @ 0.30%

POST-DEVELOPMENT BYPASS AREA
AREA = 1.50 ACRES

CN = 80
1.45 AC BdA/LeA (HSG C/D)
CN = 80 (OPEN SPACE, LAWNS - GOOD CONDITION)

Tc = 8 min.
996 L.F. CHANNEL FLOW @ 0.41%



allen
ENGINEERING SERVICES
P.O. BOX 1749 ♦ RINCON, GA 31326 ♦ PH:(912) 667-2667

EXHIBIT 'B'

POST-DEVELOPMENT DRAINAGE EXHIBIT

8TH G.M.D.

CITY OF PORT WENTWORTH

Prepared for:

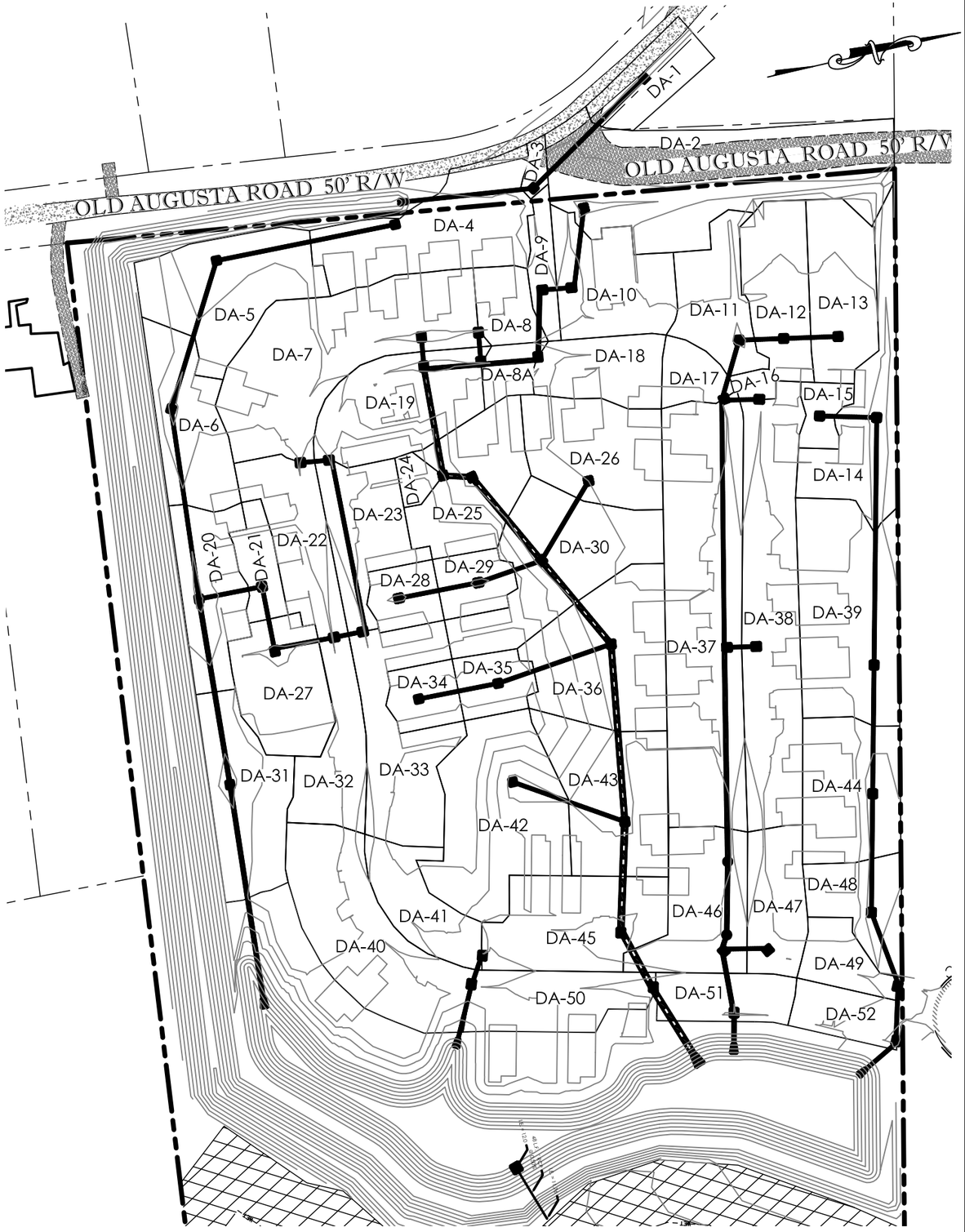
NEXT CHAPTER HOLDINGS, LLC

100' 50' 0' 100'
GRAPHIC SCALE: 1"=100'-0"

PROJECT NO.:	21-015
DRAWN BY:	ATA
DESIGNED BY:	ATA
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	ATA
SCALE:	1" = 100'
DATE:	03/07/2022

SHEET
2
OF 3

BASIN	AREA (AC)	C NUMBER	Tc (MIN.)
DA-1	0.10	0.50	5
DA-2	0.49	0.50	5
DA-3	0.02	0.95	5
DA-4	0.26	0.50	5
DA-5	0.25	0.50	5
DA-6	0.17	0.50	5
DA-7	0.39	0.80	5
DA-8	0.07	0.80	5
DA-8A	0.04	0.50	5
DA-9	0.05	0.95	5
DA-10	0.18	0.80	5
DA-11	0.14	0.80	5
DA-12	0.17	0.90	5
DA-13	0.17	0.90	5
DA-14	0.20	0.50	5
DA-15	0.04	0.80	5
DA-16	0.02	0.80	5
DA-17	0.05	0.80	5
DA-18	0.12	0.80	5
DA-19	0.22	0.50	5
DA-20	0.16	0.50	5
DA-21	0.06	0.80	5
DA-22	0.16	0.80	5
DA-23	0.16	0.80	5
DA-24	0.02	0.50	5
DA-25	0.20	0.50	5
DA-26	0.20	0.50	5
DA-27	0.17	0.80	5
DA-28	0.06	0.95	5
DA-29	0.07	0.95	5
DA-30	0.27	0.50	5
DA-31	0.20	0.50	5
DA-32	0.14	0.80	5
DA-33	0.22	0.80	5
DA-34	0.06	0.95	5
DA-35	0.07	0.95	5
DA-36	0.27	0.50	5
DA-37	0.50	0.80	5
DA-38	0.37	0.80	5
DA-39	0.32	0.50	5
DA-40	0.30	0.80	5
DA-41	0.12	0.80	5
DA-42	0.32	0.50	5
DA-43	0.25	0.50	5
DA-44	0.12	0.50	5
DA-45	0.23	0.80	5
DA-46	0.19	0.80	5
DA-47	0.13	0.80	5
DA-48	0.12	0.50	5
DA-49	0.07	0.80	5
DA-50	0.15	0.80	5
DA-51	0.10	0.95	5
DA-52	0.08	0.95	5
TOTAL ACRES	**9.01**		



allen
ENGINEERING SERVICES
P.O. BOX 1749 ♦ RINCON, GA 31326 ♦ PH:(912) 667-2667

EXHIBIT 'C'

STORM DRAIN INLET EXHIBIT

8TH G.M.D.

CITY OF PORT WENTWORTH

Prepared for:

NEXT CHAPTER HOLDINGS, LLC

100' 50' 0' 100'

GRAPHIC SCALE: 1"=100'-0"

PROJECT NO.:	21-015
DRAWN BY:	ATA
DESIGNED BY:	ATA
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	ATA
SCALE:	1" = 100'
DATE:	03/07/2022

SHEET

3

OF 3

APPENDIX B

BACKGROUND DATA

Rainfall Data for
Pt. Wentworth, Chatham County, Georgia

Storm Event (Year)	Average Rainfall (in./hr.)	Total 24-Hour Rainfall (inches)
1	0.15	3.67
2	0.18	4.27
5	0.22	5.35
10	0.26	6.35
25	0.33	7.86
50	0.38	9.14
100	0.44	10.50

* Rainfall depths were derived from NOAA Atlas 14, Volume 9, Version 2 for Latitude: 32.2358˚, Longitude: -81.1914˚, Elevation: 23.69'.

NOAA Atlas 14, Volume 9, Version 2
Location name: Port Wentworth, Georgia, USA*
Latitude: 32.2358°, Longitude: -81.1914°
Elevation: 23.69 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.540** (0.459-0.641)	**0.610** (0.518-0.726)	**0.726** (0.614-0.865)	**0.822** (0.690-0.984)	**0.953** (0.768-1.17)	**1.06** (0.826-1.32)	**1.16** (0.867-1.48)	**1.26** (0.897-1.66)	**1.39** (0.948-1.89)	**1.49** (0.986-2.06)
10-min	**0.790** (0.672-0.938)	**0.894** (0.759-1.06)	**1.06** (0.899-1.27)	**1.20** (1.01-1.44)	**1.40** (1.12-1.72)	**1.54** (1.21-1.93)	**1.69** (1.27-2.17)	**1.84** (1.31-2.42)	**2.04** (1.39-2.76)	**2.19** (1.44-3.02)
15-min	**0.963** (0.819-1.14)	**1.09** (0.926-1.30)	**1.30** (1.10-1.55)	**1.47** (1.23-1.76)	**1.70** (1.37-2.10)	**1.88** (1.48-2.35)	**2.06** (1.55-2.64)	**2.25** (1.60-2.96)	**2.49** (1.69-3.37)	**2.67** (1.76-3.68)
30-min	**1.37** (1.16-1.62)	**1.56** (1.32-1.85)	**1.87** (1.58-2.22)	**2.12** (1.78-2.54)	**2.46** (1.98-3.03)	**2.73** (2.13-3.41)	**2.99** (2.24-3.83)	**3.25** (2.32-4.28)	**3.59** (2.44-4.87)	**3.85** (2.54-5.31)
60-min	**1.76** (1.50-2.09)	**2.00** (1.70-2.38)	**2.41** (2.04-2.87)	**2.75** (2.31-3.29)	**3.24** (2.61-4.00)	**3.62** (2.84-4.54)	**4.01** (3.01-5.15)	**4.42** (3.15-5.83)	**4.96** (3.38-6.74)	**5.39** (3.56-7.43)
2-hr	**2.15** (1.84-2.54)	**2.45** (2.09-2.89)	**2.95** (2.51-3.49)	**3.38** (2.86-4.02)	**4.01** (3.26-4.94)	**4.51** (3.56-5.63)	**5.03** (3.81-6.44)	**5.58** (4.01-7.34)	**6.33** (4.35-8.56)	**6.93** (4.60-9.49)
3-hr	**2.38** (2.04-2.79)	**2.70** (2.32-3.18)	**3.27** (2.79-3.85)	**3.77** (3.20-4.46)	**4.51** (3.70-5.57)	**5.13** (4.07-6.40)	**5.78** (4.40-7.39)	**6.47** (4.68-8.50)	**7.44** (5.14-10.0)	**8.22** (5.48-11.2)
6-hr	**2.77** (2.39-3.23)	**3.17** (2.73-3.70)	**3.88** (3.34-4.55)	**4.54** (3.87-5.33)	**5.52** (4.56-6.80)	**6.35** (5.09-7.91)	**7.25** (5.56-9.23)	**8.21** (5.99-10.7)	**9.58** (6.67-12.9)	**10.7** (7.18-14.5)
12-hr	**3.18** (2.76-3.68)	**3.69** (3.20-4.28)	**4.61** (3.98-5.36)	**5.45** (4.68-6.36)	**6.72** (5.59-8.23)	**7.79** (6.27-9.63)	**8.94** (6.90-11.3)	**10.2** (7.47-13.2)	**12.0** (8.37-16.0)	**13.4** (9.05-18.0)
24-hr	**3.67** (3.21-4.22)	**4.27** (3.72-4.91)	**5.35** (4.65-6.18)	**6.35** (5.48-7.36)	**7.86** (6.58-9.57)	**9.14** (7.42-11.2)	**10.5** (8.18-13.3)	**12.0** (8.89-15.6)	**14.2** (9.99-18.8)	**15.9** (10.8-21.3)
2-day	**4.26** (3.75-4.87)	**4.90** (4.30-5.60)	**6.07** (5.31-6.96)	**7.16** (6.22-8.24)	**8.85** (7.46-10.7)	**10.3** (8.40-12.6)	**11.8** (9.28-14.8)	**13.6** (10.1-17.4)	**16.0** (11.4-21.1)	**18.0** (12.3-23.9)
3-day	**4.66** (4.11-5.29)	**5.35** (4.71-6.09)	**6.61** (5.80-7.54)	**7.78** (6.78-8.91)	**9.56** (8.09-11.5)	**11.1** (9.08-13.5)	**12.7** (10.00-15.9)	**14.5** (10.8-18.6)	**17.1** (12.2-22.4)	**19.2** (13.2-25.4)
4-day	**4.99** (4.42-5.66)	**5.73** (5.06-6.50)	**7.06** (6.21-8.03)	**8.28** (7.23-9.46)	**10.1** (8.58-12.1)	**11.7** (9.60-14.2)	**13.4** (10.5-16.6)	**15.2** (11.4-19.4)	**17.8** (12.7-23.3)	**19.9** (13.7-26.3)
7-day	**5.90** (5.25-6.66)	**6.71** (5.96-7.57)	**8.13** (7.19-9.20)	**9.42** (8.28-10.7)	**11.4** (9.65-13.5)	**13.0** (10.7-15.6)	**14.7** (11.6-18.1)	**16.5** (12.4-20.9)	**19.1** (13.7-24.9)	**21.2** (14.7-27.9)
10-day	**6.73** (6.00-7.55)	**7.58** (6.76-8.52)	**9.09** (8.07-10.2)	**10.4** (9.20-11.8)	**12.4** (10.6-14.7)	**14.1** (11.6-16.8)	**15.8** (12.5-19.4)	**17.7** (13.3-22.2)	**20.3** (14.6-26.3)	**22.4** (15.6-29.3)
20-day	**9.07** (8.14-10.1)	**10.1** (9.09-11.3)	**12.0** (10.7-13.4)	**13.5** (12.0-15.2)	**15.8** (13.5-18.4)	**17.6** (14.7-20.8)	**19.5** (15.6-23.6)	**21.5** (16.3-26.8)	**24.3** (17.6-31.1)	**26.4** (18.5-34.3)
30-day	**11.1** (9.96-12.3)	**12.3** (11.1-13.7)	**14.5** (13.0-16.1)	**16.3** (14.5-18.2)	**18.8** (16.1-21.7)	**20.8** (17.3-24.4)	**22.8** (18.2-27.4)	**24.9** (18.9-30.8)	**27.7** (20.1-35.2)	**29.9** (21.0-38.6)
45-day	**13.6** (12.3-15.1)	**15.2** (13.7-16.8)	**17.8** (16.0-19.7)	**19.9** (17.8-22.2)	**22.8** (19.5-26.1)	**24.9** (20.8-29.0)	**27.1** (21.7-32.3)	**29.2** (22.3-35.9)	**32.1** (23.3-40.5)	**34.1** (24.1-44.0)
60-day	**15.9** (14.4-17.5)	**17.7** (16.1-19.6)	**20.7** (18.7-22.9)	**23.1** (20.7-25.6)	**26.2** (22.5-29.8)	**28.5** (23.8-33.0)	**30.8** (24.7-36.5)	**32.9** (25.1-40.2)	**35.7** (26.0-44.8)	**37.7** (26.7-48.3)

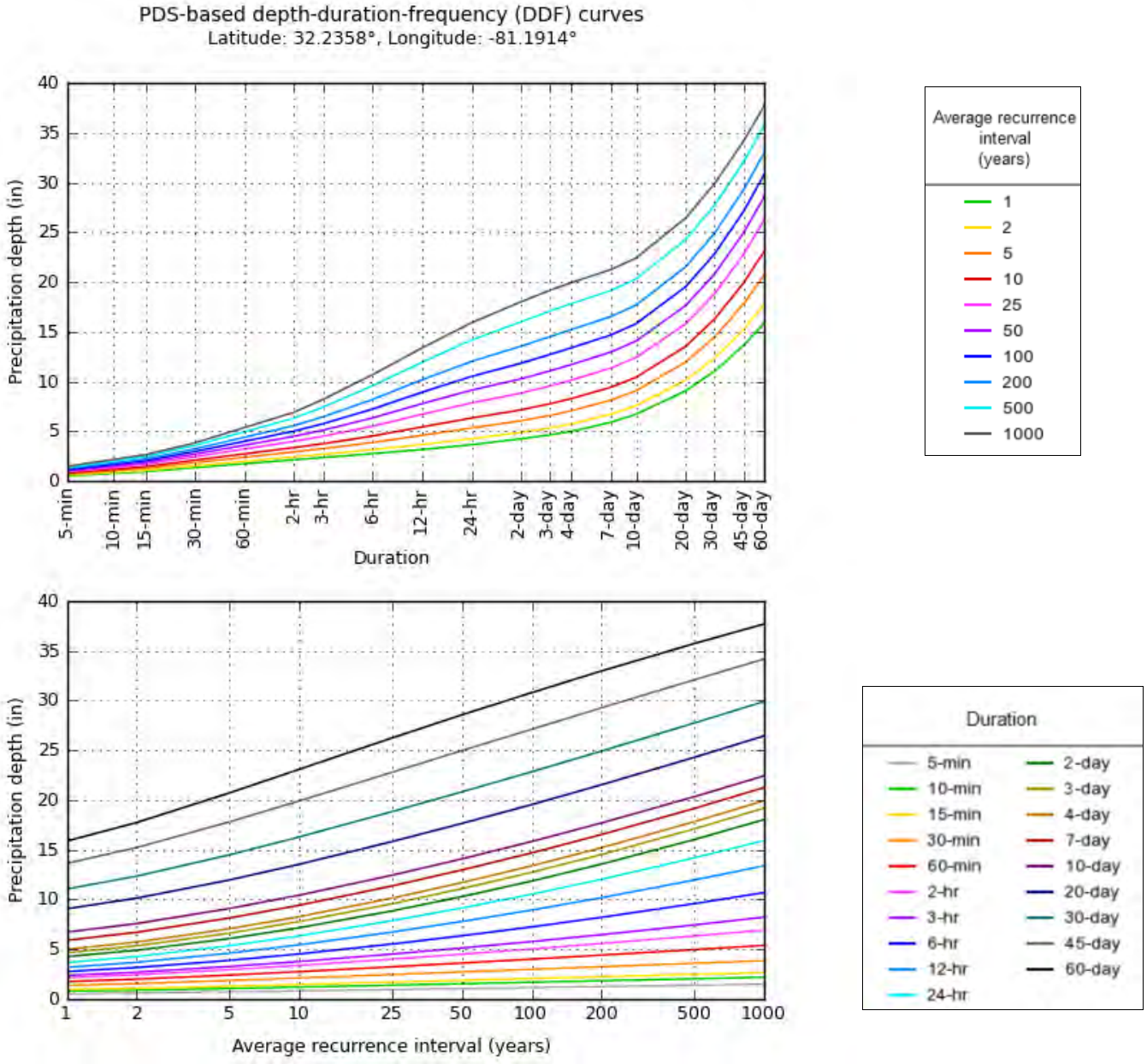
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



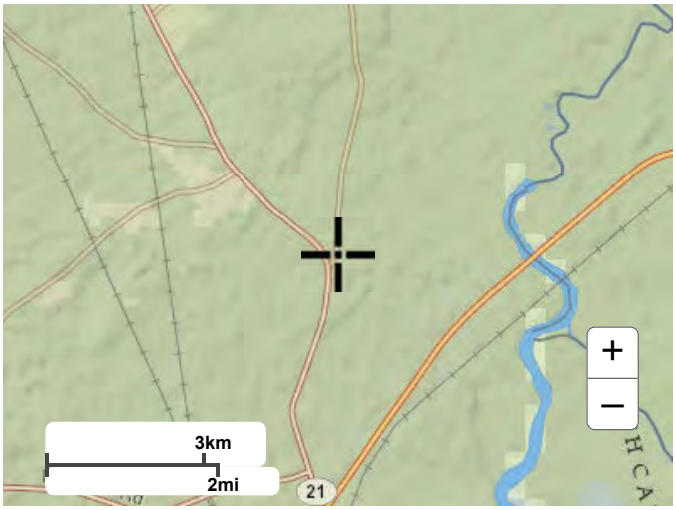
NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Wed Mar 2 19:57:12 2022

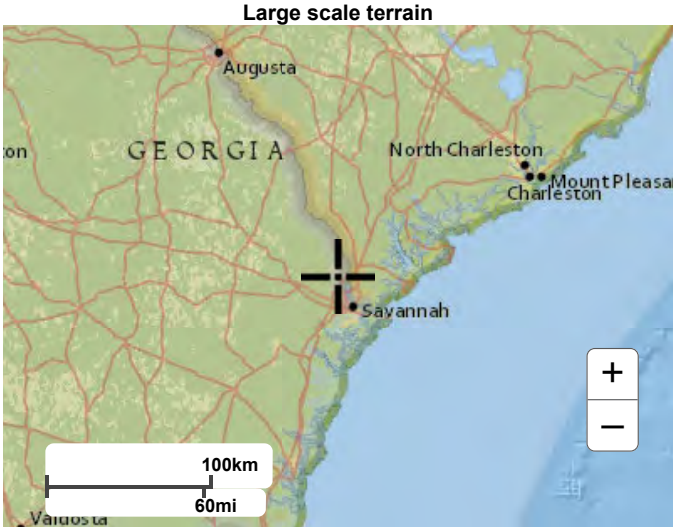
Back to Top

Maps & aerials

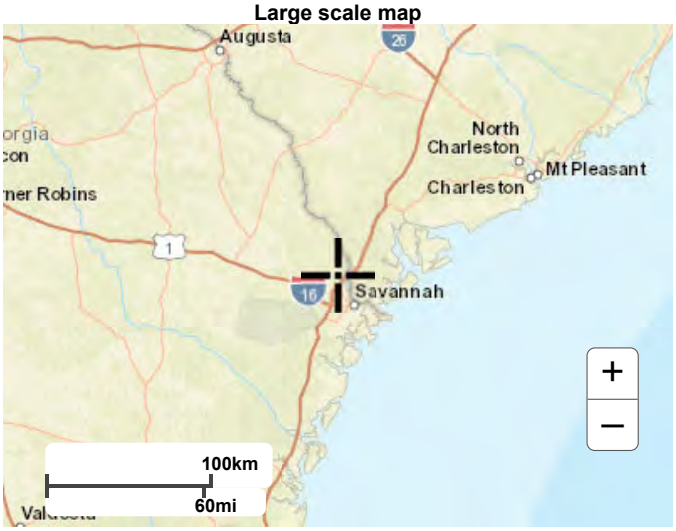
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

NOAA Atlas 14, Volume 9, Version 2
Location name: Port Wentworth, Georgia, USA*
Latitude: 32.2358°, Longitude: -81.1914°
Elevation: 23.69 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**6.48** (5.51-7.69)	**7.32** (6.22-8.71)	**8.71** (7.37-10.4)	**9.86** (8.28-11.8)	**11.4** (9.22-14.1)	**12.7** (9.91-15.8)	**13.9** (10.4-17.8)	**15.1** (10.8-19.9)	**16.7** (11.4-22.6)	**17.9** (11.8-24.7)
10-min	**4.74** (4.03-5.63)	**5.36** (4.55-6.38)	**6.38** (5.39-7.60)	**7.22** (6.07-8.65)	**8.38** (6.74-10.3)	**9.26** (7.25-11.6)	**10.2** (7.62-13.0)	**11.0** (7.88-14.6)	**12.2** (8.32-16.6)	**13.1** (8.66-18.1)
15-min	**3.85** (3.28-4.58)	**4.36** (3.70-5.18)	**5.19** (4.39-6.18)	**5.87** (4.93-7.03)	**6.81** (5.48-8.39)	**7.53** (5.90-9.42)	**8.25** (6.20-10.6)	**8.98** (6.41-11.8)	**9.94** (6.77-13.5)	**10.7** (7.04-14.7)
30-min	**2.73** (2.32-3.25)	**3.11** (2.64-3.70)	**3.73** (3.16-4.45)	**4.24** (3.56-5.07)	**4.93** (3.96-6.06)	**5.45** (4.27-6.81)	**5.98** (4.49-7.65)	**6.50** (4.64-8.56)	**7.19** (4.89-9.73)	**7.70** (5.08-10.6)
60-min	**1.76** (1.50-2.09)	**2.00** (1.70-2.38)	**2.41** (2.04-2.87)	**2.75** (2.31-3.29)	**3.24** (2.61-4.00)	**3.62** (2.84-4.54)	**4.01** (3.01-5.15)	**4.42** (3.15-5.83)	**4.96** (3.38-6.74)	**5.39** (3.56-7.43)
2-hr	**1.08** (0.922-1.27)	**1.22** (1.05-1.45)	**1.47** (1.25-1.75)	**1.69** (1.43-2.01)	**2.00** (1.63-2.47)	**2.25** (1.78-2.82)	**2.52** (1.91-3.22)	**2.79** (2.01-3.67)	**3.17** (2.17-4.28)	**3.46** (2.30-4.74)
3-hr	**0.792** (0.680-0.930)	**0.900** (0.771-1.06)	**1.09** (0.929-1.28)	**1.25** (1.07-1.49)	**1.50** (1.23-1.85)	**1.71** (1.36-2.13)	**1.92** (1.46-2.46)	**2.15** (1.56-2.83)	**2.48** (1.71-3.35)	**2.74** (1.83-3.73)
6-hr	**0.462** (0.399-0.539)	**0.529** (0.456-0.618)	**0.648** (0.557-0.759)	**0.758** (0.646-0.891)	**0.922** (0.762-1.14)	**1.06** (0.849-1.32)	**1.21** (0.928-1.54)	**1.37** (1.00-1.80)	**1.60** (1.11-2.15)	**1.79** (1.20-2.42)
12-hr	**0.264** (0.229-0.306)	**0.306** (0.266-0.355)	**0.383** (0.331-0.445)	**0.452** (0.388-0.528)	**0.558** (0.464-0.683)	**0.646** (0.521-0.800)	**0.742** (0.573-0.940)	**0.845** (0.620-1.10)	**0.992** (0.695-1.33)	**1.11** (0.751-1.50)
24-hr	**0.153** (0.134-0.176)	**0.178** (0.155-0.205)	**0.223** (0.194-0.257)	**0.264** (0.228-0.307)	**0.328** (0.274-0.399)	**0.381** (0.309-0.469)	**0.439** (0.341-0.552)	**0.501** (0.370-0.648)	**0.591** (0.416-0.784)	**0.663** (0.451-0.887)
2-day	**0.089** (0.078-0.101)	**0.102** (0.090-0.117)	**0.126** (0.111-0.145)	**0.149** (0.130-0.172)	**0.184** (0.155-0.223)	**0.214** (0.175-0.262)	**0.247** (0.193-0.309)	**0.282** (0.210-0.363)	**0.334** (0.237-0.440)	**0.375** (0.257-0.499)
3-day	**0.065** (0.057-0.074)	**0.074** (0.065-0.085)	**0.092** (0.081-0.105)	**0.108** (0.094-0.124)	**0.133** (0.112-0.160)	**0.154** (0.126-0.187)	**0.177** (0.139-0.220)	**0.202** (0.151-0.258)	**0.237** (0.169-0.312)	**0.266** (0.183-0.352)
4-day	**0.052** (0.046-0.059)	**0.060** (0.053-0.068)	**0.074** (0.065-0.084)	**0.086** (0.075-0.099)	**0.105** (0.089-0.126)	**0.122** (0.100-0.147)	**0.139** (0.110-0.173)	**0.158** (0.119-0.202)	**0.185** (0.133-0.243)	**0.207** (0.143-0.274)
7-day	**0.035** (0.031-0.040)	**0.040** (0.035-0.045)	**0.048** (0.043-0.055)	**0.056** (0.049-0.064)	**0.068** (0.057-0.080)	**0.077** (0.064-0.093)	**0.087** (0.069-0.107)	**0.098** (0.074-0.124)	**0.114** (0.082-0.148)	**0.126** (0.088-0.166)
10-day	**0.028** (0.025-0.031)	**0.032** (0.028-0.036)	**0.038** (0.034-0.043)	**0.043** (0.038-0.049)	**0.052** (0.044-0.061)	**0.059** (0.048-0.070)	**0.066** (0.052-0.081)	**0.074** (0.056-0.093)	**0.085** (0.061-0.109)	**0.093** (0.065-0.122)
20-day	**0.019** (0.017-0.021)	**0.021** (0.019-0.024)	**0.025** (0.022-0.028)	**0.028** (0.025-0.032)	**0.033** (0.028-0.038)	**0.037** (0.031-0.043)	**0.041** (0.032-0.049)	**0.045** (0.034-0.056)	**0.051** (0.037-0.065)	**0.055** (0.039-0.071)
30-day	**0.015** (0.014-0.017)	**0.017** (0.015-0.019)	**0.020** (0.018-0.022)	**0.023** (0.020-0.025)	**0.026** (0.022-0.030)	**0.029** (0.024-0.034)	**0.032** (0.025-0.038)	**0.035** (0.026-0.043)	**0.038** (0.028-0.049)	**0.041** (0.029-0.054)
45-day	**0.013** (0.011-0.014)	**0.014** (0.013-0.016)	**0.016** (0.015-0.018)	**0.018** (0.016-0.021)	**0.021** (0.018-0.024)	**0.023** (0.019-0.027)	**0.025** (0.020-0.030)	**0.027** (0.021-0.033)	**0.030** (0.022-0.037)	**0.032** (0.022-0.041)
60-day	**0.011** (0.010-0.012)	**0.012** (0.011-0.014)	**0.014** (0.013-0.016)	**0.016** (0.014-0.018)	**0.018** (0.016-0.021)	**0.020** (0.017-0.023)	**0.021** (0.017-0.025)	**0.023** (0.017-0.028)	**0.025** (0.018-0.031)	**0.026** (0.019-0.034)

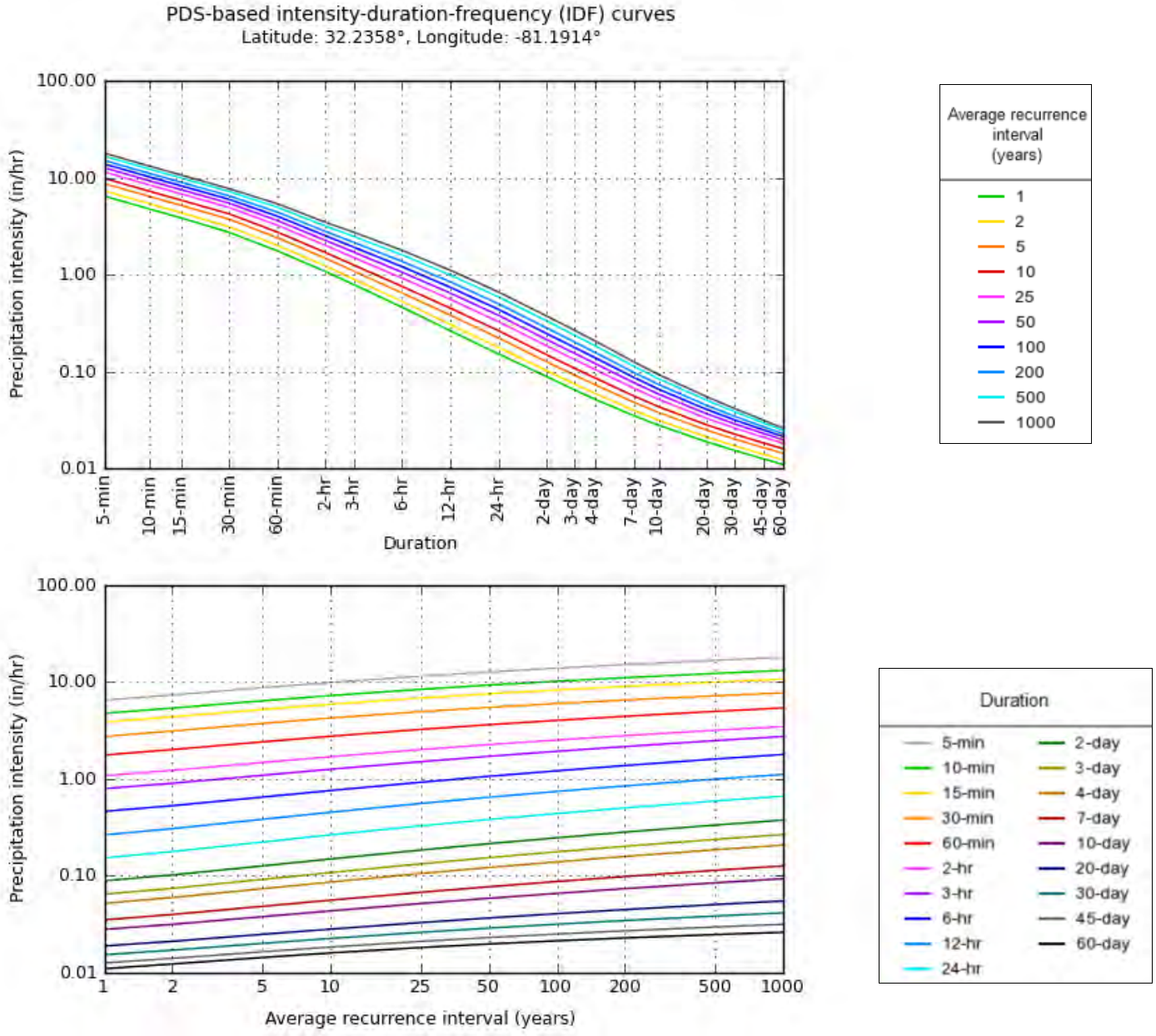
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



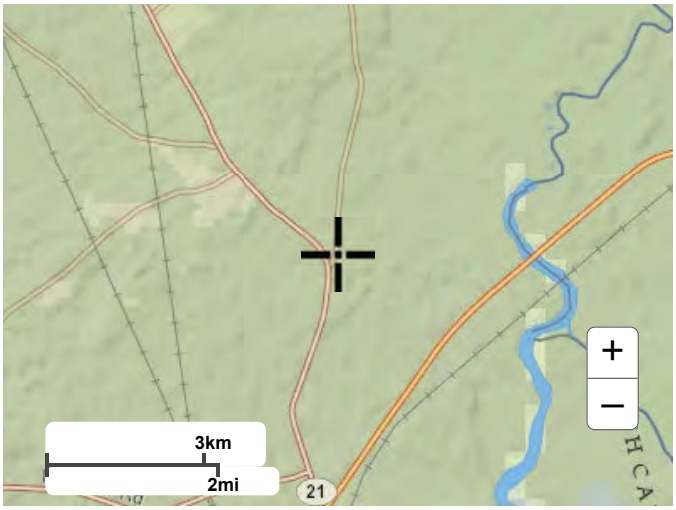
NOAA Atlas 14, Volume 9, Version 2

Created (GMT): Tue Mar 1 21:52:25 2022

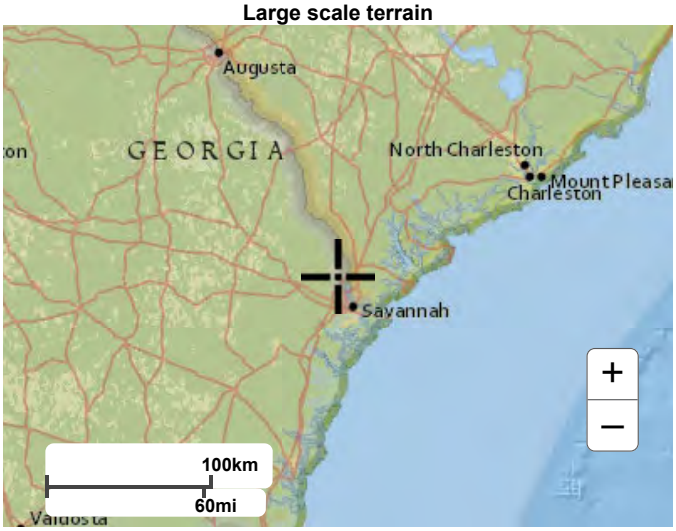
Back to Top

Maps & aerials

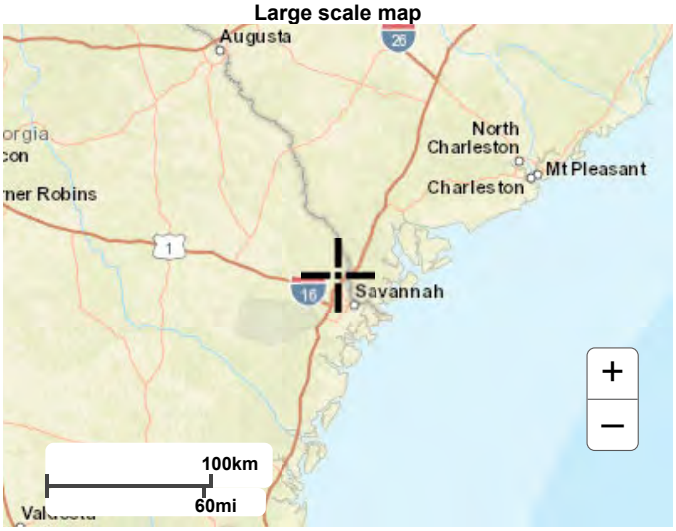
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

Back to Top

US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

The following discussion will give some guidance for adjusting curve numbers for different types of impervious areas.

Connected Impervious Areas

The CNs provided in **Table 3.1.5-1** for various land cover types were developed for typical land use relationships based on specific assumed percentages of impervious area. These CN values were developed on the assumptions that:

(a) Pervious urban areas are equivalent to pasture in good hydrologic condition, and

(b) Impervious areas have a CN of 98 and are directly connected to the drainage system.

If all of the impervious area is directly connected to the drainage system, but the impervious area percentages or the pervious land use assumptions in **Table 3.1.5-1** are not applicable, use **Figure 3.1.5-3** to compute a composite CN. For example, **Table 3.1.5-1** gives a CN of 70 for a 1/2-acre lot in hydrologic soil group B, with an assumed impervious area of 25%. However, if the lot has 20% impervious area and a pervious area CN of 61, the composite CN obtained from **Figure 3.1.5-3** is 68. The CN difference between 70 and 68 reflects the difference in percent impervious area.

Unconnected Impervious Areas

Runoff from these areas is spread over a pervious area as sheet flow. To determine CN when all or part of the impervious area is not directly connected to the drainage system, (1) use **Figure 3.1.5-4** if total impervious area is less than 30% or (2) use **Figure 3.1.5-3** if the total impervious area is equal to or greater than 30%, because the absorptive capacity of the remaining pervious areas will not significantly affect runoff.

Table 3.1.5-1 Runoff Curve Numbers[1]

Cover description			Curve numbers for hydrological soil groups			
Cover type and hydrologic condition		*Average percent impervious area*[2]	A	B	C	D
Cultivated land:	without conservation treatment		72	81	88	91
	with conservation treatment		62	71	78	81
Pasture or range land:	poor condition		68	79	86	89
	good condition		39	61	74	80
Meadow:	good		30	58	71	78
Wood or forest land:	thin stand, poor cover		45	66	77	83
	good cover		25	55	70	77
Open space (laws, parks, golf courses, cemeteries, etc)[3]:	Poor condition (grass cover <50%)		68	79	86	89
	Fair condition (grass cover 50% to 75%)		49	69	79	84
	Good condition (grass cover >75%)		39	61	74	80
Impervious areas:	Paved parking lots, roofs, driveways, etc (excluding right-of-way)		98	98	98	98
Streets and roads:	Paved; curbs and storm drains (excluding right-of-way)		98	98	98	98
	Paved; open ditches (including right-of-way)		83	89	92	93
	Gravel (including right-of-way)		76	85	89	91
	Dirt (including right-of-way)		72	82	87	89
Urban Districts:	Commercial and business	85%	89	92	94	95
	Industrial	72%	81	88	91	93
Residential districts by average lot size:	1/8 acre or less (townhouses)	65%	77	85	90	92
	1/4 acre	38%	61	75	83	87
	1/3 acre	30%	57	72	81	86
	1/2 acre	25%	54	70	80	85
	1 acre	20%	51	68	79	84
	2 acres	12%	46	65	77	82
Developing urban areas and newly graded areas (pervious areas only, no vegetation)			77	86	91	94

[1]Average runoff condition, and I_a = 0.2S
[2]The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. If the impervious area is not connected, the NRCS TR-55 method has an adjustment to reduce the effect.
[3]CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space cover type.

Sheet Flow

Sheet flow can be calculated using the following formula:

$$T_t = \frac{0.42(nL)^{0.8}}{60(P_2)^{0.5}(S)^{0.4}} \quad (3.1.8)$$

Where:

T_t = travel time (hr)
n = Manning roughness coefficient (see **Table 3.1.5-2**)
L = flow length (ft)
P_2 = 2-year, 24-hour rainfall
S = land slope (ft/ft)

Table 3.1.5-2 Roughness Coefficients (Manning's n) for Sheet Flow[1]

Surface description		n
Smooth surfaces (concrete, asphalt, gravel, or bare soil):		0.011
Fallow (no residue):		0.05
Cultivated soils:	Residue cover <20%	0.06
	Residue cover >20%	0.17
Grass:	Short grass prairie	0.15
	Dense grasses[2]	0.24
	Bermuda grass	0.41
Range (natural):		0.13
Woods[3]:	Light underbrush	0.40
	Dense underbrush	0.80

[1]The n values are a composite of information by Engman (1986).
[2]Includes species such as weeping lovegrass, bluegrass, buffalo grass, blue grama grass, and native grass mixtures.
[3]When selecting n, consider cover to a height of about 0.1 ft. This is the only part of the plant cover that will obstruct sheet flow.

Source: NRCS TR-55, TR-55, Second Edition, June 1986.

Shallow Concentrated Flow

After a maximum of 50 to 100 feet, sheet flow usually becomes shallow concentrated flow. The average velocity for this flow can be determined from **Figure 3.1.5-5**, in which average velocity is a function of water¬course slope and type of channel.

Average velocities for estimating travel time for shallow concentrated flow can be computed from using **Figure 3.1.5-5,** or the following equations. These equations can also be used for slopes less than 0.005 ft/ft.

$$\text{Unpaved: } V = 16.13(S)^{0.5} \quad (3.1.9)$$

$$\text{Paved: } V = 20.33(S)^{0.5} \quad (3.1.10)$$

Where:

V = average velocity (ft/s)
S = slope of hydraulic grade line (water-course slope, ft/ft)

After determining average velocity using **Figure 3.1.5-5** or **Equations 3.1.9** or **3.1.10**, use **Equation 3.1.7** to estimate travel time for the shallow concentrated flow segment.

Open Channels

Velocity in channels should be calculated from the Manning equation. Open channels are assumed to begin where surveyed cross section information has been obtained, where channels are visible on aerial photographs, where channels have been identified by the local municipality, or where blue lines (indicating streams) appear on United States Geological Survey (USGS) quadrangle sheets. Manning's equation or water surface profile information can be used to estimate average flow velocity.

3.1.4.6 RUNOFF COEFFICIENT (C)

The runoff coefficient (C) is the variable of the Rational Method least susceptible to precise determination and requires judgment and understanding on the part of the design engineer.

While engineering judgment will always be required in the selection of runoff coefficients, typical coefficients represent the integrated effects of many drainage basin parameters. **Table 3.1.4-2** gives the recommended runoff coefficients for the Rational Method.

It is often desirable to develop a composite runoff coefficient based on the percentage of different types of surfaces in the drainage areas. Composites can be made with the values from **Table 3.1.4-2** by using percentages of different land uses. In addition, more detailed composites can be made with coefficients for different surface types such as rooftops, asphalt, and concrete streets and sidewalks. The composite procedure can be applied to an entire drainage area or to typical "sample" blocks as a guide to the selection of reasonable values of the coefficient for an entire area.

It should be remembered that the Rational Method assumes that all land uses within a drainage area are uniformly distributed throughout the area. If it is important to locate a specific land use within the drainage area then another hydrologic method should be used where hydrographs can be generated and routed through the drainage system.

It may be that using only the impervious area from a highly impervious site (and the corresponding high C factor and shorter time of concentration) will yield a higher peak runoff value than by using the whole site. This should be checked particularly in areas where the overland portion is grassy (yielding a long t_c) to avoid underestimating peak runoff.

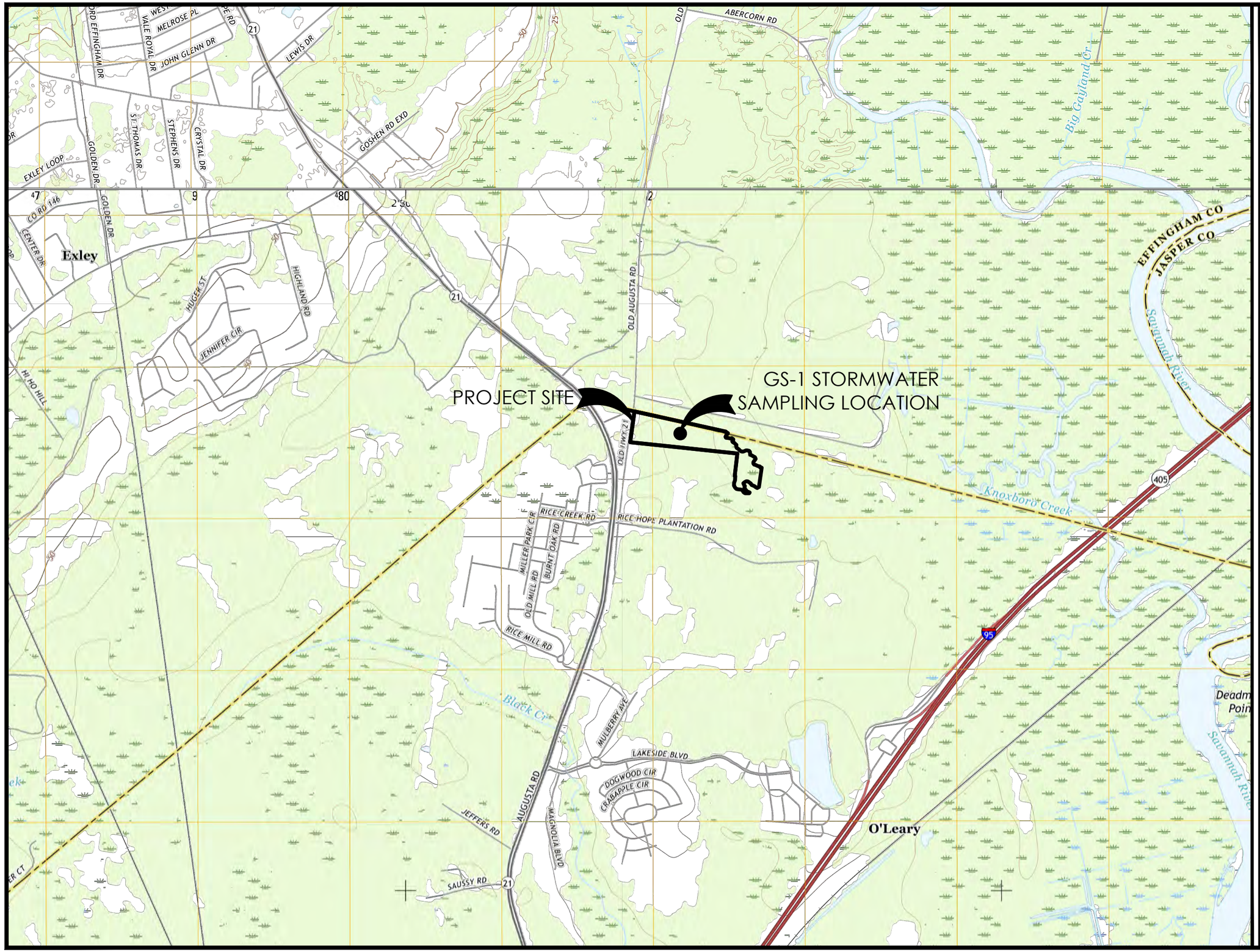
Table 3.1.4-2 Recommended Runoff Coefficient Values

Description of Area	Runoff Coefficients (C)	Description of Area	Runoff Coefficients (C)
Lawns		**Industrial**	
Sandy soil, flat, 2%	0.10	Light areas	0.70
Sandy soil, average, 2-7%	0.15	Heavy areas	0.80
Sandy soil, steep, >7%	0.20	**Parks, cemeteries**	**0.25**
Clay soil, flat, 2%	0.17	**Playgrounds**	0.35
Clay soil, average, 2-7%	0.22	**Railroad yard areas**	0.40
Clay soil, steep, >7%	0.35	**Streets**	
Unimproved areas (forest)	**0.15**	Asphalt and concrete	0.95
Business		Brick	0.85
Downtown areas	0.95	**Drives, walks, and roofs**	**0.95**
Neighborhood areas	0.70	**Gravel areas**	**0.50**
Residential		**Graded or no plant cover**	
Single-family areas	0.50	Sandy soil, flat, 0-5%	0.30
Multi-units, detached	0.60	Sandy soil, flat, 5-10%	0.40
Multi-units, attached	0.70	Clay soil, flat, 0-5%	0.50
Suburban	0.40	Clay soil, average, 5-10%	0.60
Apartment dwelling areas	0.70		

BACK TO TOC

APPENDIX C

REGULATORY DATA



allen
ENGINEERING SERVICES
P.O. BOX 1749 ♦ RINCON, GA 31326 ♦ PH:(912) 667-2667

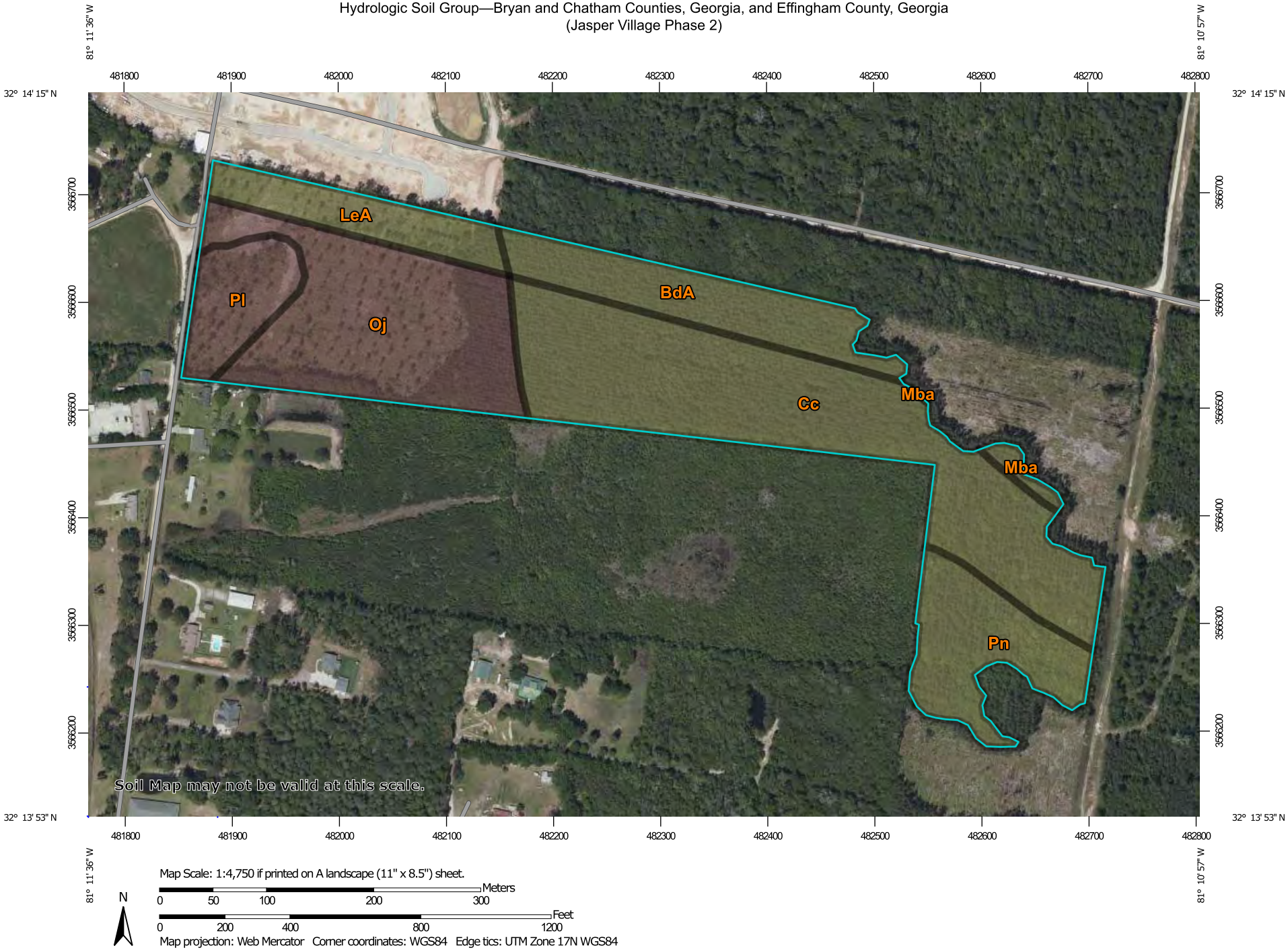
QUADRANGLE MAP
JASPER VILLAGE PHASE II
PORT WENTWORTH AND
RINCON QUADS
Prepared for:
NEXT CHAPTER HOLDINGS, LLC

2000' 1000' 0' 2000'
GRAPHIC SCALE: 1"=2000'-0"

PROJECT NO.:	21-015
DRAWN BY:	ATA
DESIGNED BY:	ATA
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	ATA
SCALE:	1" = 2000'
DATE:	03/07/2022

SHEET
1
OF 1

Hydrologic Soil Group—Bryan and Chatham Counties, Georgia, and Effingham County, Georgia
(Jasper Village Phase 2)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bryan and Chatham Counties, Georgia
Survey Area Data: Version 16, Aug 31, 2021

Soil Survey Area: Effingham County, Georgia
Survey Area Data: Version 16, Aug 30, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 22, 2020—May 1, 2020

MAP LEGEND

MAP INFORMATION

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cc	Cape Fear soils	C/D	13.5	37.4%
Mba	Meggett loam	C/D	0.4	1.0%
Oj	Ocilla complex	B/D	8.9	24.5%
Pl	Pelham loamy sand, 0 to 2 percent slopes, frequently flooded	B/D	2.4	6.6%
Pn	Pooler fine sandy loam	C/D	4.0	11.2%
Subtotals for Soil Survey Area			**29.2**	**80.6%**
Totals for Area of Interest			**36.2**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BdA	Bladen fine sandy loam, 0 to 2 percent slopes	C/D	4.3	11.9%
LeA	Leefield loamy sand, 0 to 2 percent slopes	C/D	2.7	7.5%
Subtotals for Soil Survey Area			**7.0**	**19.4%**
Totals for Area of Interest			**36.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

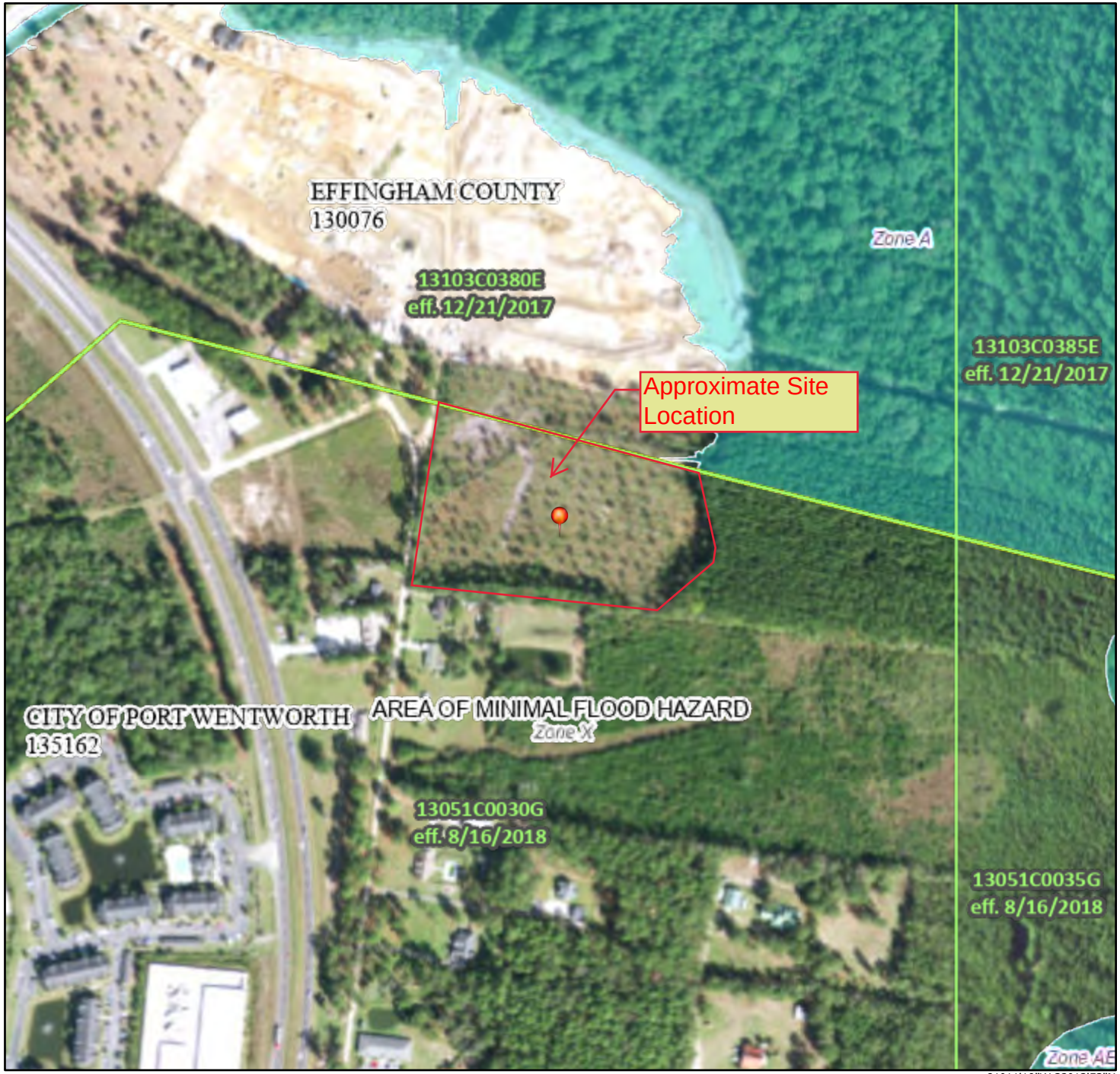
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

National Flood Hazard Layer FIRMette

FEMA

81°11'47"W 32°14'24"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

81°11'10"W 32°13'53"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/2/2022 at 5:26 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Jasper Village Phase II

January 17, 2022

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

APPENDIX D

COASTAL STORMWATER SUPPLEMENT SITE PLANNING & DESIGN WORKSHEET

Coastal Stormwater Supplement Site Planning & Design Worksheet

Revised July 2014

Site Data

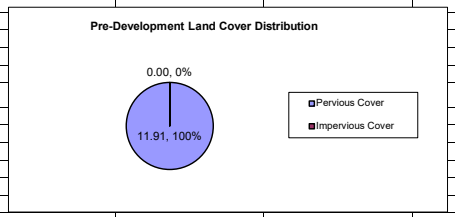
Site Name:

	data input cells
	calculation cells
	constant values

Step 1: Enter Site Information

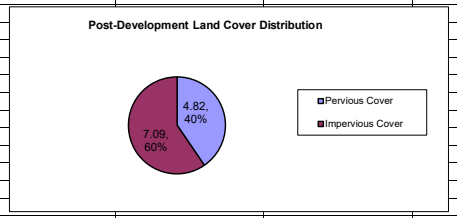
Pre-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	11.91	11.91
Impervious Cover	0.00	0.00	0.00	0.00	0.00
				Total	11.91

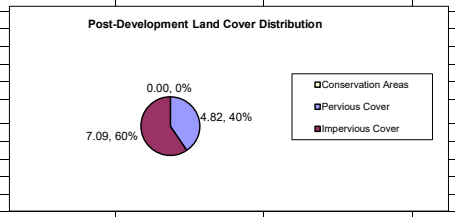


Post-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	4.82	4.82
Impervious Cover	0.00	0.00	0.00	7.09	7.09
				Total	11.91



Runoff Reduction Rainfall Event (inches)	1.2
Post-Development Site Imperviousness (%)	60%
Post-Development Site Runoff Coefficient, Rv	0.59
Target Runoff Reduction Volume, RRv (acre-feet)	0.70
Target Runoff Reduction Volume, RRv (cubic feet)	30,390

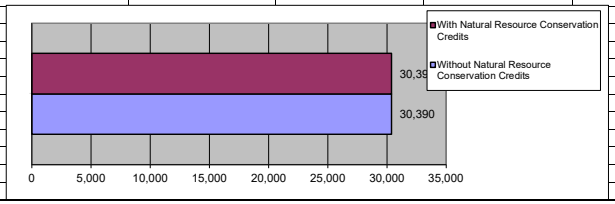


Step 2: Apply Better Site Planning Techniques

Natural Resource Conservation Credits	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Primary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Secondary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Total (acres)					0.00

Target Runoff Reduction Volume with Natural Resource Conservation Credits, RRv

Target Runoff Reduction Volume, RRv (acre-feet)	0.70
Target Runoff Reduction Volume, RRv (cubic feet)	30,390



Step 3: Apply Better Site Design Techniques

Reduced Clearing and Grading Credits

	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Undisturbed Pervious Cover (Acres)	0.0	0.0	0.0	0.0	0.00

Revised Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.00	0.00
Disturbed Pervious Cover	0.00	0.00	0.00	4.82	4.82
Impervious Cover	0.00	0.00	0.00	7.09	7.09
				Total	11.91

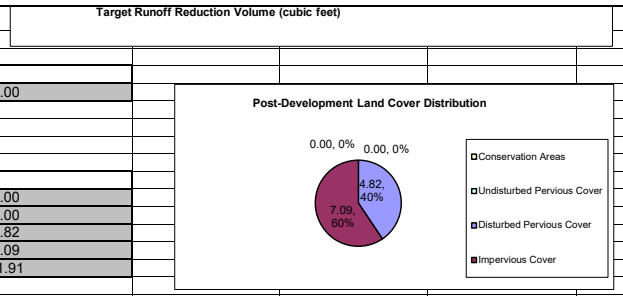
Restoration of Disturbed Pervious Surfaces

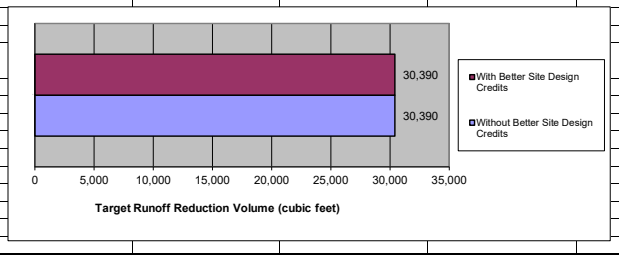
Soil Restoration (Acres)	0.0
Site Reforestation/Vegetation (Acres)	0.0
Soil Restoration w/ Site Reforestation/Revegetation (Acres)	0.0

Target Runoff Reduction Volume After Application of Better Site Design Credits, RRv

Target Runoff Reduction Volume, RRv (acre-feet)	0.70
Target Runoff Reduction Volume, RRv (cubic feet)	30,390

Note: Remainder of Better Site Design Techniques are considered to be "self-crediting."





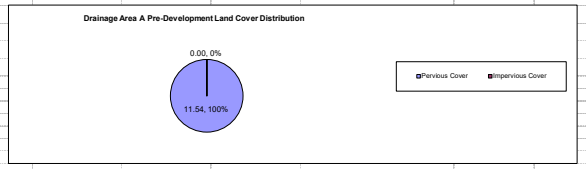
Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised July 2014

Drainage Area A

Drainage Area Information

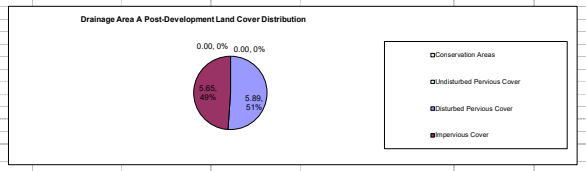
Drainage Area A Pre-Development Land Cover (acres

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	11.54	11.54
Impervious Cover	0.00	0.00	0.00	0.00	0.00
				Total	11.54



Drainage Area A Post-Development Land Cover (acres

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.00	0.00
Disturbed Pervious Cove	0.00	0.00	0.00	5.89	5.89
Impervious Cover	0.00	0.00	0.00	5.65	5.65
				Total	11.54



Low Impact Development Practices

Alternatives to Impervious Surfaces

Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

"Receiving" Low Impact Development Practices

Simple Downspout Disconnection, C/D Soils 1	3.06	3.06	12662.9	30% of volume received by the practice	0.0	12662.9	0.0	12662.9	N/A	N/A	3798.9	8864.0	3798.9	8864.0	No Downstream Practice
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	Grass Channel, C/D Soils 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

Treatment Only Practices

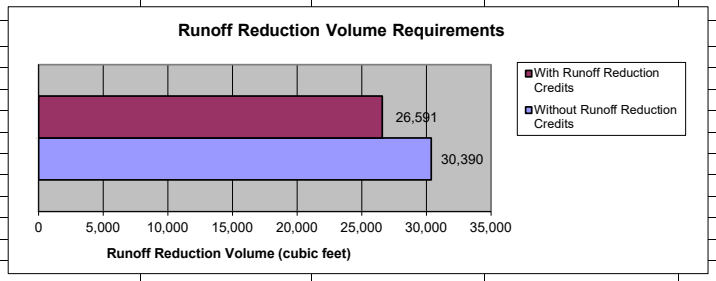
Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	None	0.0	0.0	0.0	0.0	Volume in Wet Pool and Extended Detention	0.0	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**3.06**	**3.06**									**3798.9**		**3798.9**		

Coastal Stormwater Supplement Site Planning & Design Worksheet

Revised July 2014

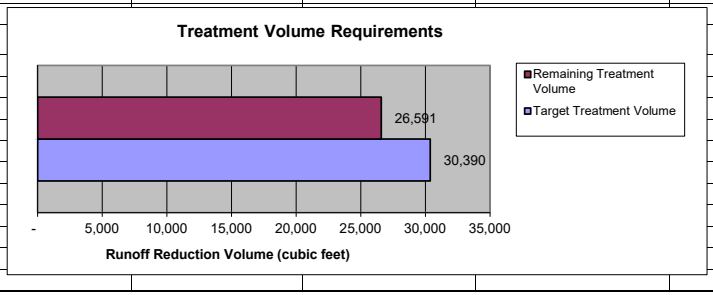
Stormwater Runoff Reduction Summary

Target Runoff Reduction and Treatment Volume, RRv (cubic feet)	30,390
Total Adjustment to Runoff Reduction Volume, RRv (cubic feet)	3,799
Percentage of Target Runoff Reduction Volume Achieved	13%
Runoff Reduction Volume Achieved (in)	0.15
Runoff Reduction Volume Remaining (cubic feet)	26,591



Note: If any of the target runoff reduction volume cannot be reduced on the development site, due to site characteristics or constraints, it should be intercepted and treated in one or more stormwater management practices that: (1) provide for at least an 80 percent reduction in TSS loads; and (2) reduce nitrogen and bacteria loads to the maximum extent practical.

Treatment Volume Achieved (cubic feet)	3,799
Treatment Volume Remaining (cubic feet)	26,591



Coastal Stormwater Supplement Site Planning & Design Worksheet; Revised December 2013

Site Data Summary

Site Land Cover Summary

Pre-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	11.91	11.91
Impervious Cover	0.00	0.00	0.00	0.00	0.00
Total					11.91

Post-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	4.82	4.82
Impervious Cover	0.00	0.00	0.00	7.09	7.09
Total					11.91

Natural Resource Conservation Credits

	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Primary Conservation Areas (acres)	0.00	0.00	0.00	0.00	0.00
Secondary Conservation Areas (acres)	0.00	0.00	0.00	0.00	0.00
Total (acres)					0.00

Reduced Clearing and Grading Credits

	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Undisturbed Pervious Cover (Acres)	0.00	0.00	0.00	0.00	0.00

Restoration of Disturbed Pervious Surfaces

Soil Restoration (Acres)	0.00
Site Reforestation/Vegetation (Acres)	0.00
Soil Restoration w/ Site Reforestation/Revegetation (Acres)	0.00

Stormwater Runoff Reduction Summary

Target Runoff Reduction and Treatment Volume, RRv (cubic feet)	30,390
Total Adjustment to Runoff Reduction Volume, RRv (cubic feet)	3,799
Percentage of Target Runoff Reduction Volume Achieved	13%
Runoff Reduction Volume Achieved (in)	0.15
Runoff Reduction Volume Remaining (cubic feet)	26,591
Treatment Volume Achieved (cubic feet)	3,799
Treatment Volume Remaining (cubic feet)	26,591

Channel and Flood Protection

	Adjusted Curve Number			Detention Required		
	1-year storm	**25-year storm**	**100-year storm**	**1-year storm**	**25-year storm**	**100-year storm**
Target Rainfall Event (in)	3.60	7.92	9.84			
D.A. A CN	88	88	88	Yes	Yes	Yes
D.A. B CN	77	77	77	No	No	No
D.A. C CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. D CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. E CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. F CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. G CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. H CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. I CN	36	#N/A	#N/A	Yes	#N/A	#N/A
D.A. J CN	36	#N/A	#N/A	Yes	#N/A	#N/A

Drainage Area A Summary

Land Cover Summary

Pre-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	11.54	11.54
Impervious Cover	0.00	0.00	0.00	0.00	0.00
Total					11.54

Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.00	0.00
Disturbed Pervious Cover	0.00	0.00	0.00	5.89	5.89
Impervious Cover	0.00	0.00	0.00	5.65	5.65
Total					11.54

Drainage Area A BMP Selections

Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Storage Volume Provided by Practice (cubic feet)	Runoff Red. Volume (ft3)	Treat. Volume (ft3)	Downstream Practice
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
Simple Downspout Disconnection, C/D Soils	3.06	3.06	N/A	3798.9	3798.9	No Downstream Practice
None	0.00	0.00	N/A	0.0	0.0	Grass Channel, C/D Soils 1
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	

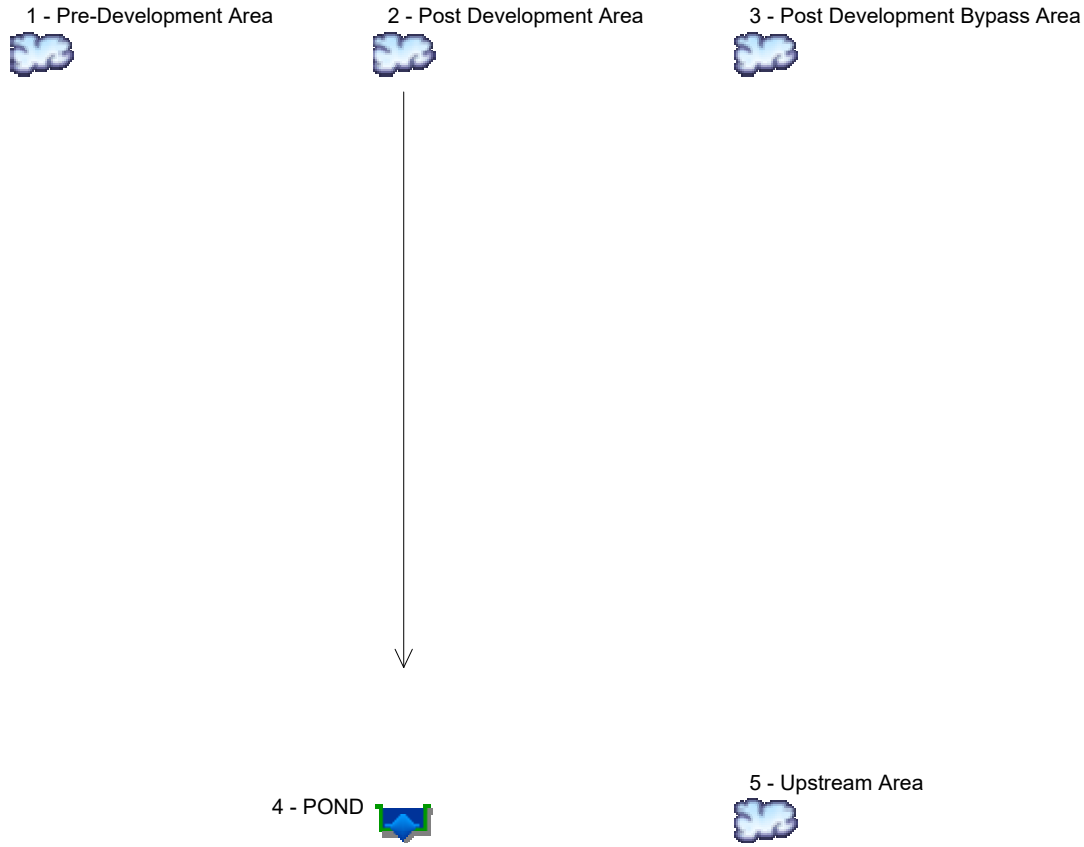
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	
None	0.00	0.00	N/A	0.0	0.0	

Total	3.06	3.06	0.0	3798.9	3798.9

APPENDIX E

COMPUTER OUTPUT REPORTS

Watershed Model Schematic



Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	15.70	-------	-------	-------	35.80	47.07	56.63	66.76	Pre-Development Area
2	SCS Runoff	------	18.82	-------	-------	-------	37.54	47.72	56.30	65.37	Post Development Area
3	SCS Runoff	------	3.662	-------	-------	-------	8.654	11.47	13.86	16.39	Post Development Bypass Area
4	Reservoir	2	1.377	-------	-------	-------	17.93	29.94	39.88	50.17	POND
5	SCS Runoff	------	31.63	-------	-------	-------	62.10	78.62	92.54	107.26	Upstream Area

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

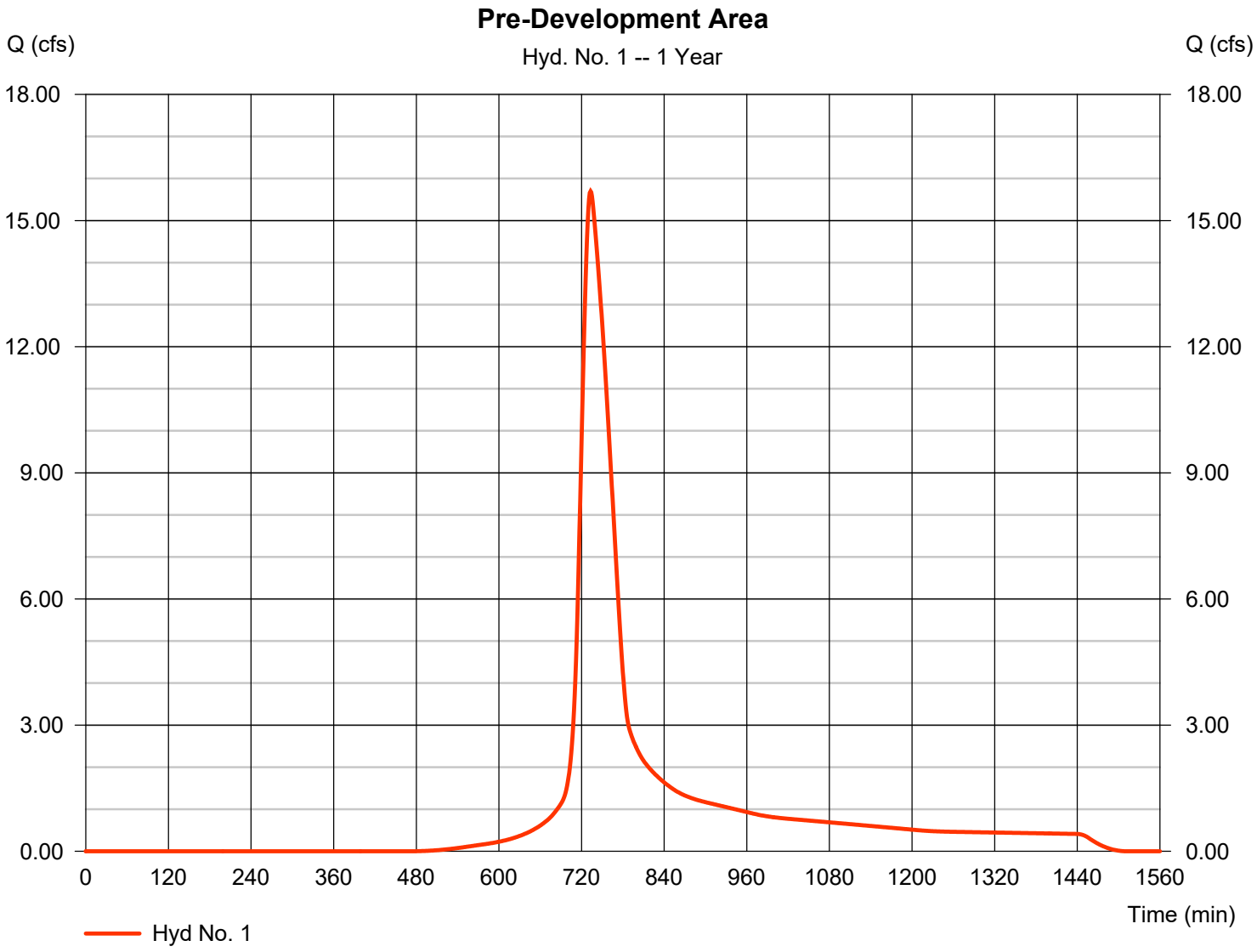
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	15.70	1	733	84,088	------	------	------	Pre-Development Area
2	SCS Runoff	18.82	1	731	96,607	------	------	------	Post Development Area
3	SCS Runoff	3.662	1	719	9,042	------	------	------	Post Development Bypass Area
4	Reservoir	1.377	1	863	91,008	2	15.62	61,477	POND
5	SCS Runoff	31.63	1	719	79,983	------	------	------	Upstream Area

Hydrograph Report

Hyd. No. 1

Pre-Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	15.70 cfs
Storm frequency	=	1 yrs	Time to peak	=	733 min
Time interval	=	1 min	Hyd. volume	=	84,088 cuft
Drainage area	=	11.910 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	29.60 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



TR55 Tc Worksheet

Hyd. No. 1

Pre-Development Area

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.400		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 0.92		0.00		0.00		
Travel Time (min)	**= 23.92**	**+**	**0.00**	**+**	**0.00**	**=**	**23.92**
Shallow Concentrated Flow							
Flow length (ft)	= 624.00		0.00		0.00		
Watercourse slope (%)	= 1.28		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.83		0.00		0.00		
Travel Time (min)	**= 5.70**	**+**	**0.00**	**+**	**0.00**	**=**	**5.70**
Channel Flow							
X sectional flow area (sqft)	= 0.00		0.00		0.00		
Wetted perimeter (ft)	= 0.00		0.00		0.00		
Channel slope (%)	= 0.00		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=0.00						
			0.00				
					0.00		
Flow length (ft)	({0})0.0		0.0		0.0		
Travel Time (min)	**= 0.00**	**+**	**0.00**	**+**	**0.00**	**=**	**0.00**

Total Travel Time, Tc ..... 29.60 min

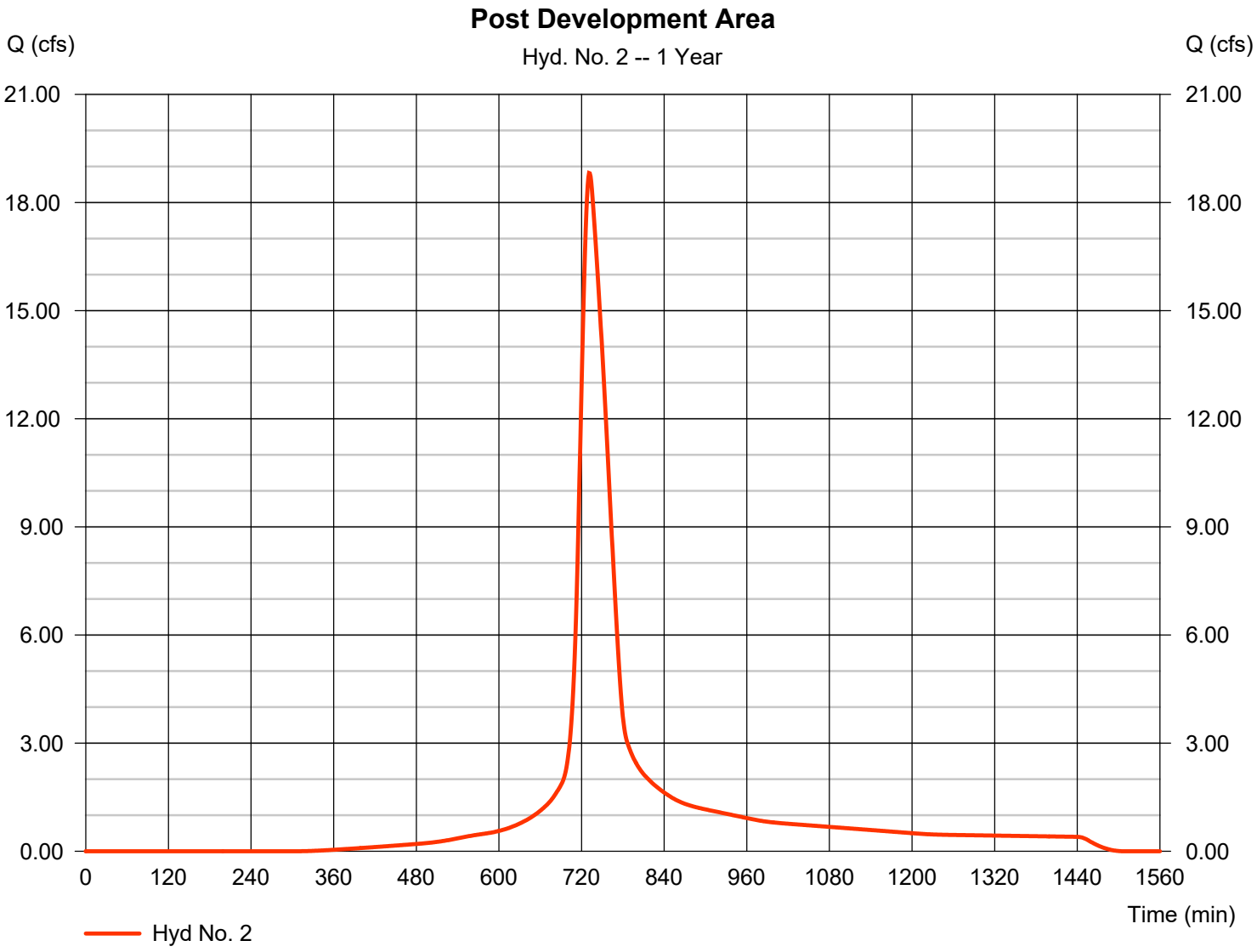
Hydrograph Report

Hyd. No. 2

Post Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	18.82 cfs
Storm frequency	=	1 yrs	Time to peak	=	731 min
Time interval	=	1 min	Hyd. volume	=	96,607 cuft
Drainage area	=	10.460 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.50 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(0.860 x 98) + (4.820 x 98) + (4.780 x 80)] / 10.460



TR55 Tc Worksheet

Hyd. No. 2

Post Development Area

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.410		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 1.00		0.00		0.00		
Travel Time (min)	**= 23.60**	**+**	**0.00**	**+**	**0.00**	**=**	**23.60**
Shallow Concentrated Flow							
Flow length (ft)	= 35.00		0.00		0.00		
Watercourse slope (%)	= 1.00		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=1.61		0.00		0.00		
Travel Time (min)	**= 0.36**	**+**	**0.00**	**+**	**0.00**	**=**	**0.36**
Channel Flow							
X sectional flow area (sqft)	= 1.77		0.00		0.00		
Wetted perimeter (ft)	= 4.71		0.00		0.00		
Channel slope (%)	= 0.30		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=2.82						
			0.00				
					0.00		
Flow length (ft)	({0})772.0		0.0		0.0		
Travel Time (min)	**= 4.56**	**+**	**0.00**	**+**	**0.00**	**=**	**4.56**

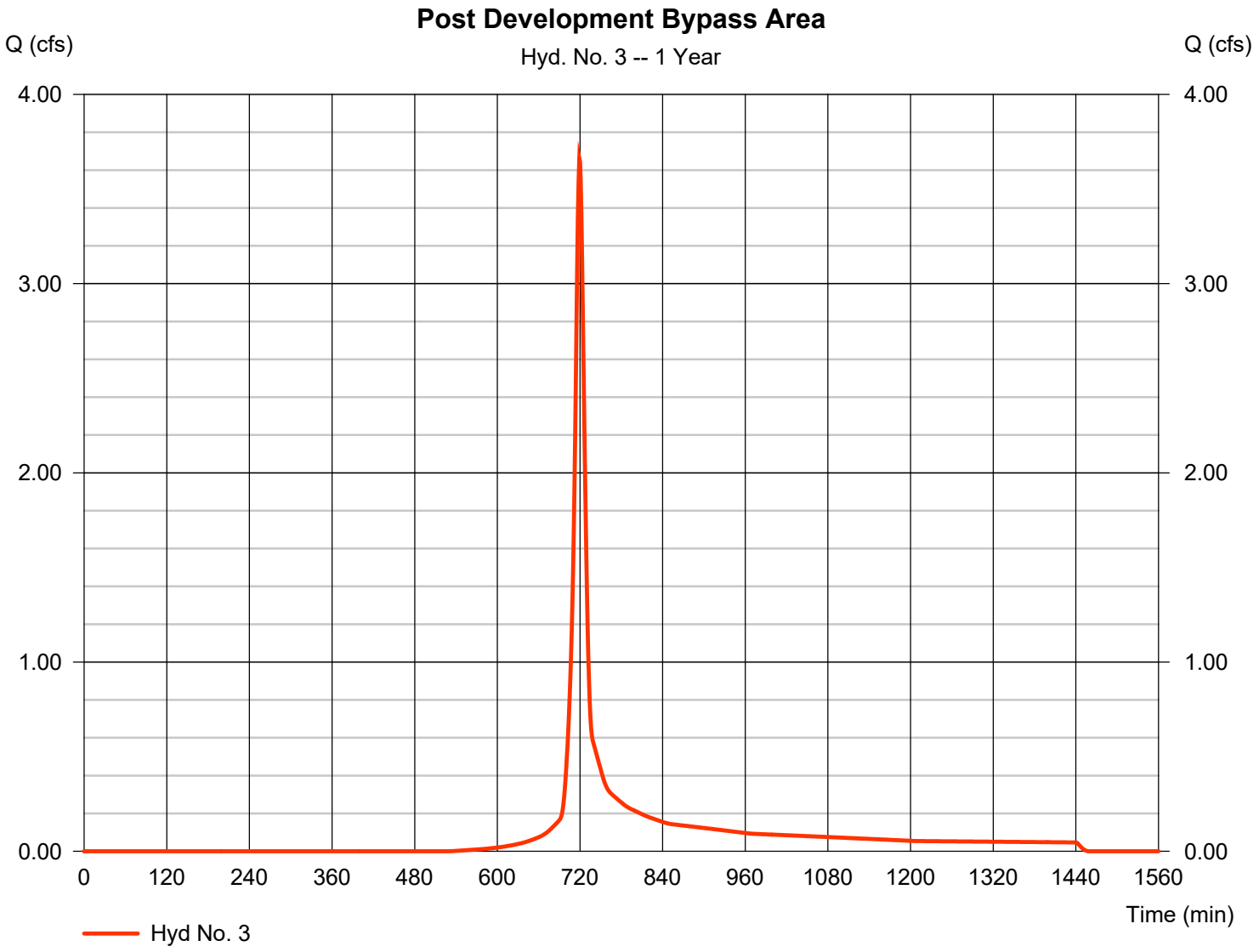
Total Travel Time, Tc ..... 28.50 min

Hydrograph Report

Hyd. No. 3

Post Development Bypass Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.662 cfs
Storm frequency	=	1 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	9,042 cuft
Drainage area	=	1.450 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	8.00 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



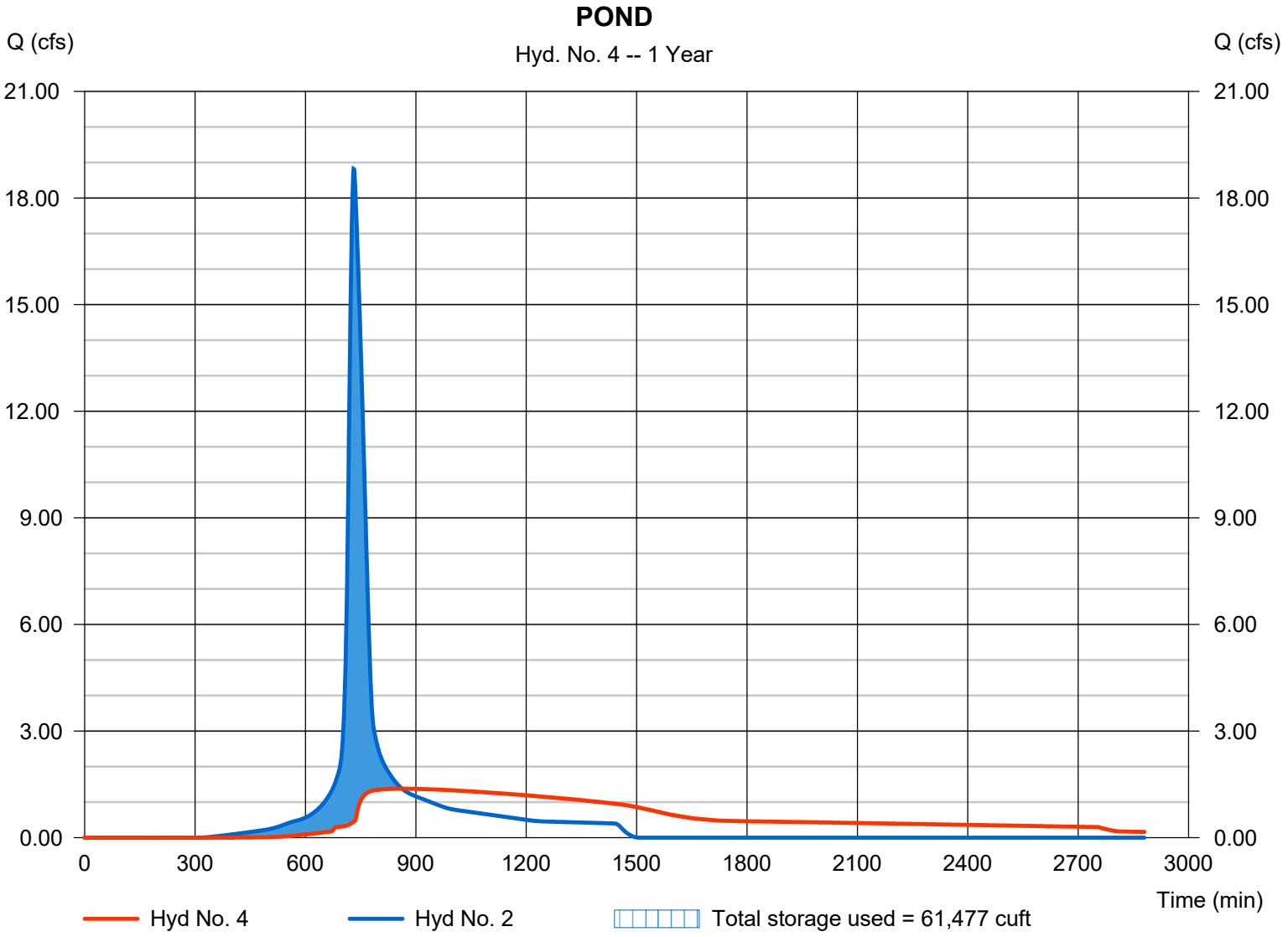
Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	=	Reservoir	Peak discharge	=	1.377 cfs
Storm frequency	=	1 yrs	Time to peak	=	863 min
Time interval	=	1 min	Hyd. volume	=	91,008 cuft
Inflow hyd. No.	=	2 - Post Development Area	Max. Elevation	=	15.62 ft
Reservoir name	=	Detention Pond	Max. Storage	=	61,477 cuft

Storage Indication method used.



Pond Report

Pond No. 1 - Detention Pond

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 12.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	12.00	12,462	0	0
0.50	13.00	15,880	7,068	7,068
1.50	14.00	19,418	17,618	24,685
2.50	15.00	23,113	21,237	45,922
3.50	16.00	26,999	25,028	70,950
4.50	17.00	30,975	28,961	99,911
5.50	18.00	35,008	32,968	132,879
6.50	19.00	39,098	37,030	169,910

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 3.50	5.25	0.00	0.00
Span (in)	= 3.50	5.25	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 12.00	14.25	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 8.00	0.00	0.00	0.00
Crest El. (ft)	= 16.25	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	12.00	0.00	0.00	---	---	0.00	---	---	---	---	---	0.000
0.50	7,068	13.00	0.30 ic	0.00	---	---	0.00	---	---	---	---	---	0.297
1.50	24,685	14.00	0.44 ic	0.00	---	---	0.00	---	---	---	---	---	0.438
2.50	45,922	15.00	0.54 ic	0.53 ic	---	---	0.00	---	---	---	---	---	1.071
3.50	70,950	16.00	0.63 ic	0.90 ic	---	---	0.00	---	---	---	---	---	1.527
4.50	99,911	17.00	0.71 ic	1.15 ic	---	---	17.30	---	---	---	---	---	19.16
5.50	132,879	18.00	0.78 ic	1.36 ic	---	---	61.67	---	---	---	---	---	63.81
6.50	169,910	19.00	0.84 ic	1.54 ic	---	---	121.49	---	---	---	---	---	123.87

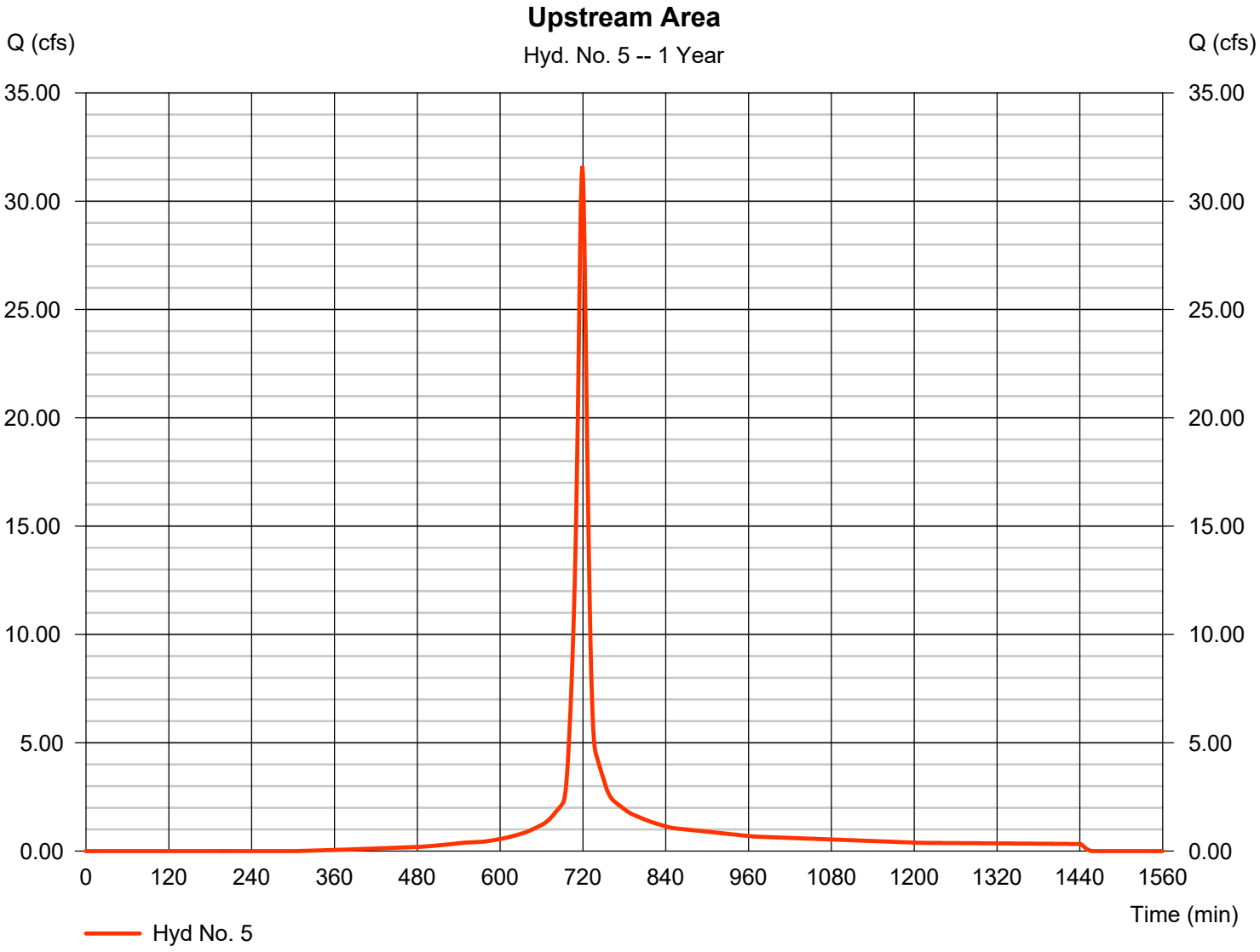
Hydrograph Report

Hyd. No. 5

Upstream Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	31.63 cfs
Storm frequency	=	1 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	79,983 cuft
Drainage area	=	8.660 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.70 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(1.630 x 98) + (6.790 x 89) + (0.360 x 83)] / 8.660



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

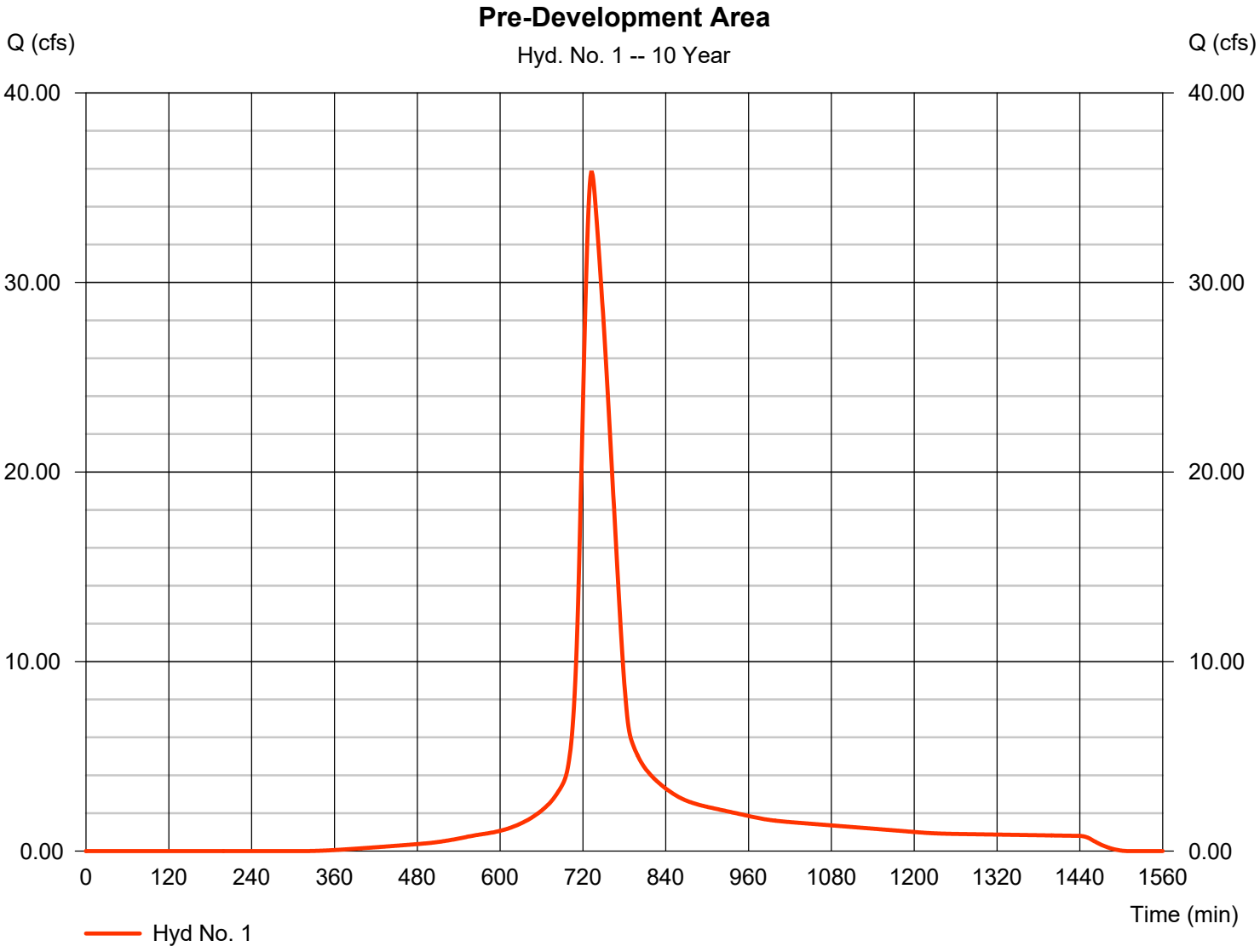
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	35.80	1	733	191,172	------	------	------	Pre-Development Area
2	SCS Runoff	37.54	1	731	197,161	------	------	------	Post Development Area
3	SCS Runoff	8.654	1	719	21,595	------	------	------	Post Development Bypass Area
4	Reservoir	17.93	1	763	186,795	2	16.96	98,851	POND
5	SCS Runoff	62.10	1	719	163,233	------	------	------	Upstream Area

Hydrograph Report

Hyd. No. 1

Pre-Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	35.80 cfs
Storm frequency	=	10 yrs	Time to peak	=	733 min
Time interval	=	1 min	Hyd. volume	=	191,172 cuft
Drainage area	=	11.910 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	29.60 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



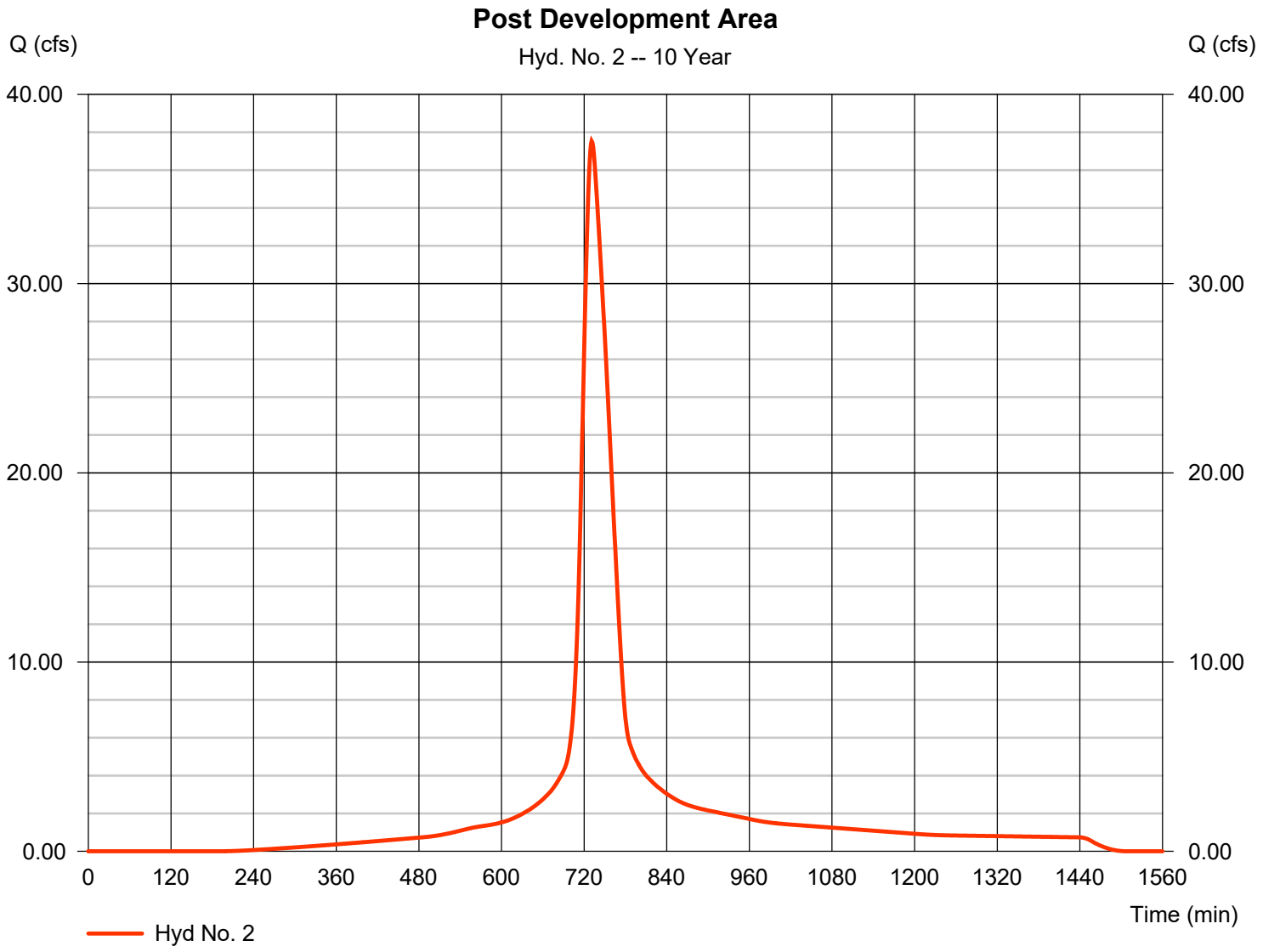
Hydrograph Report

Hyd. No. 2

Post Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	37.54 cfs
Storm frequency	=	10 yrs	Time to peak	=	731 min
Time interval	=	1 min	Hyd. volume	=	197,161 cuft
Drainage area	=	10.460 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.50 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(0.860 x 98) + (4.820 x 98) + (4.780 x 80)] / 10.460

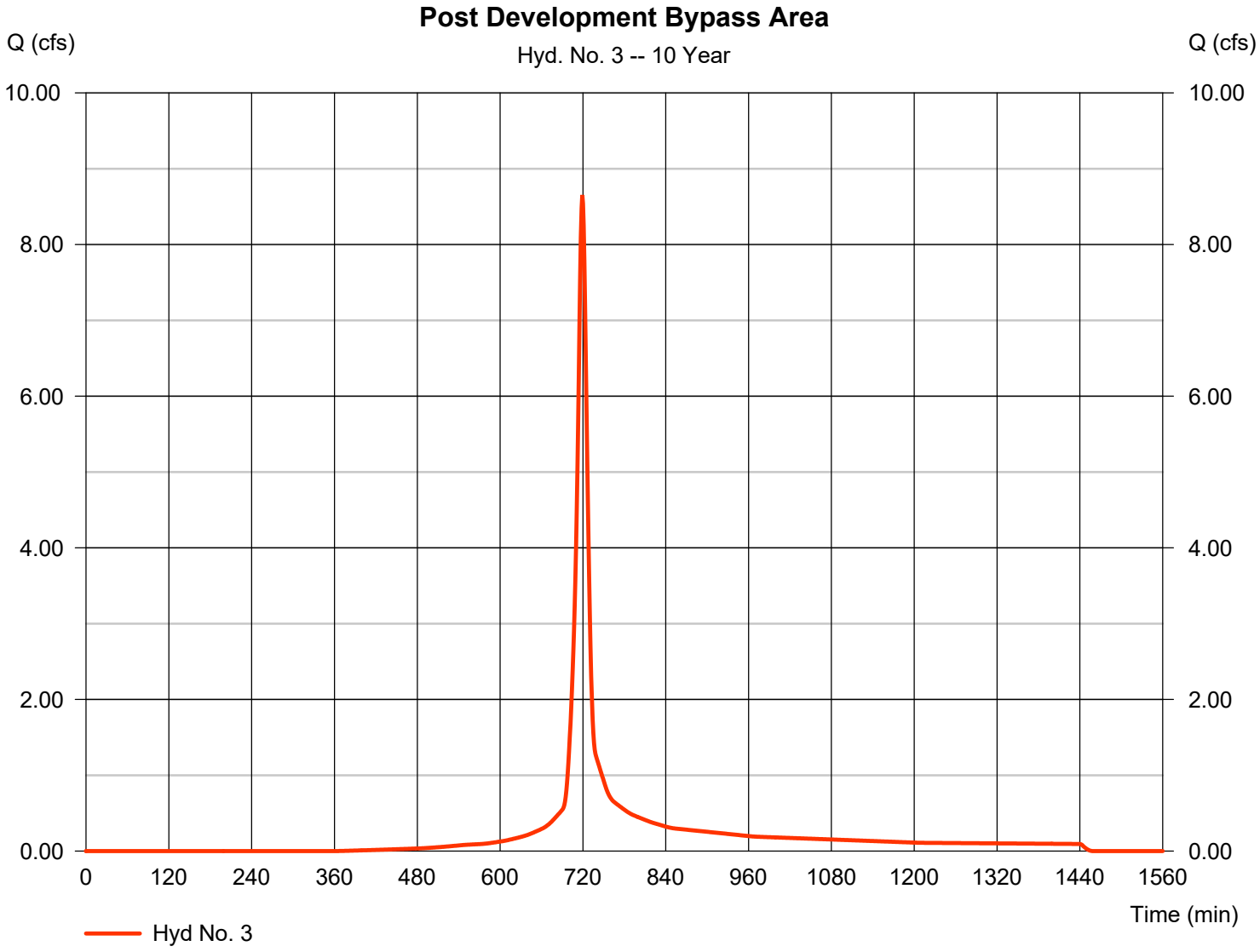


Hydrograph Report

Hyd. No. 3

Post Development Bypass Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.654 cfs
Storm frequency	=	10 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	21,595 cuft
Drainage area	=	1.450 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	8.00 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



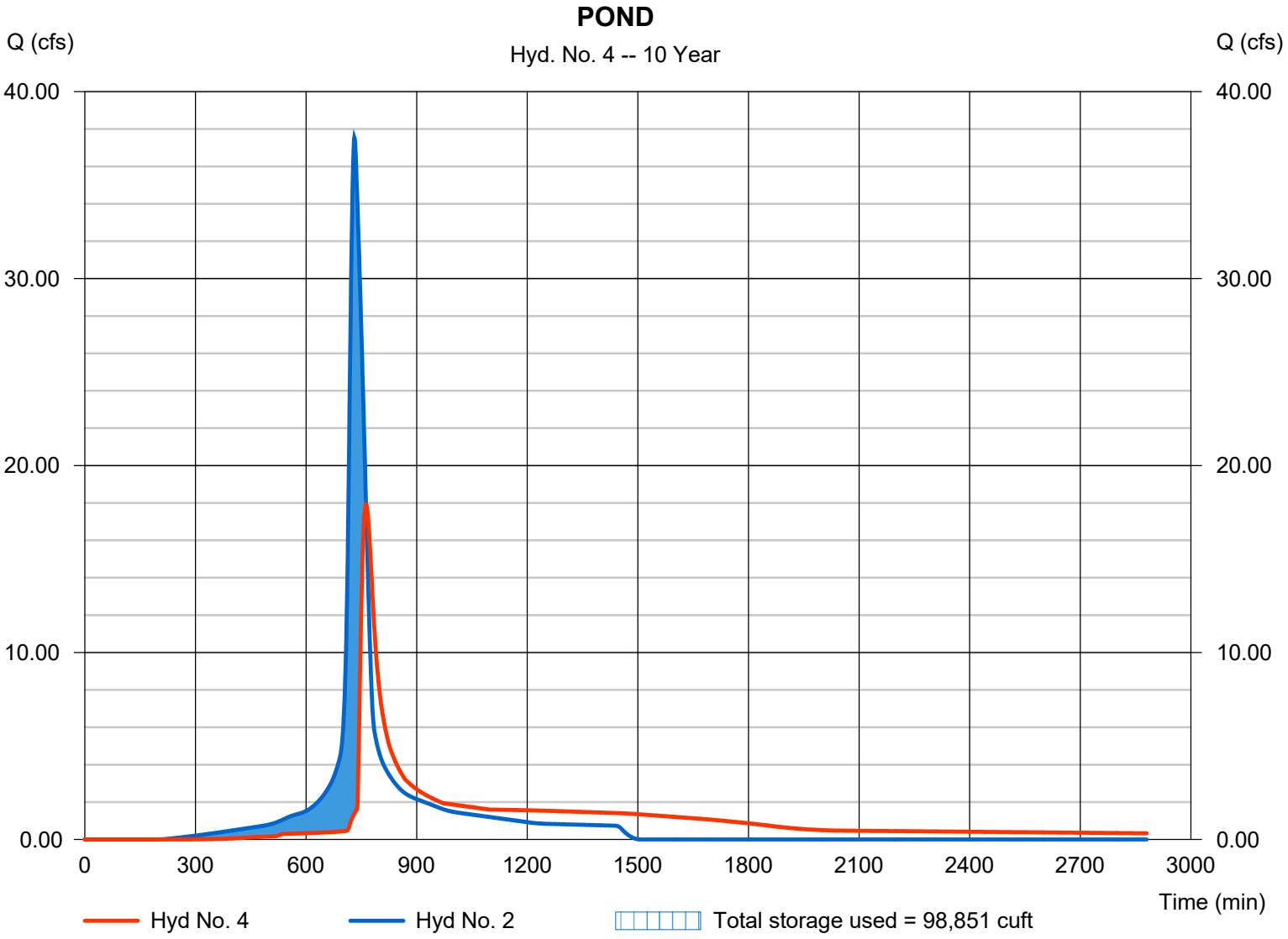
Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	=	Reservoir	Peak discharge	=	17.93 cfs
Storm frequency	=	10 yrs	Time to peak	=	763 min
Time interval	=	1 min	Hyd. volume	=	186,795 cuft
Inflow hyd. No.	=	2 - Post Development Area	Max. Elevation	=	16.96 ft
Reservoir name	=	Detention Pond	Max. Storage	=	98,851 cuft

Storage Indication method used.



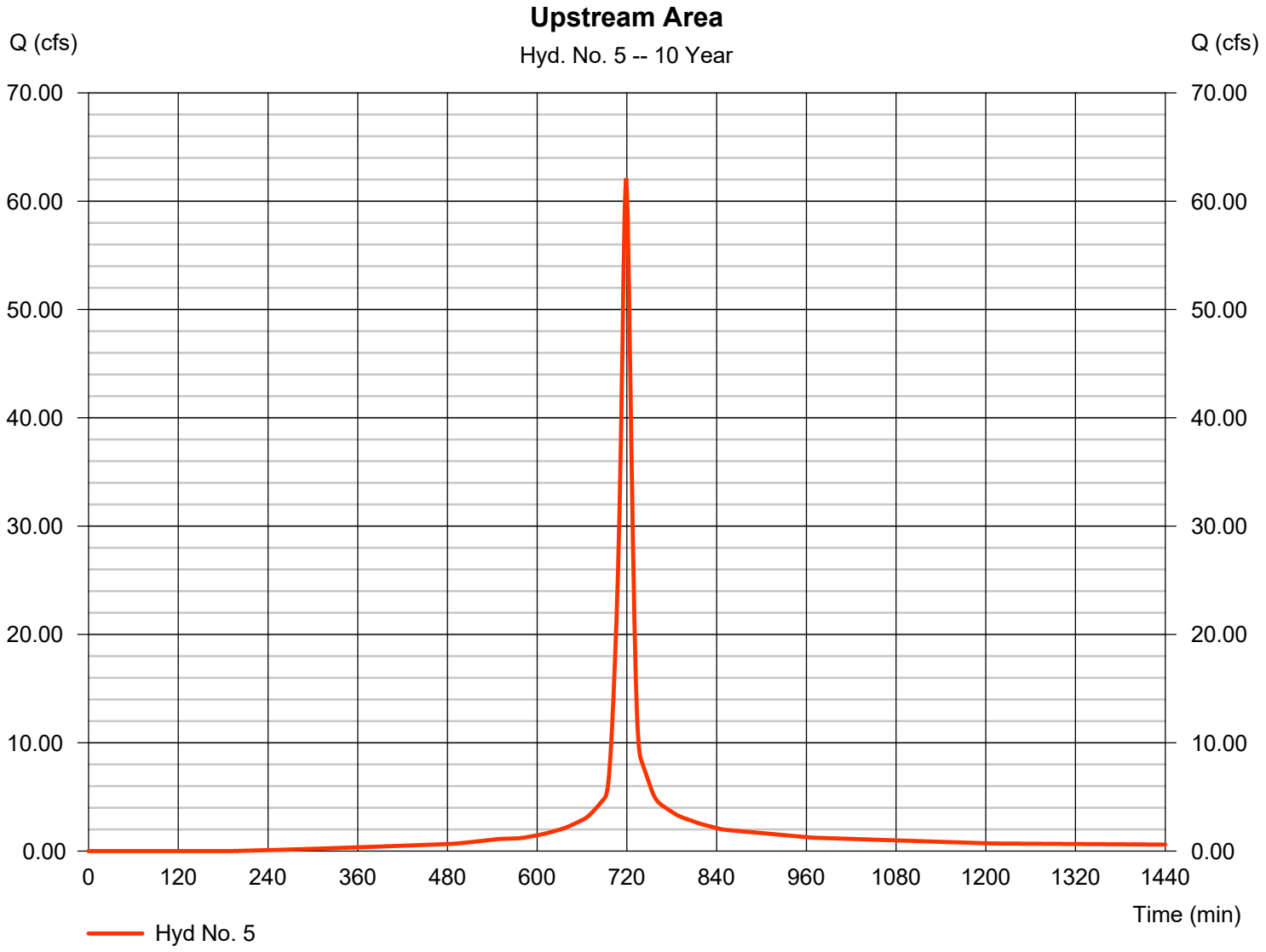
Hydrograph Report

Hyd. No. 5

Upstream Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	62.10 cfs
Storm frequency	=	10 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	163,233 cuft
Drainage area	=	8.660 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.70 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(1.630 x 98) + (6.790 x 89) + (0.360 x 83)] / 8.660



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

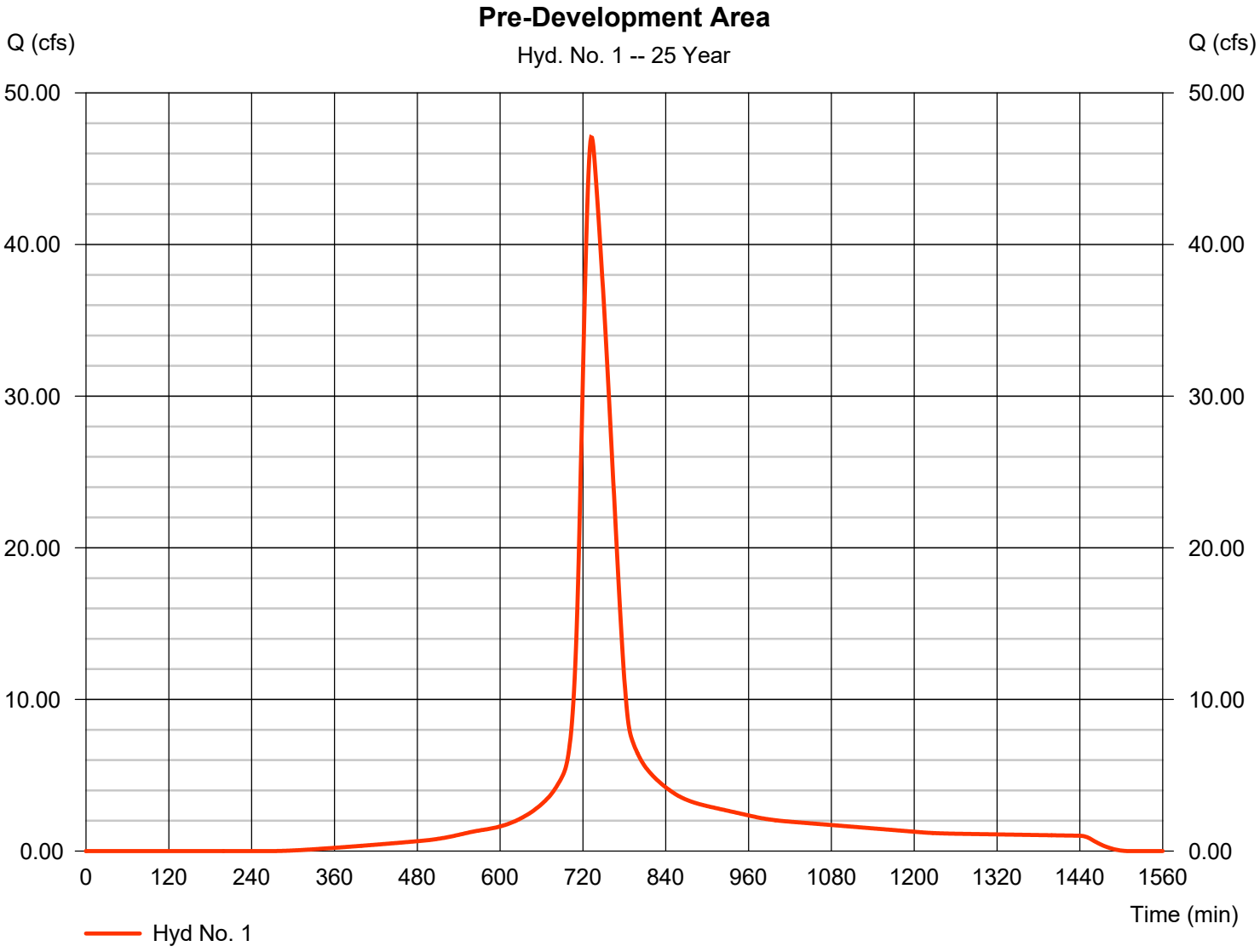
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	47.07	1	732	252,909	------	------	------	Pre-Development Area
2	SCS Runoff	47.72	1	731	253,436	------	------	------	Post Development Area
3	SCS Runoff	11.47	1	719	28,947	------	------	------	Post Development Bypass Area
4	Reservoir	29.94	1	755	241,899	2	17.28	109,253	POND
5	SCS Runoff	78.62	1	719	209,824	------	------	------	Upstream Area

Hydrograph Report

Hyd. No. 1

Pre-Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.07 cfs
Storm frequency	=	25 yrs	Time to peak	=	732 min
Time interval	=	1 min	Hyd. volume	=	252,909 cuft
Drainage area	=	11.910 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	29.60 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



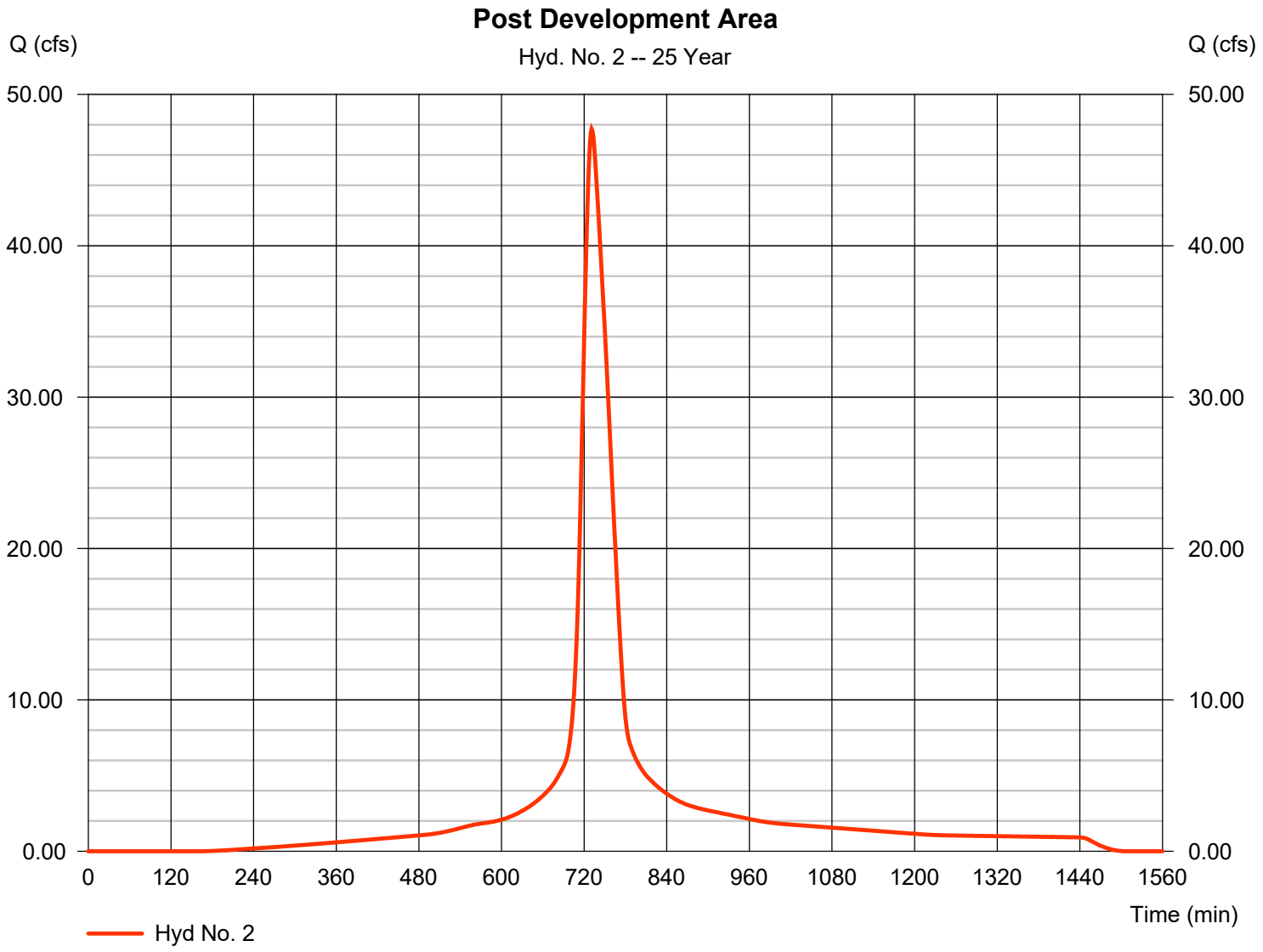
Hydrograph Report

Hyd. No. 2

Post Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	47.72 cfs
Storm frequency	=	25 yrs	Time to peak	=	731 min
Time interval	=	1 min	Hyd. volume	=	253,436 cuft
Drainage area	=	10.460 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.50 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(0.860 x 98) + (4.820 x 98) + (4.780 x 80)] / 10.460

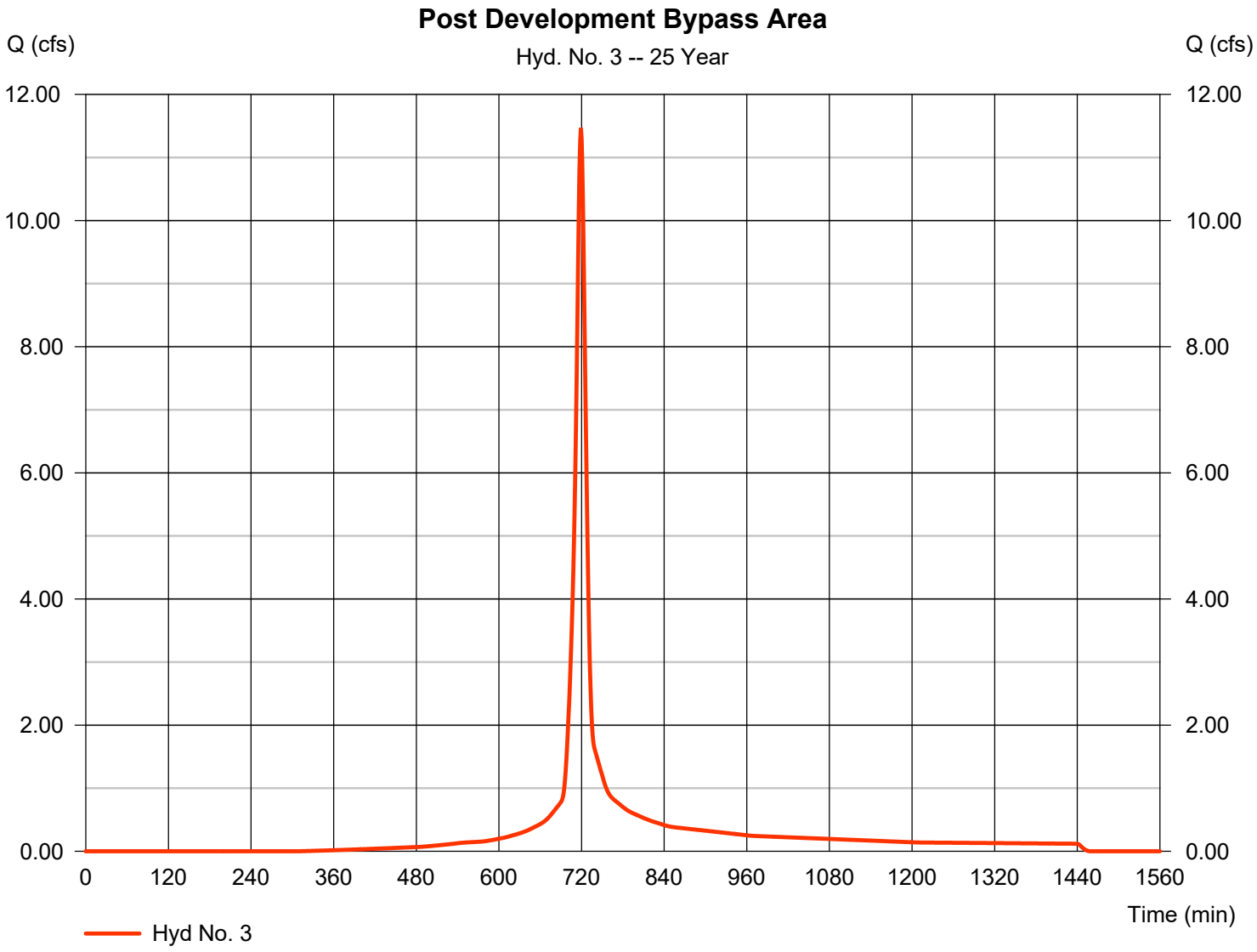


Hydrograph Report

Hyd. No. 3

Post Development Bypass Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	11.47 cfs
Storm frequency	=	25 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	28,947 cuft
Drainage area	=	1.450 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	8.00 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



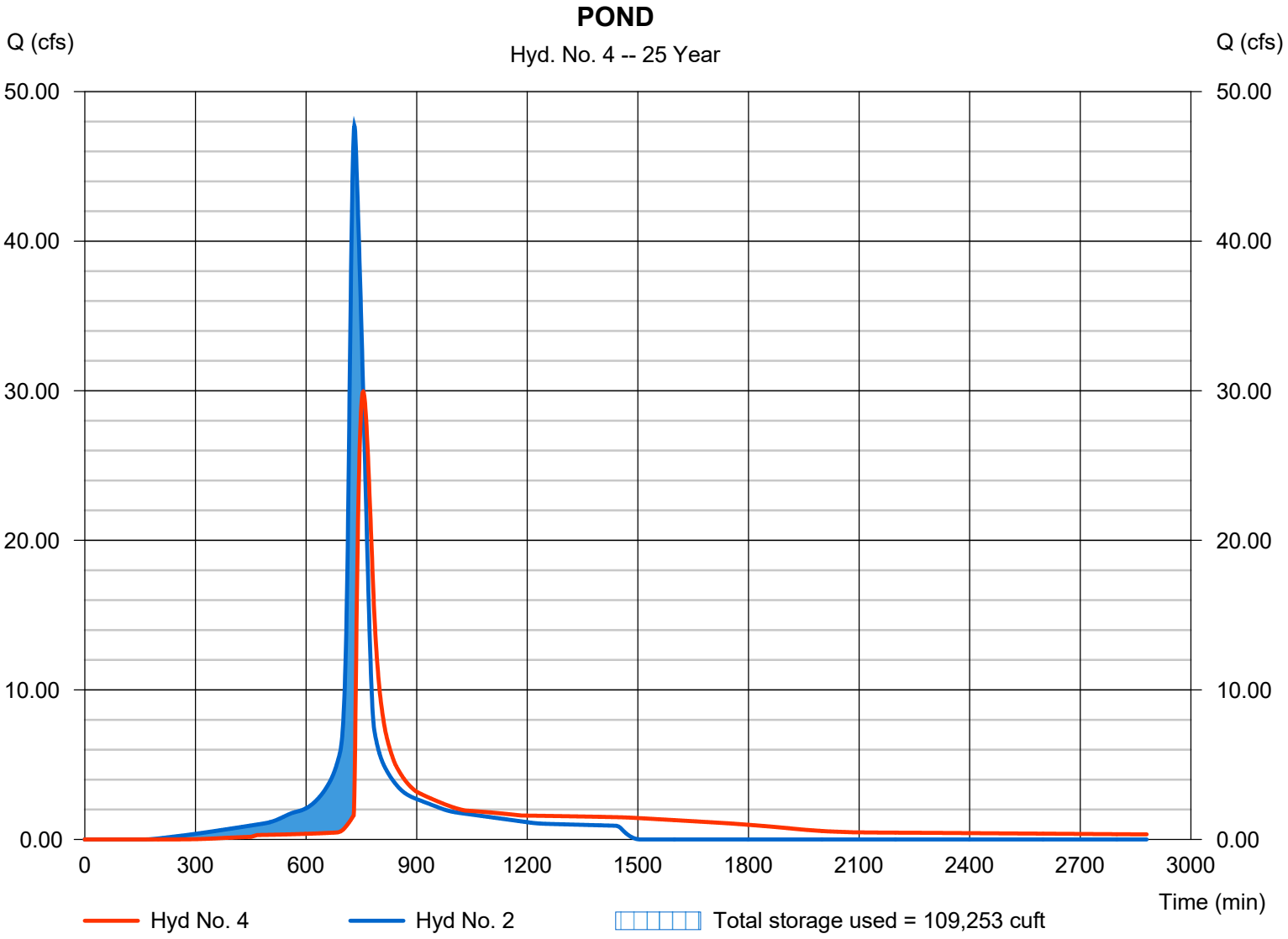
Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	=	Reservoir	Peak discharge	=	29.94 cfs
Storm frequency	=	25 yrs	Time to peak	=	755 min
Time interval	=	1 min	Hyd. volume	=	241,899 cuft
Inflow hyd. No.	=	2 - Post Development Area	Max. Elevation	=	17.28 ft
Reservoir name	=	Detention Pond	Max. Storage	=	109,253 cuft

Storage Indication method used.



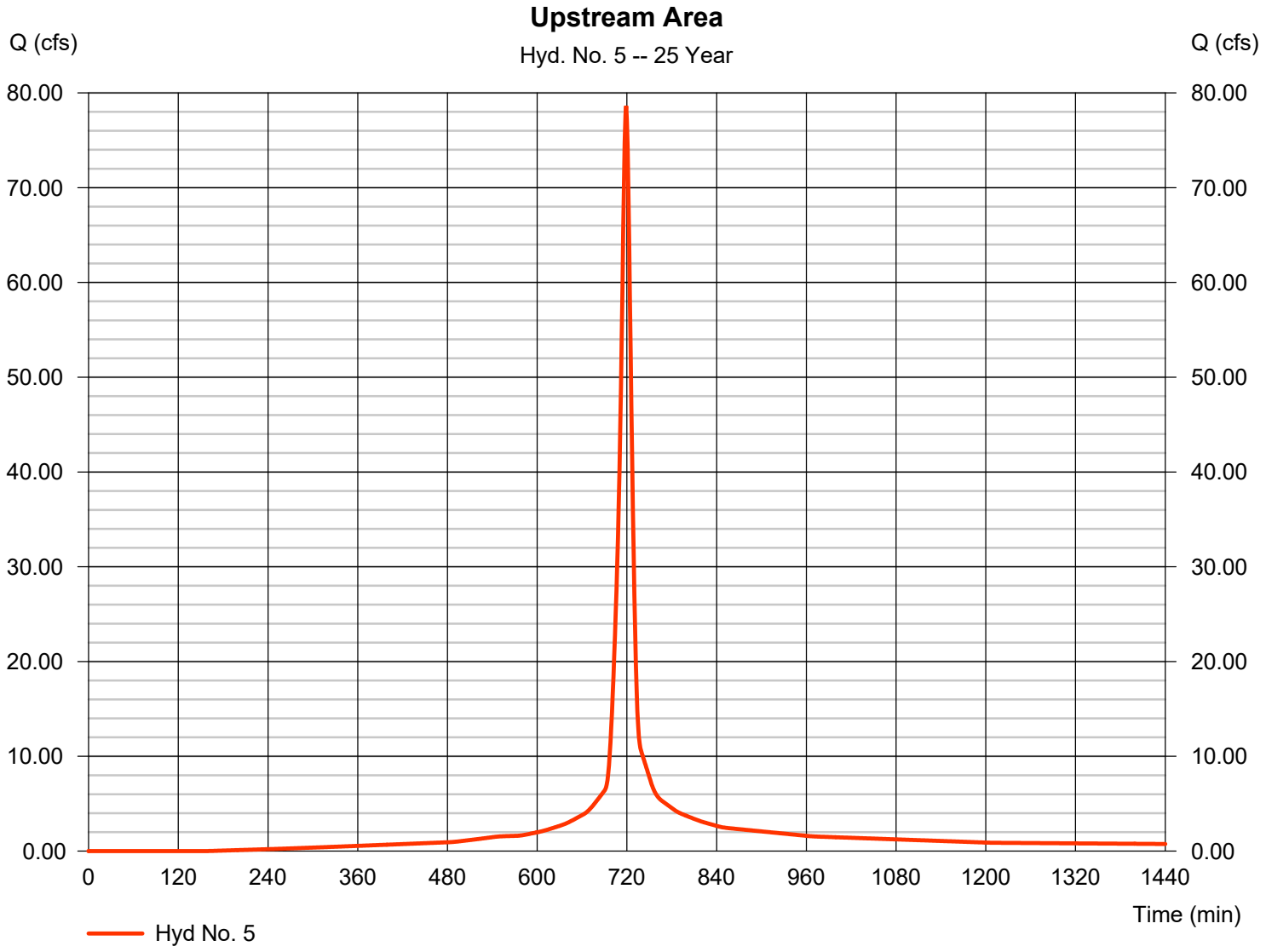
Hydrograph Report

Hyd. No. 5

Upstream Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	78.62 cfs
Storm frequency	=	25 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	209,824 cuft
Drainage area	=	8.660 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.70 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(1.630 x 98) + (6.790 x 89) + (0.360 x 83)] / 8.660



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

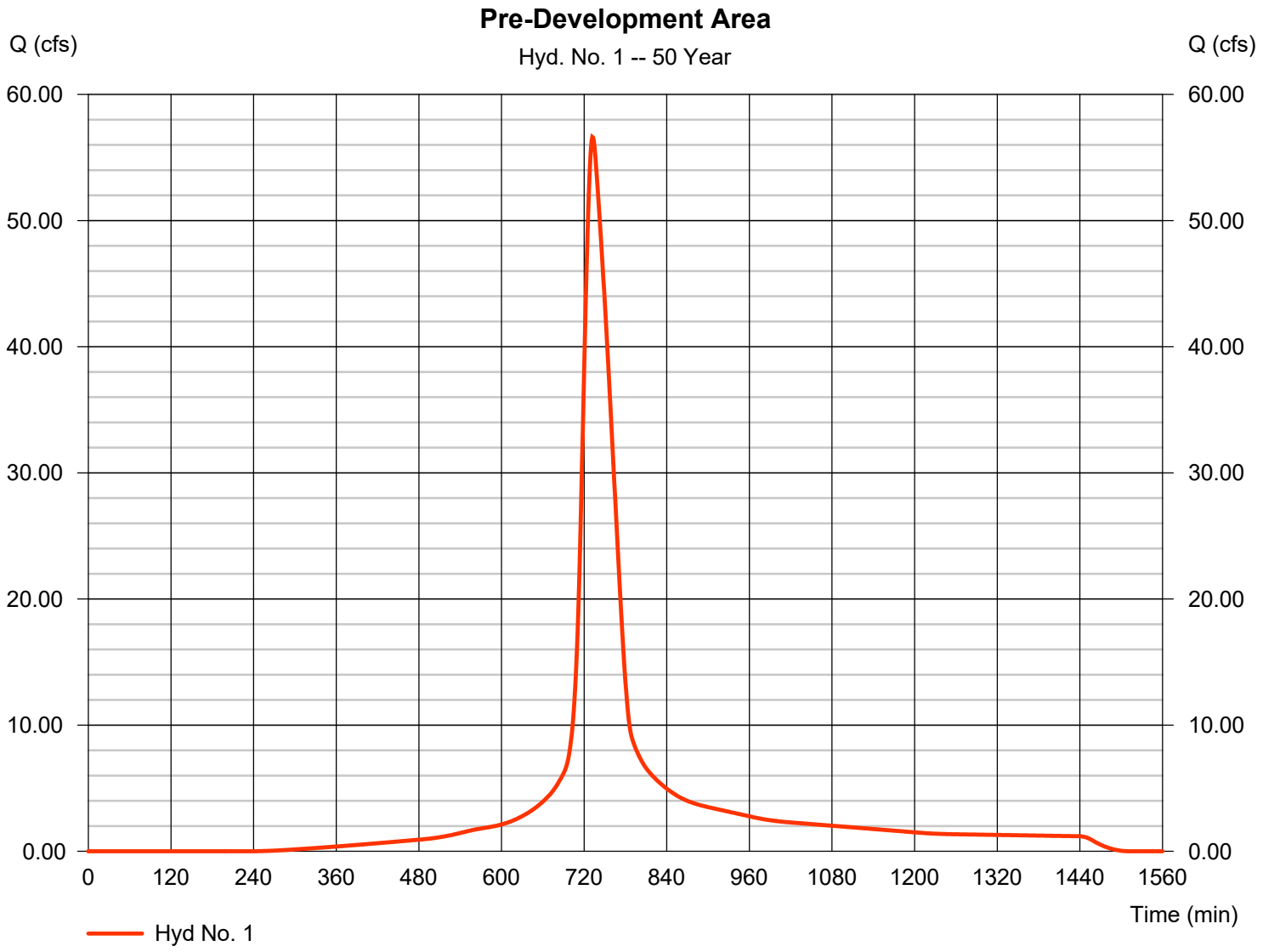
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	56.63	1	732	306,035	------	------	------	Pre-Development Area
2	SCS Runoff	56.30	1	731	301,403	------	------	------	Post Development Area
3	SCS Runoff	13.86	1	719	35,307	------	------	------	Post Development Bypass Area
4	Reservoir	39.88	1	751	289,075	2	17.51	116,863	POND
5	SCS Runoff	92.54	1	719	249,536	------	------	------	Upstream Area

Hydrograph Report

Hyd. No. 1

Pre-Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	56.63 cfs
Storm frequency	=	50 yrs	Time to peak	=	732 min
Time interval	=	1 min	Hyd. volume	=	306,035 cuft
Drainage area	=	11.910 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	29.60 min
Total precip.	=	9.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



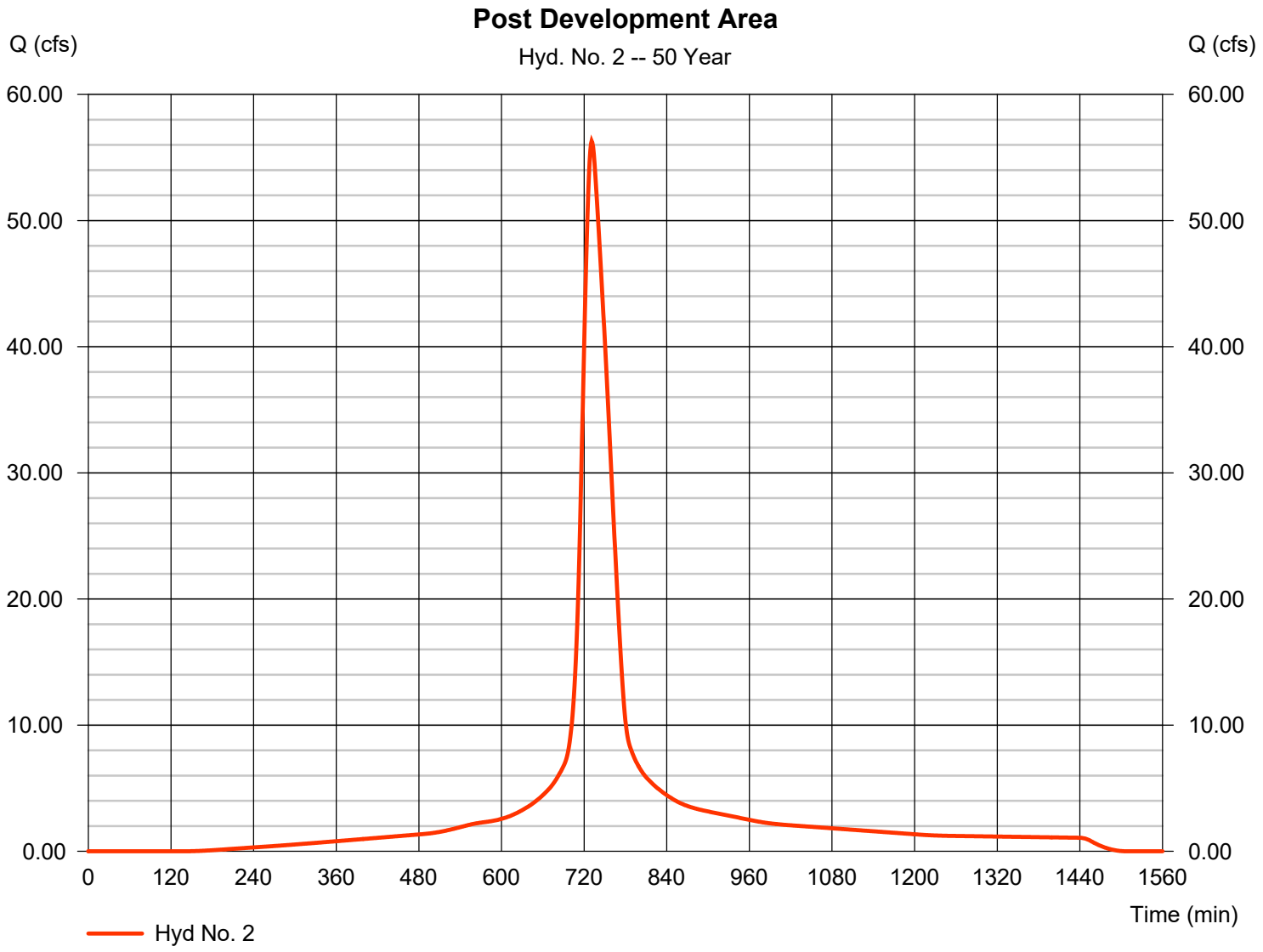
Hydrograph Report

Hyd. No. 2

Post Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	56.30 cfs
Storm frequency	=	50 yrs	Time to peak	=	731 min
Time interval	=	1 min	Hyd. volume	=	301,403 cuft
Drainage area	=	10.460 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.50 min
Total precip.	=	9.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(0.860 x 98) + (4.820 x 98) + (4.780 x 80)] / 10.460

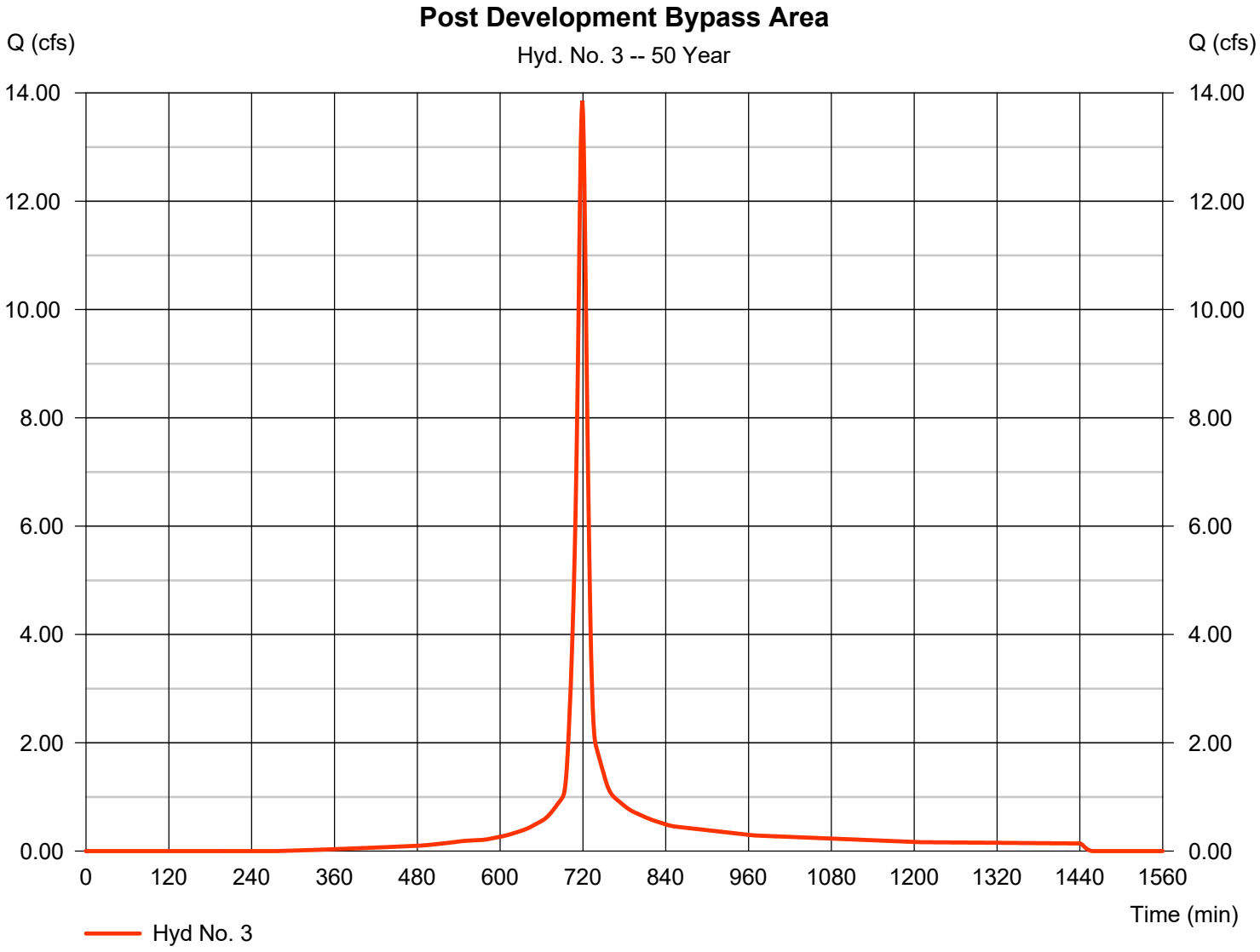


Hydrograph Report

Hyd. No. 3

Post Development Bypass Area

Hydrograph type	= SCS Runoff	Peak discharge	= 13.86 cfs
Storm frequency	= 50 yrs	Time to peak	= 719 min
Time interval	= 1 min	Hyd. volume	= 35,307 cuft
Drainage area	= 1.450 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 8.00 min
Total precip.	= 9.14 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 323



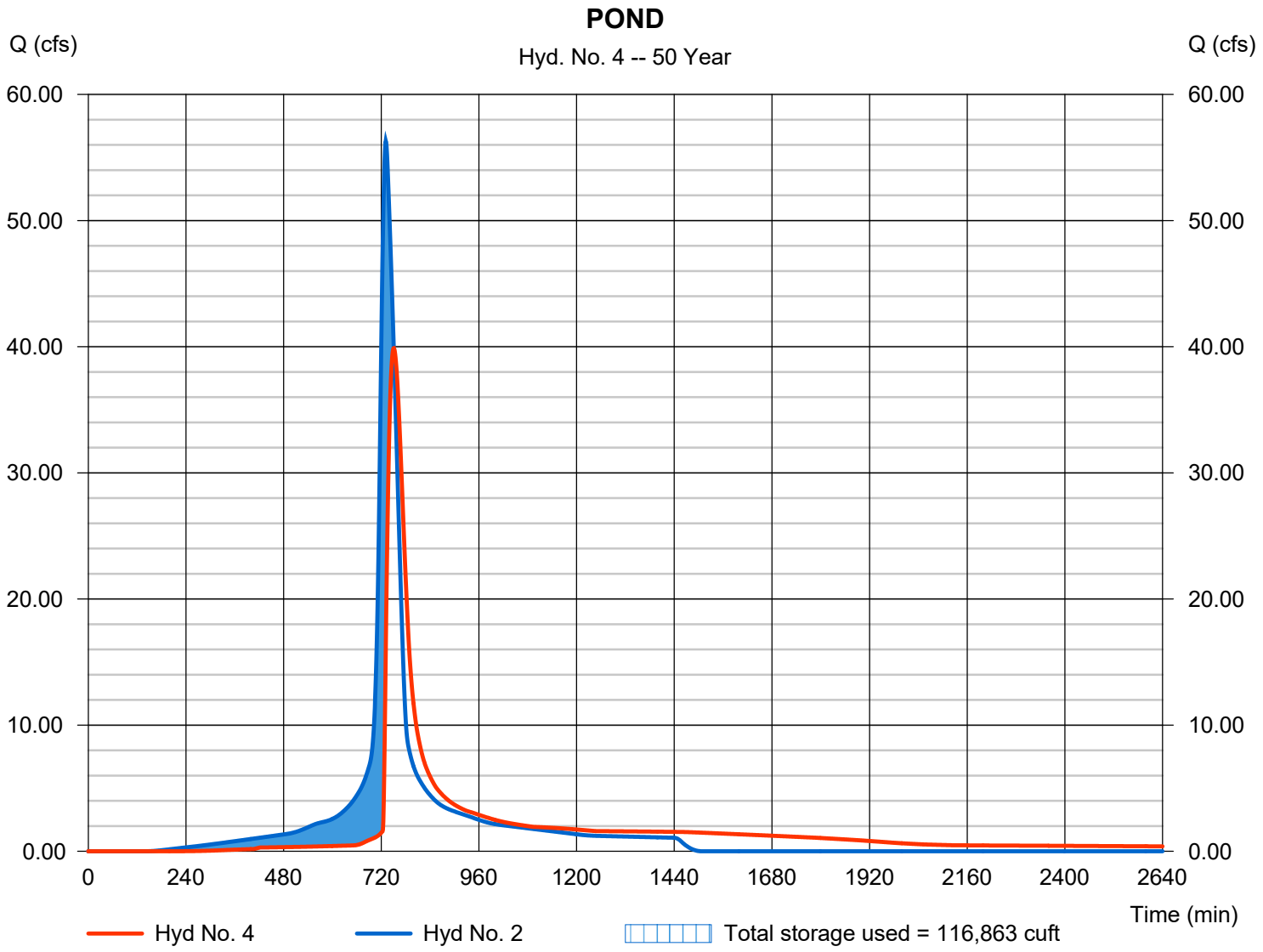
Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	=	Reservoir	Peak discharge	=	39.88 cfs
Storm frequency	=	50 yrs	Time to peak	=	751 min
Time interval	=	1 min	Hyd. volume	=	289,075 cuft
Inflow hyd. No.	=	2 - Post Development Area	Max. Elevation	=	17.51 ft
Reservoir name	=	Detention Pond	Max. Storage	=	116,863 cuft

Storage Indication method used.



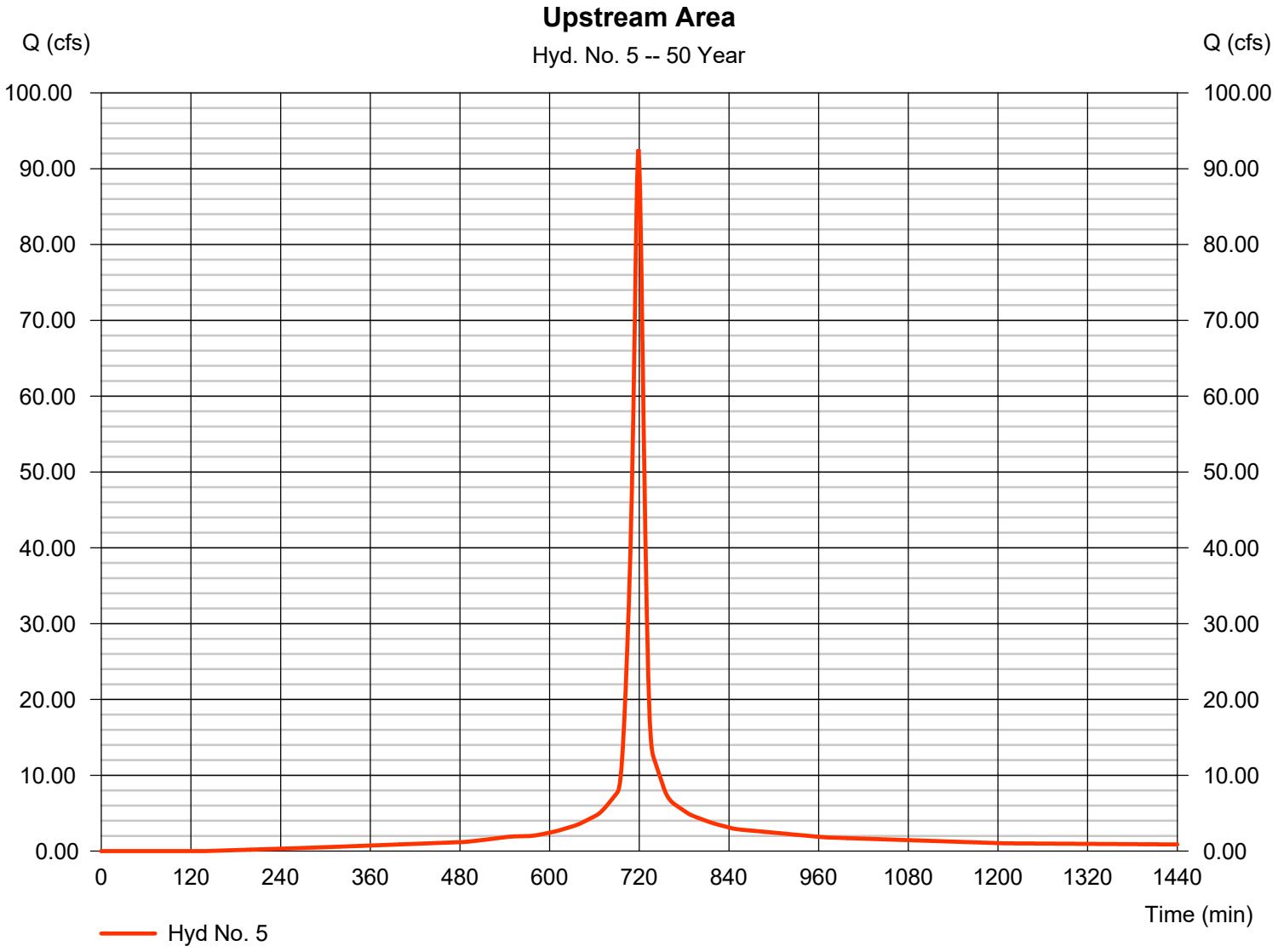
Hydrograph Report

Hyd. No. 5

Upstream Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	92.54 cfs
Storm frequency	=	50 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	249,536 cuft
Drainage area	=	8.660 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.70 min
Total precip.	=	9.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(1.630 x 98) + (6.790 x 89) + (0.360 x 83)] / 8.660



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

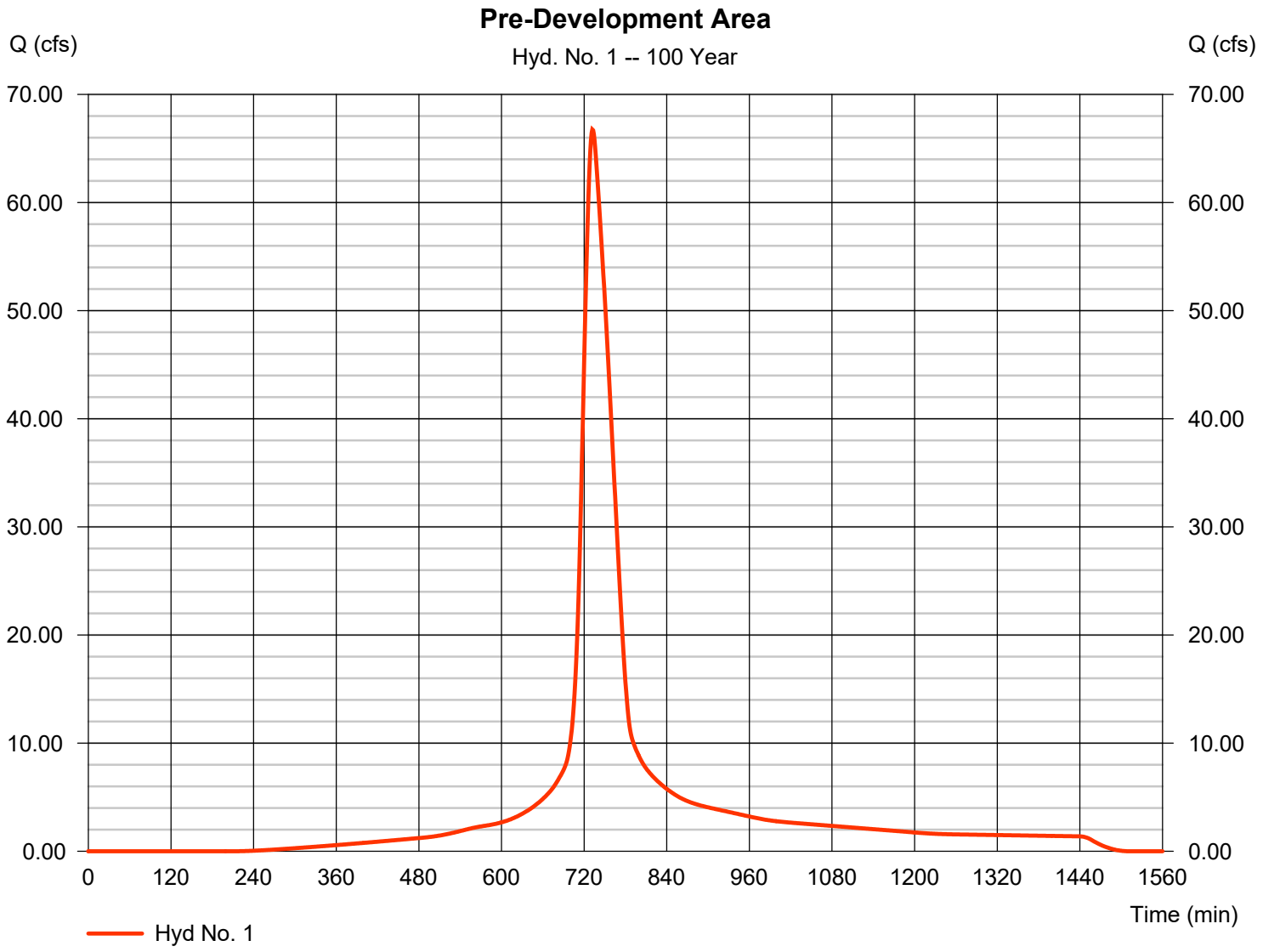
Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	66.76	1	732	363,006	------	------	------	Pre-Development Area
2	SCS Runoff	65.37	1	731	352,536	------	------	------	Post Development Area
3	SCS Runoff	16.39	1	719	42,152	------	------	------	Post Development Bypass Area
4	Reservoir	50.17	1	747	339,541	2	17.73	124,059	POND
5	SCS Runoff	107.26	1	719	291,870	------	------	------	Upstream Area

Hydrograph Report

Hyd. No. 1

Pre-Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	66.76 cfs
Storm frequency	=	100 yrs	Time to peak	=	732 min
Time interval	=	1 min	Hyd. volume	=	363,006 cuft
Drainage area	=	11.910 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	29.60 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



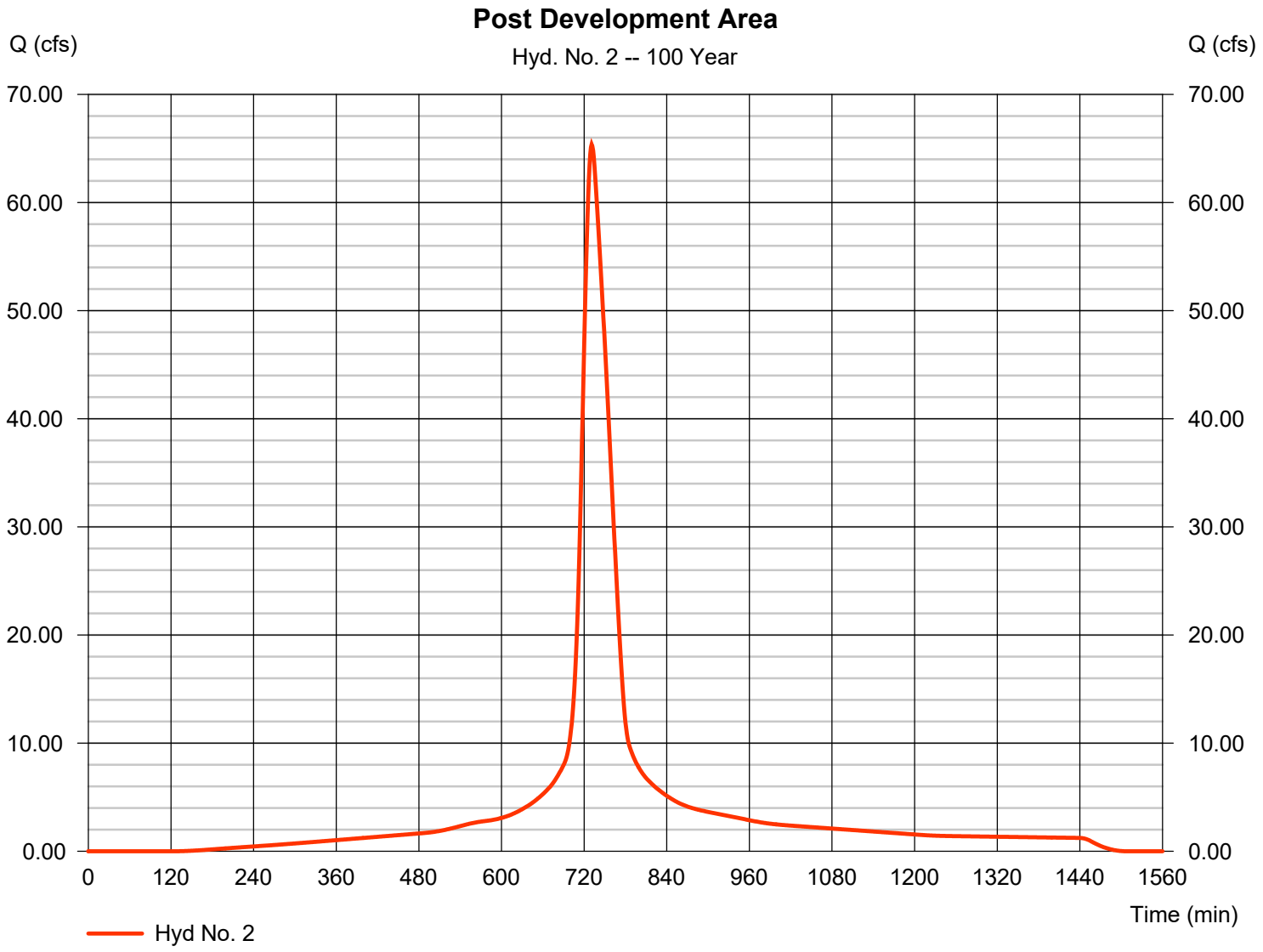
Hydrograph Report

Hyd. No. 2

Post Development Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	65.37 cfs
Storm frequency	=	100 yrs	Time to peak	=	731 min
Time interval	=	1 min	Hyd. volume	=	352,536 cuft
Drainage area	=	10.460 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	28.50 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(0.860 x 98) + (4.820 x 98) + (4.780 x 80)] / 10.460

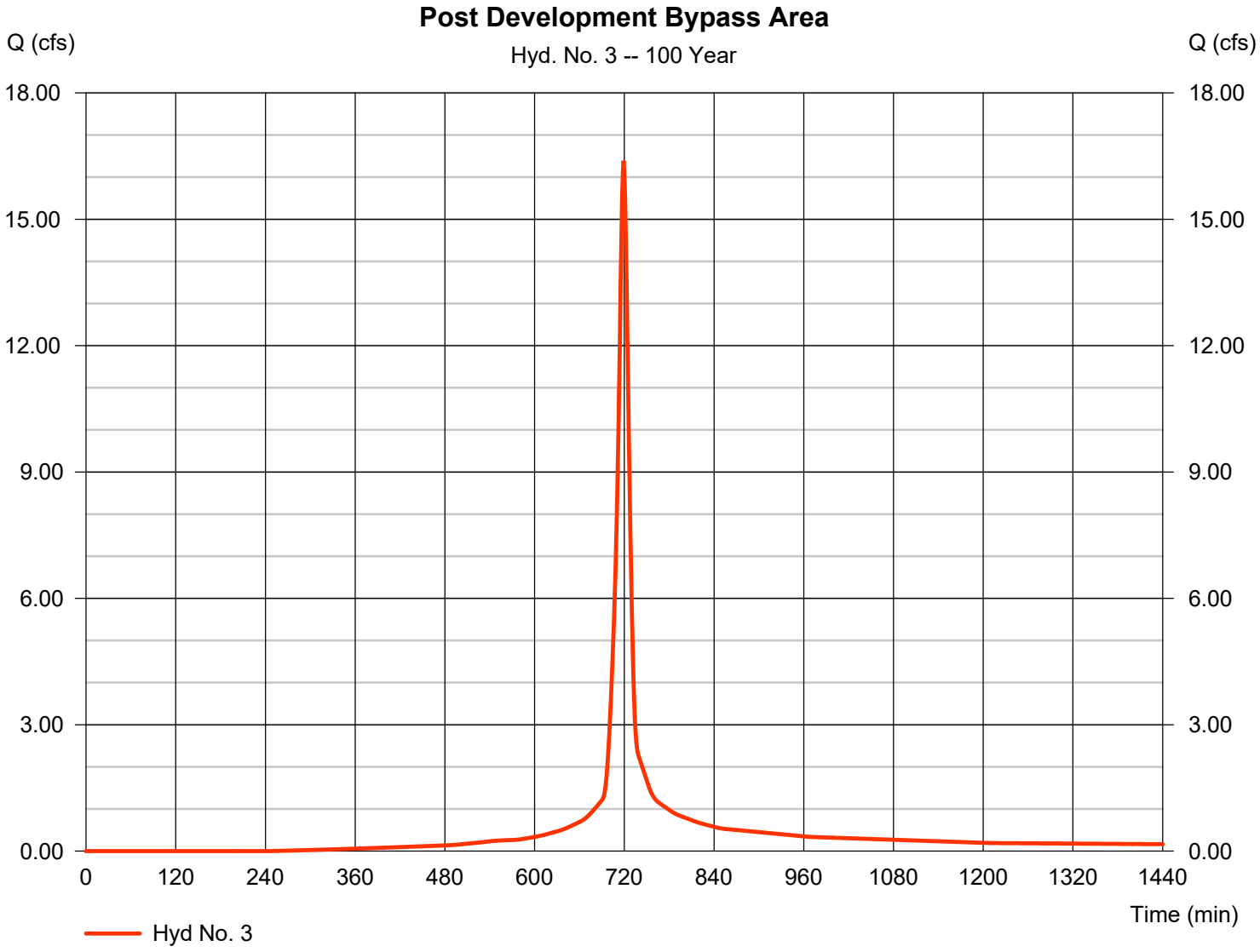


Hydrograph Report

Hyd. No. 3

Post Development Bypass Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	16.39 cfs
Storm frequency	=	100 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	42,152 cuft
Drainage area	=	1.450 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	8.00 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



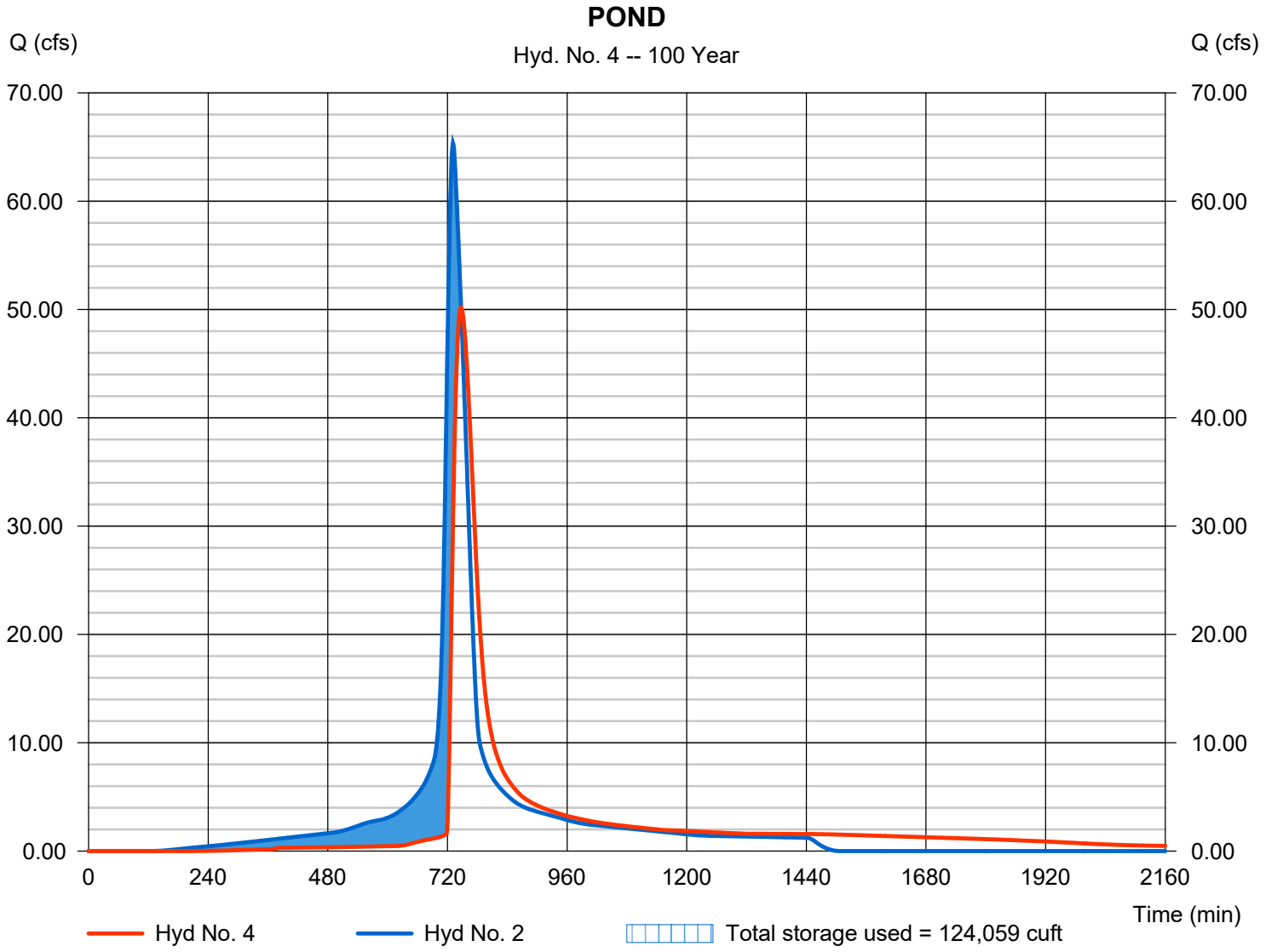
Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	=	Reservoir	Peak discharge	=	50.17 cfs
Storm frequency	=	100 yrs	Time to peak	=	747 min
Time interval	=	1 min	Hyd. volume	=	339,541 cuft
Inflow hyd. No.	=	2 - Post Development Area	Max. Elevation	=	17.73 ft
Reservoir name	=	Detention Pond	Max. Storage	=	124,059 cuft

Storage Indication method used.



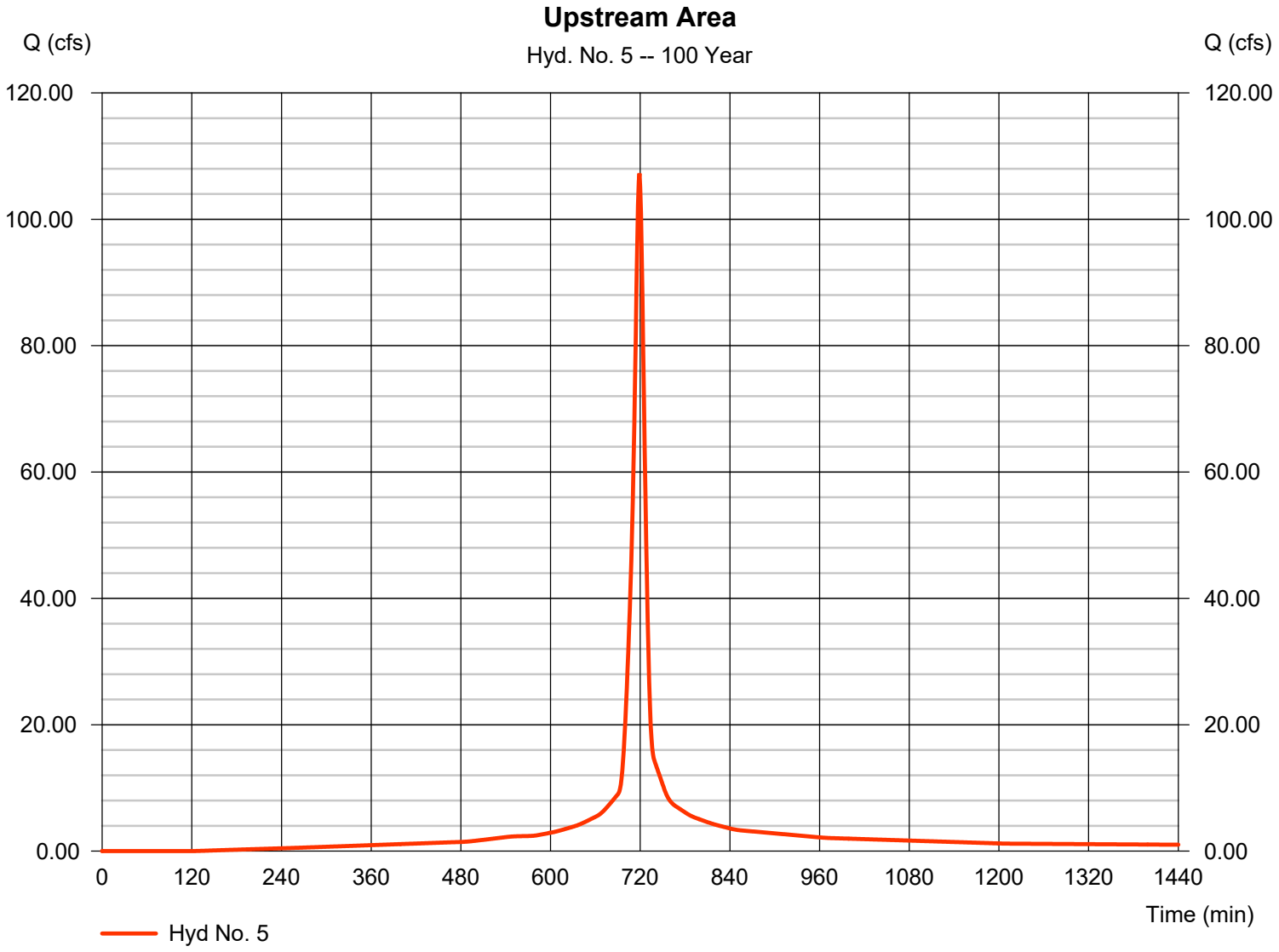
Hydrograph Report

Hyd. No. 5

Upstream Area

Hydrograph type	=	SCS Runoff	Peak discharge	=	107.26 cfs
Storm frequency	=	100 yrs	Time to peak	=	719 min
Time interval	=	1 min	Hyd. volume	=	291,870 cuft
Drainage area	=	8.660 ac	Curve number	=	90*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.70 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(1.630 x 98) + (6.790 x 89) + (0.360 x 83)] / 8.660



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	51.2637	12.6000	0.7740	--------
2	120.2653	20.2000	0.9136	--------
3	0.0000	0.0000	0.0000	--------
5	121.9171	22.7001	0.8638	--------
10	125.9155	24.0001	0.8397	--------
25	162.4312	27.7001	0.8539	--------
50	197.6749	30.4001	0.8682	--------
100	220.3055	32.0001	0.8675	--------

File name: Savannah.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	5.57	4.59	3.93	3.46	3.10	2.81	2.58	2.39	2.22	2.09	1.97	1.86
2	6.31	5.35	4.65	4.12	3.70	3.36	3.08	2.85	2.65	2.47	2.32	2.19
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.92	6.00	5.30	4.76	4.33	3.97	3.67	3.42	3.20	3.01	2.84	2.69
10	7.45	6.52	5.81	5.25	4.80	4.42	4.10	3.83	3.60	3.39	3.21	3.05
25	8.27	7.32	6.58	5.99	5.50	5.09	4.74	4.44	4.18	3.95	3.74	3.56
50	8.94	7.97	7.20	6.58	6.06	5.62	5.25	4.92	4.64	4.38	4.16	3.96
100	9.61	8.61	7.81	7.15	6.60	6.14	5.74	5.39	5.09	4.82	4.58	4.36

Tc = time in minutes. Values may exceed 60.

Precip. file name: H:\Hydrology\Port Wentworth.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	3.60	4.27	0.00	5.35	6.35	7.86	9.14	10.50
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydraflow Table of Contents

Watershed Model Schematic **1**

Hydrograph Return Period Recap **2**

1 - Year

Summary Report **3**
Hydrograph Reports **4**
Hydrograph No. 1, SCS Runoff, Pre-Development Area 4
TR-55 Tc Worksheet 5
Hydrograph No. 2, SCS Runoff, Post Development Area 6
TR-55 Tc Worksheet 7
Hydrograph No. 3, SCS Runoff, Post Development Bypass Area 8
Hydrograph No. 4, Reservoir, POND 9
Pond Report - Detention Pond 10
Hydrograph No. 5, SCS Runoff, Upstream Area 11

10 - Year

Summary Report **12**
Hydrograph Reports **13**
Hydrograph No. 1, SCS Runoff, Pre-Development Area 13
Hydrograph No. 2, SCS Runoff, Post Development Area 14
Hydrograph No. 3, SCS Runoff, Post Development Bypass Area 15
Hydrograph No. 4, Reservoir, POND 16
Hydrograph No. 5, SCS Runoff, Upstream Area 17

25 - Year

Summary Report **18**
Hydrograph Reports **19**
Hydrograph No. 1, SCS Runoff, Pre-Development Area 19
Hydrograph No. 2, SCS Runoff, Post Development Area 20
Hydrograph No. 3, SCS Runoff, Post Development Bypass Area 21
Hydrograph No. 4, Reservoir, POND 22
Hydrograph No. 5, SCS Runoff, Upstream Area 23

50 - Year

Summary Report **24**
Hydrograph Reports **25**
Hydrograph No. 1, SCS Runoff, Pre-Development Area 25
Hydrograph No. 2, SCS Runoff, Post Development Area 26
Hydrograph No. 3, SCS Runoff, Post Development Bypass Area 27
Hydrograph No. 4, Reservoir, POND 28
Hydrograph No. 5, SCS Runoff, Upstream Area 29

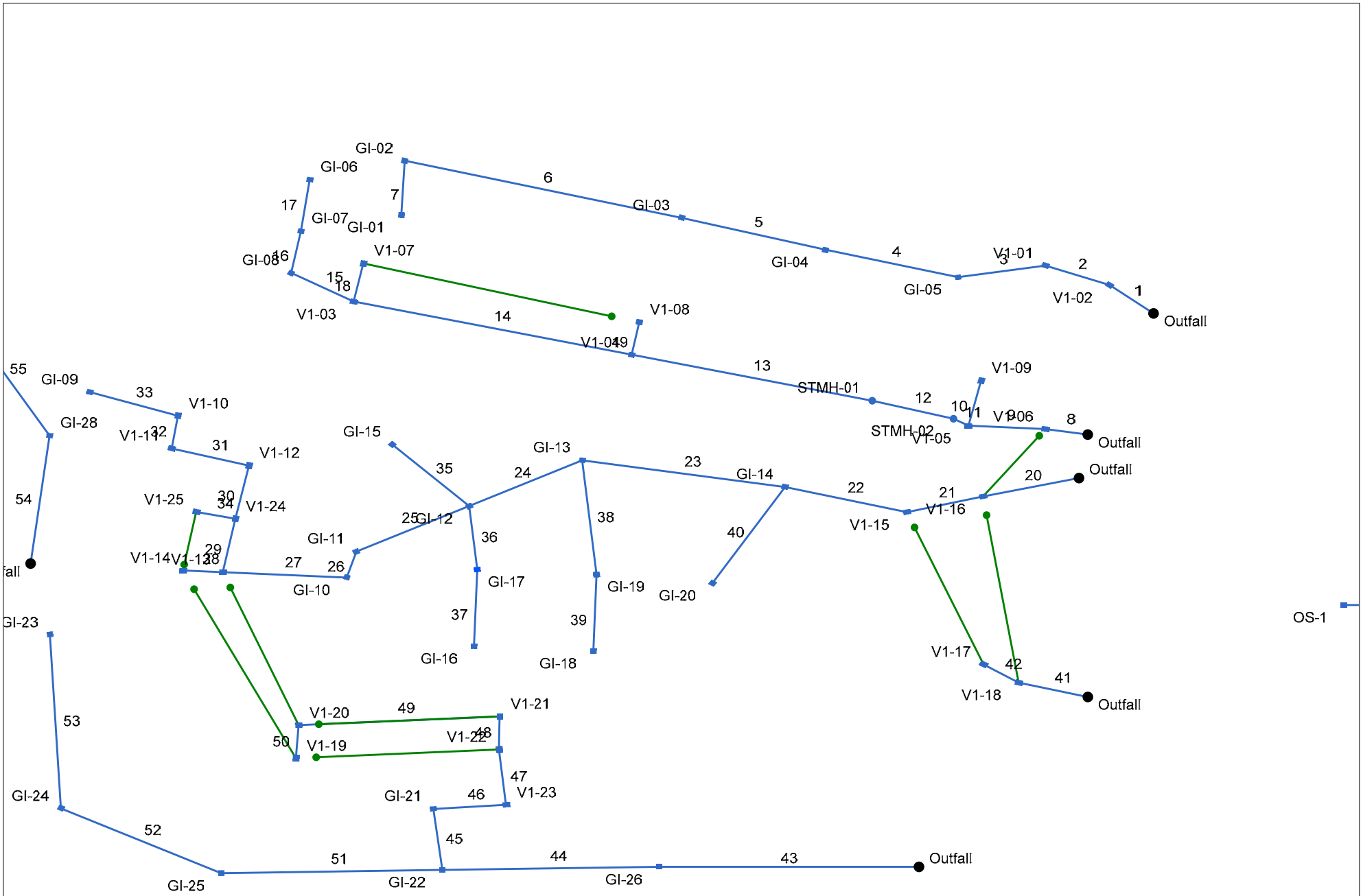
100 - Year

Summary Report **30**
Hydrograph Reports **31**
Hydrograph No. 1, SCS Runoff, Pre-Development Area 31
Hydrograph No. 2, SCS Runoff, Post Development Area 32

Hydrograph No. 3, SCS Runoff, Post Development Bypass Area..... 33
Hydrograph No. 4, Reservoir, POND..... 34
Hydrograph No. 5, SCS Runoff, Upstream Area..... 35

IDF Report..... 36

Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Jasper Village Phase 2.stm	Number of lines: 56	Date: 3/31/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	V1-02	Grate	17.68	Rect	5.00	4.00	18	Cir	14.18	18	Cir	14.18
2	V1-01	Grate	18.09	Rect	5.00	4.00	18	Cir	14.59	18	Cir	14.59
3	GI-05	Grate	18.50	Rect	4.00	4.00	18	Cir	14.74	18	Cir	14.74
4	GI-04	Grate	18.25	Rect	4.00	4.00	18	Cir	14.98	18	Cir	14.98
5	GI-03	Grate	19.00	Rect	4.00	4.00	18	Cir	15.33	18	Cir	15.33
6	GI-02	Grate	19.50	Rect	4.00	4.00	18	Cir	16.33	18	Cir	16.33
7	GI-01	Grate	20.20	Rect	4.00	4.00	18	Cir	17.03			
8	V1-06	Grate	18.85	Rect	5.00	4.00	24	Cir	14.23	24	Cir	14.23
9	V1-05	Grate	19.00	Rect	5.00	4.00	24	Cir	14.37	18 24	Cir Cir	15.56 14.37
10	V1-09	Grate	19.08	Rect	5.00	4.00	18	Cir	15.75			
11	STMH-02	Manhole	19.64	Cir	4.00	4.00	24	Cir	14.40	24	Cir	14.40
12	STMH-01	Manhole	20.10	Cir	4.00	4.00	24	Cir	14.55	24	Cir	14.55
13	V1-04	Grate	19.06	Rect	4.00	4.00	24	Cir	14.98	18 18	Cir Cir	15.50 15.67
14	V1-03	Grate	19.78	Rect	5.00	4.00	18	Cir	16.00	18 18	Cir Cir	16.28 16.37
15	GI-08	Grate	19.85	Rect	4.00	4.00	18	Cir	16.63	18	Cir	16.63
16	GI-07	Grate	20.00	Rect	4.00	4.00	18	Cir	16.72	18	Cir	16.72
17	GI-06	Grate	20.00	Rect	4.00	4.00	18	Cir	16.83			
18	V1-07	Grate	20.08	Rect	5.00	4.00	18	Cir	16.53			
19	V1-08	Grate	19.06	Rect	4.00	4.00	18	Cir	15.81			
20	V1-16	Grate	19.59	Rect	5.00	4.00	42	Cir	12.17	42	Cir	12.17
21	V1-15	Grate	19.43	Rect	5.00	4.00	42	Cir	12.31	42	Cir	12.31

Project File: Jasper Village Phase 2.stm | Number of Structures: 56 | Run Date: 3/31/2022

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
22	GI-14	Grate	19.50	Rect	4.00	4.00	42	Cir	12.53	36 18	Cir Cir	12.53 15.85
23	GI-13	Grate	19.25	Rect	4.00	4.00	36	Cir	12.89	36 18	Cir Cir	12.89 16.08
24	GI-12	Grate	19.50	Rect	4.00	4.00	36	Cir	13.11	36 18 18	Cir Cir Cir	13.11 16.46 16.33
25	GI-11	Grate	19.50	Rect	4.00	4.00	36	Cir	13.33	30	Cir	13.33
26	GI-10	Grate	21.07	Rect	4.00	4.00	30	Cir	13.39	30	Cir	13.39
27	V1-13	Grate	18.72	Rect	5.00	4.00	30	Cir	13.61	18 24	Cir Cir	15.14 14.64
28	V1-14	Grate	18.71	Rect	5.00	4.00	18	Cir	15.21			
29	V1-24	Grate	18.91	Rect	5.00	4.00	24	Cir	14.76	24 18	Cir Cir	14.83 15.34
30	V1-12	Grate	19.49	Rect	5.00	4.00	24	Cir	14.95	24	Cir	14.95
31	V1-11	Grate	19.45	Rect	5.00	4.00	24	Cir	15.37	18	Cir	15.88
32	V1-10	Grate	19.45	Rect	5.00	4.00	18	Cir	15.95	18	Cir	15.95
33	GI-09	Grate	19.70	Rect	4.00	4.00	18	Cir	16.53			
34	V1-25	Grate	18.91	Rect	5.00	4.00	18	Cir	15.41			
35	GI-15	Grate	20.00	Rect	4.00	4.00	18	Cir	16.83			
36	GI-17	Grate	21.90	Rect	4.00	4.00	18	Cir	18.40	18	Cir	18.40
37	GI-16	Grate	21.90	Rect	4.00	4.00	18	Cir	18.73			
38	GI-19	Grate	22.25	Rect	4.00	4.00	18	Cir	18.75	18	Cir	18.75
39	GI-18	Grate	22.25	Rect	4.00	4.00	18	Cir	19.08			
40	GI-20	Grate	19.50	Rect	4.00	4.00	18	Cir	16.33			
41	V1-18	Grate	21.09	Rect	5.00	4.00	18	Cir	17.61	18	Cir	17.61

Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
42	V1-17	Grate	21.00	Rect	5.00	4.00	18	Cir	17.75			
43	GI-26	Grate	21.75	Rect	4.00	4.00	24	Cir	14.38	24	Cir	14.38
44	GI-22	Grate	20.75	Rect	4.00	4.00	24	Cir	14.76	18 18	Cir Cir	16.55 14.76
45	GI-21	Grate	21.85	Rect	4.00	4.00	18	Cir	16.68	18	Cir	16.68
46	V1-23	Grate	21.68	Rect	5.00	4.00	18	Cir	16.81	18	Cir	16.81
47	V1-22	Grate	21.94	Rect	5.00	4.00	18	Cir	16.93	18	Cir	16.93
48	V1-21	Grate	21.93	Rect	5.00	4.00	18	Cir	17.00	18	Cir	17.00
49	V1-20	Grate	20.82	Rect	5.00	4.00	18	Cir	17.35	18	Cir	17.35
50	V1-19	Grate	20.74	Rect	5.00	4.00	18	Cir	17.49			
51	GI-25	Grate	19.75	Rect	4.00	4.00	18	Cir	15.15	18	Cir	15.15
52	GI-24	Grate	19.00	Rect	4.00	4.00	18	Cir	15.46	18	Cir	15.46
53	GI-23	Grate	19.00	Rect	4.00	4.00	18	Cir	15.83			
54	GI-28	Grate	20.43	Rect	4.00	4.00	18	Cir	17.10	18	Cir	17.10
55	GI-27	Grate	20.50	Rect	4.00	4.00	18	Cir	17.50			
56	OS-1	Generic	19.00	Rect	4.00	4.00	36	Cir	12.00			

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	Link-21	4.45	18	Cir	39.000	14.08	14.18	0.256	17.28*	17.35*	0.05	17.40	End	Grate
2	north2	3.93	18	Cir	48.000	14.18	14.59	0.854	17.40*	17.47*	0.06	17.53	1	Grate
3	north3	3.57	18	Cir	62.000	14.59	14.74	0.242	17.53*	17.60*	0.04	17.65	2	Grate
4	north4	3.22	18	Cir	96.000	14.74	14.98	0.250	17.65*	17.74*	0.03	17.76	3	Grate
5	north5	2.50	18	Cir	104.000	14.98	15.33	0.337	17.76*	17.82*	0.02	17.84	4	Grate
6	north6	1.44	18	Cir	200.000	15.33	16.33	0.500	17.84*	17.88*	0.02	17.89	5	Grate
7	north7	0.36	18	Cir	46.000	16.33	17.03	1.522	17.89	17.89	0.00	17.89	6	Grate
8	northint	11.57	24	Cir	30.000	14.16	14.23	0.233	17.28*	17.36*	0.11	17.46	End	Grate
9	northint2	10.95	24	Cir	54.000	14.23	14.37	0.259	17.46*	17.59*	0.32	17.91	8	Grate
10	northint3	1.18	18	Cir	39.000	15.56	15.75	0.487	17.91*	17.91*	0.01	17.92	9	Grate
11	Link-03	9.00	24	Cir	12.000	14.37	14.40	0.250	17.91*	17.92*	0.04	17.96	9	Manhole
12	Link-02	9.12	24	Cir	59.000	14.40	14.55	0.254	17.96*	18.06*	0.02	18.08	11	Manhole
13	northint4	9.46	24	Cir	173.000	14.55	14.98	0.249	18.08*	18.38*	0.21	18.59	12	Grate
14	northint6	4.07	18	Cir	200.000	15.50	16.00	0.250	18.59*	18.89*	0.12	19.02	13	Grate
15	northint7	4.46	18	Cir	50.000	16.28	16.63	0.700	19.02*	19.11*	0.14	19.25	14	Grate
16	norhint8	3.33	18	Cir	36.000	16.63	16.72	0.250	19.25*	19.28*	0.03	19.31	15	Grate
17	northint9	1.74	18	Cir	44.000	16.72	16.83	0.250	19.31*	19.32*	0.02	19.34	16	Grate
18	northint10	0.18	18	Cir	33.000	16.37	16.53	0.485	19.02*	19.02*	0.00	19.02	14	Grate
19	northint5	3.37	18	Cir	28.000	15.67	15.81	0.500	18.59*	18.62*	0.06	18.68	13	Grate
20	southint1	19.53	42	Cir	69.000	12.00	12.17	0.246	17.28*	17.31*	0.03	17.34	End	Grate
21	southint2	18.78	42	Cir	55.000	12.17	12.31	0.255	17.34*	17.36*	0.05	17.40	20	Grate
22	southint3	17.85	42	Cir	88.000	12.31	12.53	0.250	17.40*	17.43*	0.08	17.51	21	Grate
23	southint4	16.18	36	Cir	144.000	12.53	12.89	0.250	17.51*	17.59*	0.12	17.72	22	Grate
24	southint5	14.38	36	Cir	88.000	12.89	13.11	0.250	17.72*	17.76*	0.14	17.89	23	Grate

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown).

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	soutint6	10.81	36	Cir	88.000	13.11	13.33	0.250	17.89*	17.92*	0.04	17.96	24	Grate
26	Link-01	9.96	30	Cir	23.000	13.33	13.39	0.261	17.96*	17.97*	0.09	18.07	25	Grate
27	3	10.23	30	Cir	87.000	13.39	13.61	0.253	18.07*	18.12*	0.10	18.22	26	Grate
28	southint23	3.55	18	Cir	28.000	15.14	15.21	0.250	18.22*	18.25*	0.06	18.32	27	Grate
29	Link-22	6.17	24	Cir	46.000	14.64	14.76	0.261	18.22*	18.26*	0.09	18.35	27	Grate
30	southint19	5.53	24	Cir	46.000	14.83	14.95	0.261	18.35*	18.37*	0.07	18.45	29	Grate
31	southint20	4.70	24	Cir	56.000	14.95	15.37	0.750	18.45*	18.47*	0.05	18.52	30	Grate
32	southint21	4.24	18	Cir	28.000	15.88	15.95	0.250	18.52*	18.57*	0.13	18.70	31	Grate
33	southint22	2.79	18	Cir	65.000	15.95	16.53	0.892	18.70*	18.75*	0.04	18.79	32	Grate
34	Link-23	0.64	18	Cir	28.000	15.34	15.41	0.250	18.35*	18.35*	0.00	18.35	29	Grate
35	southint18	2.16	18	Cir	75.000	16.46	16.83	0.493	17.89	17.91	0.04	17.95	24	Grate
36	southint16	1.36	18	Cir	54.000	16.33	18.40	3.833	17.89	18.84	n/a	18.84 j	24	Grate
37	southint17	0.65	18	Cir	65.000	18.40	18.73	0.508	18.84	19.03	n/a	19.03 j	36	Grate
38	southint14	1.36	18	Cir	97.000	16.08	18.75	2.753	17.72	19.19	n/a	19.19 j	23	Grate
39	southint15	0.65	18	Cir	65.000	18.75	19.08	0.508	19.19	19.38	n/a	19.38 j	38	Grate
40	southint13	1.82	18	Cir	96.000	15.85	16.33	0.500	17.51	17.53	0.02	17.55	22	Grate
41	southint11	3.57	18	Cir	50.000	17.00	17.61	1.220	17.57	18.33	0.15	18.33	End	Grate
42	southint12	1.09	18	Cir	29.000	17.61	17.75	0.483	18.33	18.33	0.05	18.38	41	Grate
43	south1	9.95	24	Cir	182.000	13.92	14.38	0.253	17.28*	17.63*	0.08	17.71	End	Grate
44	Link-04	9.61	24	Cir	152.000	14.38	14.76	0.250	17.71*	17.98*	0.22	18.20	43	Grate
45	south6	7.08	18	Cir	52.000	16.55	16.68	0.250	18.20*	18.44*	0.37	18.81	44	Grate
46	south7	6.69	18	Cir	51.000	16.68	16.81	0.255	18.81*	19.02*	0.33	19.35	45	Grate
47	south8	5.43	18	Cir	47.000	16.81	16.93	0.255	19.35*	19.48*	0.07	19.55	46	Grate
48	south9	4.35	18	Cir	28.000	16.93	17.00	0.250	19.55*	19.60*	0.14	19.74	47	Grate

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
49	southint9	2.81	18	Cir	141.000	17.00	17.35	0.248	19.74*	19.84*	0.06	19.90	48	Grate
50	southint10	1.46	18	Cir	28.000	17.35	17.49	0.500	19.90*	19.91*	0.01	19.92	49	Grate
51	south3	3.04	18	Cir	155.000	14.76	15.15	0.252	18.20*	18.33*	0.04	18.37	44	Grate
52	south4	2.45	18	Cir	125.000	15.15	15.46	0.248	18.37*	18.44*	0.04	18.48	51	Grate
53	STMLink-7	1.48	18	Cir	147.000	15.46	15.83	0.252	18.48*	18.50*	0.01	18.52	52	Grate
54	offsite2	0.73	18	Cir	109.000	16.76	17.10	0.312	17.28	17.45	0.09	17.53	End	Grate
55	offsite1	0.57	18	Cir	126.000	17.10	17.50	0.317	17.53	17.79	0.08	17.88	54	Grate
56		50.17	36	Cir	48.000	11.76	12.00	0.500	14.06	14.54	0.96	15.50	End	Generic

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Return period = 25 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	39.000	0.08	1.04	0.95	0.08	0.59	5.0	13.6	7.6	4.45	5.32	2.52	18	0.26	14.08	14.18	17.28	17.35	14.90	17.68	Link-21
2	1	48.000	0.07	0.96	0.80	0.06	0.51	5.0	13.2	7.7	3.93	9.71	2.22	18	0.85	14.18	14.59	17.40	17.47	17.68	18.09	north2
3	2	62.000	0.12	0.89	0.50	0.06	0.46	5.0	12.6	7.8	3.57	5.17	2.02	18	0.24	14.59	14.74	17.53	17.60	18.09	18.50	north3
4	3	96.000	0.21	0.77	0.50	0.11	0.40	5.0	11.7	8.1	3.22	5.25	1.82	18	0.25	14.74	14.98	17.65	17.74	18.50	18.25	north4
5	4	104.000	0.32	0.56	0.50	0.16	0.29	5.0	10.4	8.6	2.50	6.09	1.42	18	0.34	14.98	15.33	17.76	17.82	18.25	19.00	north5
6	5	200.000	0.20	0.24	0.50	0.10	0.13	5.0	5.6	10.9	1.44	7.43	0.82	18	0.50	15.33	16.33	17.84	17.88	19.00	19.50	north6
7	6	46.000	0.04	0.04	0.80	0.03	0.03	5.0	5.0	11.4	0.36	12.95	0.28	18	1.52	16.33	17.03	17.89	17.89	19.50	20.20	north7
8	End	30.000	0.10	1.84	0.95	0.10	1.52	5.0	13.4	7.6	11.57	10.93	3.68	24	0.23	14.16	14.23	17.28	17.36	15.00	18.85	northint
9	8	54.000	0.19	1.74	0.80	0.15	1.43	5.0	13.1	7.7	10.95	11.52	3.48	24	0.26	14.23	14.37	17.46	17.59	18.85	19.00	northint2
10	9	39.000	0.13	0.13	0.80	0.10	0.10	5.0	5.0	11.4	1.18	7.33	0.67	18	0.49	15.56	15.75	17.91	17.91	19.00	19.08	northint3
11	9	12.000	0.00	1.42	0.00	0.00	1.17	0.0	13.1	7.7	9.00	11.31	2.87	24	0.25	14.37	14.40	17.91	17.92	19.00	19.64	Link-03
12	11	59.000	0.00	1.42	0.00	0.00	1.17	0.0	12.7	7.8	9.12	11.40	2.90	24	0.25	14.40	14.55	17.96	18.06	19.64	20.10	Link-02
13	12	173.000	0.50	1.42	0.80	0.40	1.17	5.0	11.8	8.1	9.46	11.28	3.01	24	0.25	14.55	14.98	18.08	18.38	20.10	19.06	northint4
14	13	200.000	0.05	0.55	0.80	0.04	0.47	5.0	10.3	8.6	4.07	5.25	2.30	18	0.25	15.50	16.00	18.59	18.89	19.06	19.78	northint6
15	14	50.000	0.14	0.48	0.80	0.11	0.42	5.0	6.1	10.7	4.46	8.79	2.52	18	0.70	16.28	16.63	19.02	19.11	19.78	19.85	northint7
16	15	36.000	0.17	0.34	0.90	0.15	0.31	5.0	5.7	10.9	3.33	5.25	1.88	18	0.25	16.63	16.72	19.25	19.28	19.85	20.00	norhint8
17	16	44.000	0.17	0.17	0.90	0.15	0.15	5.0	5.0	11.4	1.74	5.25	0.99	18	0.25	16.72	16.83	19.31	19.32	20.00	20.00	northint9
18	14	33.000	0.02	0.02	0.80	0.02	0.02	5.0	5.0	11.4	0.18	7.31	0.10	18	0.48	16.37	16.53	19.02	19.02	19.78	20.08	northint10
19	13	28.000	0.37	0.37	0.80	0.30	0.30	5.0	5.0	11.4	3.37	7.43	1.91	18	0.50	15.67	15.81	18.59	18.62	19.06	19.06	northint5
20	End	69.000	0.17	3.75	0.80	0.14	2.45	5.0	12.2	8.0	19.53	49.94	2.03	42	0.25	12.00	12.17	17.28	17.31	16.00	19.59	southint1
21	20	55.000	0.23	3.58	0.80	0.18	2.32	5.0	11.7	8.1	18.78	50.76	1.95	42	0.25	12.17	12.31	17.34	17.36	19.59	19.43	southint2
22	21	88.000	0.25	3.35	0.50	0.13	2.13	5.0	10.9	8.4	17.85	50.30	1.86	42	0.25	12.31	12.53	17.40	17.43	19.43	19.50	southint3

Project File: Jasper Village Phase 2.stm

Number of lines: 56

Run Date: 3/31/2022

NOTES:Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	22	144.000	0.27	2.78	0.50	0.14	1.85	5.0	9.9	8.8	16.18	33.35	2.29	36	0.25	12.53	12.89	17.51	17.59	19.50	19.25	southint4
24	23	88.000	0.27	2.38	0.50	0.14	1.59	5.0	9.2	9.0	14.38	33.35	2.03	36	0.25	12.89	13.11	17.72	17.76	19.25	19.50	southint5
25	24	88.000	0.20	1.78	0.50	0.10	1.14	5.0	8.2	9.5	10.81	33.35	1.53	36	0.25	13.11	13.33	17.89	17.92	19.50	19.50	soutint6
26	25	23.000	0.02	1.58	0.50	0.01	1.04	5.0	8.0	9.6	9.96	20.95	2.03	30	0.26	13.33	13.39	17.96	17.97	19.50	21.07	Link-01
27	26	87.000	0.22	1.56	0.50	0.11	1.03	5.0	7.3	9.9	10.23	20.62	2.08	30	0.25	13.39	13.61	18.07	18.12	21.07	18.72	3
28	27	28.000	0.39	0.39	0.80	0.31	0.31	5.0	5.0	11.4	3.55	5.25	2.01	18	0.25	15.14	15.21	18.22	18.25	18.72	18.71	southint23
29	27	46.000	0.04	0.95	0.50	0.02	0.61	5.0	6.9	10.1	6.17	11.55	1.96	24	0.26	14.64	14.76	18.22	18.26	18.72	18.91	Link-22
30	29	46.000	0.12	0.84	0.80	0.10	0.53	5.0	6.5	10.4	5.53	11.55	1.76	24	0.26	14.83	14.95	18.35	18.37	18.91	19.49	southint19
31	30	56.000	0.05	0.72	0.95	0.05	0.44	5.0	5.9	10.8	4.70	19.59	1.50	24	0.75	14.95	15.37	18.45	18.47	19.49	19.45	southint20
32	31	28.000	0.18	0.67	0.80	0.14	0.39	5.0	5.7	10.9	4.24	5.25	2.40	18	0.25	15.88	15.95	18.52	18.57	19.45	19.45	southint21
33	32	65.000	0.49	0.49	0.50	0.25	0.25	5.0	5.0	11.4	2.79	9.92	1.58	18	0.89	15.95	16.53	18.70	18.75	19.45	19.70	southint22
34	29	28.000	0.07	0.07	0.80	0.06	0.06	5.0	5.0	11.4	0.64	5.25	0.36	18	0.25	15.34	15.41	18.35	18.35	18.91	18.91	Link-23
35	24	75.000	0.20	0.20	0.95	0.19	0.19	5.0	5.0	11.4	2.16	7.38	1.41	18	0.49	16.46	16.83	17.89	17.91	19.50	20.00	southint18
36	24	54.000	0.07	0.13	0.95	0.07	0.12	5.0	5.5	11.0	1.36	20.56	1.98	18	3.83	16.33	18.40	17.89	18.84	19.50	21.90	southint16
37	36	65.000	0.06	0.06	0.95	0.06	0.06	5.0	5.0	11.4	0.65	7.48	2.06	18	0.51	18.40	18.73	18.84	19.03	21.90	21.90	southint17
38	23	97.000	0.07	0.13	0.95	0.07	0.12	5.0	5.5	11.0	1.36	17.42	1.98	18	2.75	16.08	18.75	17.72	19.19	19.25	22.25	southint14
39	38	65.000	0.06	0.06	0.95	0.06	0.06	5.0	5.0	11.4	0.65	7.48	2.06	18	0.51	18.75	19.08	19.19	19.38	22.25	22.25	southint15
40	22	96.000	0.32	0.32	0.50	0.16	0.16	5.0	5.0	11.4	1.82	7.43	1.12	18	0.50	15.85	16.33	17.51	17.53	19.50	19.50	southint13
41	End	50.000	0.28	0.40	0.80	0.22	0.32	5.0	5.3	11.2	3.57	11.60	5.01	18	1.22	17.00	17.61	17.57	18.33	18.50	21.09	southint11
42	41	29.000	0.12	0.12	0.80	0.10	0.10	5.0	5.0	11.4	1.09	7.30	1.51	18	0.48	17.61	17.75	18.33	18.33	21.09	21.00	southint12
43	End	182.000	0.16	1.91	0.50	0.08	1.23	5.0	11.7	8.1	9.95	11.37	3.17	24	0.25	13.92	14.38	17.28	17.63	16.41	21.75	south1
44	43	152.000	0.16	1.75	0.50	0.08	1.15	5.0	10.9	8.4	9.61	11.31	3.06	24	0.25	14.38	14.76	17.71	17.98	21.75	20.75	Link-04

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES:Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period =Yrs. 25 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
45	44	52.000	0.06	0.91	0.80	0.05	0.73	5.0	7.7	9.7	7.08	5.25	4.01	18	0.25	16.55	16.68	18.20	18.44	20.75	21.85	south6
46	45	51.000	0.17	0.85	0.80	0.14	0.68	5.0	7.5	9.8	6.69	5.30	3.79	18	0.25	16.68	16.81	18.81	19.02	21.85	21.68	south7
47	46	47.000	0.14	0.68	0.80	0.11	0.54	5.0	7.2	10.0	5.43	5.31	3.07	18	0.26	16.81	16.93	19.35	19.48	21.68	21.94	south8
48	47	28.000	0.22	0.54	0.80	0.18	0.43	5.0	7.0	10.1	4.35	5.25	2.46	18	0.25	16.93	17.00	19.55	19.60	21.94	21.93	south9
49	48	141.000	0.16	0.32	0.80	0.13	0.26	5.0	5.6	11.0	2.81	5.23	1.59	18	0.25	17.00	17.35	19.74	19.84	21.93	20.82	southint9
50	49	28.000	0.16	0.16	0.80	0.13	0.13	5.0	5.0	11.4	1.46	7.43	0.83	18	0.50	17.35	17.49	19.90	19.91	20.82	20.74	southint10
51	44	155.000	0.17	0.68	0.50	0.09	0.34	5.0	9.4	8.9	3.04	5.27	1.72	18	0.25	14.76	15.15	18.20	18.33	20.75	19.75	south3
52	51	125.000	0.25	0.51	0.50	0.13	0.26	5.0	7.9	9.6	2.45	5.23	1.39	18	0.25	15.15	15.46	18.37	18.44	19.75	19.00	south4
53	52	147.000	0.26	0.26	0.50	0.13	0.13	5.0	5.0	11.4	1.48	5.27	0.84	18	0.25	15.46	15.83	18.48	18.50	19.00	19.00	STMLink-7
54	End	109.000	0.02	0.12	0.95	0.02	0.07	5.0	6.1	10.6	0.73	5.86	1.85	18	0.31	16.76	17.10	17.28	17.45	18.26	20.43	offsite2
55	54	126.000	0.10	0.10	0.50	0.05	0.05	5.0	5.0	11.4	0.57	5.92	1.84	18	0.32	17.10	17.50	17.53	17.79	20.43	20.50	offsite1
56	End	48.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	50.17	47.16	8.24	36	0.50	11.76	12.00	14.06	14.54	19.00	19.00	

Project File: Jasper Village Phase 2.stm

Number of lines: 56

Run Date: 3/31/2022

NOTES:Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period =Yrs. 25 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	V1-02	0.87	0.00	0.87	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.20	3.81	0.20	3.81	0.0	Off
2	V1-01	0.64	0.00	0.64	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.17	3.07	0.17	3.07	0.0	Off
3	GI-05	0.68	0.00	0.68	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.16	5.14	0.16	5.14	0.0	Off
4	GI-04	1.20	0.00	1.20	0.00	Grate	0.0	0.00	2.00	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.21	7.70	0.21	7.70	0.0	Off
5	GI-03	1.82	0.00	1.82	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.27	10.36	0.27	10.36	0.0	Off
6	GI-02	1.14	0.00	1.14	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.020	0.020	0.020	0.18	8.93	0.18	8.93	0.0	Off
7	GI-01	0.36	0.00	0.36	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.12	3.21	0.12	3.21	0.0	Off
8	V1-06	1.08	0.57	1.65	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.25	5.65	0.25	5.65	0.0	Off
9	V1-05	1.73	0.00	1.73	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.26	5.82	0.26	5.82	0.0	Off
10	V1-09	1.18	0.00	1.18	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.22	4.61	0.22	4.61	0.0	Off
11	STMH-02	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
12	STMH-01	0.00	0.00	0.00	0.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off
13	V1-04	4.56	0.02	4.58	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.41	10.78	0.41	10.78	0.0	Off
14	V1-03	0.46	0.00	0.43	0.02	Grate	0.0	0.00	0.00	4.00	2.17	0.005	1.50	0.083	0.031	0.013	0.19	3.51	0.06	0.75	0.0	13
15	GI-08	1.28	0.00	1.28	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.22	8.06	0.22	8.06	0.0	Off
16	GI-07	1.74	0.00	1.74	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.26	10.04	0.26	10.04	0.0	Off
17	GI-06	1.74	0.00	1.74	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.26	10.04	0.26	10.04	0.0	Off
18	V1-07	0.18	0.00	0.18	0.00	Grate	0.0	0.00	0.00	4.00	2.17	0.005	1.50	0.083	0.031	0.013	0.14	1.89	0.01	0.13	0.0	19
19	V1-08	3.37	0.00	3.37	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.35	8.86	0.35	8.86	0.0	Off
20	V1-16	1.55	0.70	1.68	0.57	Grate	0.0	0.00	0.00	4.00	2.17	0.013	1.50	0.083	0.031	0.013	0.27	6.08	0.17	3.05	0.0	8
21	V1-15	2.10	0.15	2.24	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.29	6.84	0.29	6.84	0.0	Off
22	GI-14	1.42	0.00	1.42	0.00	Grate	0.0	0.00	1.85	4.00	2.17	Sag	2.00	0.050	0.020	0.013	0.20	7.10	0.20	7.10	0.0	Off
23	GI-13	1.54	0.00	1.54	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.24	9.19	0.24	9.19	0.0	Off

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Inlet N-Values = 0.016; Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
24	GI-12	1.54	0.00	1.54	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.24	9.19	0.24	9.19	0.0	Off
25	GI-11	1.14	0.00	1.14	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.21	7.43	0.21	7.43	0.0	Off
26	GI-10	0.11	0.00	0.11	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.062	0.020	0.016	-0.10	0.47	0.07	0.47	2.0	Off
27	V1-13	1.25	0.42	1.67	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.25	5.69	0.25	5.69	0.0	Off
28	V1-14	3.55	0.36	3.91	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.38	9.75	0.38	9.75	0.0	Off
29	V1-24	0.23	0.15	0.37	0.00	Grate	0.0	0.00	0.00	4.00	2.17	0.012	1.50	0.083	0.031	0.013	0.15	2.34	0.03	0.35	0.0	27
30	V1-12	1.09	0.00	0.95	0.15	Grate	0.0	0.00	0.00	4.00	2.17	0.012	1.50	0.083	0.031	0.013	0.21	4.37	0.11	1.28	0.0	29
31	V1-11	0.54	0.00	0.54	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.16	2.49	0.16	2.49	0.0	Off
32	V1-10	1.64	0.00	1.64	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.25	5.63	0.25	5.63	0.0	Off
33	GI-09	2.79	0.00	2.79	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.34	13.92	0.34	13.92	0.0	Off
34	V1-25	0.64	0.00	0.60	0.04	Grate	0.0	0.00	0.00	4.00	2.17	0.012	1.50	0.083	0.031	0.013	0.18	3.28	0.06	0.78	0.0	28
35	GI-15	2.16	0.00	2.16	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.29	11.67	0.29	11.67	0.0	Off
36	GI-17	0.76	0.00	0.76	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.17	5.54	0.17	5.54	0.0	Off
37	GI-16	0.65	0.00	0.65	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.16	4.95	0.16	4.95	0.0	Off
38	GI-19	0.76	0.00	0.76	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.17	5.54	0.17	5.54	0.0	Off
39	GI-18	0.65	0.00	0.65	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.16	4.95	0.16	4.95	0.0	Off
40	GI-20	1.82	0.00	1.82	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.27	10.36	0.27	10.36	0.0	Off
41	V1-18	2.55	0.00	1.85	0.70	Grate	0.0	0.00	0.00	4.00	2.17	0.013	1.50	0.083	0.031	0.013	0.28	6.43	0.18	3.44	0.0	20
42	V1-17	1.09	0.00	0.95	0.15	Grate	0.0	0.00	0.00	4.00	2.17	0.013	1.50	0.083	0.031	0.013	0.21	4.35	0.11	1.28	0.0	21
43	GI-26	0.91	0.00	0.91	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.19	6.34	0.19	6.34	0.0	Off
44	GI-22	0.91	0.00	0.91	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.062	0.020	0.016	0.11	1.88	0.27	1.88	2.0	Off
45	GI-21	0.55	0.00	0.55	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.15	4.36	0.15	4.36	0.0	Off
46	V1-23	1.55	0.00	1.55	0.00	Grate	0.0	0.00	3.78	4.00	2.17	Sag	1.50	0.083	0.031	0.013	0.25	5.43	0.25	5.43	0.0	Off

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Inlet N-Values = 0.016; Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
47	V1-22	1.28	0.00	1.07	0.21	Grate	0.0	0.00	0.00	4.00	2.17	0.005	1.50	0.083	0.031	0.013	0.26	5.81	0.14	2.09	0.0	50
48	V1-21	2.01	0.00	1.56	0.45	Grate	0.0	0.00	0.00	4.00	2.17	0.005	1.50	0.083	0.031	0.013	0.30	7.06	0.19	3.47	0.0	49
49	V1-20	1.46	0.45	1.49	0.41	Grate	0.0	0.00	0.00	4.00	2.17	0.018	1.50	0.083	0.031	0.013	0.24	5.24	0.15	2.20	0.0	27
50	V1-19	1.46	0.21	1.34	0.32	Grate	0.0	0.00	0.00	4.00	2.17	0.018	1.50	0.083	0.031	0.013	0.23	4.93	0.13	1.79	0.0	28
51	GI-25	0.97	0.00	0.97	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.19	6.62	0.19	6.62	0.0	Off
52	GI-24	1.42	0.00	1.42	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.23	8.71	0.23	8.71	0.0	Off
53	GI-23	1.48	0.00	1.48	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.24	8.95	0.24	8.95	0.0	Off
54	GI-28	0.22	0.00	0.22	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.10	2.12	0.10	2.12	0.0	Off
55	GI-27	0.57	0.00	0.57	0.00	Grate	0.0	0.00	1.85	2.00	2.00	Sag	2.00	0.050	0.020	0.013	0.15	4.50	0.15	4.50	0.0	Off
56	OS-1	50.17*	0.00	50.17	0.00	Genr	0.0	0.00	0.00	0.00	0.00	Sag	2.00	0.050	0.020	0.013	0.30	12.00	0.30	12.00	0.0	Off

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

NOTES: Inlet N-Values = 0.016; Intensity = 56.51 / (Inlet time + 5.40) ^ 0.68; Return period = 25 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

AES

Line No.	Line Size (in)	Line Slope (%)	Line Type	Total Area (ac)	Runoff Coeff (C)	Tc (min)	Total Runoff (cfs)	Known Q (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	HGL Dn (ft)	HGL Up (ft)	n-val Pipe
1	18	0.26	Cir	1.04	0.95	13.6	4.45	0.00	5.32	2.52	17.28	17.35	0.013
2	18	0.85	Cir	0.96	0.80	13.2	3.93	0.00	9.71	2.22	17.40	17.47	0.013
3	18	0.24	Cir	0.89	0.50	12.6	3.57	0.00	5.17	2.02	17.53	17.60	0.013
4	18	0.25	Cir	0.77	0.50	11.7	3.22	0.00	5.25	1.82	17.65	17.74	0.013
5	18	0.34	Cir	0.56	0.50	10.4	2.50	0.00	6.09	1.42	17.76	17.82	0.013
6	18	0.50	Cir	0.24	0.50	5.6	1.44	0.00	7.43	0.82	17.84	17.88	0.013
7	18	1.52	Cir	0.04	0.80	5.0	0.36	0.00	12.95	0.28	17.89	17.89	0.013
8	24	0.23	Cir	1.84	0.95	13.4	11.57	0.00	10.93	3.68	17.28	17.36	0.013
9	24	0.26	Cir	1.74	0.80	13.1	10.95	0.00	11.52	3.48	17.46	17.59	0.013
10	18	0.49	Cir	0.13	0.80	5.0	1.18	0.00	7.33	0.67	17.91	17.91	0.013
11	24	0.25	Cir	1.42	0.00	13.1	9.00	0.00	11.31	2.87	17.91	17.92	0.013
12	24	0.25	Cir	1.42	0.00	12.7	9.12	0.00	11.40	2.90	17.96	18.06	0.013
13	24	0.25	Cir	1.42	0.80	11.8	9.46	0.00	11.28	3.01	18.08	18.38	0.013
14	18	0.25	Cir	0.55	0.80	10.3	4.07	0.00	5.25	2.30	18.59	18.89	0.013
15	18	0.70	Cir	0.48	0.80	6.1	4.46	0.00	8.79	2.52	19.02	19.11	0.013
16	18	0.25	Cir	0.34	0.90	5.7	3.33	0.00	5.25	1.88	19.25	19.28	0.013
17	18	0.25	Cir	0.17	0.90	5.0	1.74	0.00	5.25	0.99	19.31	19.32	0.013
18	18	0.48	Cir	0.02	0.80	5.0	0.18	0.00	7.31	0.10	19.02	19.02	0.013
19	18	0.50	Cir	0.37	0.80	5.0	3.37	0.00	7.43	1.91	18.59	18.62	0.013
20	42	0.25	Cir	3.75	0.80	12.2	19.53	0.00	49.94	2.03	17.28	17.31	0.013
21	42	0.25	Cir	3.58	0.80	11.7	18.78	0.00	50.76	1.95	17.34	17.36	0.013
22	42	0.25	Cir	3.35	0.50	10.9	17.85	0.00	50.30	1.86	17.40	17.43	0.013
23	36	0.25	Cir	2.78	0.50	9.9	16.18	0.00	33.35	2.29	17.51	17.59	0.013

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Date: 3/31/2022

NOTES: ** Critical depth

Line No.	Line Size (in)	Line Slope (%)	Line Type	Total Area (ac)	Runoff Coeff (C)	Tc (min)	Total Runoff (cfs)	Known Q (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	HGL Dn (ft)	HGL Up (ft)	n-val Pipe
24	36	0.25	Cir	2.38	0.50	9.2	14.38	0.00	33.35	2.03	17.72	17.76	0.013
25	36	0.25	Cir	1.78	0.50	8.2	10.81	0.00	33.35	1.53	17.89	17.92	0.013
26	30	0.26	Cir	1.58	0.50	8.0	9.96	0.00	20.95	2.03	17.96	17.97	0.013
27	30	0.25	Cir	1.56	0.50	7.3	10.23	0.00	20.62	2.08	18.07	18.12	0.013
28	18	0.25	Cir	0.39	0.80	5.0	3.55	0.00	5.25	2.01	18.22	18.25	0.013
29	24	0.26	Cir	0.95	0.50	6.9	6.17	0.00	11.55	1.96	18.22	18.26	0.013
30	24	0.26	Cir	0.84	0.80	6.5	5.53	0.00	11.55	1.76	18.35	18.37	0.013
31	24	0.75	Cir	0.72	0.95	5.9	4.70	0.00	19.59	1.50	18.45	18.47	0.013
32	18	0.25	Cir	0.67	0.80	5.7	4.24	0.00	5.25	2.40	18.52	18.57	0.013
33	18	0.89	Cir	0.49	0.50	5.0	2.79	0.00	9.92	1.58	18.70	18.75	0.013
34	18	0.25	Cir	0.07	0.80	5.0	0.64	0.00	5.25	0.36	18.35	18.35	0.013
35	18	0.49	Cir	0.20	0.95	5.0	2.16	0.00	7.38	1.41	17.89	17.91	0.013
36	18	3.83	Cir	0.13	0.95	5.5	1.36	0.00	20.56	1.98	17.89	18.84 j	0.013
37	18	0.51	Cir	0.06	0.95	5.0	0.65	0.00	7.48	2.06	18.84	19.03 j	0.013
38	18	2.75	Cir	0.13	0.95	5.5	1.36	0.00	17.42	1.98	17.72	19.19 j	0.013
39	18	0.51	Cir	0.06	0.95	5.0	0.65	0.00	7.48	2.06	19.19	19.38 j	0.013
40	18	0.50	Cir	0.32	0.50	5.0	1.82	0.00	7.43	1.12	17.51	17.53	0.013
41	18	1.22	Cir	0.40	0.80	5.3	3.57	0.00	11.60	5.01	17.57	18.33	0.013
42	18	0.48	Cir	0.12	0.80	5.0	1.09	0.00	7.30	1.51	18.33	18.33	0.013
43	24	0.25	Cir	1.91	0.50	11.7	9.95	0.00	11.37	3.17	17.28	17.63	0.013
44	24	0.25	Cir	1.75	0.50	10.9	9.61	0.00	11.31	3.06	17.71	17.98	0.013
45	18	0.25	Cir	0.91	0.80	7.7	7.08	0.00	5.25	4.01	18.20	18.44	0.013
46	18	0.25	Cir	0.85	0.80	7.5	6.69	0.00	5.30	3.79	18.81	19.02	0.013

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Date: 3/31/2022

NOTES: ** Critical depth

Line No.	Line Size (in)	Line Slope (%)	Line Type	Total Area (ac)	Runoff Coeff (C)	Tc (min)	Total Runoff (cfs)	Known Q (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	HGL Dn (ft)	HGL Up (ft)	n-val Pipe	
47	18	0.26	Cir	0.68	0.80	7.2	5.43	0.00	5.31	3.07	19.35	19.48	0.013	
48	18	0.25	Cir	0.54	0.80	7.0	4.35	0.00	5.25	2.46	19.55	19.60	0.013	
49	18	0.25	Cir	0.32	0.80	5.6	2.81	0.00	5.23	1.59	19.74	19.84	0.013	
50	18	0.50	Cir	0.16	0.80	5.0	1.46	0.00	7.43	0.83	19.90	19.91	0.013	
51	18	0.25	Cir	0.68	0.50	9.4	3.04	0.00	5.27	1.72	18.20	18.33	0.013	
52	18	0.25	Cir	0.51	0.50	7.9	2.45	0.00	5.23	1.39	18.37	18.44	0.013	
53	18	0.25	Cir	0.26	0.50	5.0	1.48	0.00	5.27	0.84	18.48	18.50	0.013	
54	18	0.31	Cir	0.12	0.95	6.1	0.73	0.00	5.86	1.85	17.28	17.45	0.013	
55	18	0.32	Cir	0.10	0.50	5.0	0.57	0.00	5.92	1.84	17.53	17.79	0.013	
56	36	0.50	Cir	0.00	0.00	0.0	0.00	50.17	47.16	8.24	14.06	14.54	0.013	

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Date: 3/31/2022

NOTES: ** Critical depth

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
1	Link-21	User																		5.00
2	north2	User																		5.00
3	north3	User																		5.00
4	north4	User																		5.00
5	north5	User																		5.00
6	north6	User																		5.00
7	north7	User																		5.00
8	northint	User																		5.00
9	northint2	User																		5.00
10	northint3	User																		5.00
11	Link-03	User																		0.00
12	Link-02	User																		0.00
13	northint4	User																		5.00
14	northint6	User																		5.00
15	northint7	User																		5.00
16	norhint8	User																		5.00
17	northint9	User																		5.00
18	northint10	User																		5.00
19	northint5	User																		5.00
20	southint1	User																		5.00
21	southint2	User																		5.00
22	southint3	User																		5.00
23	southint4	User																		5.00
24	southint5	User																		5.00

Project File: Jasper Village Phase 2.stm | Min. Tc used for intensity calculations = 5 min | Number of lines: 56 | Date: 3/31/2022

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
25	soutint6	User																		5.00
26	Link-01	User																		5.00
27	3	User																		5.00
28	southint23	User																		5.00
29	Link-22	User																		5.00
30	southint19	User																		5.00
31	southint20	User																		5.00
32	southint21	User																		5.00
33	southint22	User																		5.00
34	Link-23	User																		5.00
35	southint18	User																		5.00
36	southint16	User																		5.00
37	southint17	User																		5.00
38	southint14	User																		5.00
39	southint15	User																		5.00
40	southint13	User																		5.00
41	southint11	User																		5.00
42	southint12	User																		5.00
43	south1	User																		5.00
44	Link-04	User																		5.00
45	south6	User																		5.00
46	south7	User																		5.00
47	south8	User																		5.00
48	south9	User																		5.00

Project File: Jasper Village Phase 2.stm | Min. Tc used for intensity calculations = 5 min | Number of lines: 56 | Date: 3/31/2022

Storm Sewer Inlet Time Tabulation

Line No.	Line ID	Tc Method	Sheet Flow					Shallow Concentrated Flow					Channel Flow							Total Travel Time (min)
			n-Value	flow Length (ft)	2-yr 24h P (in)	Land Slope (%)	Travel Time (min)	flow Length (ft)	Water Slope (%)	Surf Descr	Ave Vel (ft/s)	Travel Time (min)	X-sec Area (sqft)	Wetted Perim (ft)	Chan Slope (%)	n-Value	Vel	flow Length (ft)	Travel Time (min)	
49	southint9	User																		5.00
50	southint10	User																		5.00
51	south3	User																		5.00
52	south4	User																		5.00
53	STMLink-7	User																		5.00
54	offsite2	User																		5.00
55	offsite1	User																		5.00
56		User																		0.00

Project File: Jasper Village Phase 2.stm | Min. Tc used for intensity calculations = 5 min | Number of lines: 56 | Date: 3/31/2022

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	4.45	14.08	17.28	1.50	1.77	2.52	0.10	17.38	0.180	39.000	14.18	17.35	1.50	1.77	2.52	0.10	17.45	0.180	0.180	0.070	0.54	0.05
2	18	3.93	14.18	17.40	1.50	1.77	2.22	0.08	17.48	0.140	48.000	14.59	17.47	1.50	1.77	2.22	0.08	17.55	0.140	0.140	0.067	0.81	0.06
3	18	3.57	14.59	17.53	1.50	1.77	2.02	0.06	17.60	0.116	62.000	14.74	17.60	1.50	1.77	2.02	0.06	17.67	0.116	0.116	0.072	0.67	0.04
4	18	3.22	14.74	17.65	1.50	1.77	1.82	0.05	17.70	0.094	96.000	14.98	17.74	1.50	1.77	1.82	0.05	17.79	0.094	0.094	0.090	0.50	0.03
5	18	2.50	14.98	17.76	1.50	1.77	1.42	0.03	17.79	0.057	104.000	15.33	17.82	1.50	1.77	1.42	0.03	17.85	0.057	0.057	0.059	0.50	0.02
6	18	1.44	15.33	17.84	1.50	1.77	0.82	0.01	17.85	0.019	200.000	16.33	17.88	1.50	1.77	0.82	0.01	17.89	0.019	0.019	0.038	1.50	0.02
7	18	0.36	16.33	17.89	1.50	1.77	0.21	0.00	17.89	0.001	46.000	17.03	17.89	0.86	1.05	0.35	0.00	17.89	0.003	0.002	0.001	1.00	0.00
8	24	11.57	14.16	17.28	2.00	3.14	3.68	0.21	17.49	0.262	30.000	14.23	17.36	2.00	3.14	3.68	0.21	17.57	0.262	0.262	0.079	0.50	0.11
9	24	10.95	14.23	17.46	2.00	3.14	3.49	0.19	17.65	0.234	54.000	14.37	17.59	2.00	3.14	3.48	0.19	17.78	0.234	0.234	0.127	1.67	0.32
10	18	1.18	15.56	17.91	1.50	1.77	0.67	0.01	17.91	0.013	39.000	15.75	17.91	1.50	1.77	0.67	0.01	17.92	0.013	0.013	0.005	1.00	0.01
11	24	9.00	14.37	17.91	2.00	3.14	2.87	0.13	18.03	0.159	12.000	14.40	17.92	2.00	3.14	2.87	0.13	18.05	0.159	0.159	0.019	0.29	0.04
12	24	9.12	14.40	17.96	2.00	3.14	2.90	0.13	18.09	0.163	59.000	14.55	18.06	2.00	3.14	2.90	0.13	18.19	0.162	0.163	0.096	0.15	0.02
13	24	9.46	14.55	18.08	2.00	3.14	3.01	0.14	18.22	0.175	173.000	14.98	18.38	2.00	3.14	3.01	0.14	18.52	0.175	0.175	0.303	1.50	0.21
14	18	4.07	15.50	18.59	1.50	1.77	2.30	0.08	18.67	0.150	200.000	16.00	18.89	1.50	1.77	2.30	0.08	18.97	0.150	0.150	0.300	1.50	0.12
15	18	4.46	16.28	19.02	1.50	1.77	2.52	0.10	19.11	0.180	50.000	16.63	19.11	1.50	1.77	2.52	0.10	19.20	0.180	0.180	0.090	1.44	0.14
16	18	3.33	16.63	19.25	1.50	1.77	1.88	0.06	19.30	0.100	36.000	16.72	19.28	1.50	1.77	1.88	0.06	19.34	0.100	0.100	0.036	0.50	0.03
17	18	1.74	16.72	19.31	1.50	1.77	0.99	0.02	19.33	0.028	44.000	16.83	19.32	1.50	1.77	0.99	0.02	19.34	0.028	0.028	0.012	1.00	0.02
18	18	0.18	16.37	19.02	1.50	1.77	0.10	0.00	19.02	0.000	33.000	16.53	19.02	1.50	1.77	0.10	0.00	19.02	0.000	0.000	0.000	1.00	0.00
19	18	3.37	15.67	18.59	1.50	1.77	1.91	0.06	18.65	0.103	28.000	15.81	18.62	1.50	1.77	1.91	0.06	18.68	0.103	0.103	0.029	1.00	0.06
20	42	19.53	12.00	17.28	3.50	9.62	2.03	0.06	17.34	0.038	69.000	12.17	17.31	3.50	9.62	2.03	0.06	17.37	0.038	0.038	0.026	0.50	0.03
21	42	18.78	12.17	17.34	3.50	9.62	1.95	0.06	17.40	0.035	55.000	12.31	17.36	3.50	9.62	1.95	0.06	17.42	0.035	0.035	0.019	0.79	0.05
22	42	17.85	12.31	17.40	3.50	9.62	1.86	0.05	17.46	0.032	88.000	12.53	17.43	3.50	9.62	1.86	0.05	17.49	0.031	0.032	0.028	1.44	0.08

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
23	36	16.18	12.53	17.51	3.00	7.07	2.29	0.08	17.59	0.059	144.000	12.89	17.59	3.00	7.07	2.29	0.08	17.68	0.059	0.059	0.085	1.50	0.12
24	36	14.38	12.89	17.72	3.00	7.07	2.03	0.06	17.78	0.047	88.000	13.11	17.76	3.00	7.07	2.03	0.06	17.82	0.046	0.046	0.041	2.14	0.14
25	36	10.81	13.11	17.89	3.00	7.07	1.53	0.04	17.93	0.026	88.000	13.33	17.92	3.00	7.07	1.53	0.04	17.95	0.026	0.026	0.023	1.16	0.04
26	30	9.96	13.33	17.96	2.50	4.91	2.03	0.06	18.02	0.059	23.000	13.39	17.97	2.50	4.91	2.03	0.06	18.04	0.059	0.059	0.014	1.46	0.09
27	30	10.23	13.39	18.07	2.50	4.91	2.08	0.07	18.13	0.062	87.000	13.61	18.12	2.50	4.91	2.08	0.07	18.19	0.062	0.062	0.054	1.50	0.10
28	18	3.55	15.14	18.22	1.50	1.77	2.01	0.06	18.29	0.115	28.000	15.21	18.25	1.50	1.77	2.01	0.06	18.32	0.115	0.115	0.032	1.00	0.06
29	24	6.17	14.64	18.22	2.00	3.14	1.96	0.06	18.28	0.074	46.000	14.76	18.26	2.00	3.14	1.96	0.06	18.32	0.074	0.074	0.034	1.50	0.09
30	24	5.53	14.83	18.35	2.00	3.14	1.76	0.05	18.39	0.060	46.000	14.95	18.37	2.00	3.14	1.76	0.05	18.42	0.060	0.060	0.028	1.50	0.07
31	24	4.70	14.95	18.45	2.00	3.14	1.50	0.03	18.48	0.043	56.000	15.37	18.47	2.00	3.14	1.50	0.03	18.51	0.043	0.043	0.024	1.49	0.05
32	18	4.24	15.88	18.52	1.50	1.77	2.40	0.09	18.61	0.163	28.000	15.95	18.57	1.50	1.77	2.40	0.09	18.66	0.163	0.163	0.046	1.49	0.13
33	18	2.79	15.95	18.70	1.50	1.77	1.58	0.04	18.74	0.071	65.000	16.53	18.75	1.50	1.77	1.58	0.04	18.79	0.071	0.071	0.046	1.00	0.04
34	18	0.64	15.34	18.35	1.50	1.77	0.36	0.00	18.35	0.004	28.000	15.41	18.35	1.50	1.77	0.36	0.00	18.35	0.004	0.004	0.001	1.00	0.00
35	18	2.16	16.46	17.89	1.43	1.74	1.24	0.02	17.92	0.037	75.000	16.83	17.91	1.08	1.37	1.58	0.04	17.95	0.056	0.046	0.035	1.00	0.04
36	18	1.36	16.33	17.89	1.50	0.43	0.77	0.01	17.90	0.017	54.000	18.40	18.84 j	0.44**	0.43	3.18	0.16	18.99	0.493	0.255	n/a	0.50	0.08
37	18	0.65	18.40	18.84	0.44	0.25	1.52	0.04	18.87	0.112	65.000	18.73	19.03 j	0.30**	0.25	2.59	0.10	19.13	0.506	0.309	n/a	1.00	0.10
38	18	1.36	16.08	17.72	1.50	0.43	0.77	0.01	17.73	0.017	97.000	18.75	19.19 j	0.44**	0.43	3.18	0.16	19.34	0.493	0.255	n/a	0.50	0.08
39	18	0.65	18.75	19.19	0.44	0.25	1.52	0.04	19.22	0.112	65.000	19.08	19.38 j	0.30**	0.25	2.59	0.10	19.48	0.506	0.309	n/a	1.00	0.10
40	18	1.82	15.85	17.51	1.50	1.77	1.03	0.02	17.53	0.030	96.000	16.33	17.53	1.20	1.52	1.20	0.02	17.55	0.031	0.031	0.030	1.00	0.02
41	18	3.57	17.00	17.57	0.57*	0.62	5.78	0.28	17.85	0.000	50.000	17.61	18.33	0.72**	0.84	4.25	0.28	18.61	0.000	0.000	n/a	0.54	0.15
42	18	1.09	17.61	18.33	0.72	0.84	1.30	0.03	18.36	0.050	29.000	17.75	18.33	0.58	0.63	1.72	0.05	18.38	0.107	0.078	0.023	1.00	0.05
43	24	9.95	13.92	17.28	2.00	3.14	3.17	0.16	17.44	0.193	182.000	14.38	17.63	2.00	3.14	3.17	0.16	17.79	0.193	0.193	0.352	0.50	0.08
44	24	9.61	14.38	17.71	2.00	3.14	3.06	0.15	17.86	0.181	152.000	14.76	17.98	2.00	3.14	3.06	0.15	18.13	0.181	0.181	0.275	1.49	0.22

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

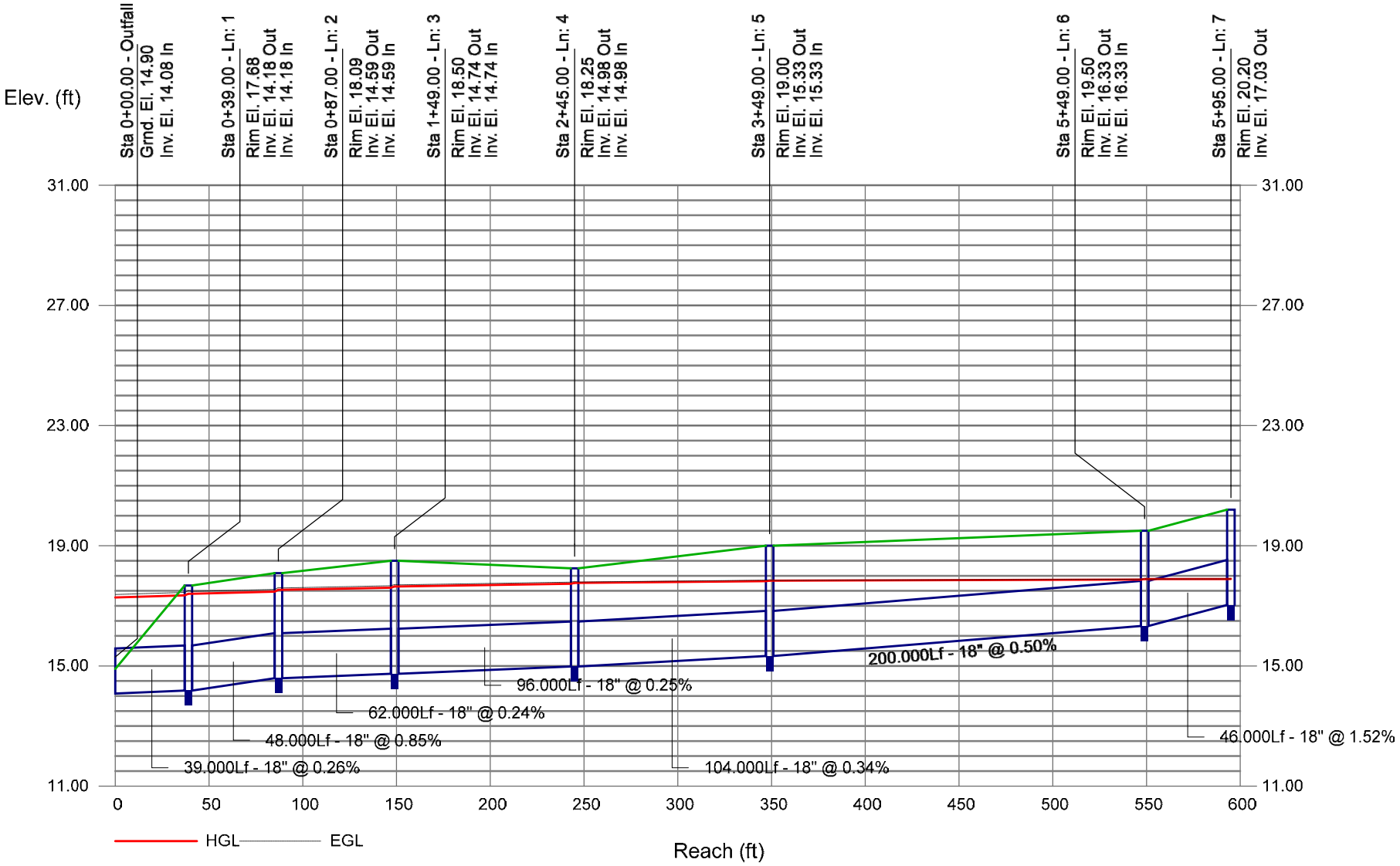
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
45	18	7.08	16.55	18.20	1.50	1.77	4.01	0.25	18.45	0.455	52.000	16.68	18.44	1.50	1.77	4.01	0.25	18.69	0.455	0.455	0.236	1.50	0.37
46	18	6.69	16.68	18.81	1.50	1.77	3.79	0.22	19.04	0.406	51.000	16.81	19.02	1.50	1.77	3.79	0.22	19.24	0.406	0.406	0.207	1.50	0.33
47	18	5.43	16.81	19.35	1.50	1.77	3.07	0.15	19.50	0.267	47.000	16.93	19.48	1.50	1.77	3.07	0.15	19.63	0.267	0.267	0.126	0.50	0.07
48	18	4.35	16.93	19.55	1.50	1.77	2.46	0.09	19.65	0.172	28.000	17.00	19.60	1.50	1.77	2.46	0.09	19.70	0.172	0.172	0.048	1.50	0.14
49	18	2.81	17.00	19.74	1.50	1.77	1.59	0.04	19.78	0.072	141.000	17.35	19.84	1.50	1.77	1.59	0.04	19.88	0.072	0.072	0.101	1.49	0.06
50	18	1.46	17.35	19.90	1.50	1.77	0.83	0.01	19.91	0.019	28.000	17.49	19.91	1.50	1.77	0.83	0.01	19.92	0.019	0.019	0.005	1.00	0.01
51	18	3.04	14.76	18.20	1.50	1.77	1.72	0.05	18.25	0.084	155.000	15.15	18.33	1.50	1.77	1.72	0.05	18.38	0.084	0.084	0.130	0.77	0.04
52	18	2.45	15.15	18.37	1.50	1.77	1.39	0.03	18.40	0.055	125.000	15.46	18.44	1.50	1.77	1.39	0.03	18.47	0.055	0.055	0.068	1.34	0.04
53	18	1.48	15.46	18.48	1.50	1.77	0.84	0.01	18.49	0.020	147.000	15.83	18.50	1.50	1.77	0.84	0.01	18.52	0.020	0.020	0.029	1.00	0.01
54	18	0.73	16.76	17.28	0.52	0.54	1.35	0.03	17.31	0.073	109.000	17.10	17.45	0.35	0.31	2.35	0.09	17.53	0.345	0.209	0.228	1.00	0.09
55	18	0.57	17.10	17.53	0.43	0.42	1.34	0.03	17.56	0.088	126.000	17.50	17.79	0.29	0.24	2.33	0.08	17.88	0.416	0.252	0.317	1.00	0.08
56	36	50.17	11.76	14.06	2.30*	5.82	8.62	1.15	15.22	0.645	48.000	12.00	14.54	2.54	6.38	7.86	0.96	15.50	0.536	0.591	0.284	1.00	0.96

Project File: Jasper Village Phase 2.stm | Number of lines: 56 | Run Date: 3/31/2022

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

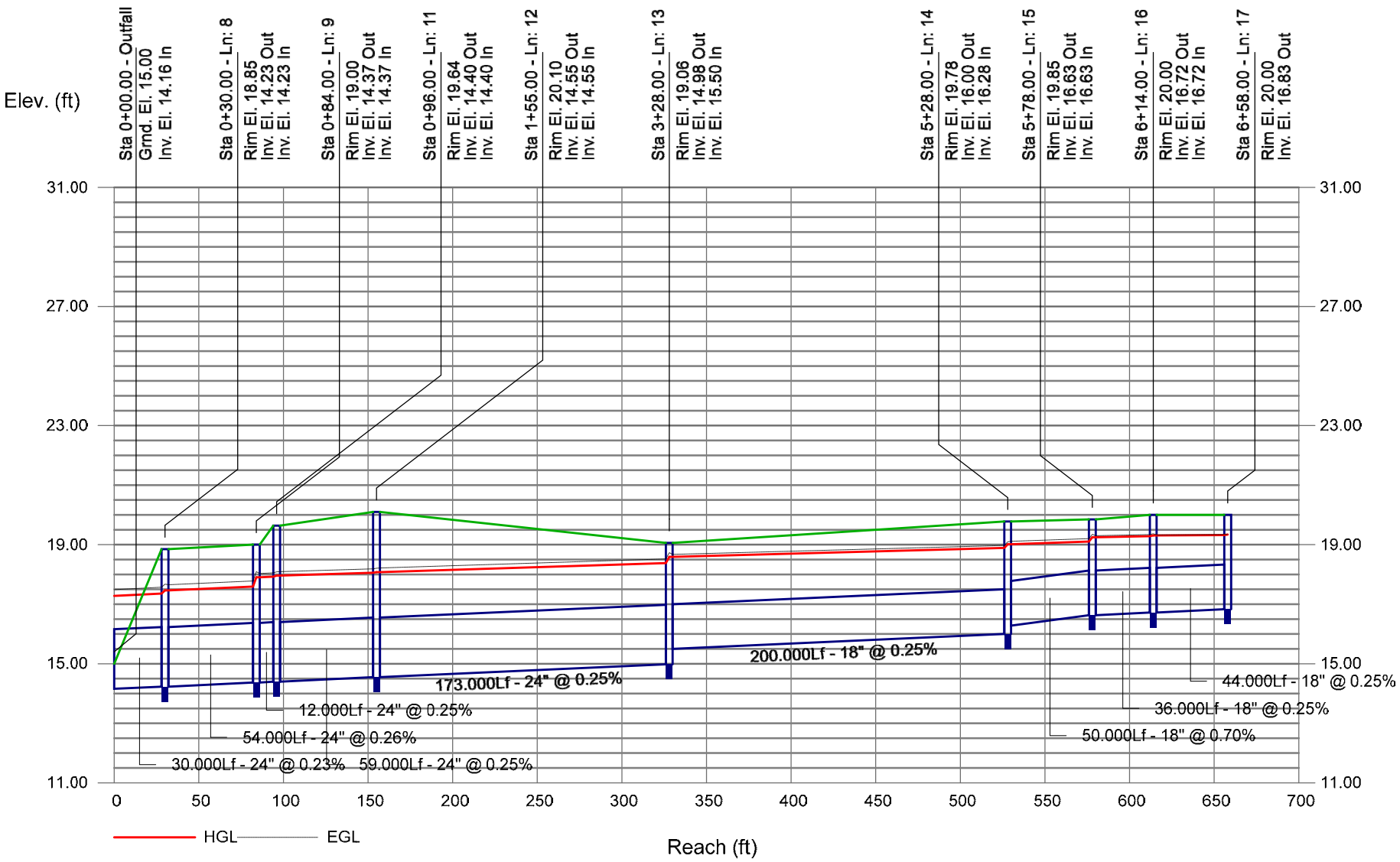
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



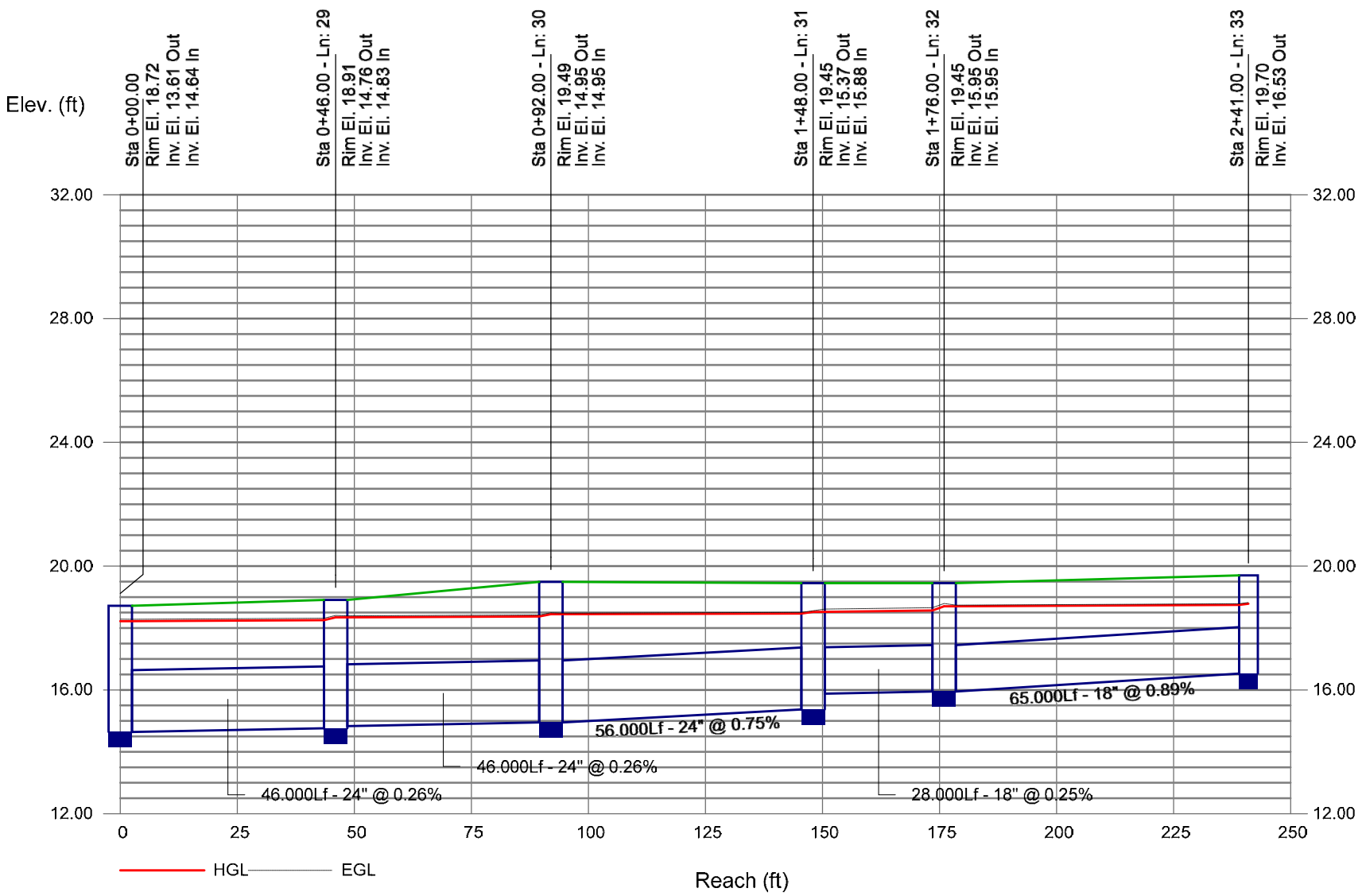
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



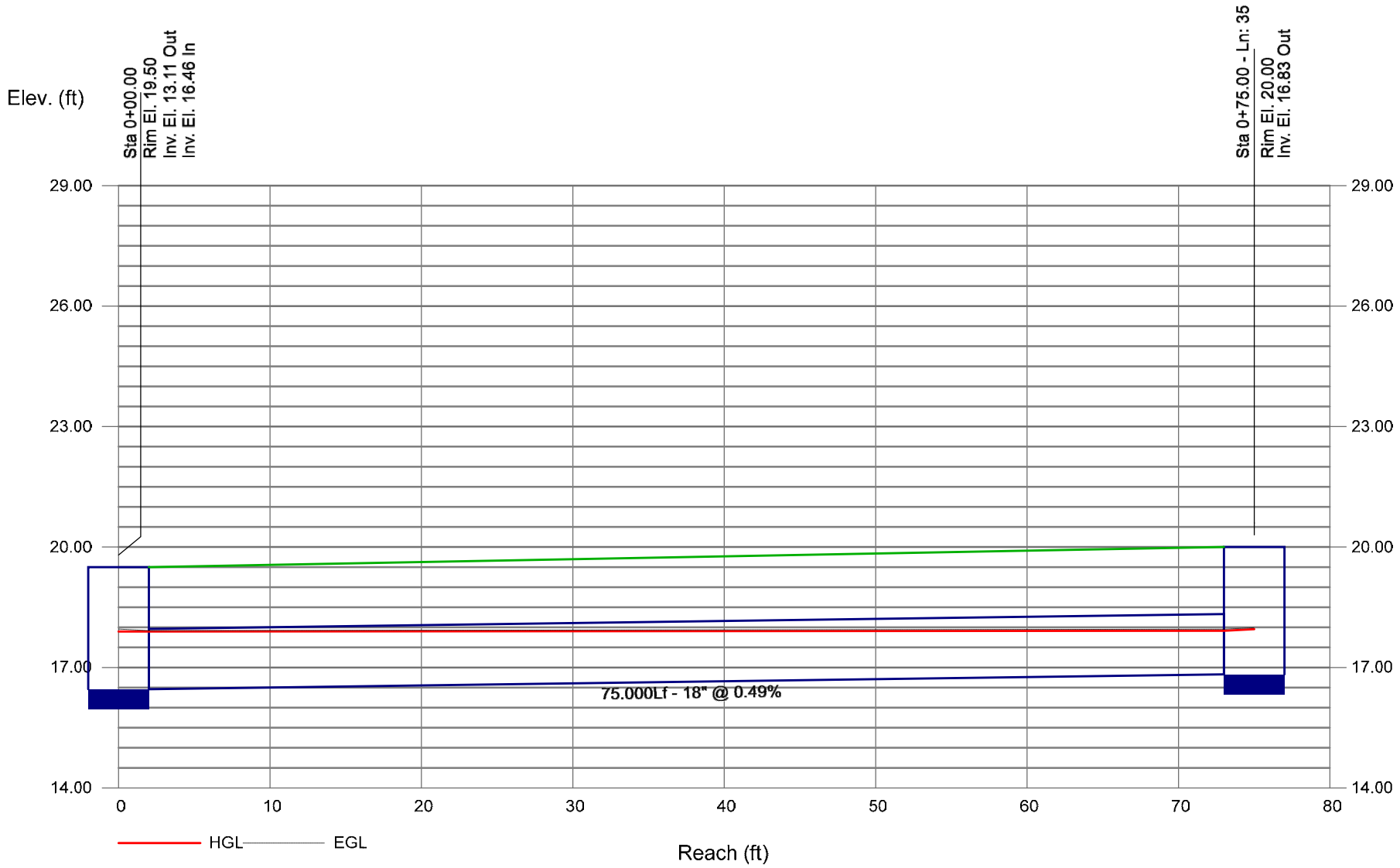
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



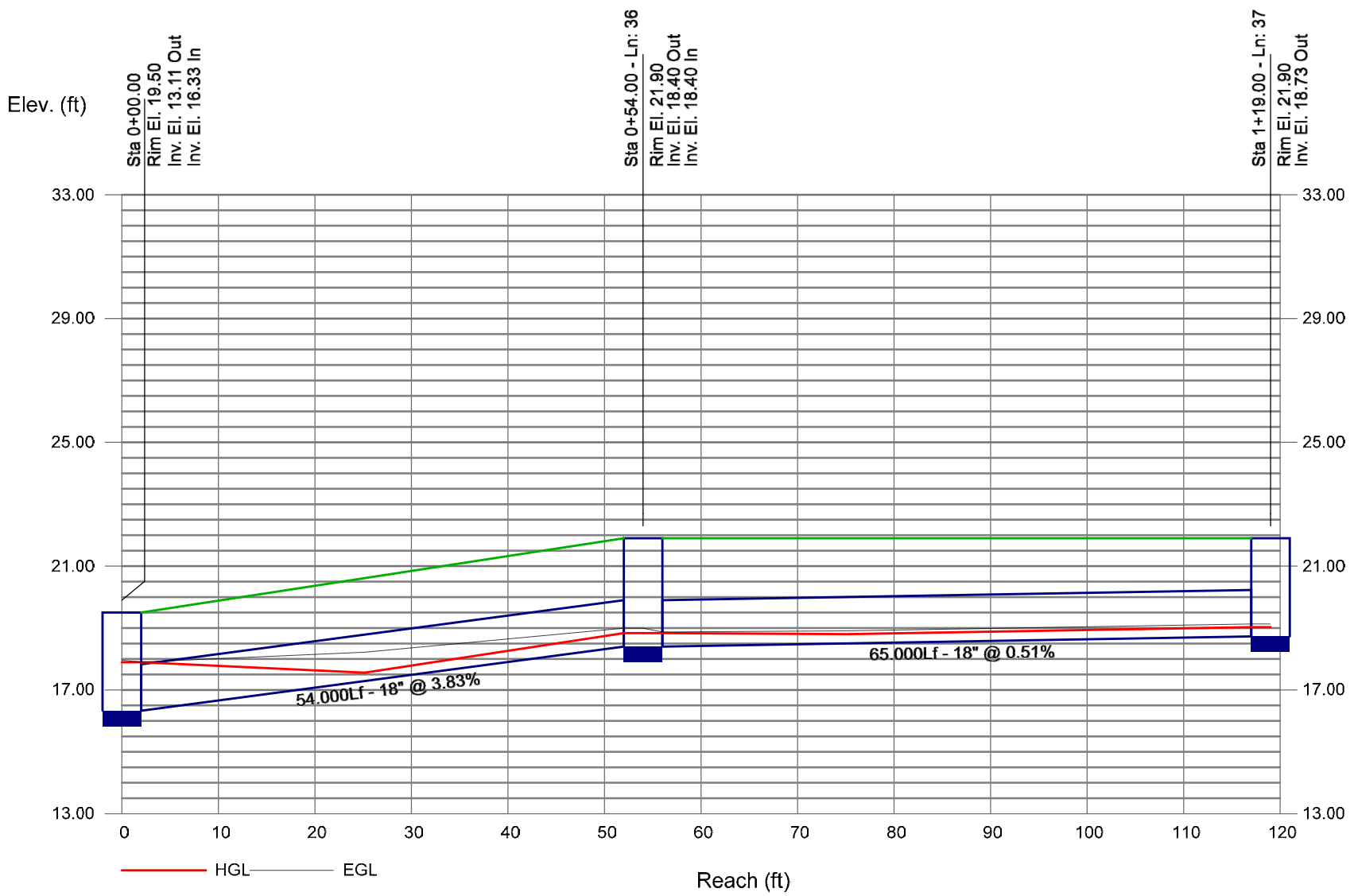
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



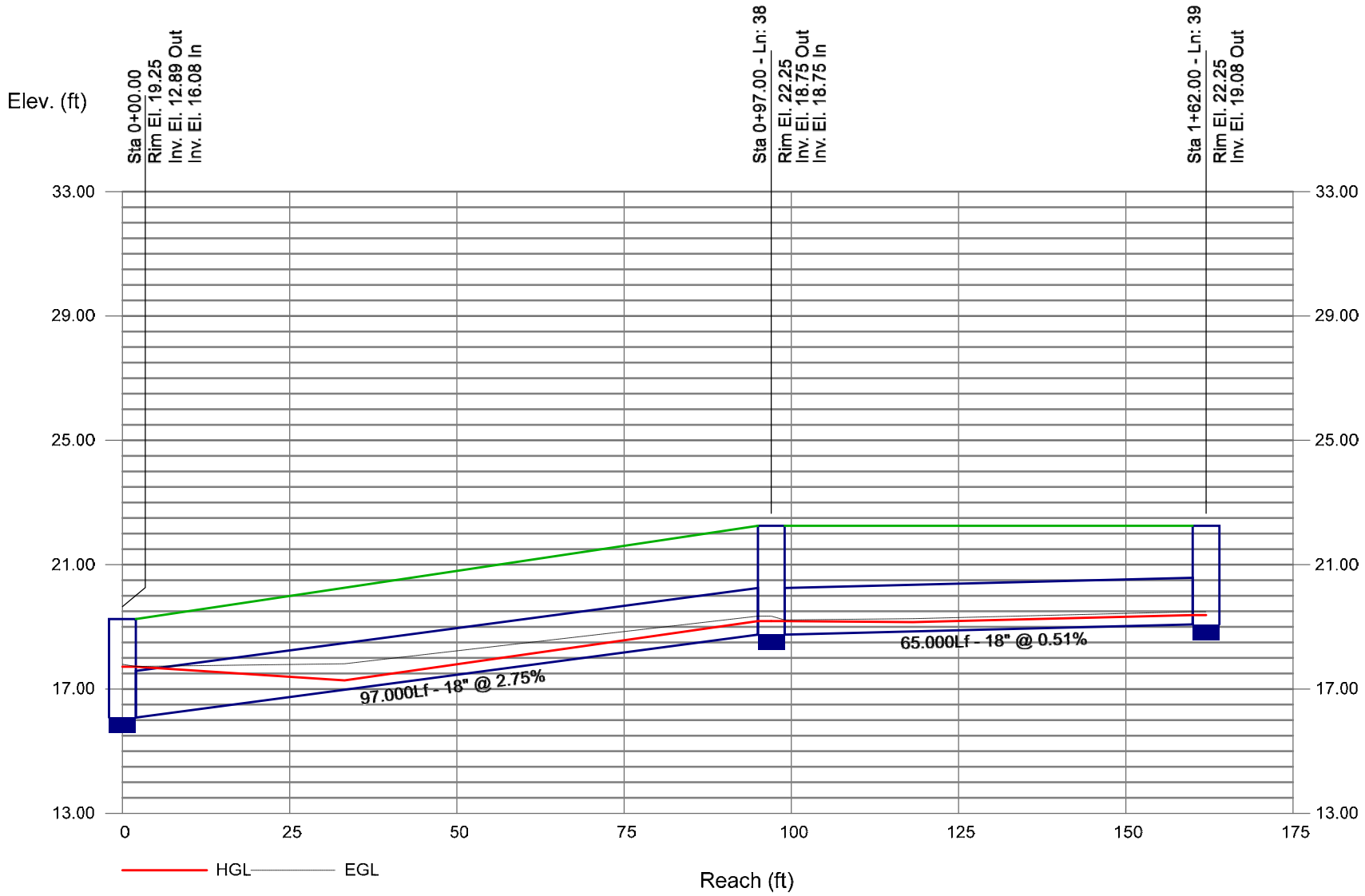
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



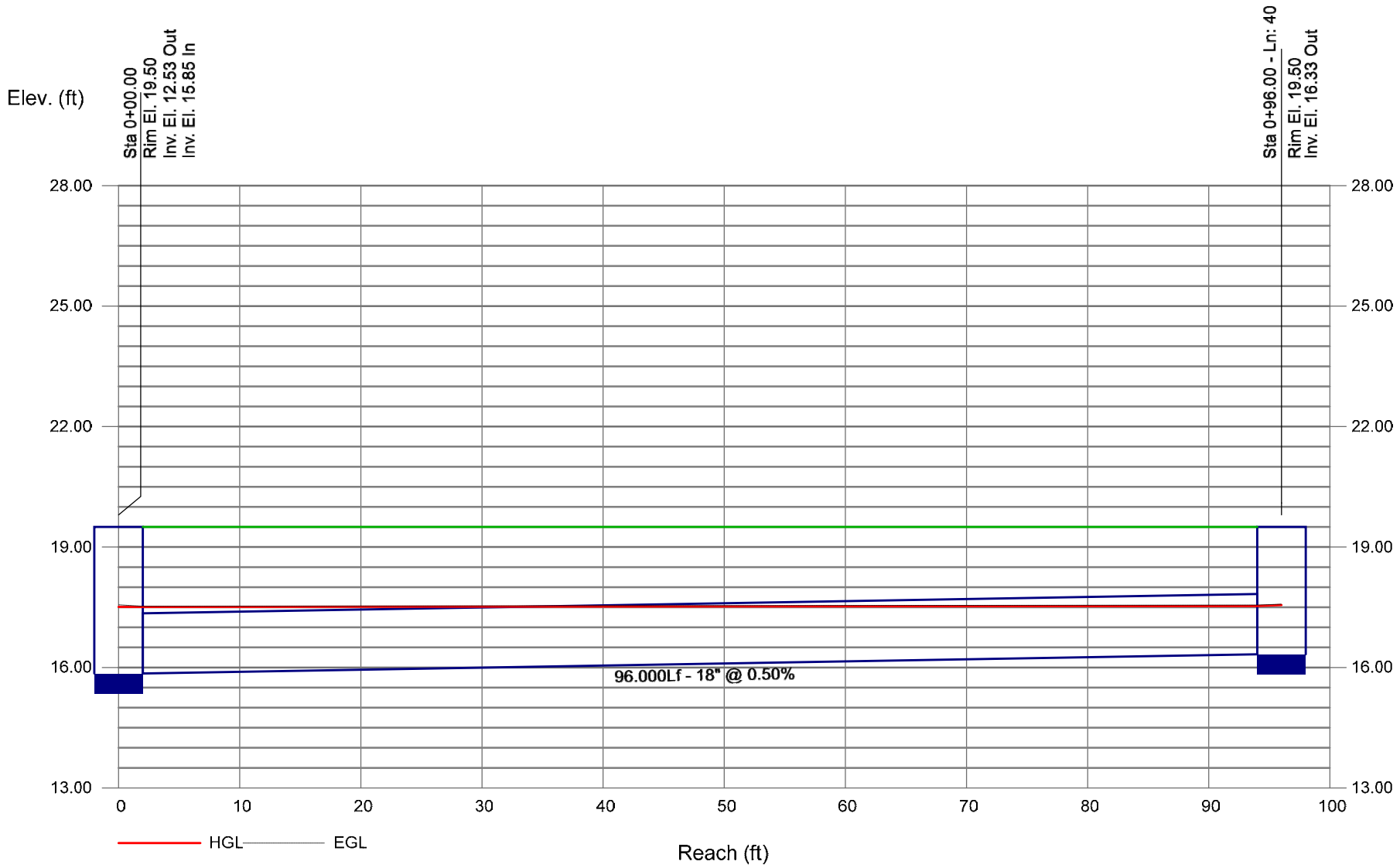
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



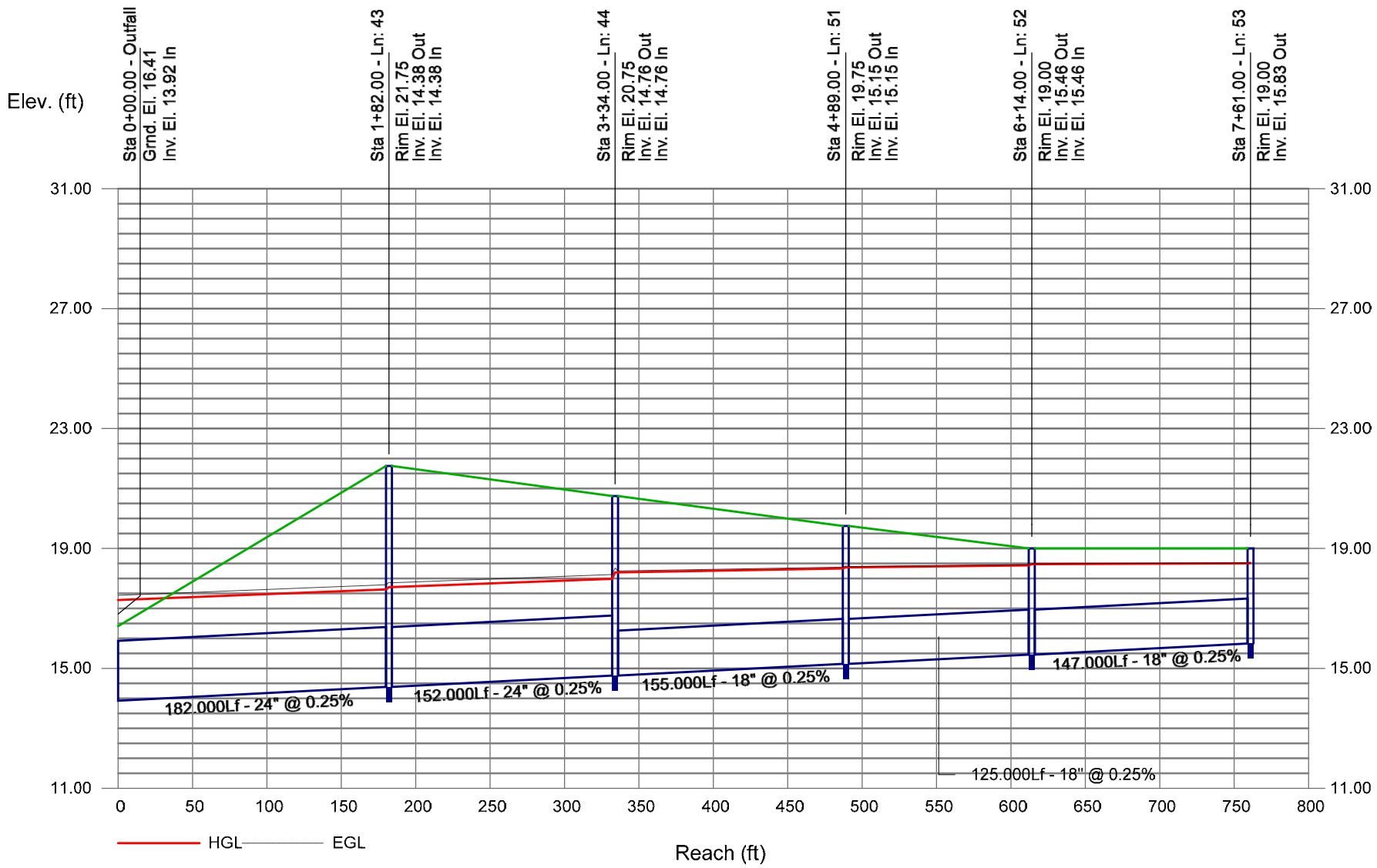
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



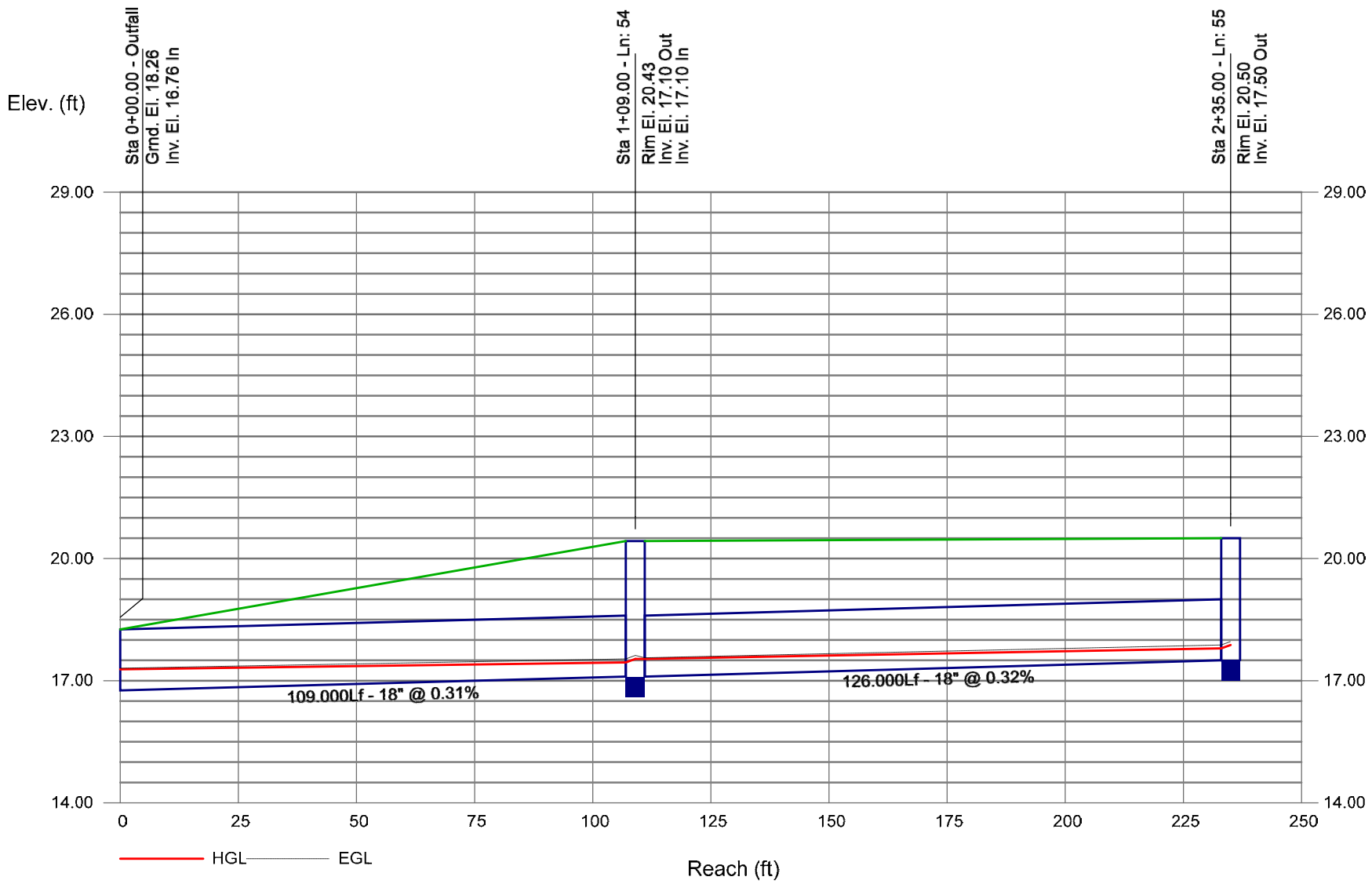
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



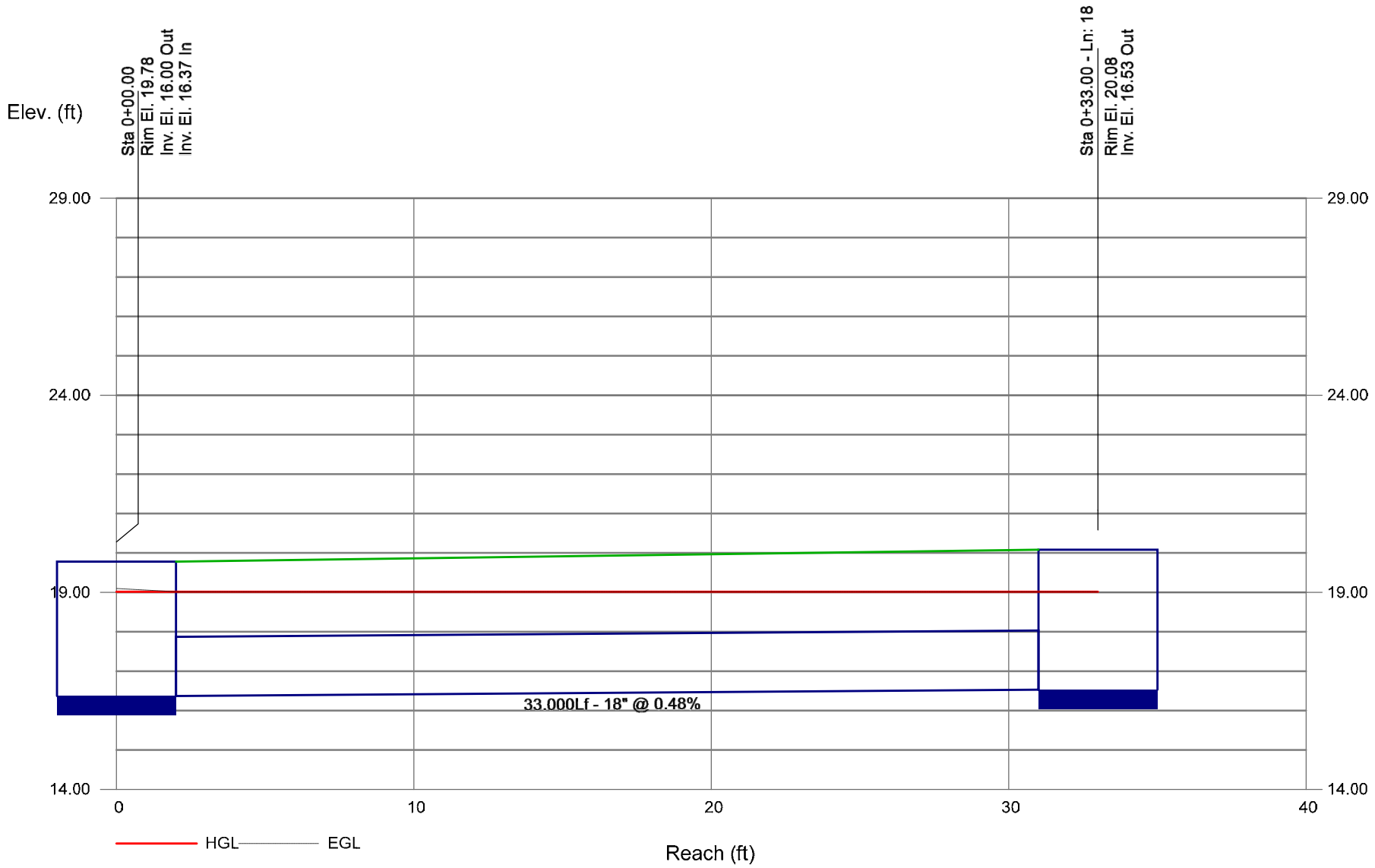
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



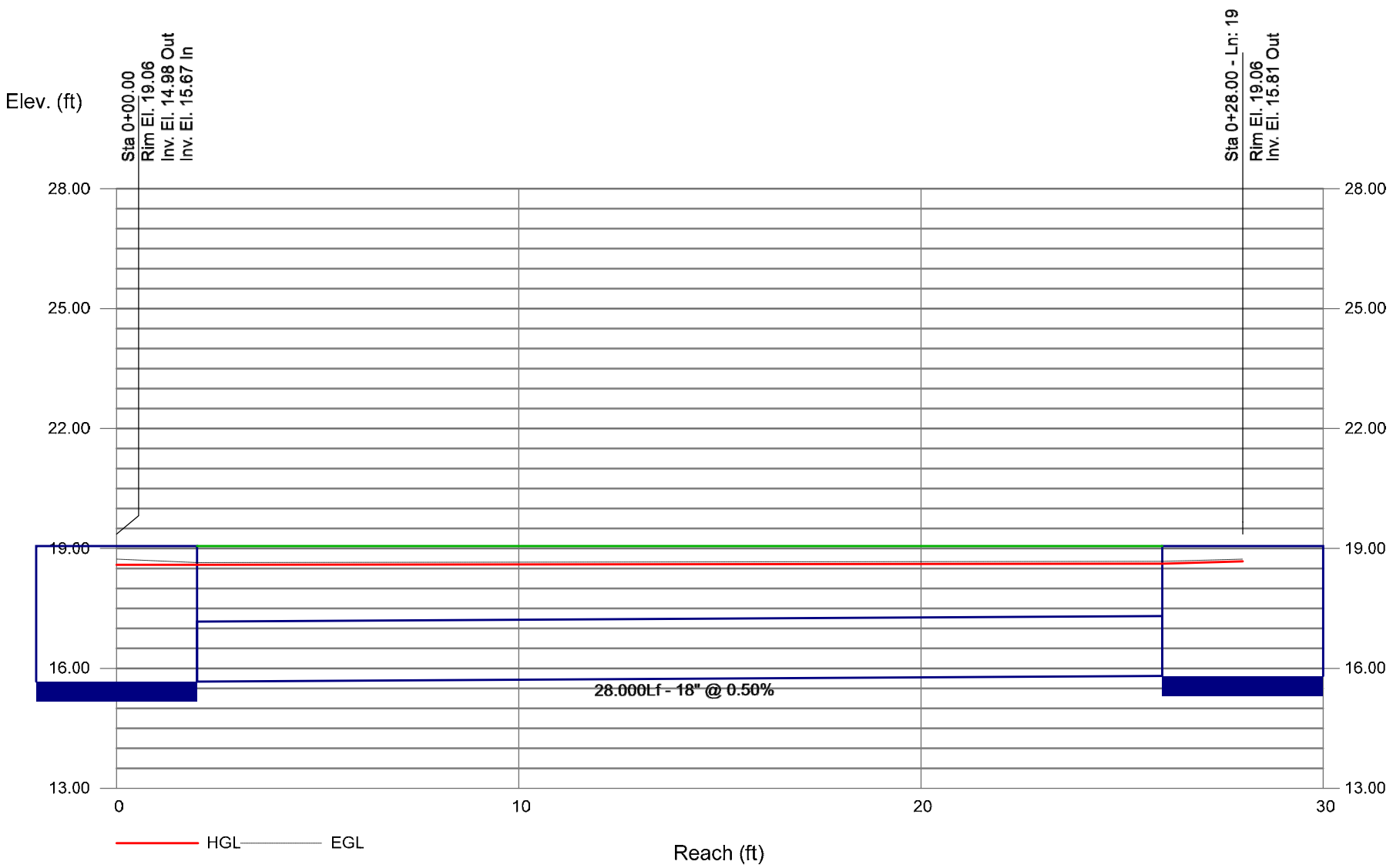
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



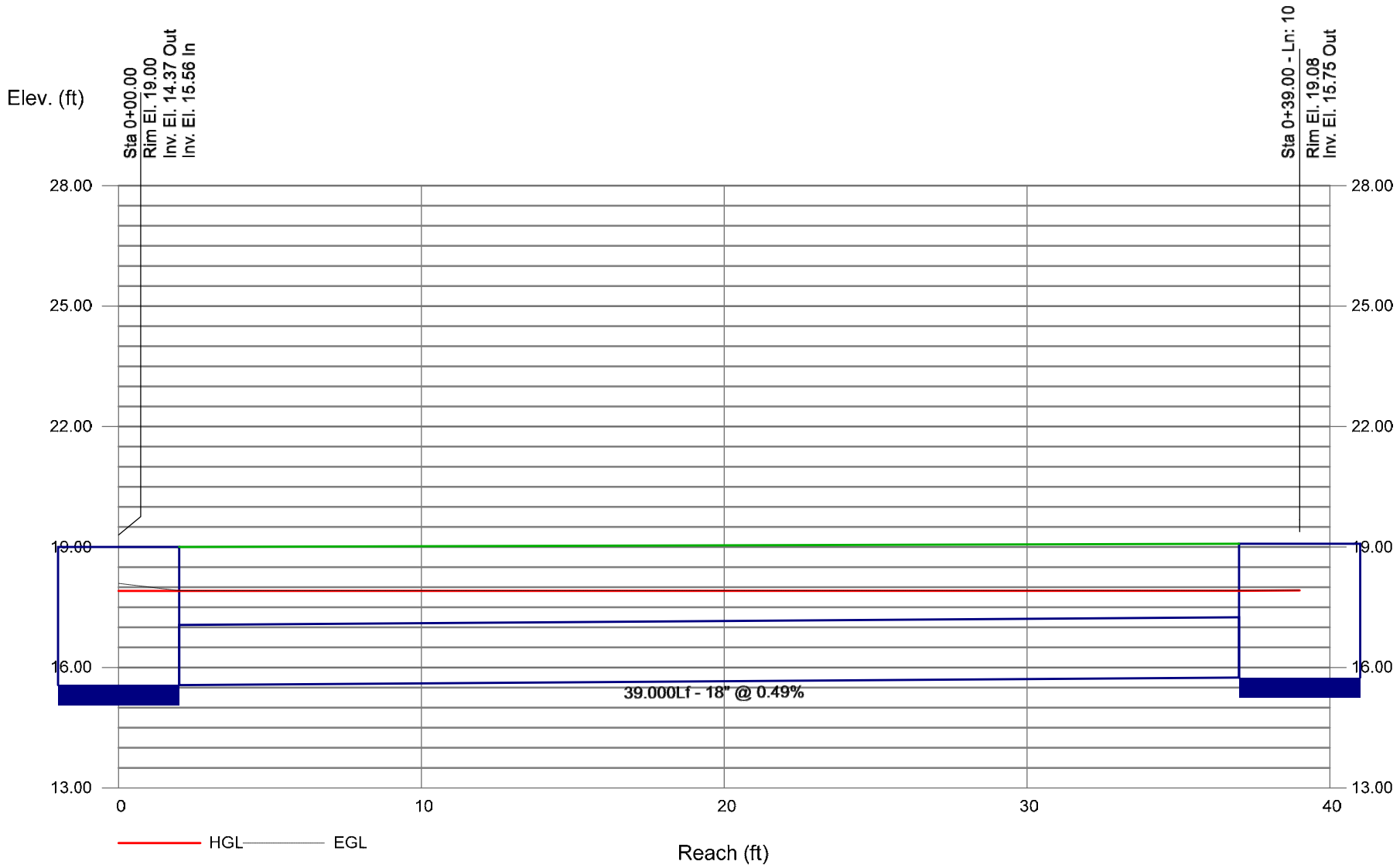
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



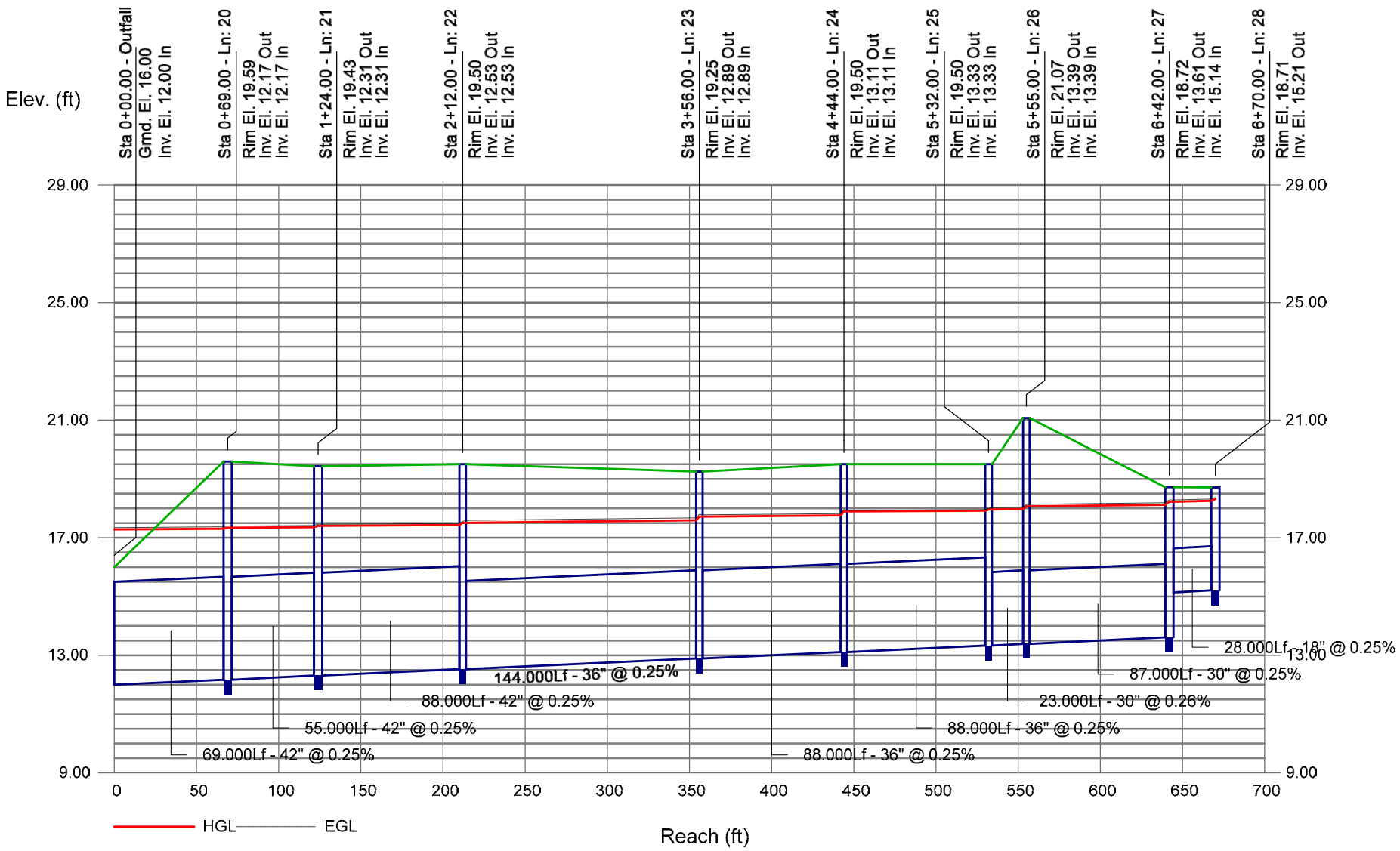
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



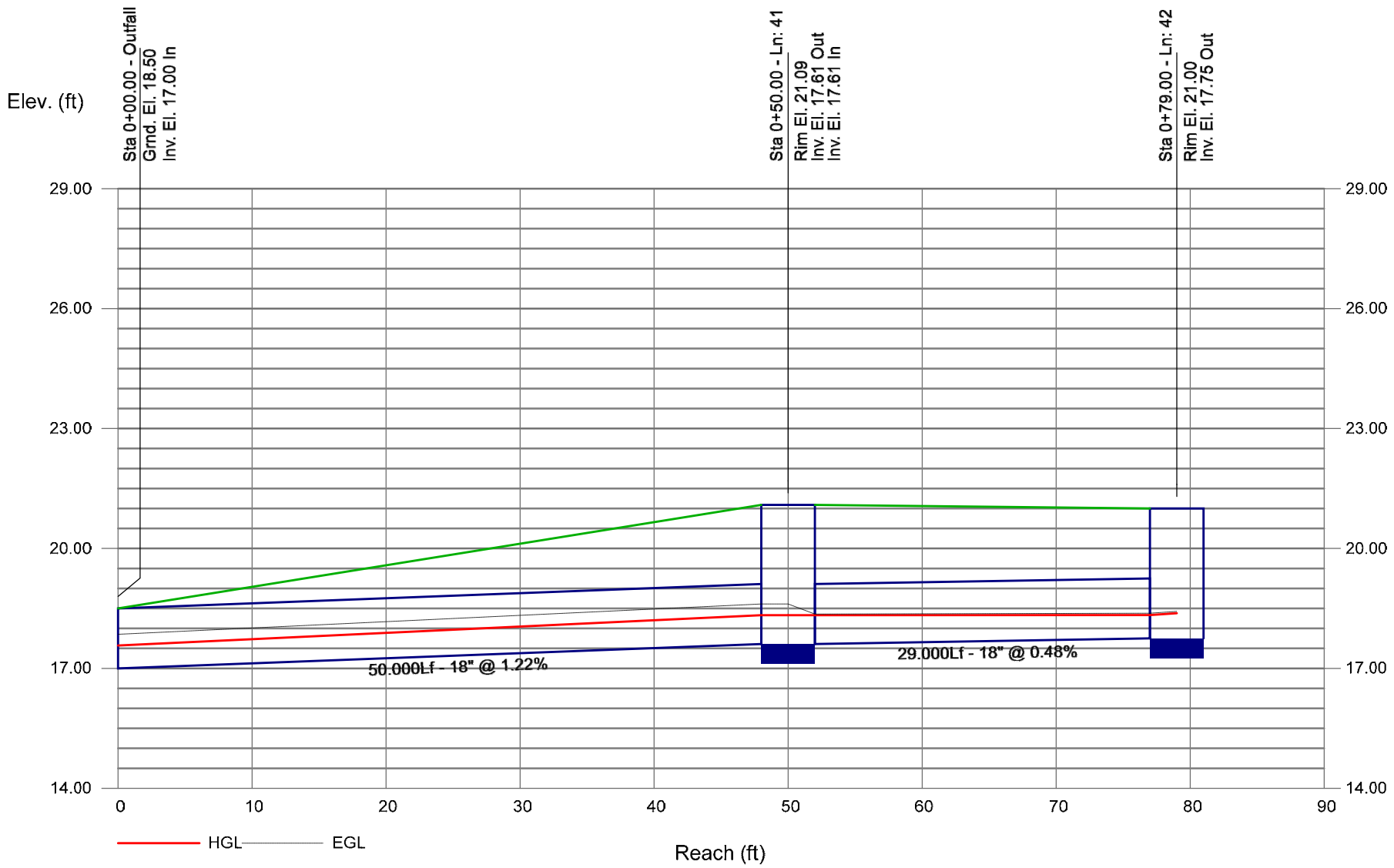
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



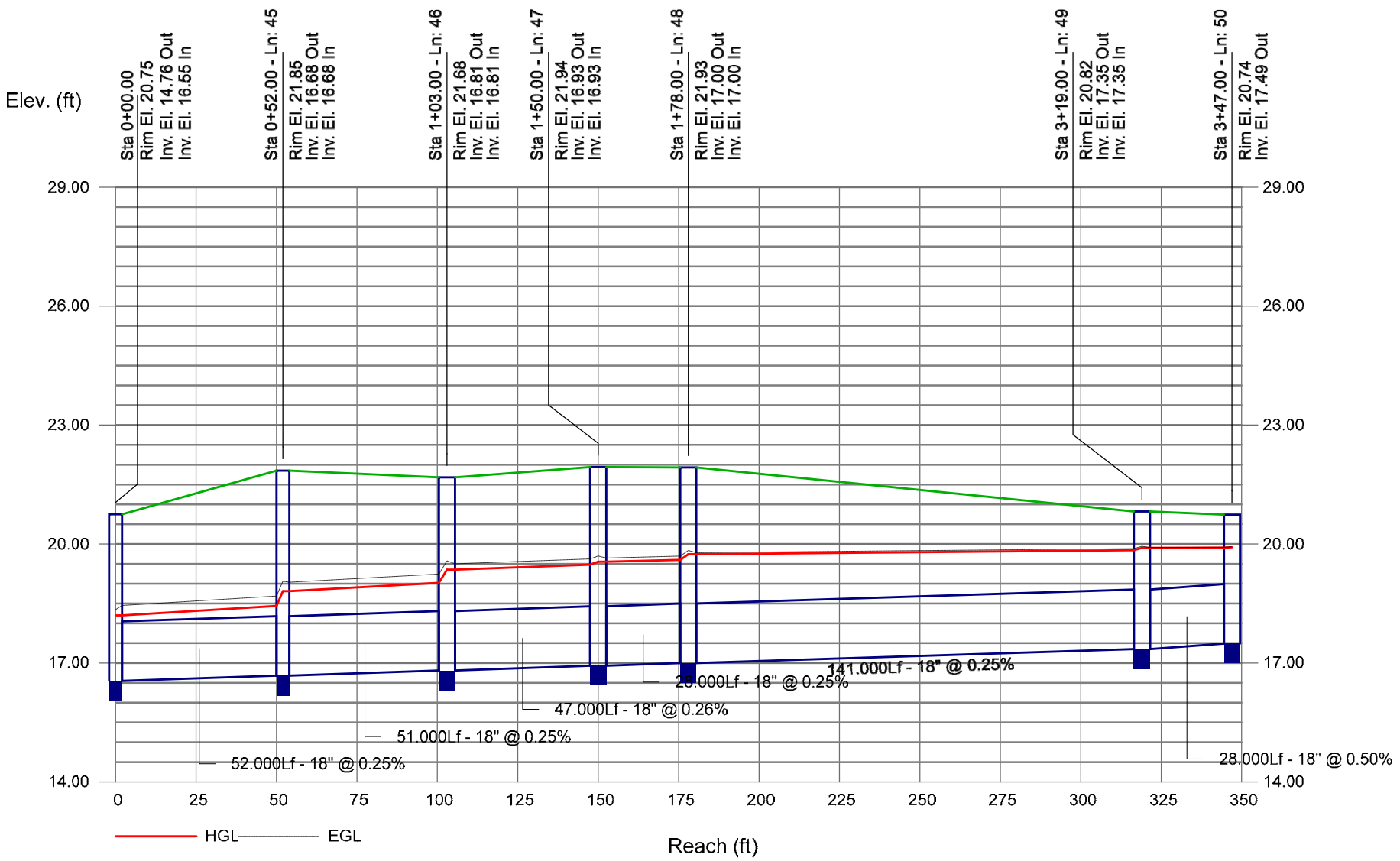
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



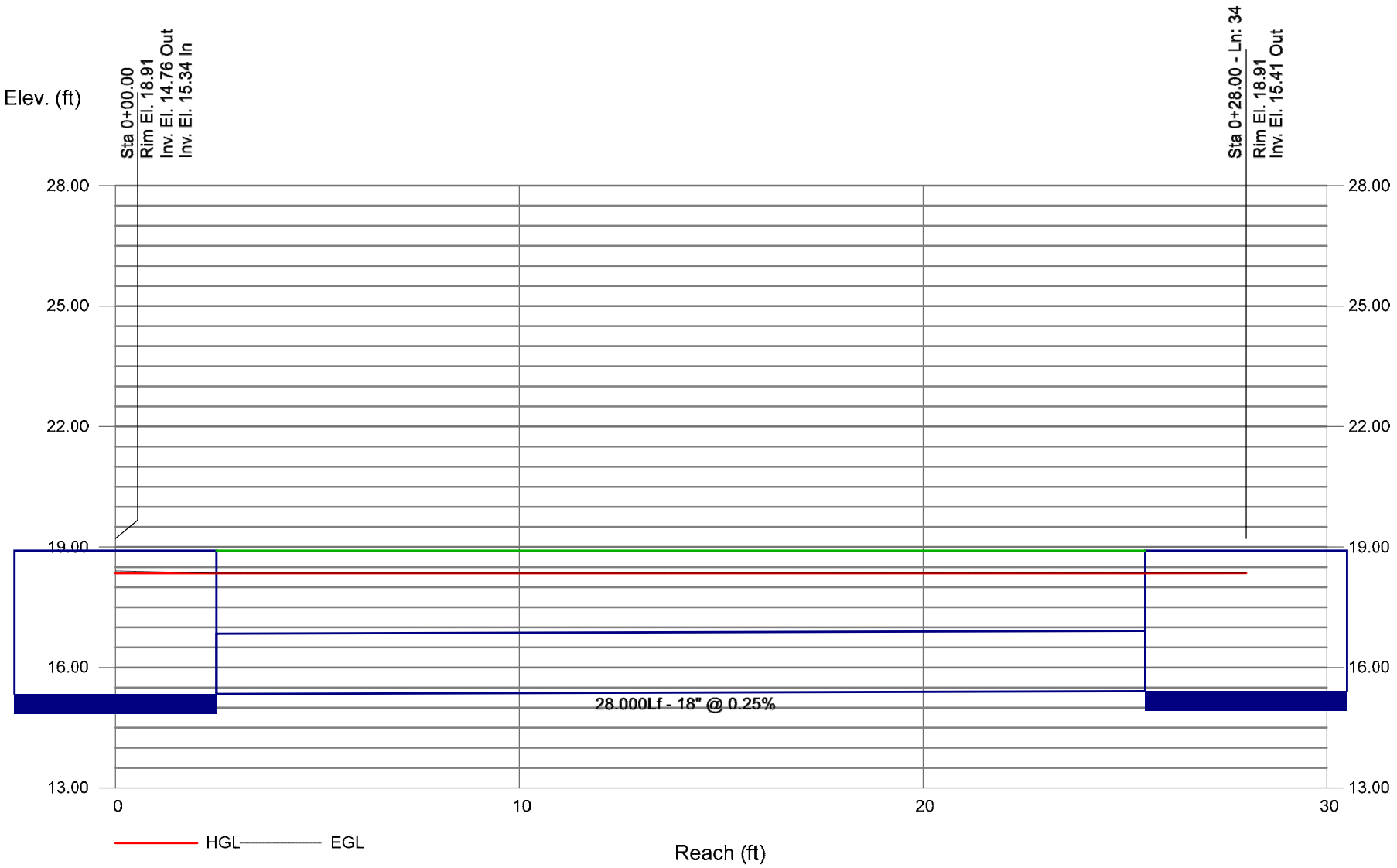
Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



Storm Sewer Profile

Proj. file: Jasper Village Phase 2.stm



Hydrology Report

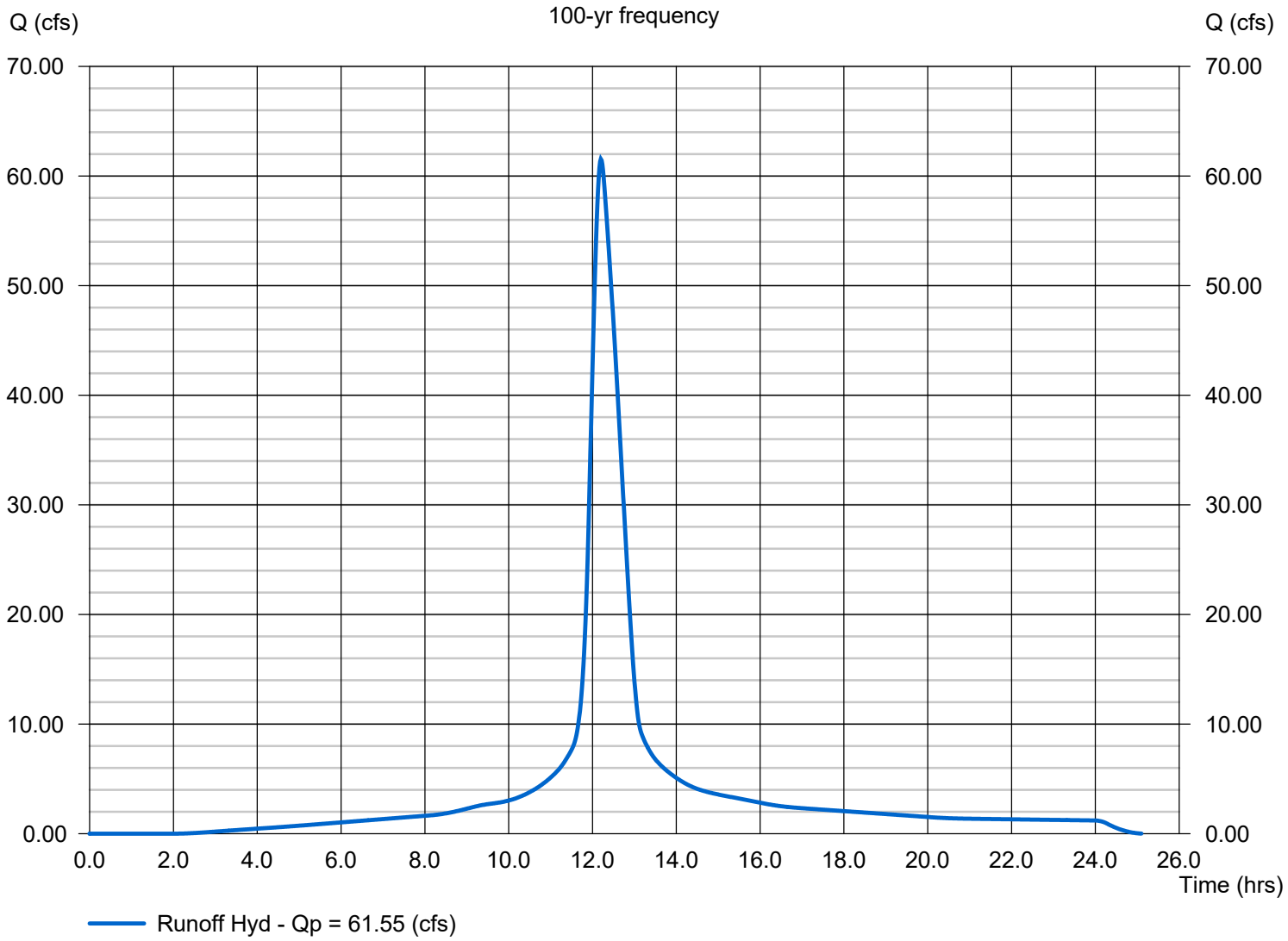
Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Mar 7 2022

Jasper Village Phase 2 Re-Routed Ditch

Hydrograph type	=	SCS	Peak discharge (cfs)	=	61.55
Storm frequency (yrs)	=	100	Time interval (min)	=	1
Drainage area (ac)	=	9.750	Curve number (CN)	=	90
Basin Slope (%)	=	*See Worksheet*	Hydraulic length (ft)	=	*See Worksheet*
Tc method	=	TR55	Time of conc. (min)	=	30
Total precip. (in)	=	11.00	Storm Distribution	=	Type II
Storm duration (hrs)	=	24	Shape factor	=	323

Hydrograph Volume = 346,160 (cuft); 7.947 (acft)

Runoff Hydrograph



TR55 Tc Worksheet

SCS

Jasper Village Phase 2 Re-Routed Ditch

Description		A		B		C		Totals
Sheet Flow								
Manning's n-value	=	0.240		0.011		0.011		
Flow length (ft)	=	100.0		0.0		0.0		
Two-year 24-hr precip. ((in))	=	4.80		0.00		0.00		
Land slope (%)	=	0.50		0.00		0.00		
Travel Time (min)	**=**	**20.29**	**+**	**0.00**	**+**	**0.00**	**=**	**20.29**
Shallow Concentrated Flow								
Flow length (ft)	=	615.00		0.00		0.00		
Watercourse slope (%)	=	0.50		0.00		0.00		
Surface description	=	Unpaved		Paved		Paved		
Average velocity (ft/s)	=	1.14		0.00		0.00		
Travel Time (min)	**=**	**8.98**	**+**	**0.00**	**+**	**0.00**	**=**	**8.98**
Channel Flow								
X sectional flow area ((sqft))	=	12.50		0.00		0.00		
Wetted perimeter ((ft))	=	11.18		0.00		0.00		
Channel slope (%)	=	0.50		0.00		0.00		
Manning's n-value	=	0.015		0.015		0.015		
Velocity (ft/s)	=	7.57		0.00		0.00		
Flow length (ft)	=	225.0		0.0		0.0		
Travel Time (min)	**=**	**0.49542460.00**			**+**	**0**	**=**	**0.50**

Total Travel Time, Tc ..... 30.00 min

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Mar 7 2022

<Name>

Trapezoidal

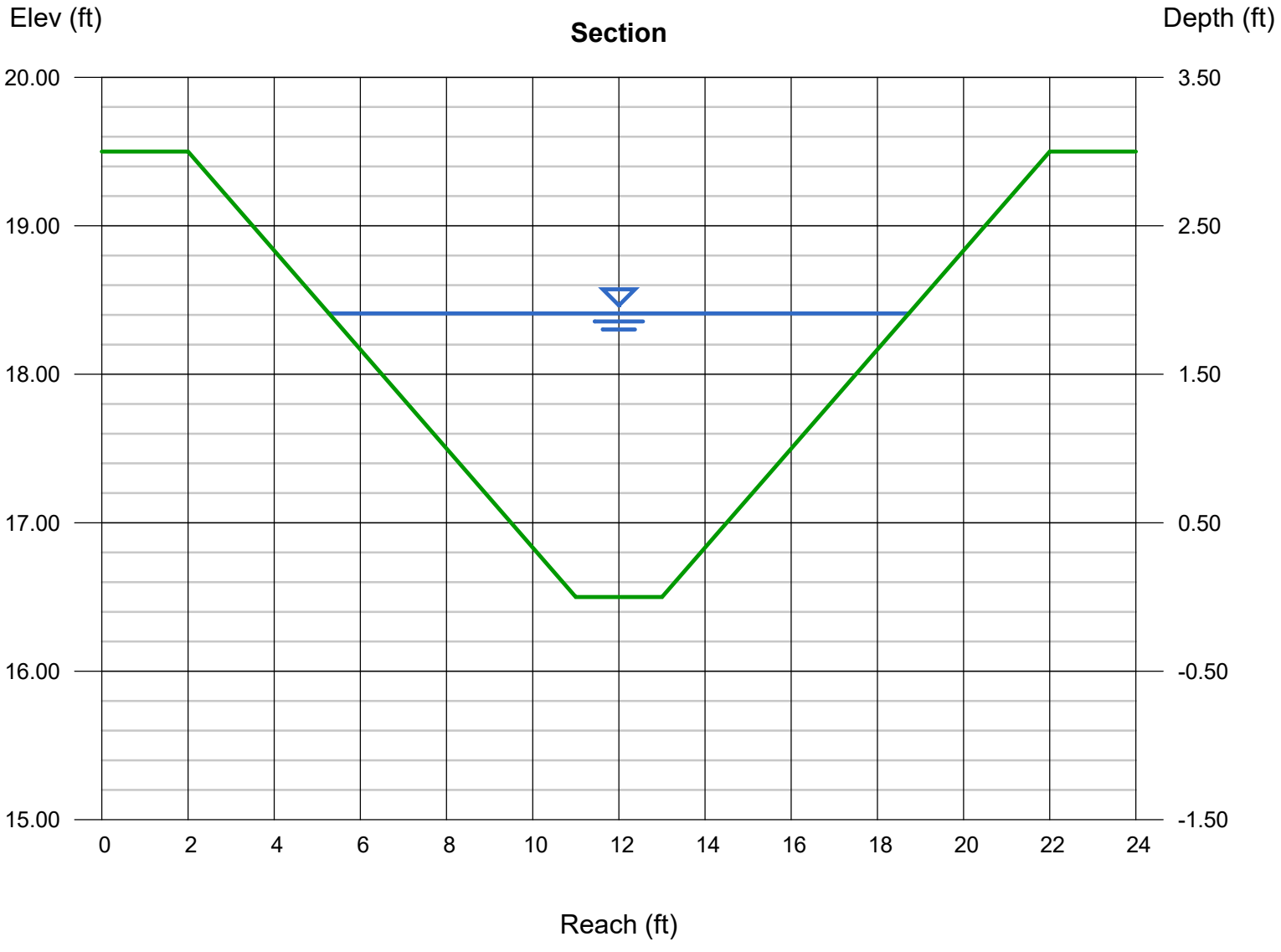
Bottom Width (ft)	= 2.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 3.00
Invert Elev (ft)	= 16.50
Slope (%)	= 0.43
N-Value	= 0.024

Calculations

Compute by:	Known Q
Known Q (cfs)	= 61.55

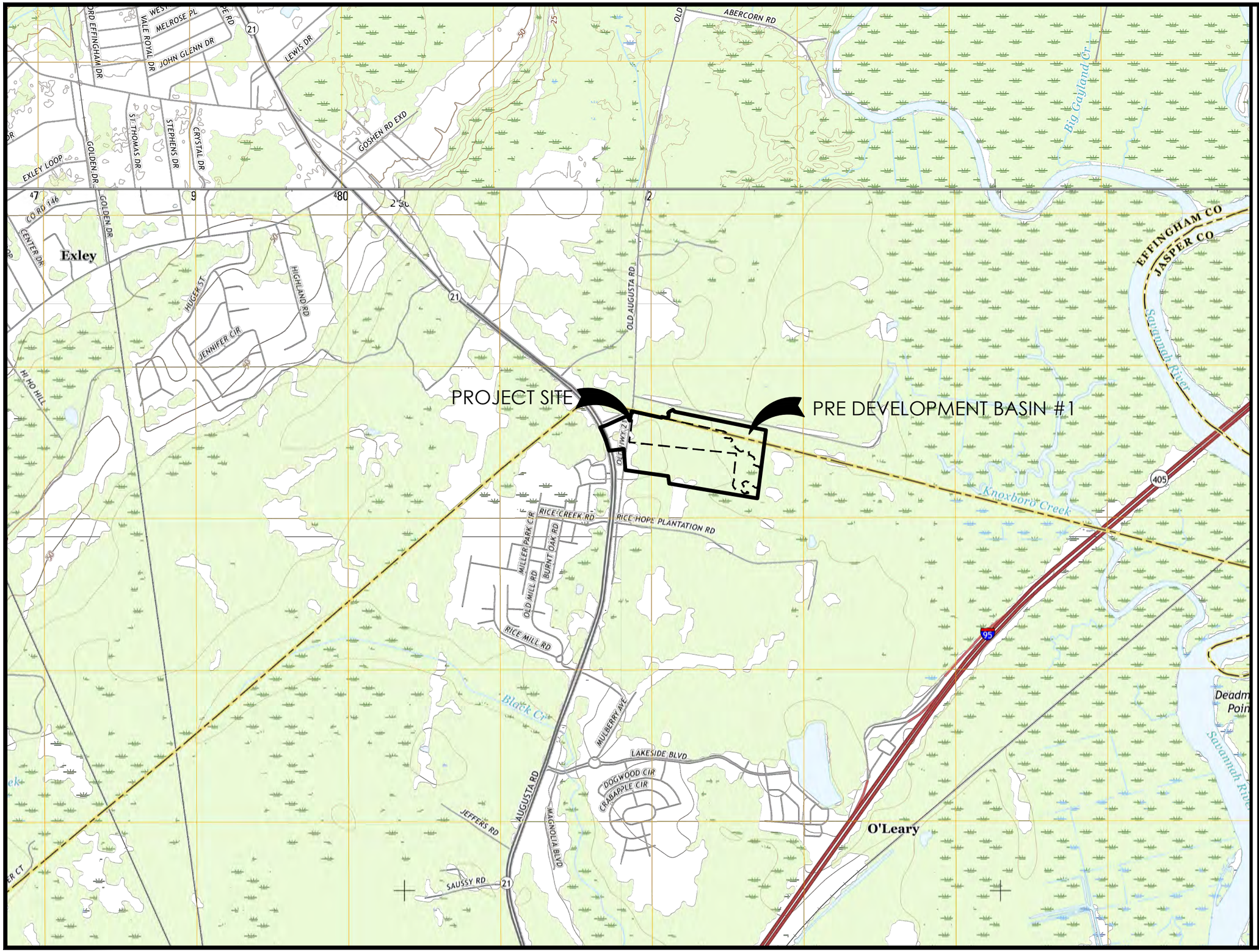
Highlighted

Depth (ft)	= 1.91
Q (cfs)	= 61.55
Area (sqft)	= 14.76
Velocity (ft/s)	= 4.17
Wetted Perim (ft)	= 14.08
Crit Depth, Yc (ft)	= 1.63
Top Width (ft)	= 13.46
EGL (ft)	= 2.18



APPENDIX F

DOWNSTREAM ANALYSIS



allen
ENGINEERING SERVICES

P.O. BOX 1749 ♦ RINCON, GA 31326 ♦ PH:(912) 667-2667

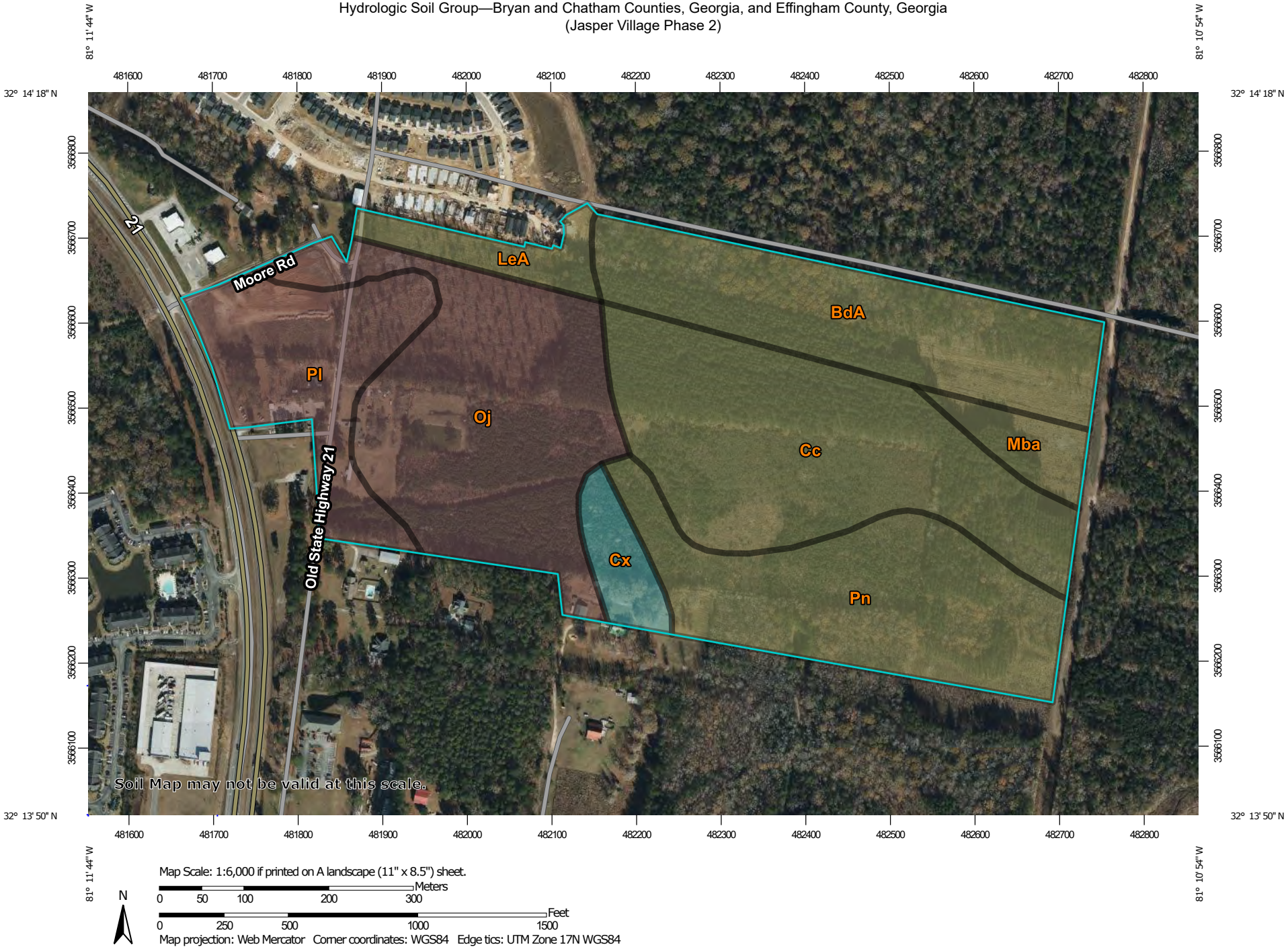
QUADRANGLE MAP
JASPER VILLAGE PHASE II
PORT WENTWORTH AND
RINCON QUADS
Prepared for:
NEXT CHAPTER HOLDINGS, LLC

2000' 1000' 0' 2000'
GRAPHIC SCALE: 1"=2000'-0"

PROJECT NO.:	21-015
DRAWN BY:	ATA
DESIGNED BY:	ATA
SURVEYED BY:	N/A
SURVEY DATE:	N/A
CHECKED BY:	ATA
SCALE:	1" = 2000'
DATE:	03/07/2022

SHEET
1
OF 1

Hydrologic Soil Group—Bryan and Chatham Counties, Georgia, and Effingham County, Georgia
(Jasper Village Phase 2)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:20,000 to 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bryan and Chatham Counties, Georgia
Survey Area Data: Version 16, Aug 31, 2021

Soil Survey Area: Effingham County, Georgia
Survey Area Data: Version 16, Aug 30, 2021

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 4, 2021—Jan 18, 2021

MAP LEGEND

MAP INFORMATION

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cc	Cape Fear soils	C/D	24.3	23.2%
Cx	Craven loamy fine sand	C	3.0	2.8%
Mba	Meggett loam	C/D	2.9	2.8%
Oj	Ocilla complex	B/D	23.4	22.4%
Pl	Pelham loamy sand, 0 to 2 percent slopes, frequently flooded	B/D	11.9	11.4%
Pn	Pooler fine sandy loam	C/D	18.5	17.7%
Subtotals for Soil Survey Area			**84.0**	**80.2%**
Totals for Area of Interest			**104.6**	**100.0%**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BdA	Bladen fine sandy loam, 0 to 2 percent slopes	C/D	17.3	16.5%
LeA	Leefield loamy sand, 0 to 2 percent slopes	C/D	3.4	3.2%
Subtotals for Soil Survey Area			**20.7**	**19.8%**
Totals for Area of Interest			**104.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

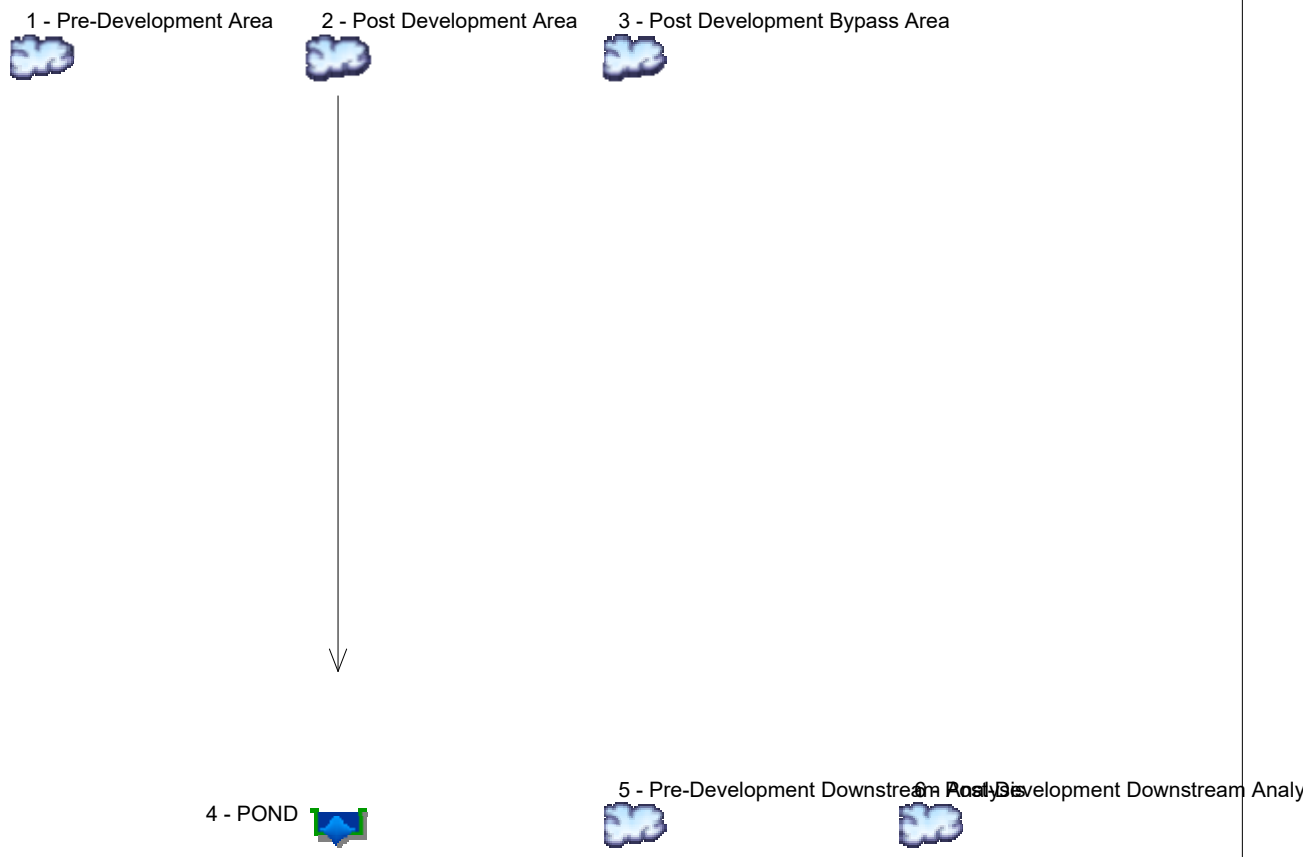
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020



Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	15.70	-------	-------	-------	35.80	47.07	56.63	66.76	Pre-Development Area
2	SCS Runoff	------	18.82	-------	-------	-------	37.54	47.72	56.30	65.37	Post Development Area
3	SCS Runoff	------	3.662	-------	-------	-------	8.654	11.47	13.86	16.39	Post Development Bypass Area
4	Reservoir	2	1.675	-------	-------	-------	17.64	29.84	39.84	50.19	POND
5	SCS Runoff	------	49.30	-------	-------	-------	114.72	151.76	183.28	216.78	Pre-Development Downstream Analy
6	SCS Runoff	------	44.37	-------	-------	-------	103.25	136.59	164.95	195.11	Post-Development Downstream Anal

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	15.70	1	733	84,088	------	------	------	Pre-Development Area
2	SCS Runoff	18.82	1	731	96,607	------	------	------	Post Development Area
3	SCS Runoff	3.662	1	719	9,042	------	------	------	Post Development Bypass Area
4	Reservoir	1.675	1	837	94,724	2	15.51	58,717	POND
5	SCS Runoff	49.30	1	789	738,509	------	------	------	Pre-Development Downstream Analy
6	SCS Runoff	44.37	1	789	664,658	------	------	------	Post-Development Downstream Anal

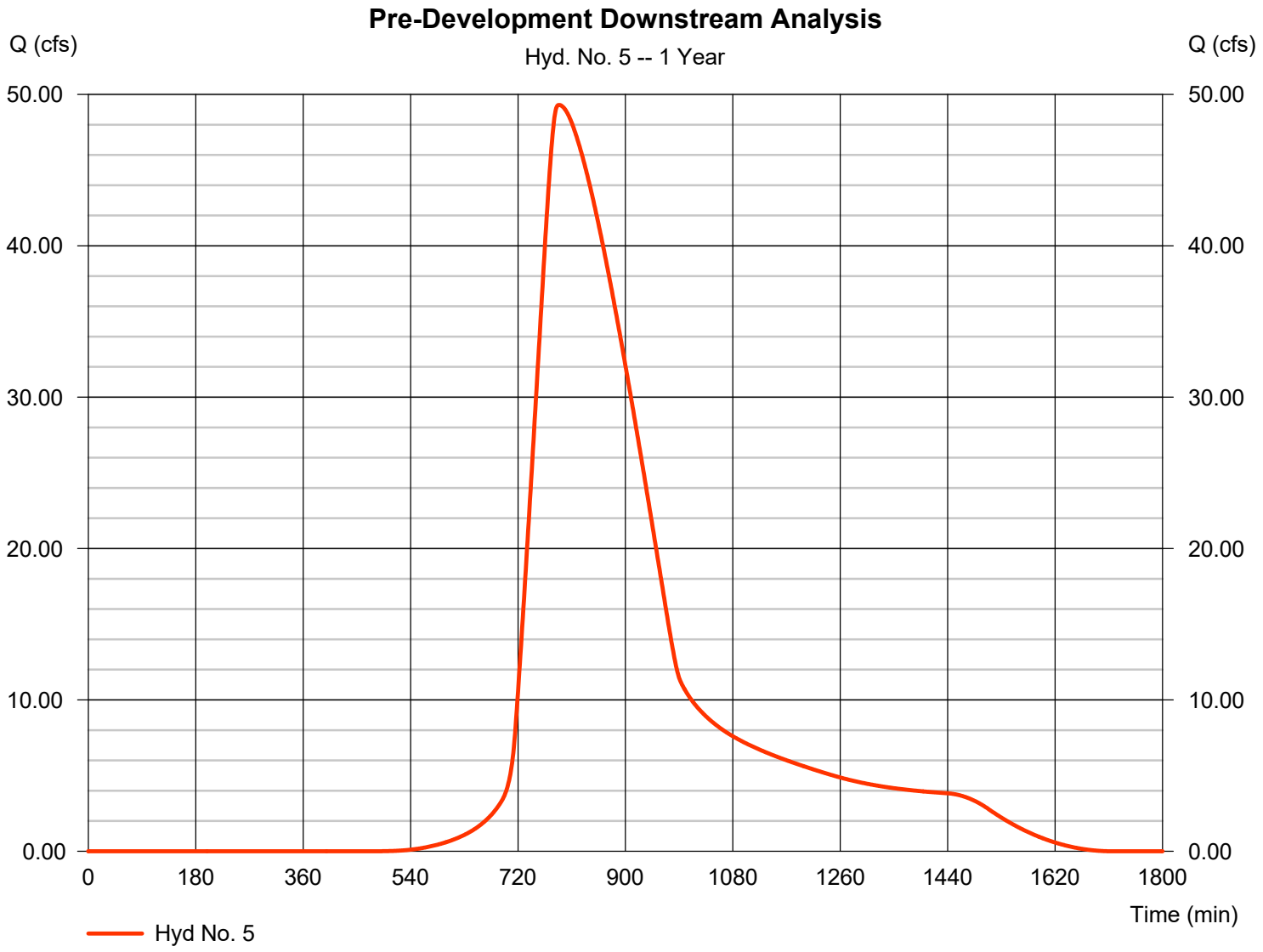
Hydrograph Report

Hyd. No. 5

Pre-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	49.30 cfs
Storm frequency	=	1 yrs	Time to peak	=	789 min
Time interval	=	1 min	Hyd. volume	=	738,509 cuft
Drainage area	=	104.600 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	116.30 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(6.000 x 82) + (3.000 x 77) + (95.600 x 83)] / 104.600



TR55 Tc Worksheet

Hyd. No. 5

Pre-Development Downstream Analysis

Description	A		B		C		Totals
Sheet Flow							
Manning's n-value	= 0.240		0.011		0.011		
Flow length (ft)	= 100.0		0.0		0.0		
Two-year 24-hr precip. (in)	= 4.80		0.00		0.00		
Land slope (%)	= 0.50		0.00		0.00		
Travel Time (min)	**= 20.29**	**+**	**0.00**	**+**	**0.00**	**=**	**20.29**
Shallow Concentrated Flow							
Flow length (ft)	= 2873.00		0.00		0.00		
Watercourse slope (%)	= 0.10		0.00		0.00		
Surface description	= Unpaved		Paved		Paved		
Average velocity (ft/s)	=0.51		0.00		0.00		
Travel Time (min)	**= 93.85**	**+**	**0.00**	**+**	**0.00**	**=**	**93.85**
Channel Flow							
X sectional flow area (sqft)	= 27.00		0.00		0.00		
Wetted perimeter (ft)	= 16.42		0.00		0.00		
Channel slope (%)	= 0.45		0.00		0.00		
Manning's n-value	= 0.015		0.015		0.015		
Velocity (ft/s)	=9.30						
			0.00				
					0.00		
Flow length (ft)	({0})1207.0		0.0		0.0		
Travel Time (min)	**= 2.16**	**+**	**0.00**	**+**	**0.00**	**=**	**2.16**

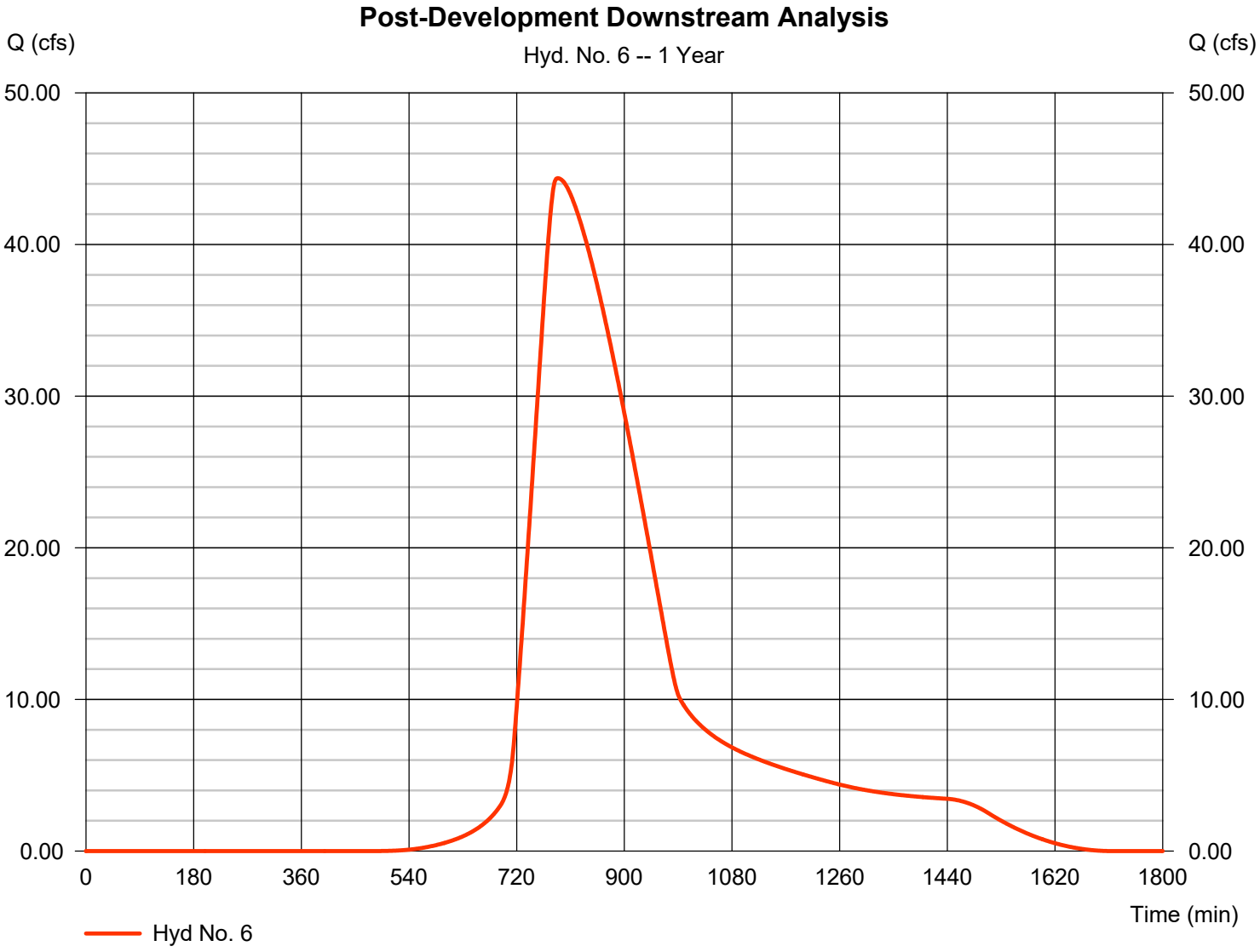
Total Travel Time, Tc ..... 116.30 min

Hydrograph Report

Hyd. No. 6

Post-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	44.37 cfs
Storm frequency	=	1 yrs	Time to peak	=	789 min
Time interval	=	1 min	Hyd. volume	=	664,658 cuft
Drainage area	=	94.140 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	116.30 min
Total precip.	=	3.60 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	35.80	1	733	191,172	------	------	------	Pre-Development Area
2	SCS Runoff	37.54	1	731	197,161	------	------	------	Post Development Area
3	SCS Runoff	8.654	1	719	21,595	------	------	------	Post Development Bypass Area
4	Reservoir	17.64	1	763	194,161	2	16.92	97,459	POND
5	SCS Runoff	114.72	1	786	1,678,977	------	------	------	Pre-Development Downstream Analy
6	SCS Runoff	103.25	1	786	1,511,080	------	------	------	Post-Development Downstream Anal

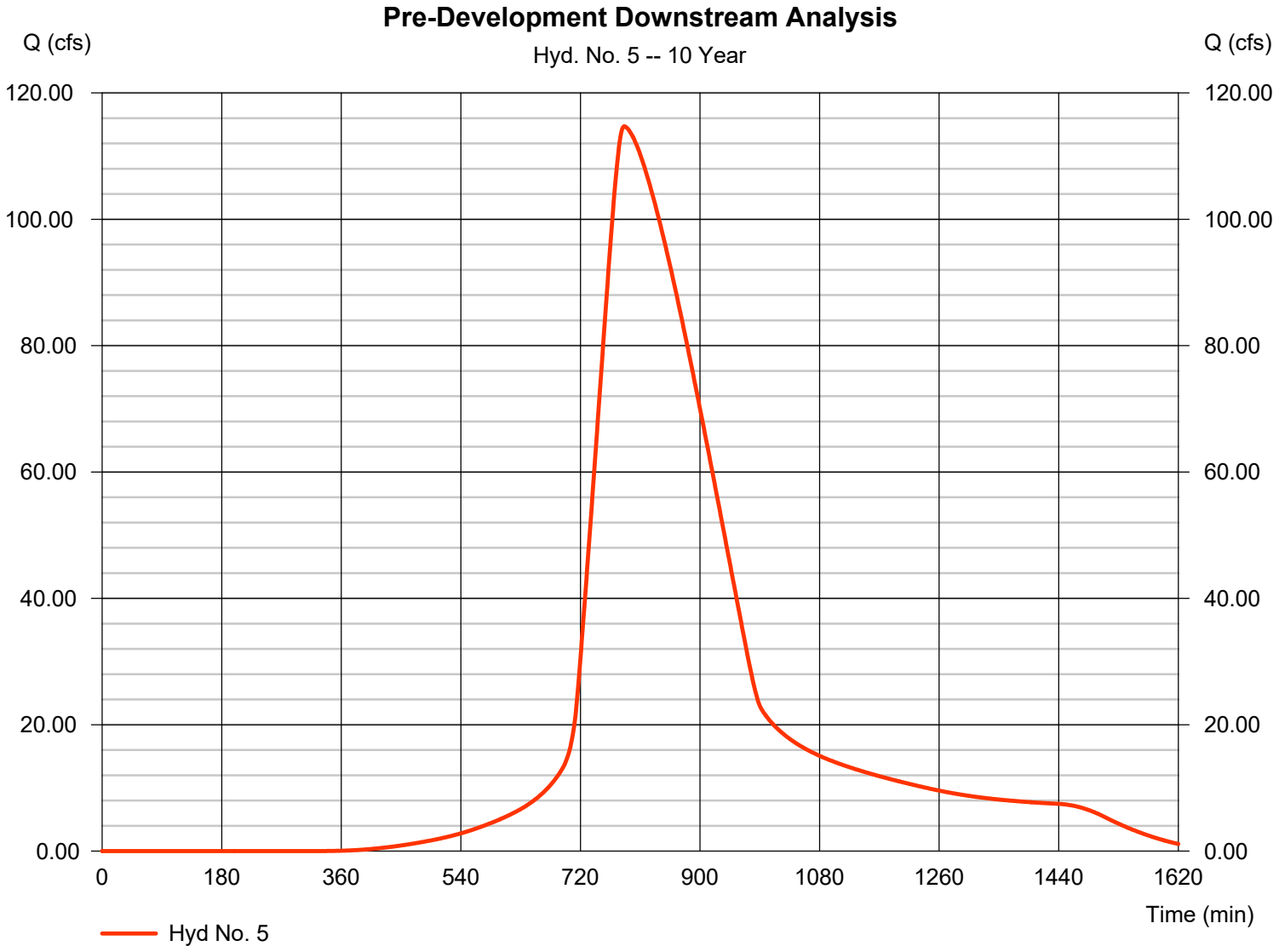
Hydrograph Report

Hyd. No. 5

Pre-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	114.72 cfs
Storm frequency	=	10 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	1,678,977 cuft
Drainage area	=	104.600 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	116.30 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(6.000 x 82) + (3.000 x 77) + (95.600 x 83)] / 104.600

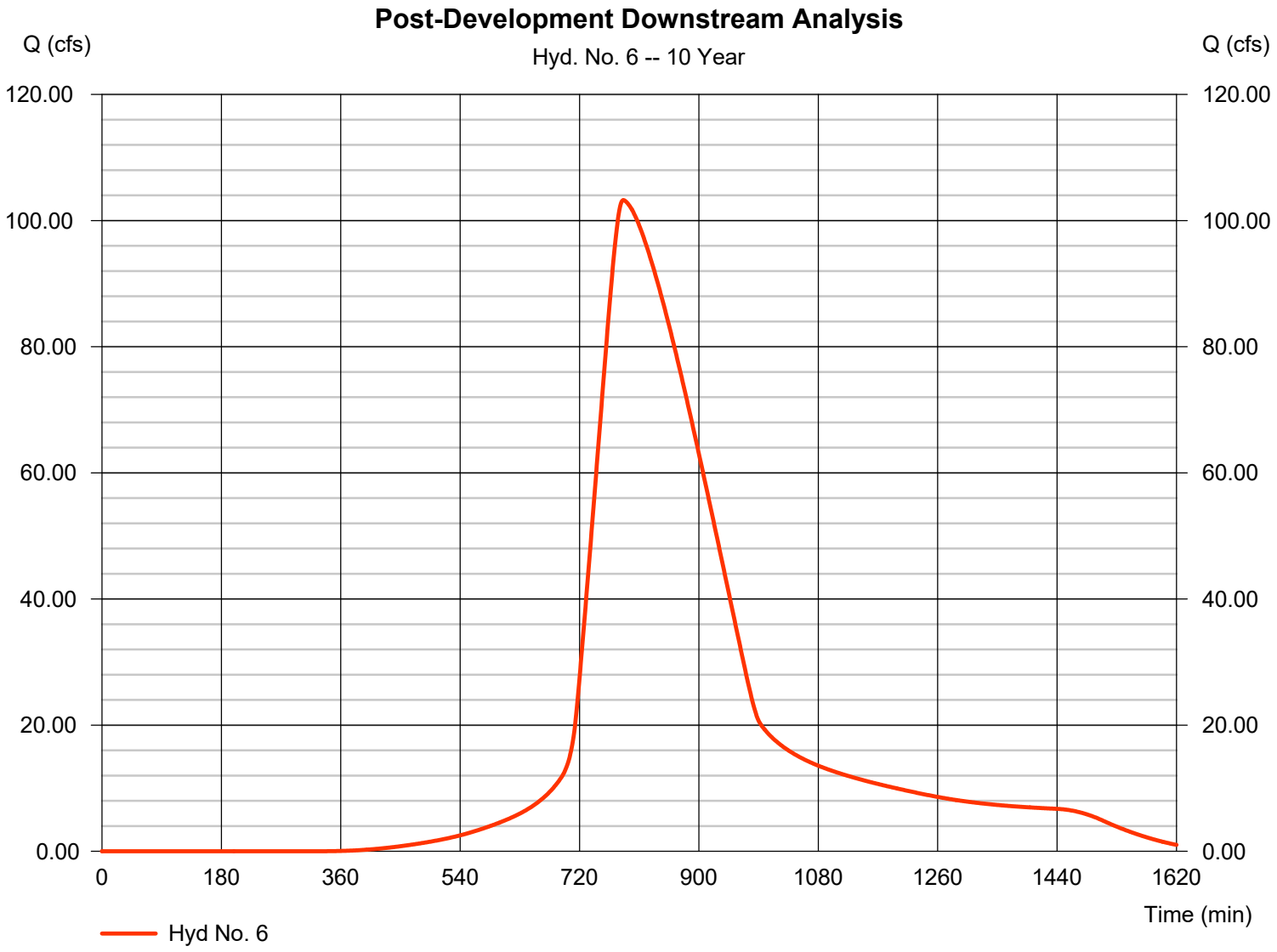


Hydrograph Report

Hyd. No. 6

Post-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	103.25 cfs
Storm frequency	=	10 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	1,511,080 cuft
Drainage area	=	94.140 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	116.30 min
Total precip.	=	6.35 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	47.07	1	732	252,909	------	------	------	Pre-Development Area
2	SCS Runoff	47.72	1	731	253,436	------	------	------	Post Development Area
3	SCS Runoff	11.47	1	719	28,947	------	------	------	Post Development Bypass Area
4	Reservoir	29.84	1	755	250,059	2	17.23	107,482	POND
5	SCS Runoff	151.76	1	786	2,221,184	------	------	------	Pre-Development Downstream Analy
6	SCS Runoff	136.59	1	786	1,999,066	------	------	------	Post-Development Downstream Anal

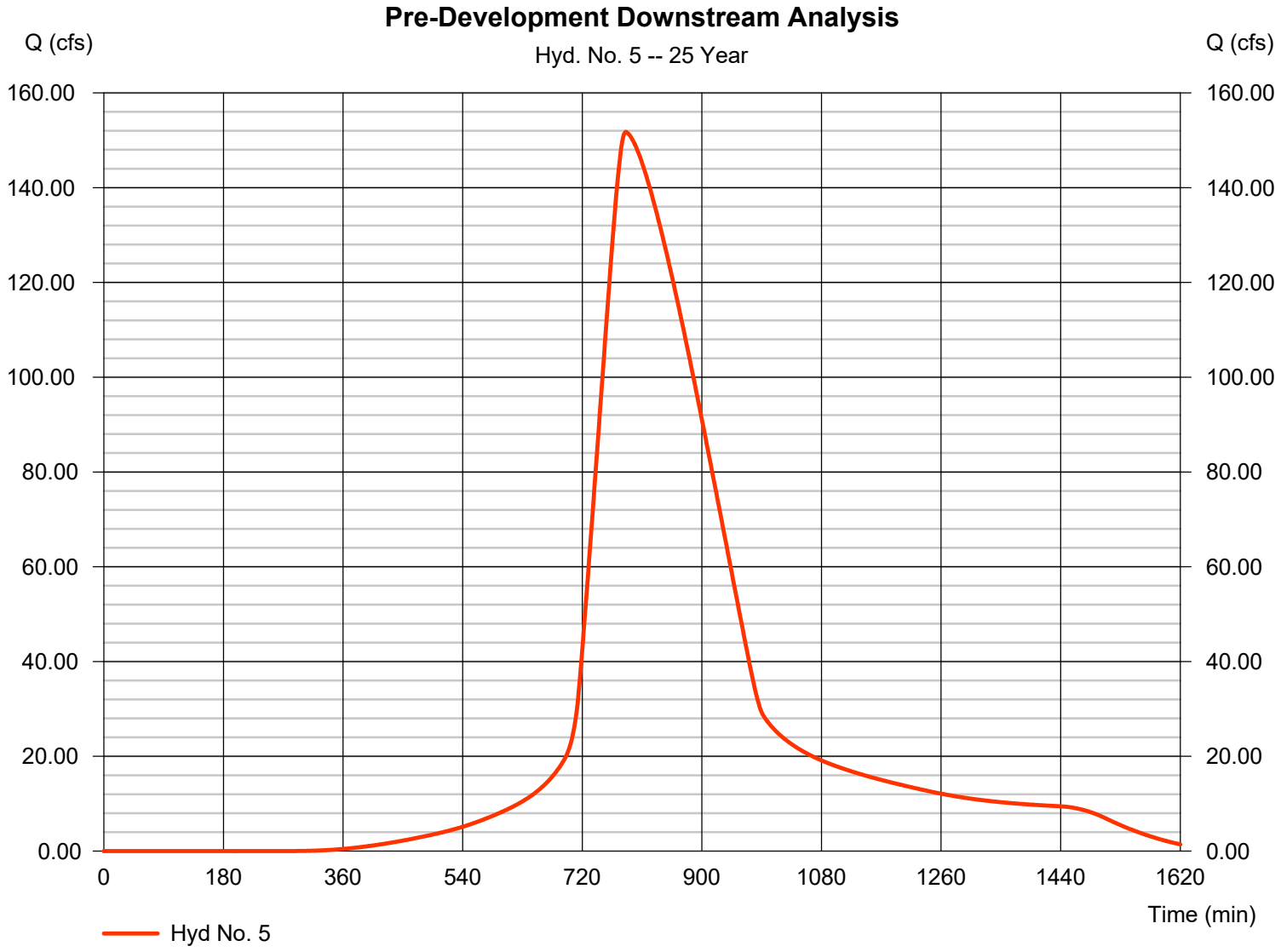
Hydrograph Report

Hyd. No. 5

Pre-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	151.76 cfs
Storm frequency	=	25 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	2,221,184 cuft
Drainage area	=	104.600 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	116.30 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(6.000 x 82) + (3.000 x 77) + (95.600 x 83)] / 104.600

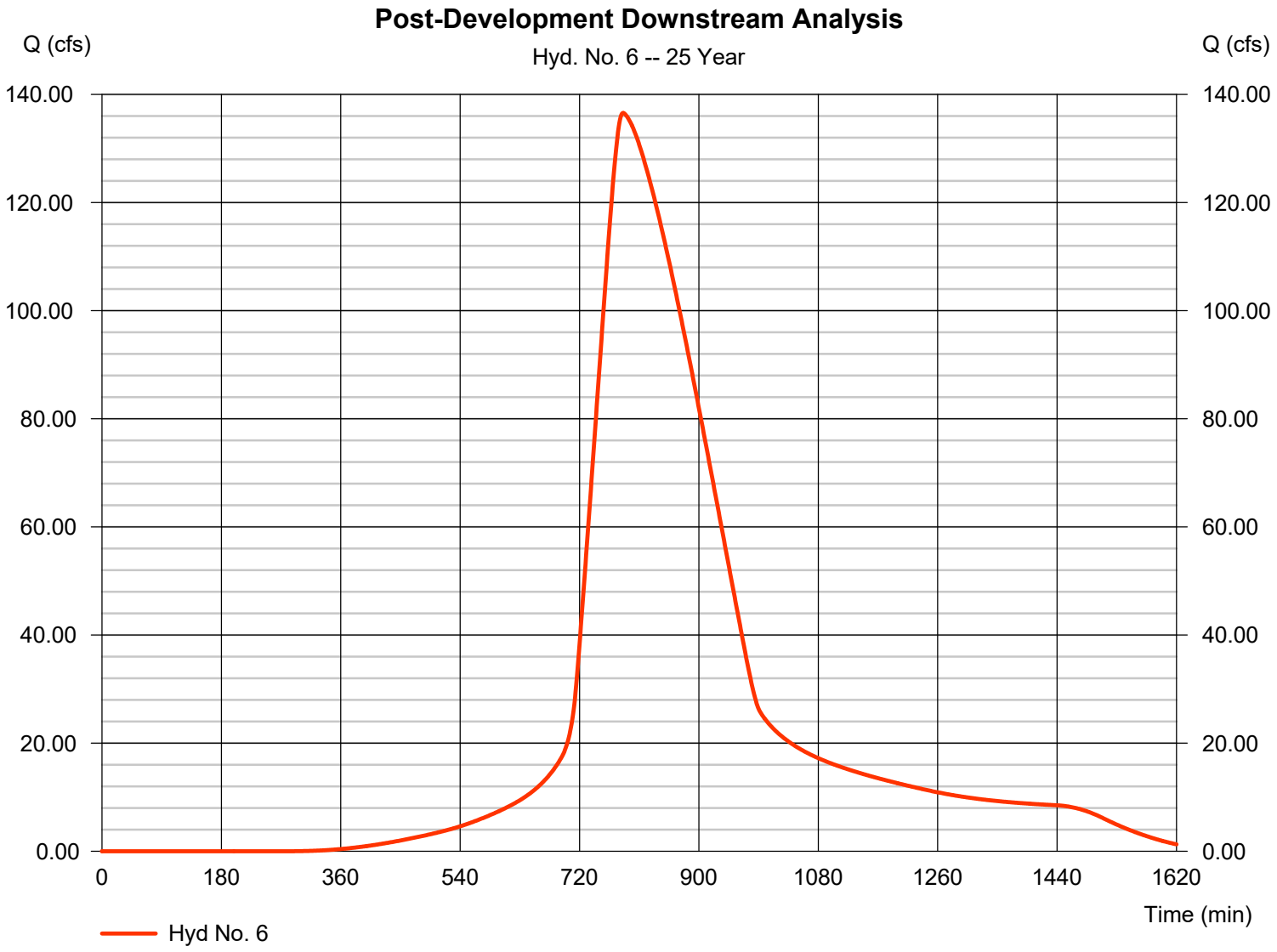


Hydrograph Report

Hyd. No. 6

Post-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	136.59 cfs
Storm frequency	=	25 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	1,999,066 cuft
Drainage area	=	94.140 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	116.30 min
Total precip.	=	7.86 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	56.63	1	732	306,035	------	------	------	Pre-Development Area
2	SCS Runoff	56.30	1	731	301,403	------	------	------	Post Development Area
3	SCS Runoff	13.86	1	719	35,307	------	------	------	Post Development Bypass Area
4	Reservoir	39.84	1	751	297,724	2	17.45	114,859	POND
5	SCS Runoff	183.28	1	786	2,687,770	------	------	------	Pre-Development Downstream Analy
6	SCS Runoff	164.95	1	786	2,418,986	------	------	------	Post-Development Downstream Anal

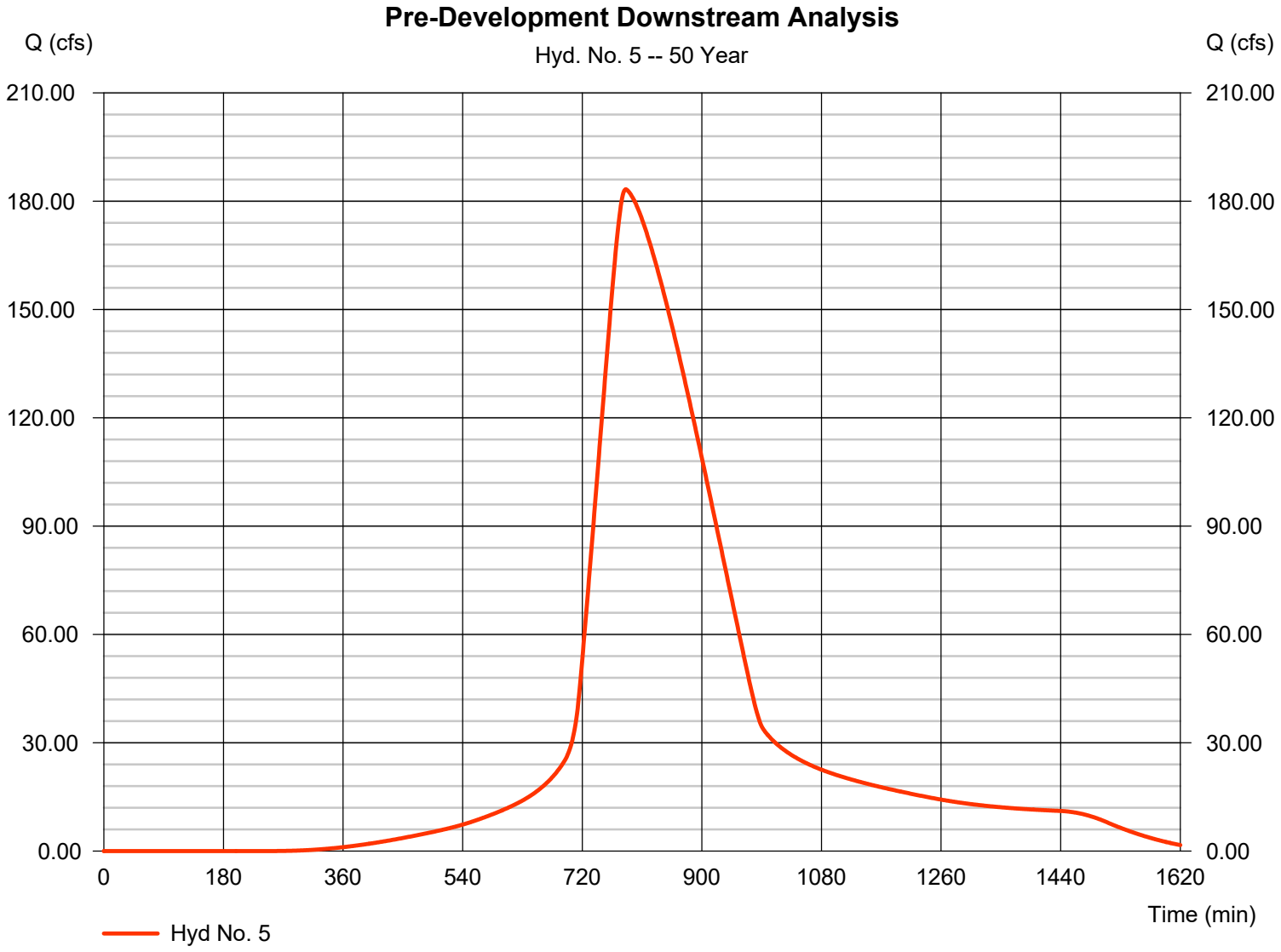
Hydrograph Report

Hyd. No. 5

Pre-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	183.28 cfs
Storm frequency	=	50 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	2,687,770 cuft
Drainage area	=	104.600 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	116.30 min
Total precip.	=	9.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(6.000 x 82) + (3.000 x 77) + (95.600 x 83)] / 104.600

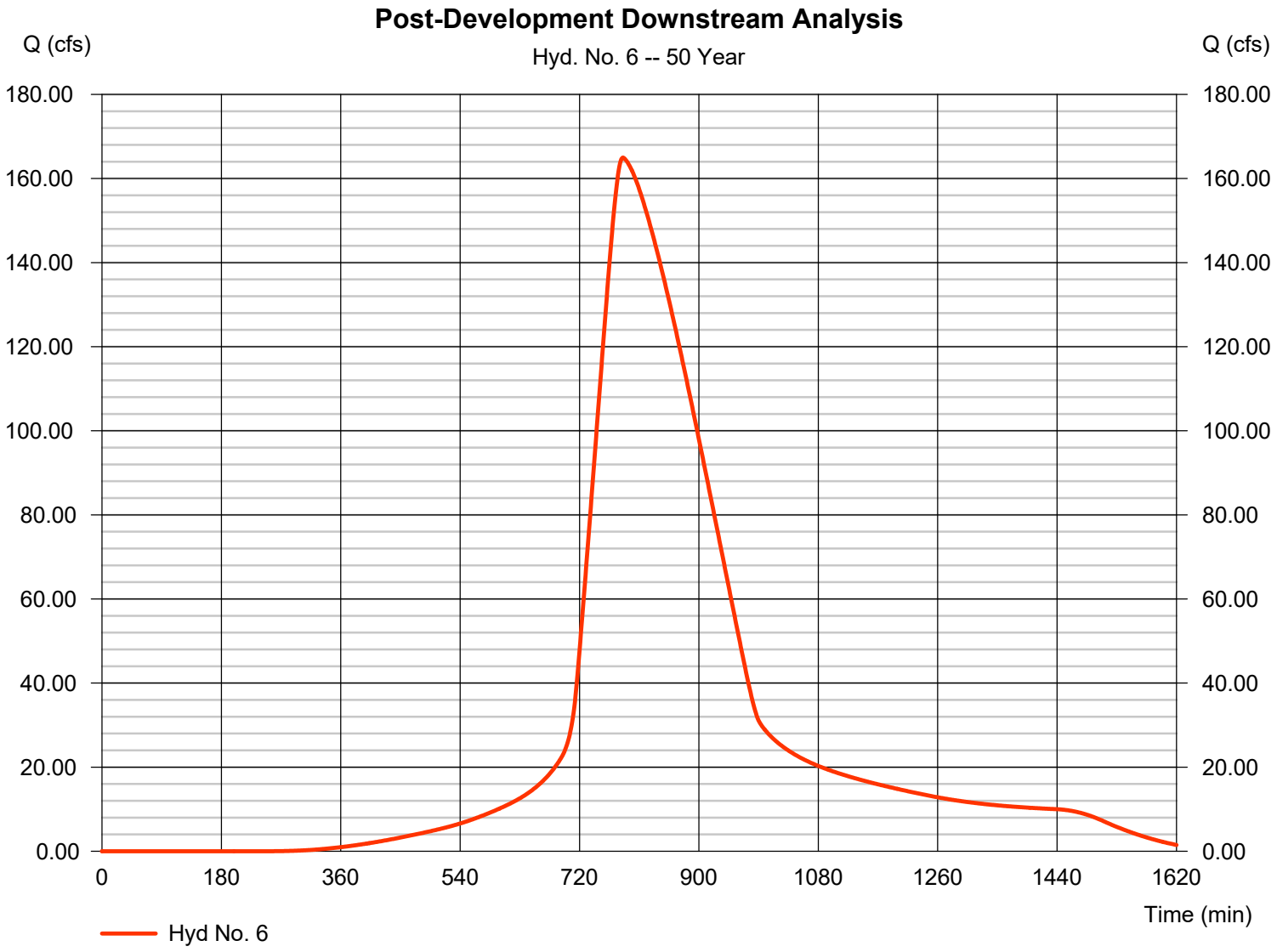


Hydrograph Report

Hyd. No. 6

Post-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	164.95 cfs
Storm frequency	=	50 yrs	Time to peak	=	786 min
Time interval	=	1 min	Hyd. volume	=	2,418,986 cuft
Drainage area	=	94.140 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	116.30 min
Total precip.	=	9.14 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	66.76	1	732	363,006	------	------	------	Pre-Development Area
2	SCS Runoff	65.37	1	731	352,536	------	------	------	Post Development Area
3	SCS Runoff	16.39	1	719	42,152	------	------	------	Post Development Bypass Area
4	Reservoir	50.19	1	747	348,558	2	17.67	121,843	POND
5	SCS Runoff	216.78	1	785	3,188,119	------	------	------	Pre-Development Downstream Analy
6	SCS Runoff	195.11	1	785	2,869,302	------	------	------	Post-Development Downstream Anal

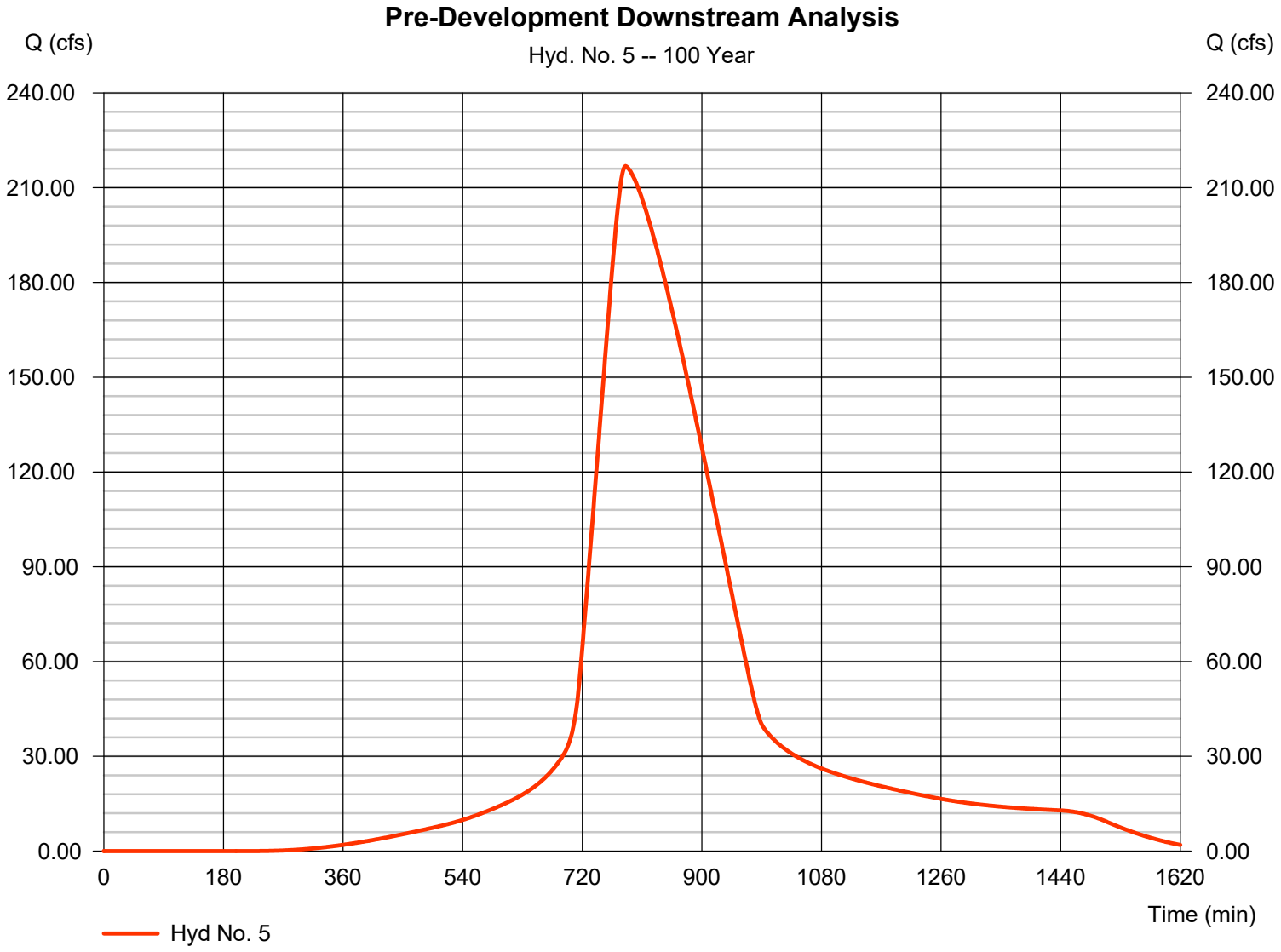
Hydrograph Report

Hyd. No. 5

Pre-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	216.78 cfs
Storm frequency	=	100 yrs	Time to peak	=	785 min
Time interval	=	1 min	Hyd. volume	=	3,188,119 cuft
Drainage area	=	104.600 ac	Curve number	=	83*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	TR55	Time of conc. (Tc)	=	116.30 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323

* Composite (Area/CN) = [(6.000 x 82) + (3.000 x 77) + (95.600 x 83)] / 104.600

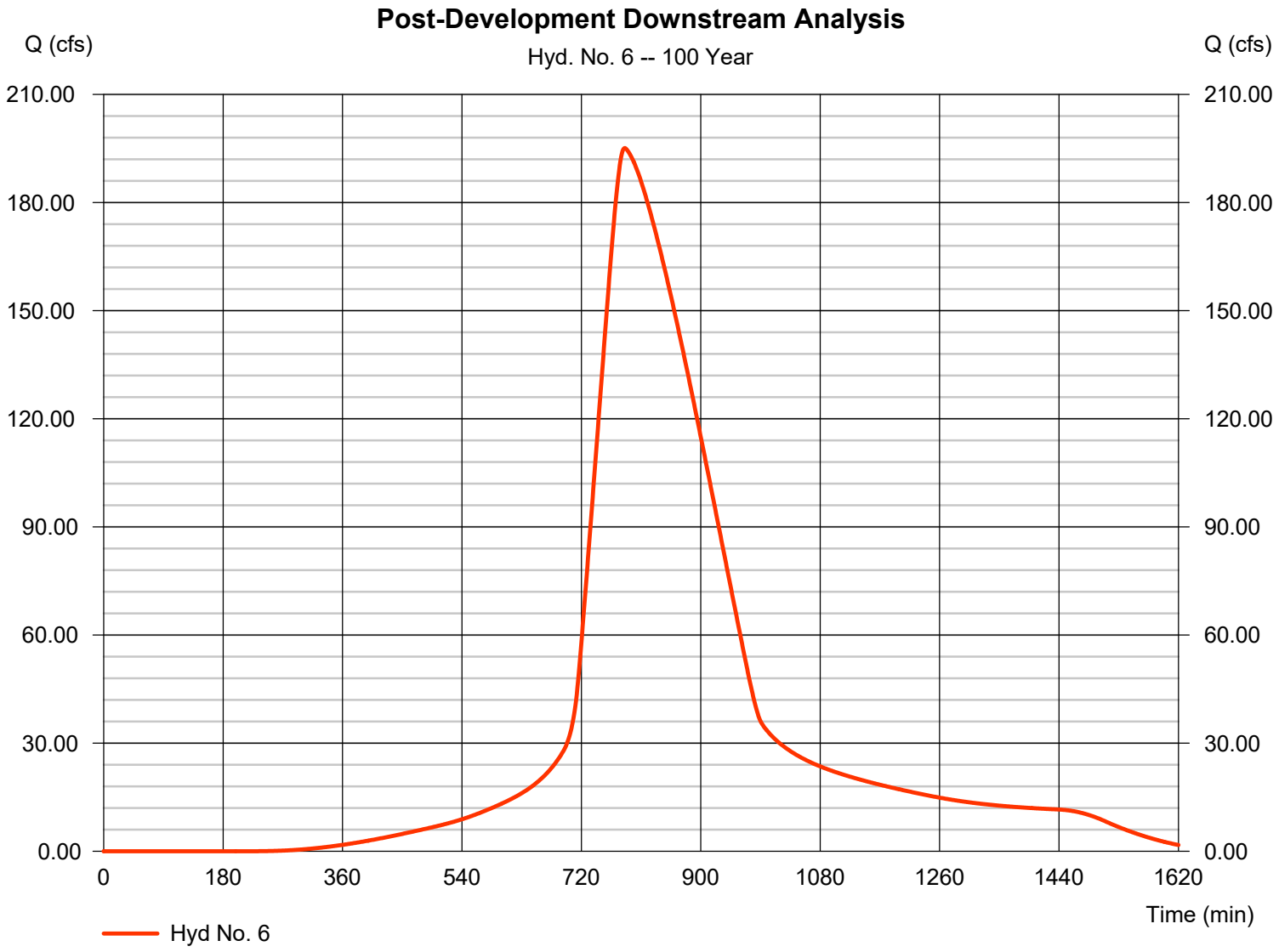


Hydrograph Report

Hyd. No. 6

Post-Development Downstream Analysis

Hydrograph type	=	SCS Runoff	Peak discharge	=	195.11 cfs
Storm frequency	=	100 yrs	Time to peak	=	785 min
Time interval	=	1 min	Hyd. volume	=	2,869,302 cuft
Drainage area	=	94.140 ac	Curve number	=	83
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	116.30 min
Total precip.	=	10.50 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	323



Hydraflow Rainfall Report

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	51.2637	12.6000	0.7740	--------
2	120.2653	20.2000	0.9136	--------
3	0.0000	0.0000	0.0000	--------
5	121.9171	22.7001	0.8638	--------
10	125.9155	24.0001	0.8397	--------
25	162.4312	27.7001	0.8539	--------
50	197.6749	30.4001	0.8682	--------
100	220.3055	32.0001	0.8675	--------

File name: Savannah.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	5.57	4.59	3.93	3.46	3.10	2.81	2.58	2.39	2.22	2.09	1.97	1.86
2	6.31	5.35	4.65	4.12	3.70	3.36	3.08	2.85	2.65	2.47	2.32	2.19
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.92	6.00	5.30	4.76	4.33	3.97	3.67	3.42	3.20	3.01	2.84	2.69
10	7.45	6.52	5.81	5.25	4.80	4.42	4.10	3.83	3.60	3.39	3.21	3.05
25	8.27	7.32	6.58	5.99	5.50	5.09	4.74	4.44	4.18	3.95	3.74	3.56
50	8.94	7.97	7.20	6.58	6.06	5.62	5.25	4.92	4.64	4.38	4.16	3.96
100	9.61	8.61	7.81	7.15	6.60	6.14	5.74	5.39	5.09	4.82	4.58	4.36

Tc = time in minutes. Values may exceed 60.

Precip. file name: H:\Hydrology\Port Wentworth.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	3.60	4.27	0.00	5.35	6.35	7.86	9.14	10.50
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	1.55	0.00	2.75	4.00	5.38	6.50	8.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	1.75	0.00	2.80	3.90	5.25	6.00	7.10

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Monday, 03 / 7 / 2022

Hyd. No. 4

POND

Hydrograph type	= Reservoir	Peak discharge	= 1.675 cfs
Storm frequency	= 1 yrs	Time to peak	= 837 min
Time interval	= 1 min	Hyd. volume	= 94,724 cuft
Inflow hyd. No.	= 2 - Post Development Area	Reservoir name	= Detention Pond
Max. Elevation	= 15.51 ft	Max. Storage	= 58,717 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
484	0.208	12.06	0.017	-----	-----	-----	-----	-----	-----	-----	-----	0.017
485	0.210	12.06	0.017	-----	-----	-----	-----	-----	-----	-----	-----	0.017
486	0.211	12.07	0.017	-----	-----	-----	-----	-----	-----	-----	-----	0.017
487	0.213	12.07	0.018	-----	-----	-----	-----	-----	-----	-----	-----	0.018
488	0.215	12.07	0.018	-----	-----	-----	-----	-----	-----	-----	-----	0.018
489	0.216	12.07	0.019	-----	-----	-----	-----	-----	-----	-----	-----	0.019
490	0.218	12.07	0.019	-----	-----	-----	-----	-----	-----	-----	-----	0.019
491	0.220	12.07	0.019	-----	-----	-----	-----	-----	-----	-----	-----	0.019
492	0.221	12.07	0.020	-----	-----	-----	-----	-----	-----	-----	-----	0.020
493	0.223	12.07	0.020	-----	-----	-----	-----	-----	-----	-----	-----	0.020
494	0.225	12.07	0.020	-----	-----	-----	-----	-----	-----	-----	-----	0.020
495	0.227	12.07	0.021	-----	-----	-----	-----	-----	-----	-----	-----	0.021
496	0.229	12.07	0.021	-----	-----	-----	-----	-----	-----	-----	-----	0.021
497	0.230	12.08	0.021	-----	-----	-----	-----	-----	-----	-----	-----	0.021
498	0.232	12.08	0.022	-----	-----	-----	-----	-----	-----	-----	-----	0.022
499	0.234	12.08	0.022	-----	-----	-----	-----	-----	-----	-----	-----	0.022
500	0.237	12.08	0.022	-----	-----	-----	-----	-----	-----	-----	-----	0.022
501	0.239	12.08	0.023	-----	-----	-----	-----	-----	-----	-----	-----	0.023
502	0.241	12.08	0.023	-----	-----	-----	-----	-----	-----	-----	-----	0.023
503	0.243	12.08	0.024	-----	-----	-----	-----	-----	-----	-----	-----	0.024

Continues on next page...

POND

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
784	3.192	15.44	0.847	0.791	-----	-----	-----	-----	-----	-----	-----	1.638
785	3.111	15.44	0.847	0.792	-----	-----	-----	-----	-----	-----	-----	1.640
786	3.043	15.45	0.848	0.794	-----	-----	-----	-----	-----	-----	-----	1.641
787	2.985	15.45	0.848	0.795	-----	-----	-----	-----	-----	-----	-----	1.643
788	2.931	15.45	0.849	0.796	-----	-----	-----	-----	-----	-----	-----	1.645
789	2.879	15.46	0.849	0.797	-----	-----	-----	-----	-----	-----	-----	1.646
790	2.829	15.46	0.849	0.798	-----	-----	-----	-----	-----	-----	-----	1.648
791	2.781	15.46	0.850	0.800	-----	-----	-----	-----	-----	-----	-----	1.649
792	2.734	15.47	0.850	0.801	-----	-----	-----	-----	-----	-----	-----	1.651
793	2.689	15.47	0.850	0.802	-----	-----	-----	-----	-----	-----	-----	1.652
794	2.646	15.47	0.851	0.803	-----	-----	-----	-----	-----	-----	-----	1.653
795	2.604	15.47	0.851	0.803	-----	-----	-----	-----	-----	-----	-----	1.655
796	2.564	15.47	0.851	0.804	-----	-----	-----	-----	-----	-----	-----	1.656
797	2.526	15.48	0.852	0.805	-----	-----	-----	-----	-----	-----	-----	1.657
798	2.489	15.48	0.852	0.806	-----	-----	-----	-----	-----	-----	-----	1.658
799	2.453	15.48	0.852	0.807	-----	-----	-----	-----	-----	-----	-----	1.659
800	2.419	15.48	0.852	0.807	-----	-----	-----	-----	-----	-----	-----	1.660
801	2.387	15.48	0.853	0.808	-----	-----	-----	-----	-----	-----	-----	1.661
802	2.356	15.49	0.853	0.809	-----	-----	-----	-----	-----	-----	-----	1.662
803	2.325	15.49	0.853	0.809	-----	-----	-----	-----	-----	-----	-----	1.663
804	2.297	15.49	0.853	0.810	-----	-----	-----	-----	-----	-----	-----	1.663
805	2.269	15.49	0.853	0.811	-----	-----	-----	-----	-----	-----	-----	1.664
806	2.242	15.49	0.854	0.811	-----	-----	-----	-----	-----	-----	-----	1.665
807	2.216	15.49	0.854	0.812	-----	-----	-----	-----	-----	-----	-----	1.666
808	2.191	15.49	0.854	0.812	-----	-----	-----	-----	-----	-----	-----	1.666
809	2.167	15.50	0.854	0.813	-----	-----	-----	-----	-----	-----	-----	1.667
810	2.144	15.50	0.854	0.813	-----	-----	-----	-----	-----	-----	-----	1.667
811	2.122	15.50	0.854	0.814	-----	-----	-----	-----	-----	-----	-----	1.668

Continues on next page...

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Monday, 03 / 7 / 2022

Hyd. No. 4

POND

Hydrograph type	= Reservoir	Peak discharge	= 17.64 cfs
Storm frequency	= 10 yrs	Time to peak	= 763 min
Time interval	= 1 min	Hyd. volume	= 194,161 cuft
Inflow hyd. No.	= 2 - Post Development Area	Reservoir name	= Detention Pond
Max. Elevation	= 16.92 ft	Max. Storage	= 97,459 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
475	0.705	12.32	0.177	-----	-----	-----	-----	-----	-----	-----	-----	0.177
476	0.708	12.32	0.179	-----	-----	-----	-----	-----	-----	-----	-----	0.179
477	0.712	12.32	0.180	-----	-----	-----	-----	-----	-----	-----	-----	0.180
478	0.715	12.33	0.182	-----	-----	-----	-----	-----	-----	-----	-----	0.182
479	0.718	12.33	0.184	-----	-----	-----	-----	-----	-----	-----	-----	0.184
480	0.721	12.33	0.185	-----	-----	-----	-----	-----	-----	-----	-----	0.185
481	0.724	12.33	0.187	-----	-----	-----	-----	-----	-----	-----	-----	0.187
482	0.727	12.33	0.189	-----	-----	-----	-----	-----	-----	-----	-----	0.189
483	0.730	12.34	0.190	-----	-----	-----	-----	-----	-----	-----	-----	0.190
484	0.733	12.34	0.192	-----	-----	-----	-----	-----	-----	-----	-----	0.192
485	0.736	12.34	0.194	-----	-----	-----	-----	-----	-----	-----	-----	0.194
486	0.740	12.34	0.196	-----	-----	-----	-----	-----	-----	-----	-----	0.196
487	0.743	12.35	0.197	-----	-----	-----	-----	-----	-----	-----	-----	0.197
488	0.746	12.35	0.199	-----	-----	-----	-----	-----	-----	-----	-----	0.199
489	0.750	12.35	0.201	-----	-----	-----	-----	-----	-----	-----	-----	0.201
490	0.753	12.35	0.202	-----	-----	-----	-----	-----	-----	-----	-----	0.202
491	0.757	12.36	0.203	-----	-----	-----	-----	-----	-----	-----	-----	0.203
492	0.761	12.36	0.204	-----	-----	-----	-----	-----	-----	-----	-----	0.204
493	0.764	12.36	0.206	-----	-----	-----	-----	-----	-----	-----	-----	0.206
494	0.768	12.36	0.207	-----	-----	-----	-----	-----	-----	-----	-----	0.207

Continues on next page...

POND

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
774	10.02	16.84	1.013	1.226	-----	-----	13.02	-----	-----	-----	-----	15.26
775	9.435	16.83	1.011	1.223	-----	-----	12.66	-----	-----	-----	-----	14.89
776	8.881	16.82	1.010	1.220	-----	-----	12.28	-----	-----	-----	-----	14.51
777	8.361	16.81	1.009	1.217	-----	-----	11.89	-----	-----	-----	-----	14.12
778	7.879	16.80	1.007	1.214	-----	-----	11.50	-----	-----	-----	-----	13.72
779	7.440	16.79	1.006	1.211	-----	-----	11.14	-----	-----	-----	-----	13.35
780	7.047	16.77	1.005	1.207	-----	-----	10.77	-----	-----	-----	-----	12.98
781	6.704	16.76	1.003	1.204	-----	-----	10.40	-----	-----	-----	-----	12.61
782	6.417	16.75	1.002	1.201	-----	-----	10.04	-----	-----	-----	-----	12.24
783	6.190	16.74	1.001	1.198	-----	-----	9.679	-----	-----	-----	-----	11.88
784	6.000	16.73	1.000	1.195	-----	-----	9.330	-----	-----	-----	-----	11.52
785	5.846	16.71	0.998	1.192	-----	-----	8.993	-----	-----	-----	-----	11.18
786	5.718	16.70	0.997	1.189	-----	-----	8.667	-----	-----	-----	-----	10.85
787	5.608	16.69	0.996	1.187	-----	-----	8.374	-----	-----	-----	-----	10.56
788	5.505	16.68	0.995	1.184	-----	-----	8.103	-----	-----	-----	-----	10.28
789	5.406	16.67	0.994	1.181	-----	-----	7.842	-----	-----	-----	-----	10.02
790	5.310	16.66	0.993	1.179	-----	-----	7.591	-----	-----	-----	-----	9.762
791	5.218	16.66	0.992	1.176	-----	-----	7.347	-----	-----	-----	-----	9.516
792	5.130	16.65	0.991	1.174	-----	-----	7.113	-----	-----	-----	-----	9.277
793	5.044	16.64	0.990	1.172	-----	-----	6.886	-----	-----	-----	-----	9.048
794	4.962	16.63	0.989	1.170	-----	-----	6.667	-----	-----	-----	-----	8.826
795	4.883	16.62	0.988	1.168	-----	-----	6.456	-----	-----	-----	-----	8.612
796	4.807	16.61	0.987	1.166	-----	-----	6.253	-----	-----	-----	-----	8.405
797	4.735	16.61	0.986	1.164	-----	-----	6.056	-----	-----	-----	-----	8.206
798	4.665	16.60	0.986	1.162	-----	-----	5.866	-----	-----	-----	-----	8.014
799	4.598	16.59	0.985	1.160	-----	-----	5.707	-----	-----	-----	-----	7.852
800	4.533	16.59	0.984	1.158	-----	-----	5.553	-----	-----	-----	-----	7.695
801	4.471	16.58	0.983	1.156	-----	-----	5.403	-----	-----	-----	-----	7.542

Continues on next page...

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Monday, 03 / 7 / 2022

Hyd. No. 4

POND

Hydrograph type	= Reservoir	Peak discharge	= 29.84 cfs
Storm frequency	= 25 yrs	Time to peak	= 755 min
Time interval	= 1 min	Hyd. volume	= 250,059 cuft
Inflow hyd. No.	= 2 - Post Development Area	Reservoir name	= Detention Pond
Max. Elevation	= 17.23 ft	Max. Storage	= 107,482 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
463	0.981	12.62	0.305	-----	-----	-----	-----	-----	-----	-----	-----	0.305
464	0.985	12.65	0.315	-----	-----	-----	-----	-----	-----	-----	-----	0.315
465	0.989	12.69	0.325	-----	-----	-----	-----	-----	-----	-----	-----	0.325
466	0.993	12.72	0.335	-----	-----	-----	-----	-----	-----	-----	-----	0.335
467	0.996	12.75	0.345	-----	-----	-----	-----	-----	-----	-----	-----	0.345
468	1.000	12.78	0.355	-----	-----	-----	-----	-----	-----	-----	-----	0.355
469	1.004	12.81	0.365	-----	-----	-----	-----	-----	-----	-----	-----	0.365
470	1.008	12.84	0.374	-----	-----	-----	-----	-----	-----	-----	-----	0.374
471	1.012	12.87	0.384	-----	-----	-----	-----	-----	-----	-----	-----	0.384
472	1.016	12.90	0.393	-----	-----	-----	-----	-----	-----	-----	-----	0.393
473	1.020	12.92	0.403	-----	-----	-----	-----	-----	-----	-----	-----	0.403
474	1.023	12.95	0.412	-----	-----	-----	-----	-----	-----	-----	-----	0.412
475	1.027	12.98	0.421	-----	-----	-----	-----	-----	-----	-----	-----	0.421
476	1.031	13.00	0.428	-----	-----	-----	-----	-----	-----	-----	-----	0.428
477	1.035	13.00	0.428	-----	-----	-----	-----	-----	-----	-----	-----	0.428
478	1.039	13.00	0.429	-----	-----	-----	-----	-----	-----	-----	-----	0.429
479	1.043	13.01	0.429	-----	-----	-----	-----	-----	-----	-----	-----	0.429
480	1.047	13.01	0.430	-----	-----	-----	-----	-----	-----	-----	-----	0.430
481	1.051	13.01	0.430	-----	-----	-----	-----	-----	-----	-----	-----	0.430
482	1.054	13.01	0.431	-----	-----	-----	-----	-----	-----	-----	-----	0.431

Continues on next page...

POND

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
762	23.18	17.19	1.050	1.312	-----	-----	25.98	-----	-----	-----	-----	28.34
763	22.23	17.18	1.049	1.309	-----	-----	25.58	-----	-----	-----	-----	27.94
764	21.28	17.17	1.047	1.307	-----	-----	25.14	-----	-----	-----	-----	27.50
765	20.34	17.16	1.046	1.304	-----	-----	24.67	-----	-----	-----	-----	27.02
766	19.40	17.15	1.045	1.301	-----	-----	24.17	-----	-----	-----	-----	26.51
767	18.49	17.14	1.044	1.298	-----	-----	23.63	-----	-----	-----	-----	25.97
768	17.58	17.12	1.042	1.294	-----	-----	23.07	-----	-----	-----	-----	25.41
769	16.70	17.11	1.041	1.291	-----	-----	22.49	-----	-----	-----	-----	24.82
770	15.83	17.09	1.039	1.287	-----	-----	21.90	-----	-----	-----	-----	24.22
771	14.99	17.08	1.037	1.283	-----	-----	21.31	-----	-----	-----	-----	23.63
772	14.16	17.06	1.036	1.279	-----	-----	20.70	-----	-----	-----	-----	23.02
773	13.36	17.04	1.034	1.275	-----	-----	20.09	-----	-----	-----	-----	22.40
774	12.59	17.03	1.032	1.271	-----	-----	19.46	-----	-----	-----	-----	21.76
775	11.85	17.01	1.030	1.267	-----	-----	18.82	-----	-----	-----	-----	21.12
776	11.15	16.99	1.029	1.263	-----	-----	18.17	-----	-----	-----	-----	20.46
777	10.50	16.97	1.026	1.258	-----	-----	17.48	-----	-----	-----	-----	19.77
778	9.889	16.96	1.024	1.253	-----	-----	16.80	-----	-----	-----	-----	19.08
779	9.335	16.94	1.022	1.249	-----	-----	16.13	-----	-----	-----	-----	18.40
780	8.839	16.92	1.020	1.244	-----	-----	15.47	-----	-----	-----	-----	17.73
781	8.408	16.90	1.018	1.240	-----	-----	14.82	-----	-----	-----	-----	17.08
782	8.047	16.88	1.017	1.235	-----	-----	14.24	-----	-----	-----	-----	16.49
783	7.761	16.86	1.015	1.231	-----	-----	13.68	-----	-----	-----	-----	15.92
784	7.523	16.85	1.013	1.226	-----	-----	13.13	-----	-----	-----	-----	15.37
785	7.329	16.83	1.011	1.222	-----	-----	12.61	-----	-----	-----	-----	14.84
786	7.168	16.82	1.009	1.219	-----	-----	12.11	-----	-----	-----	-----	14.34
787	7.029	16.80	1.008	1.215	-----	-----	11.63	-----	-----	-----	-----	13.85
788	6.900	16.79	1.006	1.211	-----	-----	11.21	-----	-----	-----	-----	13.43
789	6.775	16.78	1.005	1.208	-----	-----	10.81	-----	-----	-----	-----	13.02

Continues on next page...

Hydrograph Report

Hyd. No. 4

POND

Hydrograph type	= Reservoir	Peak discharge	= 39.84 cfs
Storm frequency	= 50 yrs	Time to peak	= 751 min
Time interval	= 1 min	Hyd. volume	= 297,724 cuft
Inflow hyd. No.	= 2 - Post Development Area	Reservoir name	= Detention Pond
Max. Elevation	= 17.45 ft	Max. Storage	= 114,859 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
426	1.091	12.93	0.404	-----	-----	-----	-----	-----	-----	-----	-----	0.404
427	1.096	12.96	0.414	-----	-----	-----	-----	-----	-----	-----	-----	0.414
428	1.100	12.99	0.425	-----	-----	-----	-----	-----	-----	-----	-----	0.425
429	1.105	13.00	0.428	-----	-----	-----	-----	-----	-----	-----	-----	0.428
430	1.109	13.00	0.428	-----	-----	-----	-----	-----	-----	-----	-----	0.428
431	1.114	13.01	0.429	-----	-----	-----	-----	-----	-----	-----	-----	0.429
432	1.118	13.01	0.430	-----	-----	-----	-----	-----	-----	-----	-----	0.430
433	1.123	13.01	0.430	-----	-----	-----	-----	-----	-----	-----	-----	0.430
434	1.127	13.01	0.431	-----	-----	-----	-----	-----	-----	-----	-----	0.431
435	1.132	13.02	0.431	-----	-----	-----	-----	-----	-----	-----	-----	0.431
436	1.136	13.02	0.432	-----	-----	-----	-----	-----	-----	-----	-----	0.432
437	1.141	13.02	0.432	-----	-----	-----	-----	-----	-----	-----	-----	0.432
438	1.145	13.02	0.433	-----	-----	-----	-----	-----	-----	-----	-----	0.433
439	1.150	13.03	0.434	-----	-----	-----	-----	-----	-----	-----	-----	0.434
440	1.154	13.03	0.434	-----	-----	-----	-----	-----	-----	-----	-----	0.434
441	1.159	13.03	0.435	-----	-----	-----	-----	-----	-----	-----	-----	0.435
442	1.163	13.03	0.436	-----	-----	-----	-----	-----	-----	-----	-----	0.436
443	1.168	13.04	0.436	-----	-----	-----	-----	-----	-----	-----	-----	0.436
444	1.172	13.04	0.437	-----	-----	-----	-----	-----	-----	-----	-----	0.437
445	1.177	13.04	0.437	-----	-----	-----	-----	-----	-----	-----	-----	0.437

Continues on next page...

POND

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
781	9.845	16.99	1.029	1.263	-----	-----	18.19	-----	-----	-----	-----	20.48
782	9.421	16.97	1.026	1.258	-----	-----	17.42	-----	-----	-----	-----	19.70
783	9.086	16.95	1.024	1.253	-----	-----	16.67	-----	-----	-----	-----	18.95
784	8.806	16.93	1.022	1.248	-----	-----	15.97	-----	-----	-----	-----	18.23
785	8.579	16.91	1.020	1.243	-----	-----	15.29	-----	-----	-----	-----	17.55
786	8.390	16.89	1.018	1.238	-----	-----	14.66	-----	-----	-----	-----	16.91
787	8.227	16.88	1.016	1.234	-----	-----	14.09	-----	-----	-----	-----	16.34
788	8.076	16.86	1.014	1.230	-----	-----	13.55	-----	-----	-----	-----	15.80
789	7.930	16.85	1.013	1.226	-----	-----	13.04	-----	-----	-----	-----	15.28
790	7.790	16.83	1.011	1.222	-----	-----	12.55	-----	-----	-----	-----	14.78
791	7.654	16.82	1.009	1.218	-----	-----	12.09	-----	-----	-----	-----	14.31
792	7.524	16.80	1.008	1.215	-----	-----	11.64	-----	-----	-----	-----	13.87
793	7.398	16.79	1.007	1.212	-----	-----	11.25	-----	-----	-----	-----	13.47
794	7.277	16.78	1.005	1.208	-----	-----	10.88	-----	-----	-----	-----	13.09
795	7.161	16.77	1.004	1.205	-----	-----	10.53	-----	-----	-----	-----	12.73
796	7.049	16.75	1.003	1.202	-----	-----	10.19	-----	-----	-----	-----	12.39
797	6.942	16.74	1.002	1.200	-----	-----	9.861	-----	-----	-----	-----	12.06
798	6.839	16.73	1.000	1.197	-----	-----	9.549	-----	-----	-----	-----	11.75
799	6.740	16.72	0.999	1.194	-----	-----	9.250	-----	-----	-----	-----	11.44
800	6.646	16.71	0.998	1.192	-----	-----	8.964	-----	-----	-----	-----	11.15
801	6.555	16.70	0.997	1.189	-----	-----	8.689	-----	-----	-----	-----	10.88
802	6.467	16.70	0.996	1.187	-----	-----	8.438	-----	-----	-----	-----	10.62
803	6.384	16.69	0.995	1.185	-----	-----	8.212	-----	-----	-----	-----	10.39
804	6.303	16.68	0.994	1.183	-----	-----	7.993	-----	-----	-----	-----	10.17
805	6.226	16.67	0.994	1.181	-----	-----	7.781	-----	-----	-----	-----	9.956
806	6.151	16.66	0.993	1.179	-----	-----	7.578	-----	-----	-----	-----	9.749
807	6.079	16.66	0.992	1.177	-----	-----	7.381	-----	-----	-----	-----	9.550
808	6.010	16.65	0.991	1.175	-----	-----	7.192	-----	-----	-----	-----	9.358

Continues on next page...

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2020 Monday, 03 / 7 / 2022

Hyd. No. 4

POND

Hydrograph type	= Reservoir	Peak discharge	= 50.19 cfs
Storm frequency	= 100 yrs	Time to peak	= 747 min
Time interval	= 1 min	Hyd. volume	= 348,558 cuft
Inflow hyd. No.	= 2 - Post Development Area	Reservoir name	= Detention Pond
Max. Elevation	= 17.67 ft	Max. Storage	= 121,843 cuft

Storage Indication method used.

Hydrograph Discharge Table

(Printed values >= 1.00% of Qp.)

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
485	1.672	13.32	0.502	-----	-----	-----	-----	-----	-----	-----	-----	0.502
486	1.677	13.32	0.503	-----	-----	-----	-----	-----	-----	-----	-----	0.503
487	1.683	13.32	0.504	-----	-----	-----	-----	-----	-----	-----	-----	0.504
488	1.688	13.33	0.505	-----	-----	-----	-----	-----	-----	-----	-----	0.505
489	1.694	13.33	0.505	-----	-----	-----	-----	-----	-----	-----	-----	0.505
490	1.700	13.34	0.506	-----	-----	-----	-----	-----	-----	-----	-----	0.506
491	1.706	13.34	0.507	-----	-----	-----	-----	-----	-----	-----	-----	0.507
492	1.713	13.35	0.508	-----	-----	-----	-----	-----	-----	-----	-----	0.508
493	1.719	13.35	0.509	-----	-----	-----	-----	-----	-----	-----	-----	0.509
494	1.726	13.35	0.510	-----	-----	-----	-----	-----	-----	-----	-----	0.510
495	1.734	13.36	0.511	-----	-----	-----	-----	-----	-----	-----	-----	0.511
496	1.741	13.36	0.512	-----	-----	-----	-----	-----	-----	-----	-----	0.512
497	1.749	13.37	0.513	-----	-----	-----	-----	-----	-----	-----	-----	0.513
498	1.757	13.37	0.513	-----	-----	-----	-----	-----	-----	-----	-----	0.513
499	1.766	13.37	0.514	-----	-----	-----	-----	-----	-----	-----	-----	0.514
500	1.774	13.38	0.515	-----	-----	-----	-----	-----	-----	-----	-----	0.515
501	1.783	13.38	0.516	-----	-----	-----	-----	-----	-----	-----	-----	0.516
502	1.793	13.39	0.517	-----	-----	-----	-----	-----	-----	-----	-----	0.517
503	1.803	13.39	0.518	-----	-----	-----	-----	-----	-----	-----	-----	0.518
504	1.813	13.40	0.519	-----	-----	-----	-----	-----	-----	-----	-----	0.519

Continues on next page...

POND

Hydrograph Discharge Table

Time (min)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
784	10.17	17.01	1.030	1.267	-----	-----	18.76	-----	-----	-----	-----	21.05
785	9.902	16.99	1.028	1.262	-----	-----	18.00	-----	-----	-----	-----	20.29
786	9.685	16.97	1.026	1.257	-----	-----	17.25	-----	-----	-----	-----	19.54
787	9.496	16.95	1.024	1.252	-----	-----	16.55	-----	-----	-----	-----	18.82
788	9.322	16.93	1.022	1.247	-----	-----	15.88	-----	-----	-----	-----	18.15
789	9.153	16.91	1.020	1.243	-----	-----	15.25	-----	-----	-----	-----	17.51
790	8.991	16.89	1.018	1.238	-----	-----	14.66	-----	-----	-----	-----	16.92
791	8.834	16.88	1.016	1.234	-----	-----	14.14	-----	-----	-----	-----	16.39
792	8.683	16.86	1.015	1.230	-----	-----	13.63	-----	-----	-----	-----	15.88
793	8.538	16.85	1.013	1.227	-----	-----	13.15	-----	-----	-----	-----	15.39
794	8.398	16.84	1.011	1.223	-----	-----	12.70	-----	-----	-----	-----	14.93
795	8.264	16.82	1.010	1.220	-----	-----	12.26	-----	-----	-----	-----	14.49
796	8.135	16.81	1.009	1.217	-----	-----	11.85	-----	-----	-----	-----	14.07
797	8.011	16.80	1.007	1.213	-----	-----	11.46	-----	-----	-----	-----	13.68
798	7.892	16.79	1.006	1.210	-----	-----	11.12	-----	-----	-----	-----	13.33
799	7.778	16.77	1.005	1.208	-----	-----	10.79	-----	-----	-----	-----	13.00
800	7.669	16.76	1.004	1.205	-----	-----	10.47	-----	-----	-----	-----	12.68
801	7.564	16.75	1.003	1.202	-----	-----	10.16	-----	-----	-----	-----	12.37
802	7.463	16.74	1.002	1.200	-----	-----	9.870	-----	-----	-----	-----	12.07
803	7.366	16.73	1.001	1.197	-----	-----	9.589	-----	-----	-----	-----	11.79
804	7.273	16.73	1.000	1.195	-----	-----	9.320	-----	-----	-----	-----	11.51
805	7.184	16.72	0.999	1.193	-----	-----	9.062	-----	-----	-----	-----	11.25
806	7.098	16.71	0.998	1.191	-----	-----	8.814	-----	-----	-----	-----	11.00
807	7.015	16.70	0.997	1.188	-----	-----	8.576	-----	-----	-----	-----	10.76
808	6.935	16.69	0.996	1.186	-----	-----	8.368	-----	-----	-----	-----	10.55
809	6.857	16.69	0.995	1.185	-----	-----	8.170	-----	-----	-----	-----	10.35
810	6.783	16.68	0.994	1.183	-----	-----	7.979	-----	-----	-----	-----	10.16
811	6.710	16.67	0.994	1.181	-----	-----	7.795	-----	-----	-----	-----	9.970

Continues on next page...

City Council
7224 GA Highway 21
Port Wentworth, GA 31407

SUBMITTED

Meeting: 05/26/22 07:00 PM
Department: Development Services
Category: Planning/Zoning Item
Prepared By: Melanie Ellis
Department Head: Brian Harvey

AGENDA ITEM (ID # 2666)

DOC ID: 2666

Site Plan Review Application submitted by Felipe Toledo, P.E., Thomas & Hutton of behalf of LRE Crossgate North, LLC., for PIN # 7-0035-01-007 (Northeast corner of Crossgate Rd & Jimmy Deloach Parkway) for a Specific Development Site Plan to allow a warehouse development (NFI Crossgate Industrial Park) in a P-I-1 (Planned Industrial) Zoning District

Issue/Item: Site Plan Review Application submitted by Felipe Toledo, P.E., Thomas & Hutton of behalf of LRE Crossgate North, LLC., for PIN # 7-0035-01-007 (Northeast corner of Crossgate Rd & Jimmy Deloach Parkway) for a Specific Development Site Plan to allow a warehouse development (NFI Crossgate Industrial Park) in a P-I-1 (Planned Industrial) Zoning District

Background: The subject property is currently vacant woodland. There are no buildings or structures on the subject property. The general development site plan for this project was approved during the March 8, 2022 City Council Meeting.

Facts and Findings: The proposed project consist of a 332,450 s.f. warehouse and a 96,250 s.f. warehouse with associated parking, utilities, drainage and infrastructure improvements. The entrance will be located off of Crossgate Road. The applicant provided a Traffic Impact Analysis with the general development plan. The site plan is currently under review by City Engineer's T. R. Long Engineering. This project complies with the 2021-2041 City of Port Wentworth Comprehensive Plan.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, May 9, 2022 at 6:30 PM. **/ UPDATE: THE PLANNING COMMISSION VOTED UNANIMOUSLY TO RECOMMEND TABLING THIS ITEM.**

ATTACHMENTS:

- NFI CROSSGATE 7-0035-01-007 S-SITE PLAN MAY 2022 - Application (PDF)
- NFI CROSSGATE 7-0035-01-007 S-SITE PLAN MAY 2022 - Timeline (DOCX)

220175

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

RECEIVED
MAR 16 2022
BY: KS

Site Plan Review Application

Site Plan Application is required for all new construction in a "P" or "MPO" zone as defined in the Zoning Ordinance of the City of Port Wentworth.

Site Plan Type (*Check One*): ☐ General / Concept ☒ Specific Development

Site Plan Address: CROSSGATE RD, PORT WENTWORTH, GA 31407

PIN #(s): 7003501007

Zoning: ~~E-D-Z~~ P-I-2 Estimated Cost of Construction: $

Type of Construction: Two Warehouses (Building A ±106,250 - Building B ±332,450)

Project Name: NFI Crossgate Industrial Park

Applicant's Name: Felipe Toledo, P.E

Mailing Address: 50 Park of Commerce Way, Savannah, GA 31405

Phone #: 912-721-4090 Email: toledo.f@tandh.com

Owner's Name (If Different form Applicant): LRE Crossgate North LLC (c/o Brian Werrell)

Mailing Address: Triad1828 Centre, 2 Copper Street, Camden, NJ, 08102

Phone #: Brian Werrell Email: Brian.werrell@nfiindustries.com

---

I hereby acknowledge that the above information is true and correct.

Felipe Toledo — 3/14/2022

Applicant's Signature — Date

Brian Werrell, Development Manager — 3/11/2022

Owner's Signature (If Different form Applicant) — Date

Please see page 2 for required submittal checklist

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application Submittal Checklist

Documentation below is required for a complete submittal.

- ☒ Signed and Completed Application
- ☒ 3 Full size sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☒ 15 half size (11" X 17") sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☒ 2 copies of hydrology reports (if applicable)
- ☒ Names, mailing address, and PIN number of all property owners within 250 feet of all property lines
- ☒ 1 8 ½" X 11" of site plan civil drawings or concept plan (depending on type of site plan)
- ☒ PDF of entire submittal on a flash drive or download link ONLY (NO CD'S)
- ☐ Other Engineering details or reports may be required once submittal has been received
- ☒ Site plan review fee check
    - No Land Disturbance- $206.00 Site Plan Fee + $50.00 Admin Fee = Total $256.00
    - With Land Disturbance - $836.00 Site Plan Fee + $50.00 Admin Fee = Total $886.00

Additional Fee Statement: If engineer review cost to the City exceeds the site plan review fee that is paid at the time of initial application submittal, you may be required to pay additional review cost.

I have read and agree to the above additional fee statement

Felipe Toledo — Applicant's Signature

3/14/2022 — Date

Updated 10/19/2021

CITY OF PORT WENTWORTH
(912) 964-4379

REC#: 00349071 3/28/2022 2:12 PM
OPER: ME TERM: 011
REF#: CK 113563

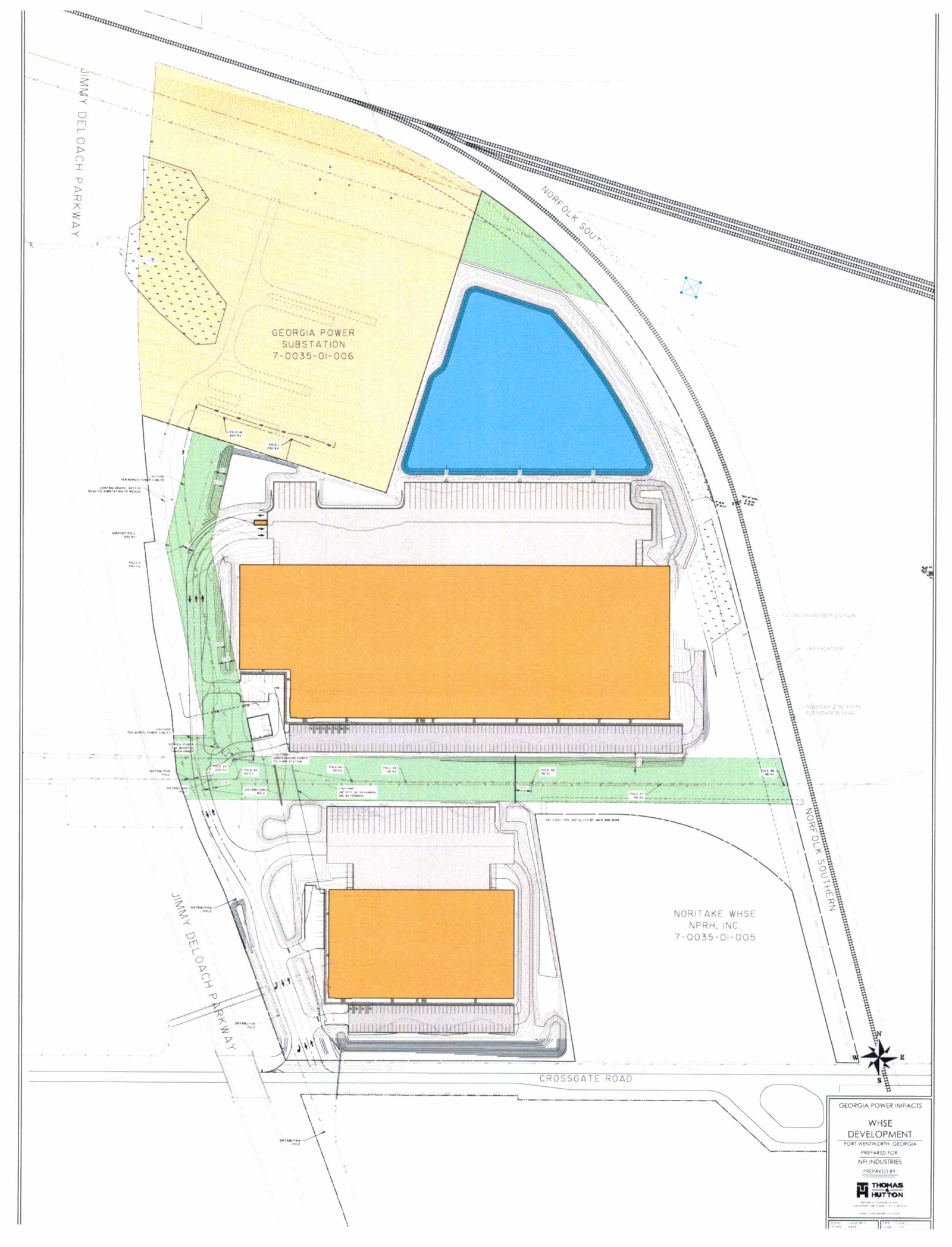
TRAN: 112.0000 BLDG PERMIT
220175 886.00CR
LRE CROSSGATE NORTH, LLC
7-0035-01-007
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM

Owner Name	Parcel Number	Property Address	Owner Address	County	State
LRE CROSSGATE SOUTH LLC	7003301004	CROSSGATE RD, PORT WENTWORTH, GA 31407	CROSSGATE RD, PORT WENTWORTH, GA 31407	Chatham	GA
GEORGIA POWER COMPANY	7003501006	HIGHWAY 21, PORT WENTWORTH, GA 31407	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308-3374	Chatham	GA
MCCASKLE, JULIA & HARRIS, SARAH	7001018008	101 GORDON ST, PORT WENTWORTH, GA 31407	101 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
PORT WENTWORTH CITY OF	7000803039	WARREN DR, PORT WENTWORTH, GA 31407	PO BOX 4086, SAVANNAH, GA 31407-4086	Chatham	GA
CRESCENT INVESTMENTS INC	7003501002	6232 HIGHWAY 21 RD, PORT WENTWORTH, GA 31407	6232 GA HIGHWAY 21, PORT WENTWORTH, GA 31407-9796	Chatham	GA
MCINTOSH, OWEN E & MCINTOSH, ERMA J	7001018001	115 GORDON ST, PORT WENTWORTH, GA 31407	115 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
CROSSGATE INDL INVTRS LLC	7003501008	1500 CROSSGATE RD, PORT WENTWORTH, GA 31407	CROSSGATE RD, PORT WENTWORTH, GA 31407	Chatham	GA
BROWNFIELD, PAMELA	7001018002	113 GORDON ST, PORT WENTWORTH, GA 31407	113 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
WATSON, JACQUELINE & WATSON, MARCUS	7001018003	111 GORDON ST, PORT WENTWORTH, GA 31407	111 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
SAVANNAH ECONOMIC DEV AUTHORIT	7003301005	1501 CROSSGATE RD, PORT WENTWORTH, GA 31407	131 HUTCHINSON ISLAND RD, SAVANNAH, GA 31421-7006	Chatham	GA
GUNN, KELLY LAPERAL	7000803037	60 WARREN DR, PORT WENTWORTH, GA 31407	117 WREN CT, SAVANNAH, GA 31419-8340	Chatham	GA
SAVANNAH ECONOMIC DEVELOPMENT AUTHORITY	7000902002	1 BIRKENHEAD ST, PORT WENTWORTH, GA 31407	131 HUTCHINSON ISLAND RD, SAVANNAH, GA 31421-7006	Chatham	GA
LRE CROSSGATE NORTH LLC	7003501007	CROSSGATE RD, PORT WENTWORTH, GA 31407	CROSSGATE RD, PORT WENTWORTH, GA 31407	Chatham	GA
PARTAIN, KAREN D EDITH F	7001018005	107 GORDON RD, PORT WENTWORTH, GA 31407	107 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
NORTON, GARY WILSON & NORTON, DONNA	7001018006	105 GORDON ST, PORT WENTWORTH, GA 31407	105 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
SOUTHERN REGION INDUSTRIAL REALTY INC	7001001001	DORSET RD, PORT WENTWORTH, GA 31407	3 COMMERCIAL PL Unit 209, NORFOLK, VA 23510-2108	Chatham	GA
NRPH INC	7003501005	1000 CROSSGATE RD, PORT WENTWORTH, GA 31407	15 FAIR LAWN AVE Unit 2A, FAIR LAWN, NJ 07410-2322	Chatham	GA
L-A SAVANNAH-CROSSGATE LLC	7000501004	BONNYBRIDGE RD, PORT WENTWORTH, GA 31407	1960 SATELLITE BLVD Unit 3000, DULUTH, GA 30097-4129	Chatham	GA
PERRY, JULIE STALLINGS	7001018004	109 GORDON ST, PORT WENTWORTH, GA 31407	109 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA
NORFOLK SOUTHERN COPR TAXATION DEPT BOX 209	7000901001	BIRKENHEAD ST, PORT WENTWORTH, GA 31407	3 COMMERCIAL PL, NORFOLK, VA 23510-2108	Chatham	GA
HENDRICK, ROBERT EWING	7001018007	103 GORDON ST, PORT WENTWORTH, GA 31407	103 GORDON ST, PORT WENTWORTH, GA 31407-1401	Chatham	GA


JIMMY DELOACH PARKWAY
NORFOLK SOUTHERN
GEORGIA POWER
SUBSTATION
7-0035-01-006
NORITAKE WHSE
NPRH, INC.
7-0035-01-005
NORFOLK SOUTHERN
JIMMY DELOACH PARKWAY
CROSSGATE ROAD
GEORGIA POWER IMPACTS
WHSE
DEVELOPMENT
PORT WENTWORTH, GEORGIA
PREPARED FOR:
NFI INDUSTRIES
PREPARED BY:
THOMAS & HUTTON

Project Timeline

Project Number: 220175

Project Name: NFI Crossgate Industrial Park Specific Site Plan 7-0035-01-007

Applicant / Engineer: Felipe Toledo, Thomas & Hutton

Owner: LRE Crossgate North LLC

City Review Engineer: TR Long

- 3/16/2022 – application received; complete
- 3/25/2022 – sent files to TR Long for review.
- 4/20/2022 – received 1st comment letter from TR Long. Forwarded letter to T&H.
- 5/7/2022 – received 1st resubmittal from T&H. TR Long copied on resubmission.
- 5/9/2022 – Planning Commission voted to recommend tabling this item.

114 North Commerce Street
Hinesville, Georgia 31313
Office: (912) 368-5664
Fax: (912) 368-7206

T R LONG ENGINEERING, P.C.

308 Commercial Drive
Savannah, Georgia 31406
Office: (912) 335-1046
Fax: (912) 355-1642

April 19, 2022

Mr. Brian Harvey
City of Port Wentworth
7224 Georgia Highway 21
Port Wentworth, Georgia 31407

Re: NFI Industries Buildings A & B – Crossgate Industrial Park
Port Wentworth, Georgia

Dear Mr. Harvey,

T. R. Long Engineering, P.C. has reviewed the "NFI Industries Buildings A & B – Crossgate Industrial Park" prepared by Thomas and Hutton Engineering Company dated February 14, 2022. T. R. Long Engineering, P.C. offers the following comments with regards to this submittal:

1. The plans do not include any benchmark or control point references. Additionally, the north arrow does not indicate whether project is magnetic or state plane.
2. Please revise car parking to show standard parking stalls. The city standard parking stall is 9' x 20' with a 24' travel isle.
3. Please provide documentation that the local fire department is acceptable with a gravel fire lane (gravel access road).
4. Please provide documentation that the local fire department is acceptable with gravel fire lane with a dead end shown at building B.
5. The new driveway connecting to Crossgate Road is not shown intersecting at 90 degrees. Please revise driveway to connect at 90 degrees.
6. The plans show a new onsite driveway that replaces and/or relocates the access easement road for the Georgia Power substation. Please provide documentation that Georgia Power agrees with the new driveway location.
7. On the grading and Drainage sheets several of the proposed contours do not tie to existing grades. Please revise the proposed contours or add existing contours to the grading and drainage sheets so the grading is shown properly.
8. Please provide sanitary manhole #1 & #2 information along Building B on sheet C2.1.
9. Please provide a master water meter and backflow on water system. Coordinate location of master meter and backflow with the City of Port Wentworth Water and Sewer Department.
10. Please remove random dimensions on plan sheet C1.4.
11. Please note vertical separations between water and sewer on sanitary sewer profiles.

Should you have any questions, comments, or need additional information please contact us.

Sincerely,

Trent R. Long, P.E.

ESTD 1946
75H
THOMAS & HUTTON

50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 | 912.234.5300
THOMASANDHUTTON.COM

May 2, 2022

Mr. Brian Harvey
City of Port Wentworth
7224 Georgia Highway 21
Port Wentworth, Georgia 31407

Re: NFI Industries Building A and B
Crossgate Industrial Park
Port Wentworth, Georgia
J-26327.0010
Response to Comments

Dear Mr. Harvey:

On behalf of our client, NFI Industries, regarding comments for Crossgate Industrial Park Buildings A and B that were issued on February 14, 2022, we offer the following responses (in bold italics):

1. **Comment:** The plans do not include any benchmark or control point references. Additionally, the north arrow does not indicate whether project is magnetic or state plane.
   Response: Survey Control sheet has been added to the plan set.
2. **Comment:** Please revise car parking to show standard parking stalls. The city standard parking stall is 9' x 20' with a 24' travel isle.
   Response: In our opinion we are meeting PW requirements. The width of car parking is 62' which equates to a travel lane and two 19' long spaces measured to the edge of pavement. The 18" curb and gutter provides an additional 12" of length to each space and therefore each space is providing the 20' length required by the city.
3. **Comment:** Please provide documentation that the local fire department is acceptable with a gravel fire lane (gravel access road).
   Response: Email from the reviewing authority will be provided.
4. **Comment:** Please provide documentation that the local fire department is acceptable with gravel fire lane with a dead end shown at building B.
   Response: Email from the reviewing authority will be provided.
5. **Comment:** The new driveway connecting to Crossgate Road is not shown intersecting at 90 degrees. Please revise driveway to connect at 90 degrees.
   Response: Please note that entrance drive has been planned to connect to a future roadway that will serve the property to the SW which will provide access in a northerly direction from the Jimmy Deloach Parkway. As it is the intention to not allow truck traffic to head in an easterly direction down Crossgate Road we would ask that connection to Crossgate be allowed at the angle shown. Please note that previous submittal incorrectly showed an exit lane in line with this future roadway.

The plans have been revised to remove the straight though move and will only allow for vehicles to move in a westerly direction towards Hwy 21.

6. **Comment:** The plans show a new onsite driveway that replaces and/or relocates the access easement road for the Georgia Power substation. Please provide documentation that Georgia Power agrees with the new driveway location.
Response: Access was coordinated with Georgia Power during conceptual design. An email stating that they are OK with road access will be forwarded to Port Wentworth.

7. **Comment:** On the Grading and Drainage sheets several of the proposed contours do not tie to existing grades. Please revise the proposed contours or add existing contours to the grading and drainage sheets so the grading is shown properly.
Response: Corrections have been made.

8. **Comment:** Please provide sanitary manhole #1 & #2 information along Building B on sheet C2.1.
Response: Information has been added to manholes.

9. **Comment:** Please provide a master water meter and backflow on water system. Coordinate location of master meter and backflow with the City of Port Wentworth Water and Sewer Department.
Response: We request that a teams meeting be held. We would request that a 16" gate valve be installed to demarcate the separation between the public and private system. The installation of a backflow preventor and meter on the fire protection line would add significant pressure loss to the system and would be redundant as each buildings fire system will be provided with a backflow preventor.

10. **Comment:** Please remove random dimensions on plan sheet C1.4.
Response: Corrections have been made.

11. **Comment:** Please note vertical separations between water and sewer on sanitary sewer profiles.
Response: Vertical separation has been added.

We thank you for your attention to this project and look forward to receiving your approval. Please feel free to contact our office with any questions.

Sincerely,

THOMAS & HUTTON

Felipe I. Toledo, P.E.

FIT/dc

Z:\J\26327\J26327.0010\Engineering\Drawings\Construction Plans\COVER SHEET.dwg - Feb 24, 2020 - 3:45:57 PM

SITE DEVELOPMENT FOR BUILDINGS A & B
AT
CROSSGATE INDUSTRIAL PARK
PORT WENTWORTH, GEORGIA

PREPARED FOR:

NFI INDUSTRIES

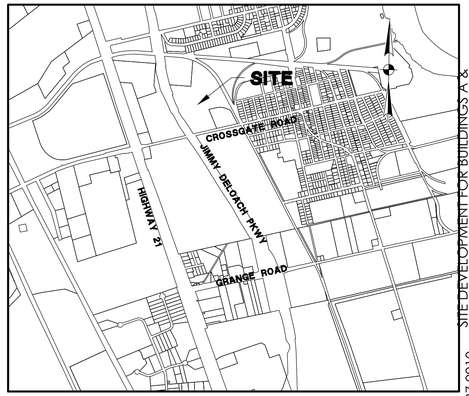
TRIAD 1828 CENTER
2 COOPER STREET
CAMDEN, NJ 08102

FEBRUARY 14, 2022

J-26327.0010

PREPARED BY:

THOMAS & HUTTON



VICINITY MAP
SCALE: 1" = 2000'

J-26327.0010
2/14/22
SITE DEVELOPMENT FOR BUILDINGS A & B

PERMIT SET - FOR REVIEW PURPOSES ONLY

Sheet List Table

Sheet Number	Sheet Title
C0	COVER SHEET
GN	GENERAL NOTES
SC1	SURVEY CONTROL SHEET
C1.1	SITE LAYOUT - SHEET 1
C1.2	SITE LAYOUT - SHEET 2
C1.3	ENLARGED PLAN AT BUILDING A
C1.4	ENLARGED PLAN AT BUILDING B
C2.1	WATER & SEWER PLAN - SHEET 1
C2.2	WATER & SEWER PLAN- SHEET 2
C2.3	SANITARY SEWER PROFILES
C2.4	SANITARY SEWER DETAILS
C2.5	WATER SYSTEM DETAILS
C2.6	WATER SYSTEM DETAILS
C2.7	WATER SYSTEM DETAILS
C3.1	PAVING GRADING & DRAINAGE - SHEET 1
C3.2	PAVING GRADING & DRAINAGE - SHEET 2
C3.3	DRAINAGE PROFILES
C3.4	DRAINAGE PROFILES
C3.5	DETAILS
C3.6	DETAILS
EC0.1	EROSION CONTROL NOTES
EC0.2	EROSION CONTROL NOTES
EC0.3	EROSION CONTROL NOTES
EC1.1	INITIAL ESPC PLAN
EC1.2	INITIAL ESPC PLAN
EC1.3	INTERMEDIATE ESPC PLAN
EC1.4	INTERMEDIATE ESPC PLAN
EC1.5	FINAL ESPC PLAN
L2.3	GRASSING SPECIFICATIONS
EC1.6	FINAL ESPC PLAN
EC2.1	EROSION CONTROL DETAILS
EC2.2	EROSION CONTROL DETAILS
EC2.3	EROSION CONTROL DETAILS
L1.0	OVERALL LANDSCAPE PLAN
L1.1	LANDSCAPE PLAN
L1.2	LANDSCAPE PLAN
L1.3	LANDSCAPE PLAN
L1.4	LANDSCAPE PLAN
L1.5	LANDSCAPE PLAN
L2.1	LANDSCAPE DETAILS
L2.2	LANDSCAPE SPECIFICATIONS

GEORGIA REGISTERED No. 027456 PROFESSIONAL ENGINEER JOSEPH L. MERCER

SUBMITTAL HISTORY

----	----
SUBMITTED TO	DATE

REVISION HISTORY

----		----	----
REV. NO.	REVISION	BY	DATE

811 Know what's below. Call before you dig.

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405
p.912.234.5300
www.thomasandhutton.com

Z:\26327\26327.000\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\GENERAL SHEETS\GN1 - May 3, 2022 - 10:47 AM

WATER LEGEND

DESCRIPTION	EXISTING	PROPOSED
WATER MAIN	10"W	10"W
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
VALVE AND BOX		
FIRE HYDRANT W/VALVE & BOX		
POST HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-½° BEND - HORIZONTAL		
11-¼° BEND - HORIZONTAL		
BEND - VERTICAL		
CAP		

ABBREVIATIONS

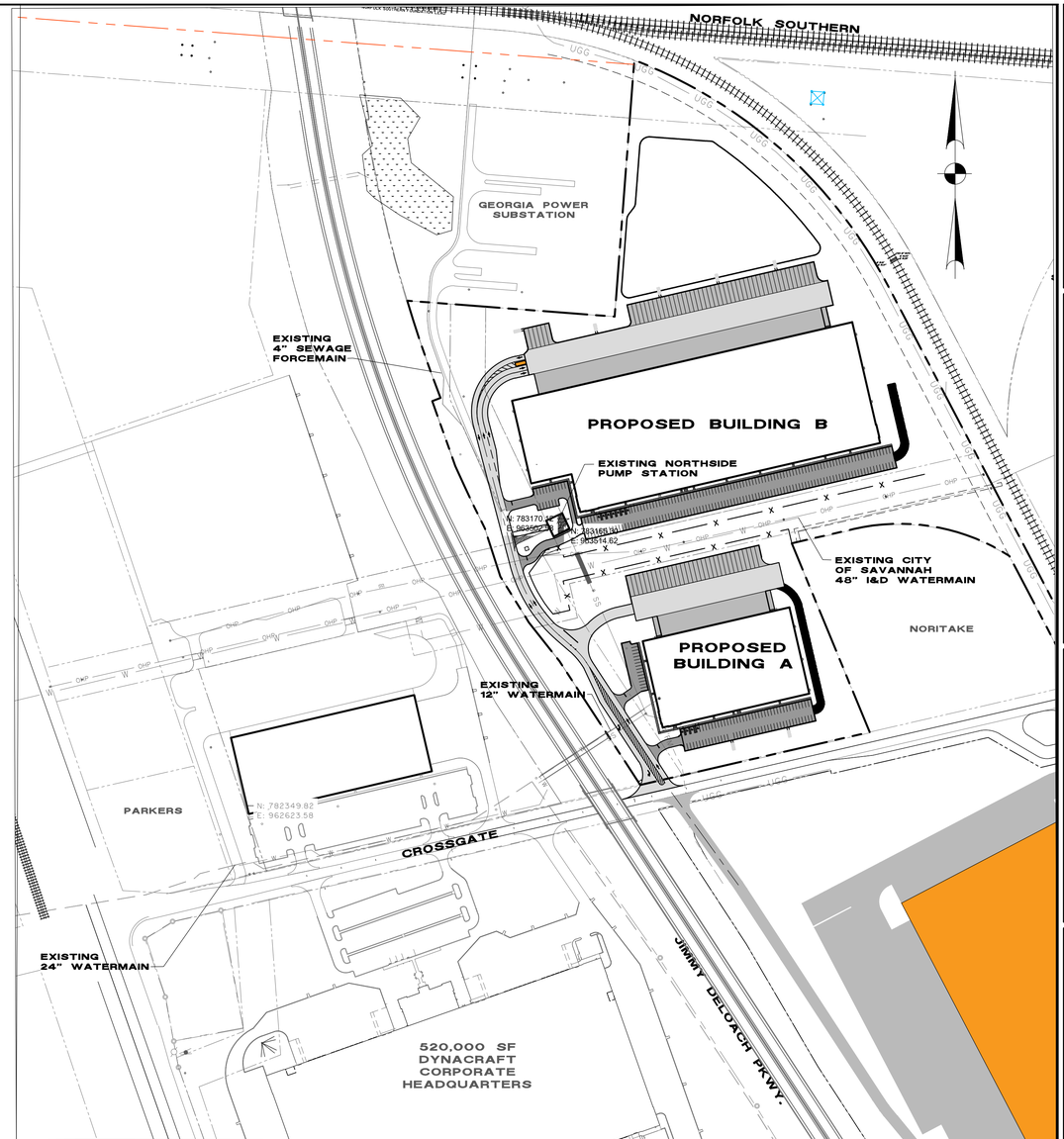
HDPE	HIGH DENSITY POLYETHELENE		JB	JUNCTION BOX		SDMH	STORM DRAINAGE MANHOLE
BOT	BOTTOM		LF	LINEAR FEET		SF	SQUARE FEET
CI	CURB INLET		MAX	MAXIMUM		SS	SANITARY SEWER
CPP	CORRUGATED PLASTIC PIPE		MIN	MINIMUM		TC	TOP OF CURB
DIP	DUCTILE IRON PIPE		MH	MANHOLE		TG	TOP OF GUTTER
EL	ELEVATION		OC	ON CENTER		TP	TOP OF PAVEMENT
FG	FINISH GRADE		PC	POINT OF CURVE		TW	TOP OF WALK
FH	FIRE HYDRANT		PH	POST HYDRANT		TYP	TYPICAL
FM	FORCE MAIN (SANITARY SEWER)		PT	POINT OF TANGENT		W	WATER
FP	FINISH PAD		PVC	POLYVINYL CHLORIDE		W/	WITH
FR	FRAME		RCP	REINFORCED CONCRETE PIPE		WV	WATER VALVE
GI	GRATE INLET		RJP	RESTRAINED JOINT PIPE		YI	YARD INLET
GV	GATE VALVE		R/W	RIGHT-OF-WAY			
INV	INVERT ELEVATION		SD	STORM DRAINAGE			

SEWER LEGEND

DESCRIPTION	EXISTING	PROPOSED
GRAVITY PIPE	SS	
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
MANHOLE		
CLEANOUT		
FORCEMAIN	10"FM 10"FM	10"FM 10"FM
VALVE AND BOX		
FLUSH HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-½° BEND - HORIZONTAL		
11-¼° BEND - HORIZONTAL		
BEND - VERTICAL		
PLUG		

GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE TIE-IN OF NEW WATER AND SEWER FACILITIES TO CITY OF PORT WENTWORTH SYSTEM. ALL WORK ON THIS PROJECT SHALL BE IN STRICT ACCORDANCE WITH CITY OF PORT WENTWORTH SPECIFICATIONS AND DETAILS.
2. EXISTING NORTHSIDE PUMP STATION AS WELL AS FORCEMAIN, GRAVITY SEWER AND WATER MAINS EXIST ON THE PROJECT SITE THAT ARE OWNED AND MAINTAINED BY THE CITY OF PORT WENTWORTH. CONSTRUCTION OF IMPROVEMENTS WILL REQUIRE MODIFICATIONS, RELOCATIONS AND CONNECTION TO PORT WENTWORTH UTILITIES AND ALL OUTAGES MUST BE SCHEDULED WITH CITY PERSONNEL (OMAR SENATI-MARTINEZ 912-999-2084)
3. SITEWORK FOR THE DISTRIBUTION CENTER PROJECT WILL BE CONSTRUCTED IN CLOSE PROXIMITY TO EXISTING GA POWER TRANSMISSION LINE POLES. PRIOR TO THE START OF CONSTRUCTION CONTRACTOR SHALL BE RESPONSIBLE FOR STAKING THE LOCATION OF ORANGE SAFETY BARRIER AROUND THE POLES AND GUY WIRES AND MEETING WITH REPRESENTATIVE FROM GA POWER (STEVE KENARD - 912- 547-1494) PRIOR TO INSTALLATION. ALL WORK SHALL BE PERFORMED SO AS TO CAUSE NO DAMAGE TO EXTING POLES, GUYS OR POWERLINES. THERE IS AN EXISTING GRAVEL DRIVEWAY THAT PROVIDES ACCESS FOR GEORGIA POWER FROM CROSSGATE ROAD TO THE SUBSTATION. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 12' WIDE ACCESS TO THE SUBSTAION AT ALL TIMES.
4. A CITY OF SAVANNAH 48" DIAMETER INDUSTRIAL AND DOMESTIC WATER LINE BISECTS THE PROPERTY THAT IS BEING DEVELOPED. PRIOR TO START OF ANY WORK AT THE PROJECT SITE, THE CONTRACTOR SHALL INSTALL ORANGE SAFETY BARRIER AS SHOWN ON DRAWING C1 AND C2 AND NO EQUIPMENT , MATERIAL OR PERSONNEL SHALL BE ALLOWED IN FENCED OFF AREA.
5. CONTRACTOR SHALL MAINTAIN MINIMUM COVER OVER THE WATER MAIN PIPE BARREL OF 3'-0" UNLESS OTHERWISE INDICATED. TOP OF PIPE ELEVATIONS ARE SHOWN FOR CASES WHERE FUTURE STORM SEWERS ARE TO BE INSTALLED. IN NO CASE SHALL THE WATER MAIN BE INSTALLED AT A LOWER ELEVATION THAN THAT SHOWN.
6. SHOULD PIPE, FITTINGS, AND OTHER MATERIALS BE NEEDED IN ADDITION TO THAT SHOWN ON THE DRAWINGS BECAUSE PIPELINE WAS NOT INSTALLED TO THE ALIGNMENT AND PROFILE SHOWN, THEN THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THOSE NECESSARY MATERIALS AND PROVIDING THE EQUIPMENT AND LABOR TO INSTALL THEM TO MEET THE DESIGN INTENT OF THE WATERMAIN AT NO ADDITIONAL COST TO THE OWNER.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER 48 HOURS IN ADVANCE OF ALL REQUIRED TESTS AND INSPECTIONS.
8. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
9. ALL WATERMAINS SHALL BE POLYVINYL CHLORIDE (PVC C900) UNLESS OTHERWISE INDICATED.
10. ALL GRAVITY SEWER MAIN SHALL BE POLYVINYL CHLORIDE (PVC SDR26) UNLESS OTHERWISE INDICATED.
11. SURVEYING AND BOUNDARY INFORMATION BY THOMAS AND HUTTON
12. ALL ELEVATIONS SHOWN ARE BASED ON NAVD88.
13. TOPOGRAPHIC SURVEY BY THOMAS AND HUTTON.
14. CONTRACTOR SHALL VERIFY ACCURACY OF ANY TEMPORARY BENCHMARKS SHOWN PRIOR TO UTILIZING THEM FOR CONSTRUCTION.
15. THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION / DEPTH OF ALL UTILITIES THAT MAY BE IMPACTED BY HIS CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND TAKE STEPS TO PROTECT THE LINE(S) AND ENSURE CONTINUED SERVICE. DAMAGE CAUSED TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES TO EXISTING UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.
16. IF WORK IS SUSPENDED OR DELAYED FOR 14 DAYS, THE CONTRACTOR SHALL TEMPORARILY STABILIZE THE DISTURBED AREA AT NO ADDITIONAL COST TO THE OWNER.
17. THE CONTRACTOR SHALL INSTALL ANY BARRICADES PRIOR TO BEGINNING CONSTRUCTION
18. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL AND PREVENTION STRUCTURES SHOWN ON THE PLANS. BOTH MUST BE APPROVED BY CITY OF PORT WENTWORTH PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITIES.
19. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE DISTURBANCE OF THE LAND AND SHALL REMAIN FUNCTIONAL UNTIL THE CONTRIBUTING DISTURBED AREAS ARE STABILIZED. SILT BARRIERS WILL BE INSTALLED AS NECESSARY TO PREVENT EXCESSIVE SEDIMENTATION OF DOWNSTREAM AREAS. CONTRACTOR SHALL GRADE AREAS TO DRAIN FOR POSITIVE FLOW PRIOR TO FINAL APPROVAL.
20. ALL DRAINAGE WILL BE MADE FUNCTIONAL DAILY AS WORK PROGRESSES.



PROJECT MAP

SCALE: 1" = 200'

GENERAL INFORMATION

GENERAL CONTRACTOR

COUNTY CHATHAM
CITY PORT WENTWORTH
ZONING P-I-I

OWNER OF PROPERTY
NFI INDUSTRIES
TRIAD 1828 CENTER, 2 COOPER STREET
CAMDEN, NJ 08102
856-470-2078

ENGINEER:
THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31402
(912) 234-5300

PREPARED FOR:
NFI INDUSTRIES
TRIAD 1828 CENTER, 2 COOPER STREET
CAMDEN, NJ 08102
856-470-2078

SURVEYOR: THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31402
(912) 234-5300

UTILITY: CITY OF PORT WENTWORTH
ATTN: BRIAN HARVEY
DIRECTOR OF DEVELOPMENT SERVICES
305 SOUTH COASTAL HIGHWAY
PORT WENTWORTH, GA 31407
912-964-4379 EXT 108

GEORGIA REGISTERED No. 027868 PROFESSIONAL ENGINEER JASON L. MASSEE

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

GENERAL NOTES

JOB NO:	J-26327.000
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	AS LISTED

GN

J:\26327\1\26327-0010\ENGINEERING\SURVEY\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-0010 SURVEY CONTROL SHEET.DWG - May 3, 2022 - 10:43 AM

GRID NORTH, NAD83 (2011)
GEORGIA SPC, EAST ZONE

NOTES

1. HORIZONTAL AND VERTICAL CONTROL SHOWN ON THIS SHEET SHOULD BE USED FOR ALL LAYOUT AND RECORD DATA FOR THIS PROJECT. IF DISCREPANCIES ARE FOUND, PLEASE CONTACT THOMAS & HUTTON PRIOR TO PROCEEDING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH SUPPLEMENTAL CONTROL WITHIN THE PROJECT AS NEEDED.
2. ELEVATIONS FOR THIS PROJECT ARE BASED ON NAVD88.
3. COORDINATES FOR THIS PROJECT ARE BASED ON THE GEORGIA STATE PLANE COORDINATE SYSTEM, GEORGIA EAST ZONE, NAD83. DUE TO NORMAL VARIATIONS INHERENT TO ESTABLISHING COORDINATE POSITIONS, INDIVIDUAL GPS UNITS SHOULD BE LOCALIZED (OR CALIBRATED) TO THIS SITE.

SAVANNAH & ATLANTA RAILROAD
100' RIGHT-OF-WAY

NOW OR FORMERLY
NRPH, INC
7-0035-01-005
DB 152-B PAGE 215

NOW OR FORMERLY
GEORGIA POWER COMPANY
7-0035-01-006
PRB 47-P PAGE 159
DB 388-D PAGE 124

REMAINING PORTION OF PARCEL B

CROSSGATE ROAD
(PUBLIC RIGHT-OF-WAY VARIES)

JIMMY DELOACH PARKWAY
(PUBLIC RIGHT-OF-WAY VARIES - A LIMITED ACCESS HIGHWAY)

1016 1100 1202 1206 1207 1210 1211 1212 1215 1220 1222 1223 1304

100 0 100 200
1 INCH = 100 FEET

VERTICAL CONTROL TABLE

Point	Elevation (88)	Description
1016	27.86	REBAR W/ T&H CAP
1304	23.89	NGS DISC Z 212

HORIZONTAL CONTROL TABLE

Point	Northing	Easting	Description
1016	782328.399	963555.126	REBAR W/ T&H CAP
1100	782673.223	965029.803	REBAR W/ T&H CAP
1202	783291.459	964702.241	REBAR W/ T&H CAP
1206	783861.531	964402.184	REBAR W/ T&H CAP
1207	784297.056	964054.310	REBAR W/ T&H CAP
1210	784500.786	963592.355	REBAR W/ T&H CAP
1211	784179.071	963248.379	REBAR W/ T&H CAP
1212	783847.318	963197.799	REBAR W/ T&H CAP
1215	783577.383	963204.774	REBAR W/ T&H CAP
1220	782901.922	963443.323	REBAR W/ T&H CAP
1222	782711.639	963647.228	REBAR W/ T&H CAP
1223	782475.455	963815.072	REBAR W/ T&H CAP

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---		---	---
		---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

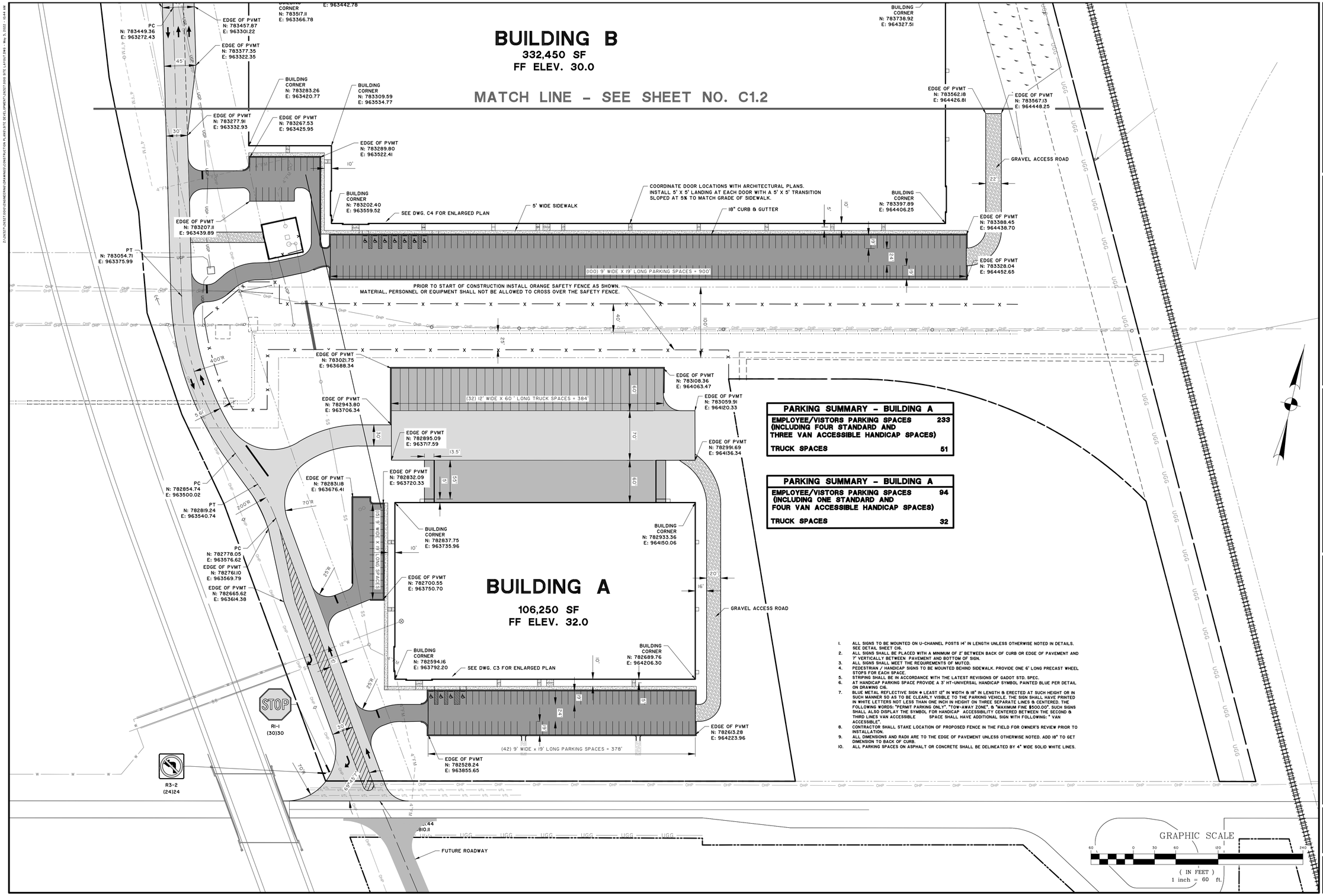
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

SURVEY CONTROL SHEET

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 100'

SC1



PARKING SUMMARY - BUILDING A

EMPLOYEE/VISTORS PARKING SPACES (INCLUDING FOUR STANDARD AND THREE VAN ACCESSIBLE HANDICAP SPACES)	233
TRUCK SPACES	51

PARKING SUMMARY - BUILDING A

EMPLOYEE/VISTORS PARKING SPACES (INCLUDING ONE STANDARD AND FOUR VAN ACCESSIBLE HANDICAP SPACES)	94
TRUCK SPACES	32

1. ALL SIGNS TO BE MOUNTED ON U-CHANNEL POSTS 14' IN LENGTH UNLESS OTHERWISE NOTED IN DETAILS. SEE DETAIL SHEET C16.
2. ALL SIGNS SHALL BE PLACED WITH A MINIMUM OF 2' BETWEEN BACK OF CURB OR EDGE OF PAVEMENT AND 7' VERTICALLY BETWEEN PAVEMENT AND BOTTOM OF SIGN.
3. ALL SIGNS SHALL MEET THE REQUIREMENTS OF MUTCD.
4. PEDESTRIAN / HANDICAP SIGNS TO BE MOUNTED BEHIND SIDEWALK. PROVIDE ONE 6' LONG PRECAST WHEEL STOPS FOR EACH SPACE.
5. STRIPING SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF GADOT STD. SPEC.
6. AT HANDICAP PARKING SPACE PROVIDE A 3' HT-UNIVERSAL HANDICAP SYMBOL PAINTED BLUE PER DETAIL ON DRAWING C16.
7. BLUE METAL REFLECTIVE SIGN @ LEAST 12" IN WIDTH & 18" IN LENGTH & ERECTED AT SUCH HEIGHT OR IN SUCH MANNER SO AS TO BE CLEARLY VISIBLE TO THE PARKING VEHICLE. THE SIGN SHALL HAVE PRINTED IN WHITE LETTERS NOT LESS THAN ONE INCH IN HEIGHT ON THREE SEPARATE LINES & CENTERED. THE FOLLOWING WORDS: "PERMIT PARKING ONLY". "TOW-AWAY ZONE". & "MAXIMUM FINE $500.00". SUCH SIGNS SHALL ALSO DISPLAY THE SYMBOL FOR HANDICAP ACCESSIBILITY CENTERED BETWEEN THE SECOND & THIRD LINES VAN ACCESSIBLE SPACE SHALL HAVE ADDITIONAL SIGN WITH FOLLOWING: " VAN ACCESSIBLE".
8. CONTRACTOR SHALL STAKE LOCATION OF PROPOSED FENCE IN THE FIELD FOR OWNER'S REVIEW PRIOR TO INSTALLATION.
9. ALL DIMENSIONS AND RADII ARE TO THE EDGE OF PAVEMENT UNLESS OTHERWISE NOTED. ADD 18" TO GET DIMENSION TO BACK OF CURB.
10. ALL PARKING SPACES ON ASPHALT OR CONCRETE SHALL BE DELINEATED BY 4" WIDE SOLID WHITE LINES.

GEORGIA REGISTERED No. 033811 PROFESSIONAL ENGINEER JOSEPH L. MERCER

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

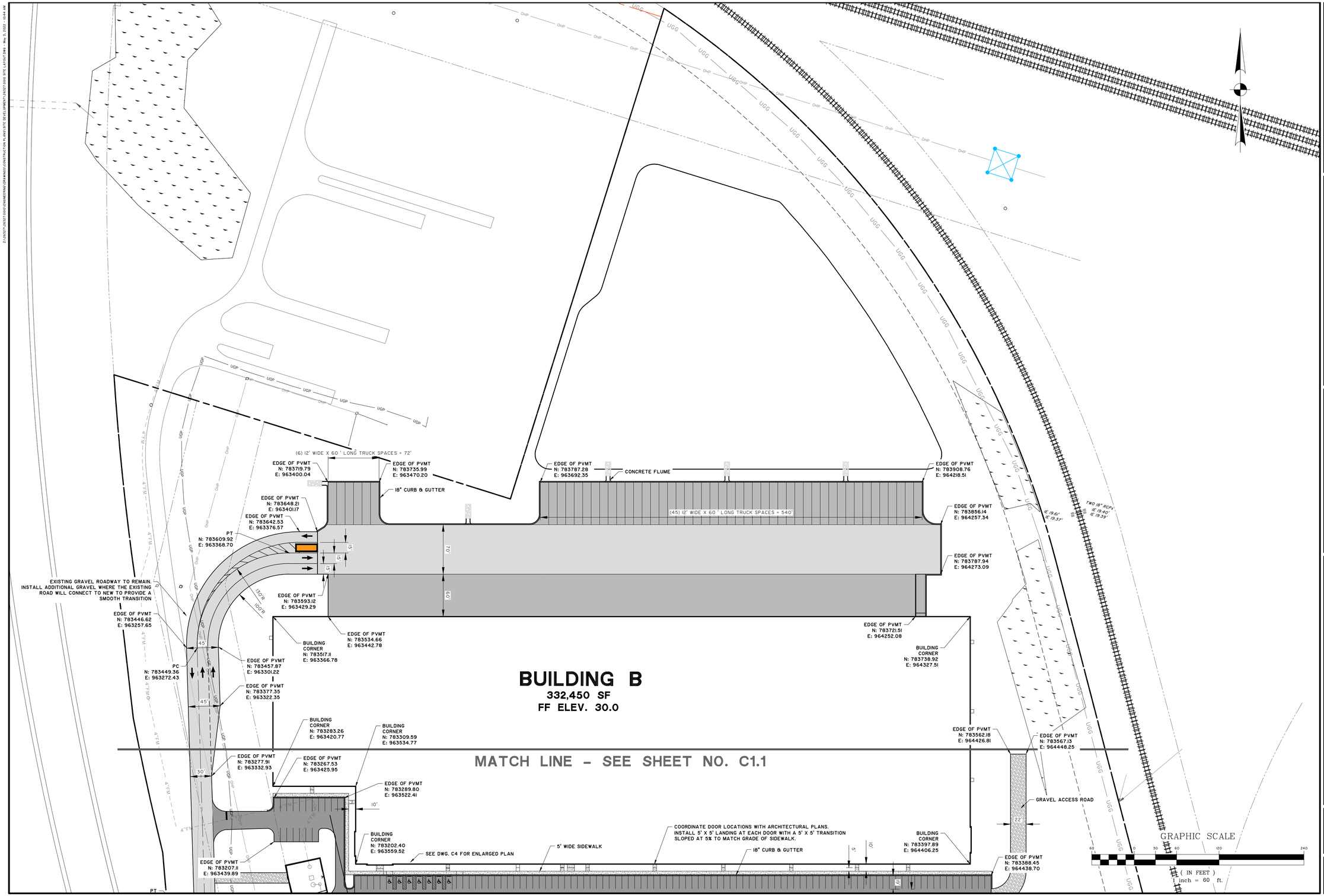
SITE LAYOUT - SHEET 1

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

C1.1

Z:\26327\26327.0010\DRAWINGS\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-0010 SITE LAYOUT.DWG - May 5, 2022 - 10:41 AM

Z:\26327\26327.0010\CAD\RETAIL\SHEETS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0010 SITE LAYOUT.DWG - May 5, 2022 - 10:14 AM



PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

SITE LAYOUT - SHEET 2

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

C1.2

Z:\26327\26327.0010\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0010 ENLARGED PLAN AT BLDG A.DWG - May 5, 2022 - 10:43 AM

BUILDING A
FF ELEV. 32.0

ACCESIBLE ROUTE

5' x 5' LANDING WITH 5' x 5' TRANSITION SLOPED AT 5% TO SIDEWALK

5' x 5' LANDING WITH 5' x 5' TRANSITION SLOPED AT 5% TO SIDEWALK

10' x 5' LANDING WITH 10' x 5' TRANSITION SLOPED AT 5% TO SIDEWALK

STOP
R1-1
(30)30

R7-8
(12)18

GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

GEORGIA REGISTERED No. 032541 PROFESSIONAL ENGINEER JOSEPH L. MEREDITH

NO.	REVISIONS	BY	DATE
----		----	----

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

ENLARGED PLAN AT BUILDING A

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 20'

C1.3

Z:\26327\26327.0010\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-0010 ENLARGED PLAN AT BLDG B.DWG - May 3, 2022 - 10:48 AM

BUILDING B
FF ELEV. 30.0

5' x 5' LANDING WITH
5' x 5' TRANSITION AT 5%
SLOPE TO MATCH SIDEWALK

5' x 5' LANDING WITH
5' x 5' TRANSITION AT 5%
SLOPE TO MATCH SIDEWALK

N: 783214.50
E: 963334.06

N: 783230.11
E: 963401.77

5' WIDE SIDEWALK
AND 18" CURB & GUTTER

ACCESIBLE ROUTE

5' x 5'
LANDING WITH
ONE 6" HIGH STEP

5' x 5' LANDING WITH
5' x 5' TRANSITION AT 5%
SLOPE TO MATCH SIDEWALK

EXIST GA. POWER
TRANSFORMER

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GEORGIA
REGISTERED
No. 029166
PROFESSIONAL
ENGINEER
JOSEPH L. MEYER

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

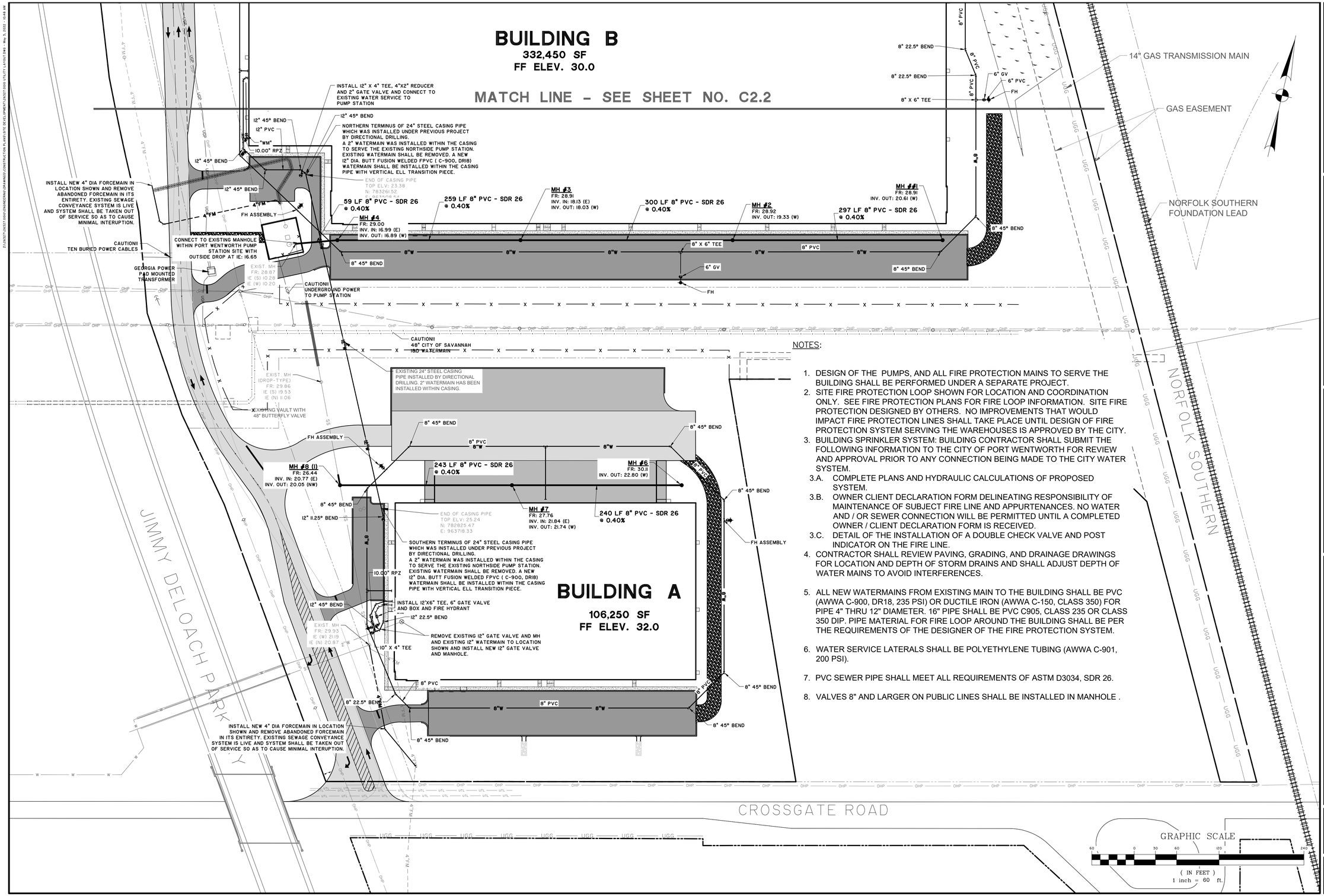
SITE DEVELOPMENT FOR BUILDINGS A & B

ENLARGED PLAN AT BUILDING B

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 20'

C1.4

PERMIT SET - FOR REVIEW PURPOSES ONLY



NOTES:

1. DESIGN OF THE PUMPS, AND ALL FIRE PROTECTION MAINS TO SERVE THE BUILDING SHALL BE PERFORMED UNDER A SEPARATE PROJECT.
2. SITE FIRE PROTECTION LOOP SHOWN FOR LOCATION AND COORDINATION ONLY. SEE FIRE PROTECTION PLANS FOR FIRE LOOP INFORMATION. SITE FIRE PROTECTION DESIGNED BY OTHERS. NO IMPROVEMENTS THAT WOULD IMPACT FIRE PROTECTION LINES SHALL TAKE PLACE UNTIL DESIGN OF FIRE PROTECTION SYSTEM SERVING THE WAREHOUSES IS APPROVED BY THE CITY.
3. BUILDING SPRINKLER SYSTEM: BUILDING CONTRACTOR SHALL SUBMIT THE FOLLOWING INFORMATION TO THE CITY OF PORT WENTWORTH FOR REVIEW AND APPROVAL PRIOR TO ANY CONNECTION BEING MADE TO THE CITY WATER SYSTEM.
   - 3.A. COMPLETE PLANS AND HYDRAULIC CALCULATIONS OF PROPOSED SYSTEM.
   - 3.B. OWNER CLIENT DECLARATION FORM DELINEATING RESPONSIBILITY OF MAINTENANCE OF SUBJECT FIRE LINE AND APPURTENANCES. NO WATER AND / OR SEWER CONNECTION WILL BE PERMITTED UNTIL A COMPLETED OWNER / CLIENT DECLARATION FORM IS RECEIVED.
   - 3.C. DETAIL OF THE INSTALLATION OF A DOUBLE CHECK VALVE AND POST INDICATOR ON THE FIRE LINE.
4. CONTRACTOR SHALL REVIEW PAVING, GRADING, AND DRAINAGE DRAWINGS FOR LOCATION AND DEPTH OF STORM DRAINS AND SHALL ADJUST DEPTH OF WATER MAINS TO AVOID INTERFERENCES.
5. ALL NEW WATERMAINS FROM EXISTING MAIN TO THE BUILDING SHALL BE PVC (AWWA C-900, DR18, 235 PSI) OR DUCTILE IRON (AWWA C-150, CLASS 350) FOR PIPE 4" THRU 12" DIAMETER. 16" PIPE SHALL BE PVC C905, CLASS 235 OR CLASS 350 DIP. PIPE MATERIAL FOR FIRE LOOP AROUND THE BUILDING SHALL BE PER THE REQUIREMENTS OF THE DESIGNER OF THE FIRE PROTECTION SYSTEM.
6. WATER SERVICE LATERALS SHALL BE POLYETHYLENE TUBING (AWWA C-901, 200 PSI).
7. PVC SEWER PIPE SHALL MEET ALL REQUIREMENTS OF ASTM D3034, SDR 26.
8. VALVES 8" AND LARGER ON PUBLIC LINES SHALL BE INSTALLED IN MANHOLE .

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 027868 JOSEPH L. MASON

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

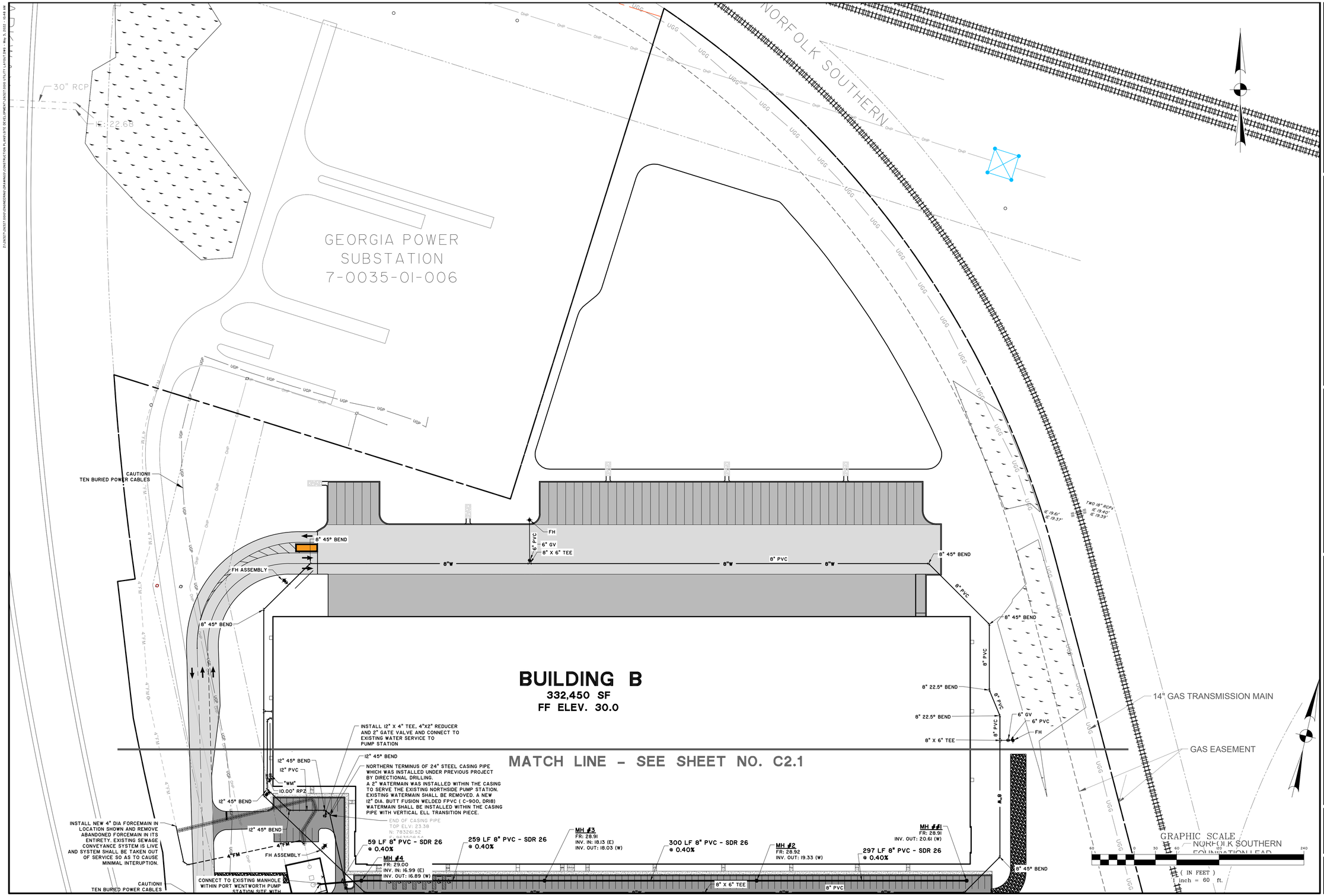
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

WATER & SEWER PLAN - SHEET I

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

C2.1



GEORGIA REGISTERED No. 029168 PROFESSIONAL ENGINEER JOSEPH L. MOSER

NO.	REVISIONS	BY	DATE
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

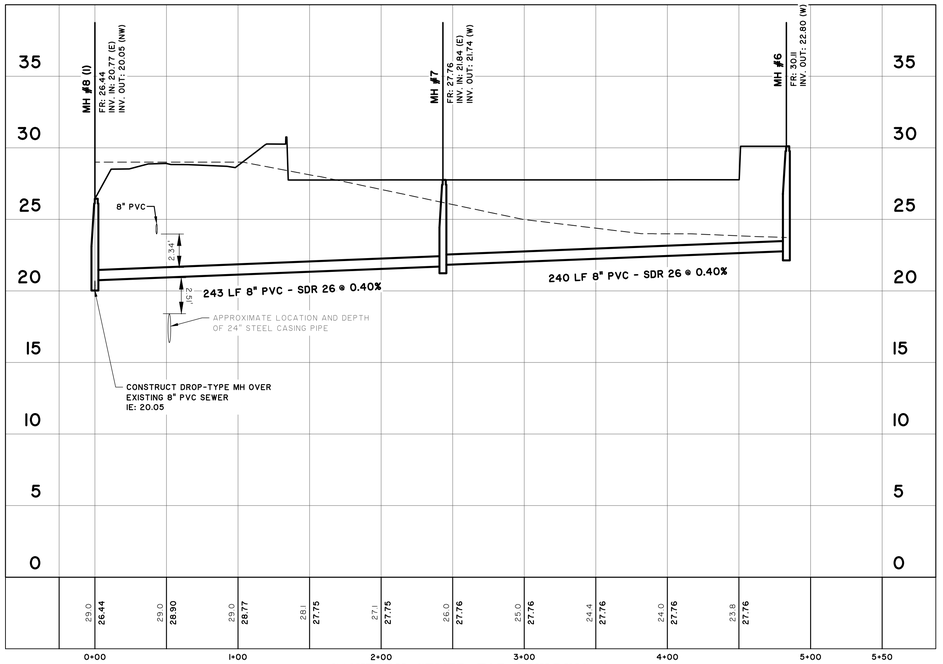
SITE DEVELOPMENT FOR BUILDINGS A & B

WATER & SEWER PLAN- SHEET 2

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

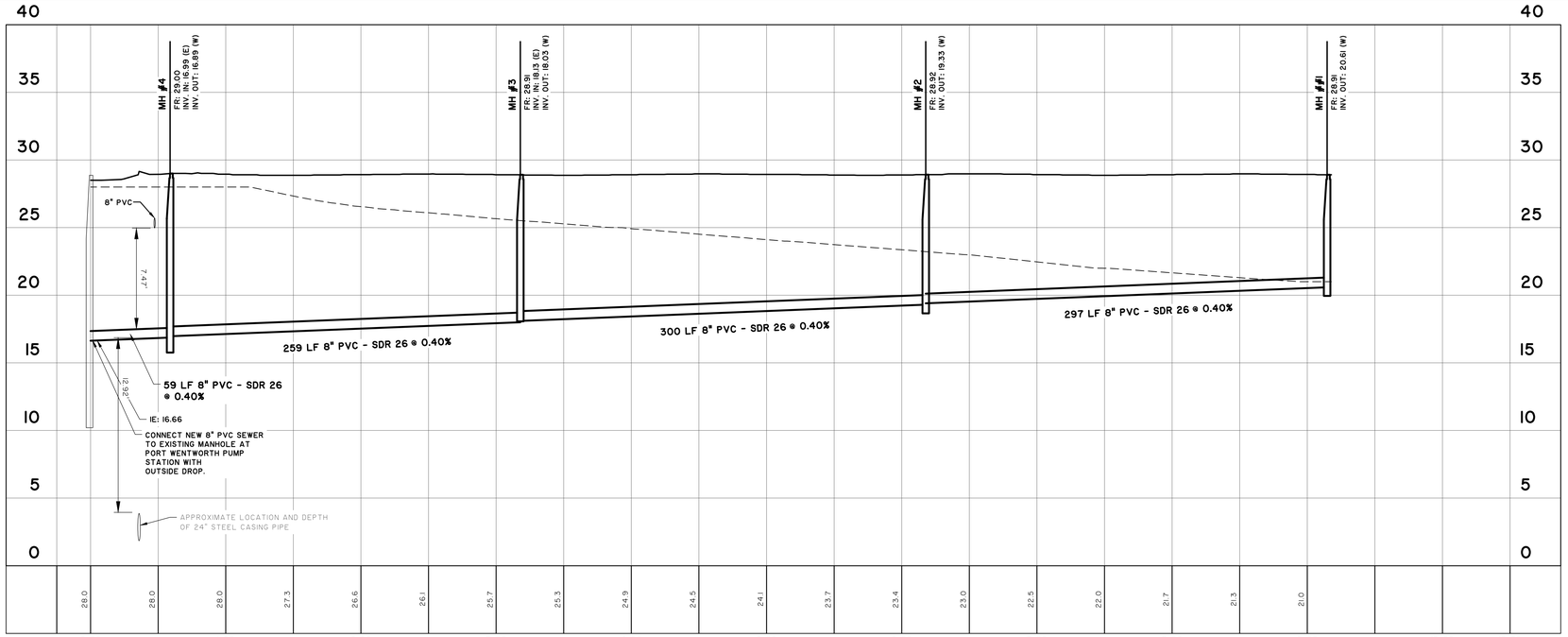
C2.2

Z:\26327\J26327.0000\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0000 SANITARY SEWER PROFILES.DWG - May 5, 2022 - 10:49 AM



SANITARY SEWER FOR BUILDING A

STATIONS: -0+25 – 5+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'



SANITARY SEWER FOR BUILDING B

STATIONS: -0+25 – 10+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

GEORGIA REGISTERED No. 029168 PROFESSIONAL ENGINEER JOSEPH L. MERCER

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

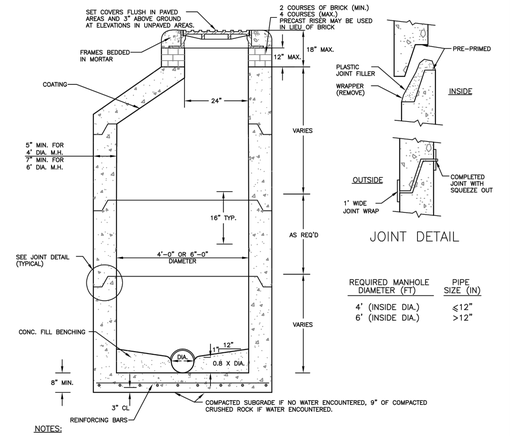
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

SANITARY SEWER PROFILES

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	AS NOTED

C2.3



REQUIRED MANHOLE DIAMETER (FT)	PIPE SIZE (IN)
4' (INSIDE DIA.)	≤12"
6' (INSIDE DIA.)	>12"

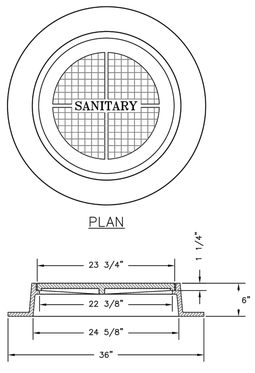
NOTES:

1. PRECAST REINFORCED CONCRETE TOPS, RISERS, BASES AND REBARS SHALL CONFORM TO LATEST ASTM C-478 STD. SPECIFICATIONS.
2. INTERIOR OF MANHOLE SHALL BE COATED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STD. SPECIFICATIONS. THE EXTERIOR OF MANHOLE SHALL BE COATED WITH CONSEAL CS-55 DAMP-PROOF COATING OR EQUAL
3. MANUFACTURER CERTIFICATION THAT MANHOLE MEETS ASTM SPECIFICATION SHALL BE SUBMITTED TO CITY OF PORT WENTWORTH.
4. SEE DETAIL SHEET FOR MANHOLE COVER & FRAME.
6. BUOYANCY MAY NEED TO BE CHECKED IF NECESSARY
7. ALL PIPE PENETRATIONS SHALL HAVE A BOOT CONNECTION. SEE DETAIL S-6.

PRECAST CONCRETE MANHOLE

City of Port Wentworth
TECHNICAL DETAILS
S-1

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



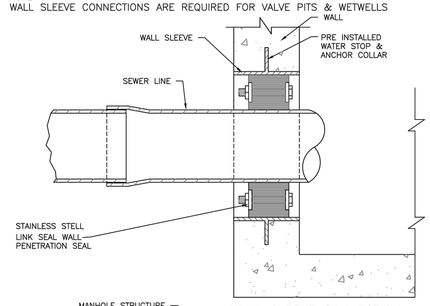
NOTE:
MANHOLE RING & COVER SHALL BE HEAVY DUTY RATED EQUAL TO U. S. FOUNDRY CO. USF 195-ORS. TOTAL WEIGHT 325# TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED 2 1/2" -3" LETTER HEIGHT "SANITARY" (NON VENTED). MANHOLE RING SHALL INCLUDE A WATERTIGHT GASKET. STACKING CLEATS ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

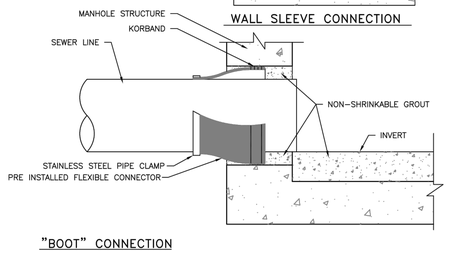
MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS
S-2

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

NOTE:
WALL SLEEVE CONNECTIONS ARE REQUIRED FOR VALVE PITS & WETWELLS

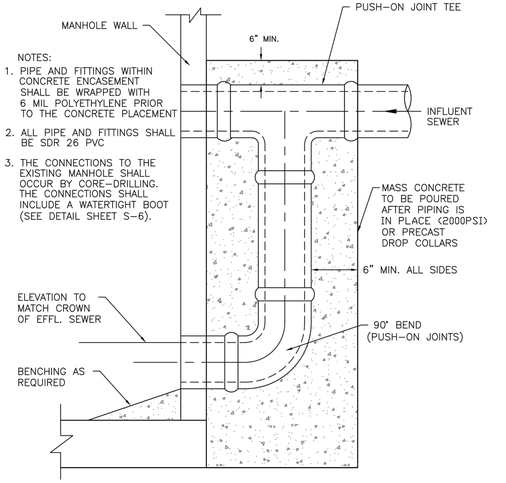




PRECAST STRUCTURE PIPE CONNECTION

City of Port Wentworth
TECHNICAL DETAILS
S-6

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



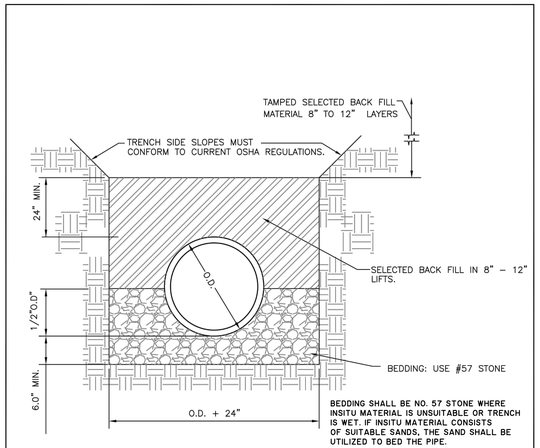
NOTES:

1. PIPE AND FITTINGS WITHIN CONCRETE ENCASEMENT SHALL BE WRAPPED WITH 6 MIL POLYETHYLENE PRIOR TO THE CONCRETE PLACEMENT
2. ALL PIPE AND FITTINGS SHALL BE SDR 26 PVC
3. THE CONNECTIONS TO THE EXISTING MANHOLE SHALL OCCUR BY CORE-DRILLING. THE CONNECTIONS SHALL INCLUDE A WATERTIGHT BOOT (SEE DETAIL SHEET S-6).

DROP MANHOLE CONNECTION

City of Port Wentworth
TECHNICAL DETAILS
S-7

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

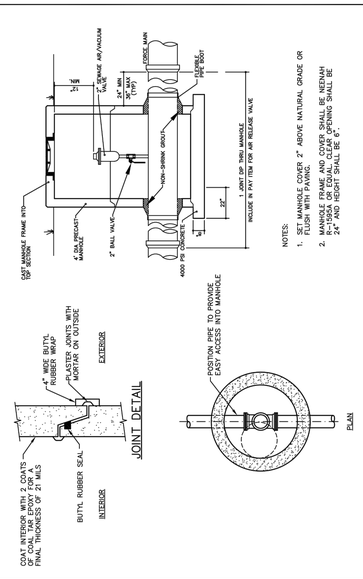


BEDDING SHALL BE NO. 57 STONE WHERE INSITU MATERIAL IS UNSUITABLE OR TRENCH IS WET. IF INSITU MATERIAL CONSISTS OF SUITABLE SANDS, THE SAND SHALL BE UTILIZED TO BED THE PIPE.

PIPE BEDDING

City of Port Wentworth
TECHNICAL DETAILS
S-8

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



COMBINATION AIR VALVE & MANHOLE

City of Port Wentworth
TECHNICAL DETAILS
S-9

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 027648 JOSEPH L. NEMECEK

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Columbia, SC | Charleston, SC
Myrtle Beach, SC | Wilmington, NC

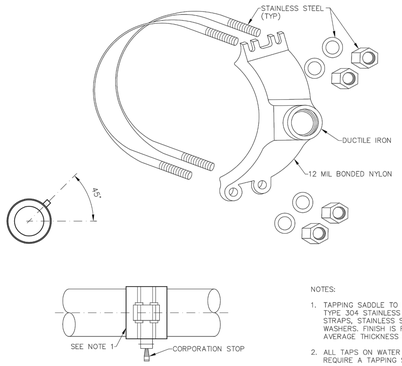
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

SANITARY SEWER DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 1.109'

C2.4



NOTES:

1. TAPPING SADDLE TO BE DUCTILE IRON WITH TYPE 304 STAINLESS STEEL FORGED DOUBLE STRAPS, STAINLESS STEEL BOLTS, NUTS AND WASHERS. FINISH IS FUSION-BONDED NYLON TO AVERAGE THICKNESS OF 12 MILS.
2. ALL TAPS ON WATER MAIN WILL REQUIRE A TAPPING SADDLE.

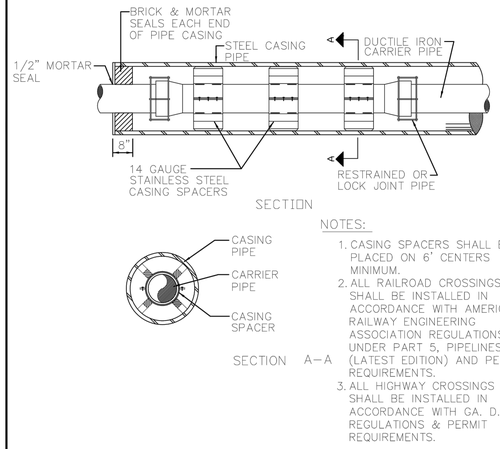
1" AND 2" TAPPING SADDLE

City of Port Wentworth
TECHNICAL DETAILS

W-2

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



SECTION

SECTION A-A

NOTES:

1. CASING SPACERS SHALL BE PLACED ON 6' CENTERS MINIMUM.
2. ALL RAILROAD CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH AMERICAN RAILWAY ENGINEERING ASSOCIATION REGULATIONS, UNDER PART 5, PIPELINES (LATEST EDITION) AND PERMIT REQUIREMENTS.
3. ALL HIGHWAY CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH GA. D.O.T. REGULATIONS & PERMIT REQUIREMENTS.

CARRIER PIPE INSTALLATION

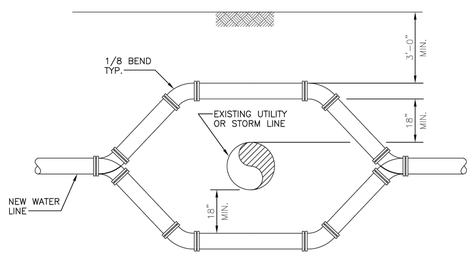
CARRIER PIPE INSTALLATION

City of Port Wentworth
TECHNICAL DETAILS

W-3

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: NFEBRUARY 2007



NOTES:

1. WATER LINE SHALL BE INSTALLED ABOVE SANITARY OR STORM LINE IF POSSIBLE.
2. STRAIGHT RUN OF WATER LINE DIRECTLY ABOVE OR BELOW EXISTING UTILITY LINE MUST BE 10' MINIMUM WITH NO JOINT.
3. IF WATER LINE IS INSTALLED BELOW SANITARY LINE WATER LINE SHALL BE DUCTILE IRON PIPE.
4. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

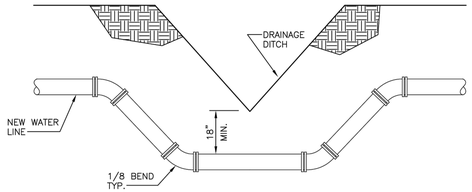
STANDARD UTILITY CROSSING

City of Port Wentworth
TECHNICAL DETAILS

W-6

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:

1. WATER LINE SHALL BE DUCTILE IRON BELOW STORM DRAINAGE DITCH.
2. STRAIGHT RUN OF WATER LINE DIRECTLY BELOW NEW OR EXISTING DRAINAGE DITCH MUST BE 10' MINIMUM WITH NO JOINT.
3. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

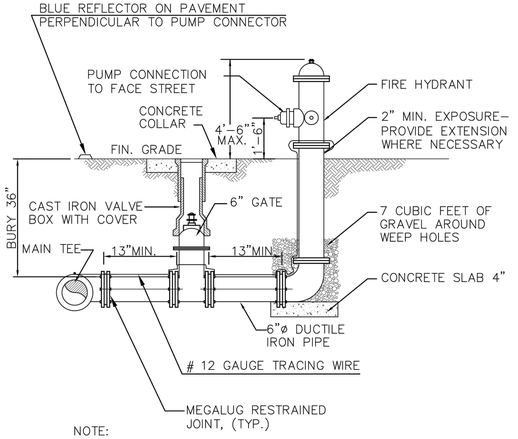
UTILITY CROSSING DRAINAGE DITCH

City of Port Wentworth
TECHNICAL DETAILS

W-7

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTE:

1. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE RESTRAINED.
2. PROTECT BOLTS AND THREADS FROM CONCRETE.

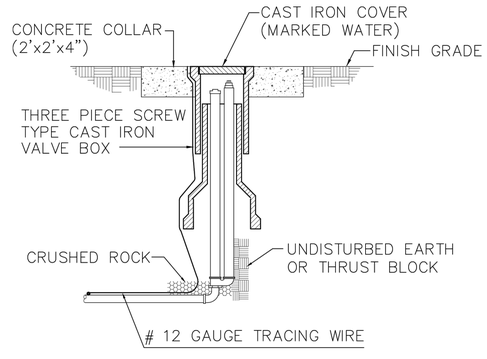
STANDARD FIRE HYDRANT

City of Port Wentworth
TECHNICAL DETAILS

W-9

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTE:

1. MAINGUARD #79 BLOW-OFF HYDRANT BY THE KUPFERLE FOUNDRY COMPANY. SEE MANUFACTURER'S SPECIFICATION FOR FURTHER DETAIL.

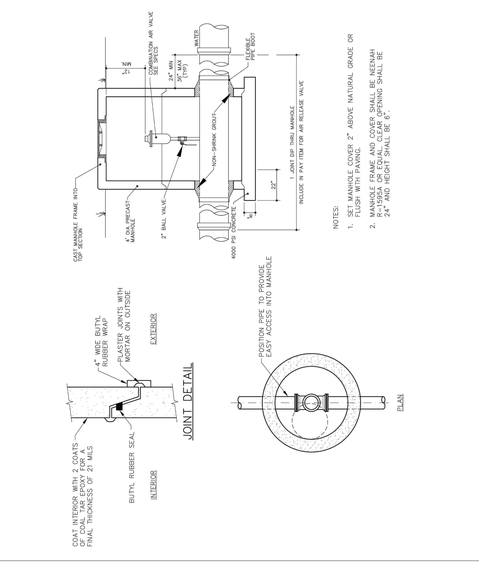
BLOW-OFF HYDRANT

City of Port Wentworth
TECHNICAL DETAILS

W-10

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



COMBINATION AIR VALVE & MANHOLE

City of Port Wentworth
TECHNICAL DETAILS

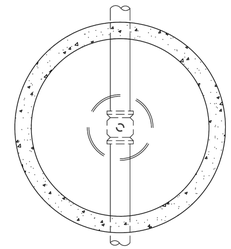
W-13

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

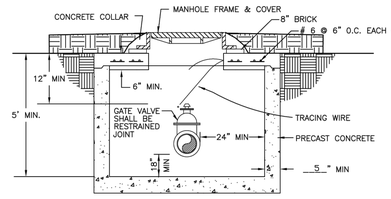
SCALE: N.T.S.
DATED: FEBRUARY 2007

NOTES:

1. MANHOLE FRAME AND COVER SHALL BE NEENAH FOUNDRY CO, CATALOG NO. R-1668, TYPE C, LABELED "WATER".
2. THE BOTTOM OF THE MANHOLE FRAME SHALL NOT BE MORE THAN 12" ABOVE THE TOP OF THE MANHOLE STRUCTURE.
3. PRECAST CONCENTRIC CONE RISERS MAY BE USED WHERE REQUIRED FOR DEPTH.
4. THE MANHOLE FRAME AND COVER MUST BE CENTERED OVER THE VALVE.



PLAN



VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS

W-14

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 32766 JOSEPH L. HESTER

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Columbia, SC | Charleston, SC
Myrtle Beach, SC | Wilmington, NC

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

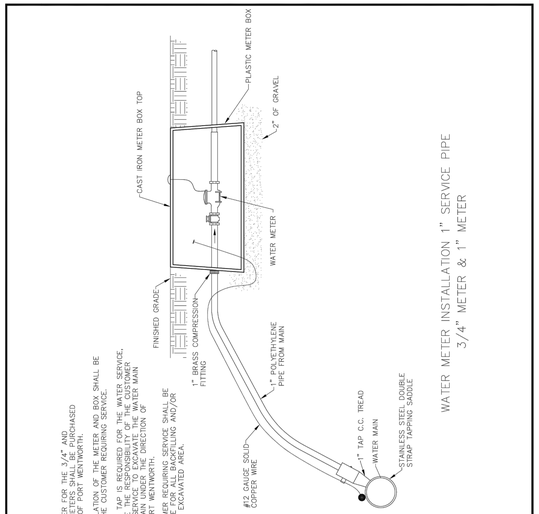
SITE DEVELOPMENT FOR BUILDINGS A & B

WATER SYSTEM DETAILS

JOB NO:	J-26327.000
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 1.1108'

C2.5

Z:\26300s\26327s\000\Engineering\26300s000 WATER AND SEWER SYSTEM NORTH SIDE\CONSTRUCTION PLANS\26300s000 C4 WATER DETAIL SHEET.dwg - Dec 1, 2006 - 4:59:03 PM



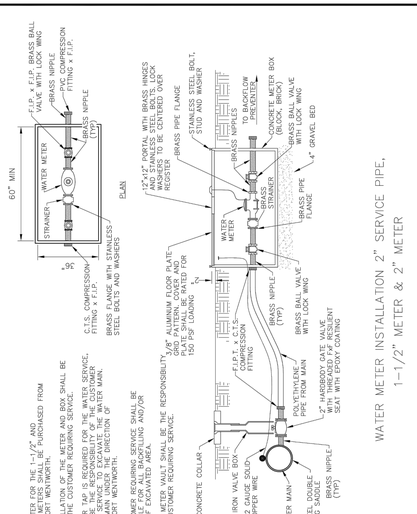
NOTES:
1. WATER METER FOR THE 1-1/2" AND 2" WATER METERS SHALL BE PURCHASED FROM CITY OF PORT WENTWORTH.
2. THE INSTALLATION OF THE METER AND BOX SHALL BE DONE BY THE CUSTOMER REQUIRING SERVICE.
3. A WATER TAP IS REQUIRED FOR THE WATER SERVICE. IT SHALL BE THE RESPONSIBILITY OF THE CUSTOMER REQUIRING SERVICE TO EXCAVATE, THE WATER MAIN AND TAP MAIN UNDER THE DIRECTION OF CITY OF PORT WENTWORTH.
4. THE CUSTOMER REQUIRING SERVICE SHALL BE RESPONSIBLE FOR ALL BACKFILLING AND/OR REPAIRS OF EXCAVATED AREA.

WATER METER INSTALLATION 1" SERVICE PIPE
3/4" METER & 1" METER

RESIDENTIAL WATER METER W/BACKFLOW PREVENTER

City of Port Wentworth
TECHNICAL DETAILS
W-17

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



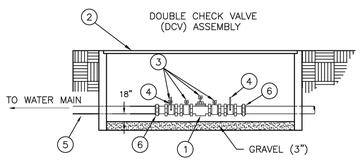
NOTES:
1. WATER METER FOR THE 1-1/2" AND 2" WATER METERS SHALL BE PURCHASED FROM CITY OF PORT WENTWORTH.
2. THE INSTALLATION OF THE METER AND BOX SHALL BE DONE BY THE CUSTOMER REQUIRING SERVICE.
3. IF A WATER TAP IS REQUIRED FOR THE WATER SERVICE, IT SHALL BE THE RESPONSIBILITY OF THE CUSTOMER REQUIRING SERVICE TO EXCAVATE, THE WATER MAIN AND TAP MAIN UNDER THE DIRECTION OF CITY OF PORT WENTWORTH.
4. THE CUSTOMER REQUIRING SERVICE SHALL BE RESPONSIBLE FOR ALL BACKFILLING AND/OR REPAIRS OF EXCAVATED AREA.
5. CONCRETE METER VAULT SHALL BE THE RESPONSIBILITY OF THE CUSTOMER REQUIRING SERVICE.

WATER METER INSTALLATION 2" SERVICE PIPE,
1-1/2" METER & 2" METER

WATER METER INSTALLATION 2" SERVICE PIPE

City of Port Wentworth
TECHNICAL DETAILS
W-19

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



MATERIALS		
ITEM	QUAN	DESCRIPTION
1	1	DOUBLE CHECK VALVE ASSEMBLY *
2	2	METER BOX (JUMBO METER BOX FOR 5/8", 3/4", 1" & 1 1/2" BFD ONLY)
3	4	TEST COCKS
4	2	FULL PORT BALL VALVES
5		POLYETHYLENE, COPPER OR BRASS CUT TO LENGTH
6	2	UNION

* DUAL CHECK VALVES ARE NOT ALLOWABLE

INSTALLATION INSTRUCTIONS:

THE ASSEMBLY SHALL NOT BE BURIED IN EARTH, BUT MAY BE INSTALLED IN A UTILITY BOX ADJACENT TO OR AS CLOSE AS PRACTICAL TO, THE OUTLET SIDE OF THE METER. UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR SYSTEM CONTAINMENT.

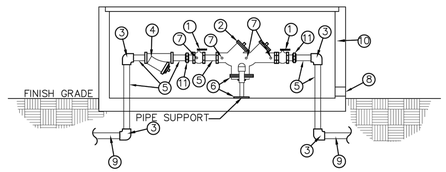
NOTES:
1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE. INSTALLER MUST PROVIDE FOR THERMAL EXPANSION DOWNSTREAM OF THE BACKFLOW PREVENTOR.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTION DEVICE; UNDER NO CIRCUMSTANCE, SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL OUTSIDE INSTALLATION
(3/4", 1", 1 1/2", 2" & 2 1/2" SIZES)

DOMESTIC DOUBLE CHECK VALVE ASSEMBLY (A)

City of Port Wentworth
TECHNICAL DETAILS
W-20

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



MATERIALS		
ITEM	QUAN	DESCRIPTION
1	2	FULL PORT BALL VALVE
2	1	REDUCED PRESSURE ZONE DEVICE
3	4	BRASS ELLS THREADED OR FLANGED
4	1	STRAINER W/ RPZ DEVICE (OPTIONAL) SEE NOTE 3
5	6	BRASS OR COPPER ONLY. NIPPLES CUT TO LENGTH
6		PIPE STAND MIN.12"
7	4	BRASS PLUGS INSERTED IN TEST COCKS
8		2" X 2" DRAIN
9		POLYETHYLENE OR COPPER
10		PREFABRICATED ENCLOSURE BY HOT BOX OR EQUAL
11	2	UNION SEE NOTE 3

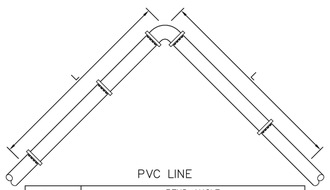
NOTES:
1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED IMMEDIATELY DOWNSTREAM OF METER.
2. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR ANY USE OTHER THAN BACKFLOW DEVICE TESTING.
3. ITEMS 4 AND 11 (THE STRAINER AND THE UNIONS) MAY BE INSTALLED ON THE VERTICAL RISERS TO REDUCE THE OVERALL LAYING LENGTH.

TYPICAL OUTSIDE INSTALLATION
REDUCED PRESSURE
TYPE BACKFLOW PREVENTION DEVICE
(3/4", 1", 1 1/2", 2", & 2 1/2" SIZES)

BACKFLOW PREVENTION DEVICE

City of Port Wentworth
TECHNICAL DETAILS
W-25

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



PVC LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	3	6	12	29
6	4	8	17	41
8	5	11	22	53
10	6	13	26	64
12	7	15	31	75

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	2	4	8	20
6	3	6	12	28
8	4	7	15	36
10	4	9	18	43
12	5	10	21	51
16	6	13	27	65
20	8	16	33	79
24	9	18	38	92

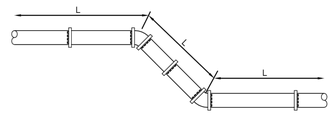
MINIMUM RESTRAINED LENGTH (L)

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

STANDARD HORIZONTAL BEND RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS
W-27

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



PVC LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	5	10	22	52
6	7	15	30	74
8	9	19	40	96
10	11	23	48	115
12	13	27	56	136

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	3	6	12	28
6	4	8	17	40
8	4	10	22	52
10	5	12	26	62
12	6	15	30	73
16	7	19	39	94
20	11	23	47	114
24	13	26	55	132

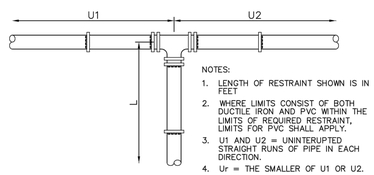
MINIMUM RESTRAINED LENGTH (L)

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

STANDARD VERTICAL BEND RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS
W-28

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET
2. WHERE LIMITS CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. U1 AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF U1 OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90° HORIZONTAL BEND.

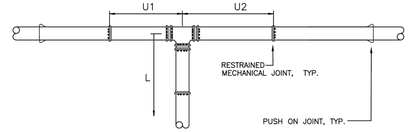
TEE Ur	5'-10"	11'-20"	21'-35"	> 35'
4x4	43	28	4	*
6x4	38	17	*	*
6x6	64	49	25	*
8x4	34	6	*	*
8x6	61	42	10	*
8x8	87	72	48	12
10x4	29	*	*	*
10x6	58	34	*	*
10x8	84	66	35	*
10x10	106	91	67	31
12x4	24	*	*	*
12x6	54	26	*	*
12x8	82	60	23	*
12x10	104	86	57	13
12x12	126	112	87	51

MINIMUM RESTRAINED LENGTH (L)
* RESTRAIN AT TEE ONLY

STANDARD TEE RESTRAINT (PVC LINE)

City of Port Wentworth
TECHNICAL DETAILS
W-29

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. U1 AND U2 = UNINTERRUPTED STRAIGHT RUNS OF RESTRAINED JOINT PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF U1 OR U2 (E.G., U1, IN THE ABOVE DIAGRAM)
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90° HORIZONTAL BEND.

DUCTILE IRON LINE

TEE Ur	5'-10"	11'-20"	21'-35"	36'-50"	50'-75"	75'-100'
4X4	23	15	2	*	*	*
6X4	21	9	*	*	*	*
6X6	35	27	14	*	*	*
8X4	18	3	*	*	*	*
8X6	33	23	5	*	*	*
8X8	47	39	26	6	*	*
10X4	16	*	*	*	*	*
10X6	31	18	*	*	*	*
10X8	46	36	19	*	*	*
10X10	57	49	36	17	*	*
12X4	13	*	*	*	*	*
12X6	30	14	*	*	*	*
12X8	44	32	13	*	*	*
12X10	56	47	31	7	*	*
12X12	68	60	47	28	*	*
16X6	28	4	*	*	*	*
16X8	41	25	*	*	*	*

DUCTILE IRON LINE

TEE Ur	5'-10'	11'-20'	21'-35'	36'-50'	50'-75'	75'-100'
16X10	54	41	20	*	*	*
16X12	66	56	38	*	*	*
16X16	89	81	38	*	*	*
20X6	22	*	*	*	*	*
20X8	38	18	*	*	*	*
20X10	51	35	8	*	*	*
20X12	64	51	28	*	*	*
20X16	87	77	60	35	10	*
20X20	108	100	87	67	48	*
24X6	18	*	*	*	*	*
24X8	35	10	*	*	*	*
24X10	49	29	*	*	*	*
24X12	62	45	17	*	*	*
24X16	86	73	53	22	*	*
24X20	107	97	81	57	33	*
24X24	127	119	106	86	66	33

MINIMUM RESTRAINED LENGTH (L)
*RESTRAIN AT TEE ONLY.

STANDARD TEE RESTRAINT (DUCTILE IRON PIPE)

City of Port Wentworth
TECHNICAL DETAILS
W-30

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Columbia, SC | Charleston, SC
Myrtle Beach, SC | Wilmington, NC

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA
SITE DEVELOPMENT FOR BUILDINGS A & B
WATER SYSTEM DETAILS

JOB NO: J-26327.0010
DATE: 2/14/22
DRAWN: SSF
DESIGNED: SSF
REVIEWED: FIT
APPROVED: FIT
SCALE: 1" = 1.1108'

C2.6

DUCTILE IRON LINE

PIPE DIA.	L
4	28
6	40
8	52
10	62
12	73
16	94
20	114
24	132

PVC LINE

PIPE DIA.	L
4	52
6	74
8	96
10	115
12	136

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LIMITS CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. FOR LINE STUBS (SEE DETAIL W39). THE LENGTH OF RESTRAINT (L) SHALL BE FROM THE VALVE AND NOT THE CAP.

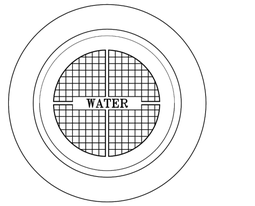
STANDARD DEAD END RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS

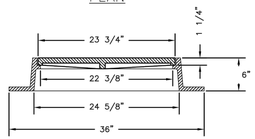
W-31

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



PLAN



SECTION

NOTE:

MANHOLE RING & COVER SHALL BE HEAVY DUTY RATED EQUAL TO U. S. FOUNDRY CO. USF 195-ORS. TOTAL WEIGHT 325# TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED 2 1/2" -3" LETTER HEIGHT "WATER" (NON VENTED). MANHOLE RING SHALL INCLUDE A WATERTIGHT GASKET. STACKING CLEATS ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

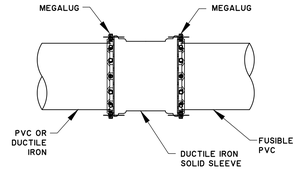
MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS

W-34

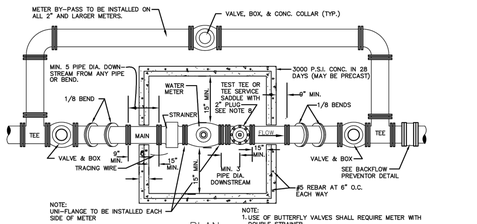
PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



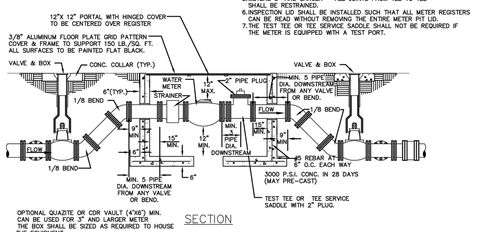
FPVC CONNECTION DETAIL

SCALE: NONE



PLAN

NOTE:
1. USE OF BUTTERFLY VALVES SHALL REQUIRE METER WITH DOUBLE STRAINER.
2. TURBINE METERS (CLASS II) SHALL HAVE U.L. APPROVED STRAINERS
3. COMPLETE BY-PASS ASSEMBLY IS REQUIRED ON ALL METERS.
4. VALVES: GREATER THAN 2" SHALL BE MECHANICAL JOINT GATE VALVES.
5. METERS 3" AND LARGER – ALL JOINTS FROM TEE TO TEE SHALL BE RESTRAINED.
6. INSPECTION LID SHALL BE INSTALLED SUCH THAT ALL METER REGISTERS CAN BE READ WITHOUT REMOVING THE ENTIRE METER PIT LID.
7. THE TEST TEE OR TEE SERVICE SADDLE SHALL NOT BE REQUIRED IF THE METER IS EQUIPPED WITH A TEST PORT.



SECTION

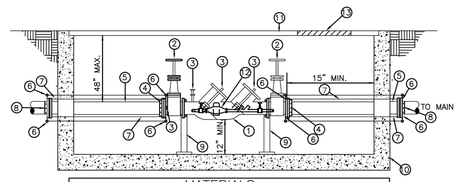
WATER METER INST. 3" AND LARGER

City of Port Wentworth
TECHNICAL DETAILS

W-15

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



MATERIALS

ITEM	QUAN.	DESCRIPTION
1	1	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
2	2	OS&Y RESILIENT SEAT GATE VALVES
3	4	TEST COCKS
4	2	COMPANION FLANGE (UNION SHALL BE USED FOR 2")
5		DUCTILE IRON PIPE, CUT TO FIT
6	8	CARBON STEEL EYE BOLTS
7		3/4 GALV. ALL THREAD ROD
8		MEGA LUG OR EQUIVALENT FOR DUCTILE PIPE
9	2	2" SCH. 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
10		PIT-CEMENT BLOCK, POURED CONCRETE, OR PREFABRICATED BOX PER CITY SPECS.
11		3/8 ALUMINUM FLOOR PLATE / HATCH COVER
12	1	3/4 CUBIC FT. BYPASS METER
13		2' X 2' MIN. HATCH

NOTES:
1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR THE SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER; UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.
3. IF ADDITIONAL SIAMESE CONNECTION IS REQUIRED FOR FIRE SERVICE, SEE DETAIL SHEET STD. FIRE SERVICE SYSTEM FOR BUILDINGS.

TYPICAL BELOW GRADE INSTALLATION
(2", 3", 4", 6", 8", & 10" SIZES)

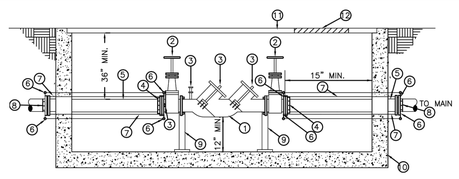
FIRE SYTEM DOUBLE DETECTOR CHECK VALVE

City of Port Wentworth
TECHNICAL DETAILS

W-22

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



MATERIALS

ITEM	QUAN.	DESCRIPTION
1	1	DOUBLE CHECK VALVE ASSEMBLY
2	2	NON-RISING RESILIENT SEAT GATE VALVES
3	4	TEST COCKS
4	2	COMPANION FLANGE
5		DUCTILE IRON PIPE, CUT TO FIT
6	8	CARBON STEEL EYE BOLTS
7		3/4 GALV. ALL THREAD ROD
8		MEGA LUG OR EQUIVALENT FOR DUCTILE PIPE
9	2	2" SCH. 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
10		PIT-CEMENT BLOCK, POURED CONCRETE, OR PREFABRICATED BOX PER CITY SPECS.
11		3/8 ALUM. FLOOR PLATE / HATCH COVER W/FLUSH HANDLE
12		2' X 2' MIN. HATCH

NOTE:
1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE), UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER USED FOR SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTION DEVICE; UNDER NO CIRCUMSTANCE, SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.

TYPICAL BELOW GRADE INSTALLATION
(3", 4", 6", 8", & 10" SIZES)

DOMESTIC DOUBLE CHECK VALVE ASSEMBLY (B)

City of Port Wentworth
TECHNICAL DETAILS

W-21

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

GEORGIA
REGISTERED PROFESSIONAL ENGINEER
No. 029560
JOSEPH L. MERCER
Engineer

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Columbia, SC | Charleston, SC
Myrtle Beach, SC | Wilmington, NC

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

WATER SYSTEM DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 1.1108'

C2.7

Z:\26327\0010\Engineering\Drawings\26327.0010 WATER AND SEWER SYSTEM NORTH SIDE\CONSTRUCTION PLANS\26327.0010 C4 WATER DETAIL SHEET.dwg - Dec 1, 2021 - 4:59:03 PM

BUILDING B
332,450 SF
FF ELEV. 30.0

MATCH LINE - SEE SHEET NO. C3.2

FES #21
INV. OUT: 22.00 (N)

FES
INV. OUT: 24.20 (S)

78 LF 18" RCP
@ 0.38%

FES
INV. IN: 24.50 (N)

CI #A5
TYPE C
FR: 27.96
INV. OUT: 21.00 (E)

CI #A4
TYPE C
FR: 27.89
INV. IN: 19.96 (W)
INV. OUT: 19.97 (E)

CI #1
TYPE C
FR: 27.89
INV. IN: 9.50 (S)
INV. IN: 19.00 (W)
INV. OUT: 19.00 (E)

CI #A3
TYPE C
FR: 27.89
INV. IN: 18.58 (W)
INV. OUT: 18.58 (E)

432 LF 48" RCP
@ 0.24%

220 LF 30" RCP
@ 0.47%

204 LF 36" RCP
@ 0.47%

174 LF 42" RCP
@ 0.24%

200 LF 48" RCP
@ 0.24%

CI #A2
TYPE C
FR: 27.97
INV. IN: 18.09 (W)
INV. OUT: 18.09 (N)

JACK AND BORE 130 LF
OF 48" DIA. STEEL PIPE AT 0.0%
BENEATH CITY OF SAVANNAH
I & D WATERMAIN

FES #6
INV. IN: 21.50 (E)

164 LF 30" RCP
@ 0.44%

85 LF 36" RCP
@ 0.44%

200 LF 36" RCP
@ 0.45%

FES #24
INV. OUT: 21.50 (S)

FES #32
INV. OUT: 19.50 (W)

RI #2
FR: 20.19
TH: 19.52
INV. OUT: 9.50 (N)

FES #7
INV. IN: 22.00 (N)

89 LF 24" RCP
@ 0.56%

CI #5
TYPE C
FR: 26.18
INV. IN: 20.77 (E)
INV. OUT: 20.77 (W)

CI #3
TYPE C
FR: 26.01
INV. IN: 19.88 (E)
INV. OUT: 19.88 (W)

71 LF 18" RCP
@ 1.00%

25 LF 18" RCP
@ 1.18%

FES #36
INV. OUT: 25.00 (E)

JB #35
FR: 29.77
INV. IN: 24.71 (NE)
INV. IN: 24.71 (W)
INV. OUT: 24.71 (S)

29 LF 18" RCP
@ 1.01%

FES #11
INV. IN: 25.00 (N)

FES #10
INV. OUT: 24.00 (SW)

FES #8
INV. OUT: 24.00 (SE)

BUILDING A
106,250 SF
FF ELEV. 32.0

61 LF 18" RCP
@ 1.64%

FES #9
INV. IN: 25.00 (NW)

FES #38
INV. IN: 25.00 (SE)

68 LF 18" RCP
@ 1.47%

FES #37
INV. OUT: 26.00 (NW)

PAVEMENT LEGEND

- 5" CONCRETE PAVEMENT / 4" GAB[2]
- 7" CONCRETE PAVEMENT / 4" GAB[2]
- 10" CONCRETE PAVEMENT / 4" GAB WITH DOWEL BASKETS[2]
- 4" SIDEWALK[2]
- GRAVEL ACCESS STRIP[1]

[1]SEE C17 - PAVING AND DRAINAGE DETAILS
[2]IF CONCRETE PAVEMENT IS PLACED OVER CEMENT-TREATED SUBGRADE, GAB MAY BE ELIMINATED. (SEE GEOTECH REPORT)
[3]PAVEMENT RECOMMENDATION PER TERRACON REPORT DATED MAY 4, 2021

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 029560 JOSEPH L. MEYER

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

PAVING GRADING & DRAINAGE - SHEET I

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

C3.1

Z:\26327\26327.0010\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0010 PSD.DWG - Mon, 2 2022 - 9:08 AM

STORMWATER
DETENTION POND 1
3H:1V SIDESLOPES (TYP. ABOVE ELEV. 19
1H:1V SIDESLOPES FROM ELEV. 10 TO 19))
BOTTOM: 10.0'
NWL: 20.00'
TOP: 24.0'
25-YR: 22.81'
50-YR: 23.48'
100-YR: 23.92'

BUILDING B
332,450 SF
FF ELEV. 30.0

MATCH LINE - SEE SHEET NO. C3.1

FES #29
INV. IN: 18.00 (S)

74 LF 36" RCP
@ 2.71%

FES #39
INV. OUT: 20.00 (N)

FES #22
INV. IN: 20.00 (S)

131 LF 18" RCP
@ 1.53%

FES #21
INV. OUT: 22.00 (N)

FES
INV. OUT: 24.20 (S)

78 LF 18" RCP
@ 0.38%

FES
INV. IN: 24.50 (N)

CS #30
FR: 23.38
INV. OUT: 20.00 (NE)

46 LF 36" RCP
@ 1.08%

FES #31
INV. IN: 19.50 (SW)

FES #19
INV. IN: 16.00 (SE)

85 LF 60" RCP
@ 0.24%

CI #18
TYPE C
FR: 25.08
INV. IN: 16.70 (SE)
INV. OUT: 16.20 (NW)

145 LF 54" RCP
@ 0.24%

SMH #A1
FR: 24.70
INV. IN: 17.05 (S)
INV. OUT: 17.05 (NW)

432 LF 48" RCP
@ 0.24%

CI #A5
TYPE C
FR: 27.96
INV. OUT: 21.00 (E)

CI #A4
TYPE C
FR: 27.89
INV. IN: 19.96 (W)
INV. OUT: 19.97 (E)

CI #1
TYPE C
FR: 27.89
INV. IN: 9.50 (S)
INV. IN: 19.00 (W)
INV. OUT: 19.00 (E)

CI #A3
TYPE C
FR: 27.89
INV. IN: 18.58 (W)
INV. OUT: 18.58 (E)

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

GEORGIA
REGISTERED
No. 026560
PROFESSIONAL
ENGINEER
JOSEPH L. MERCER
Delaware

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

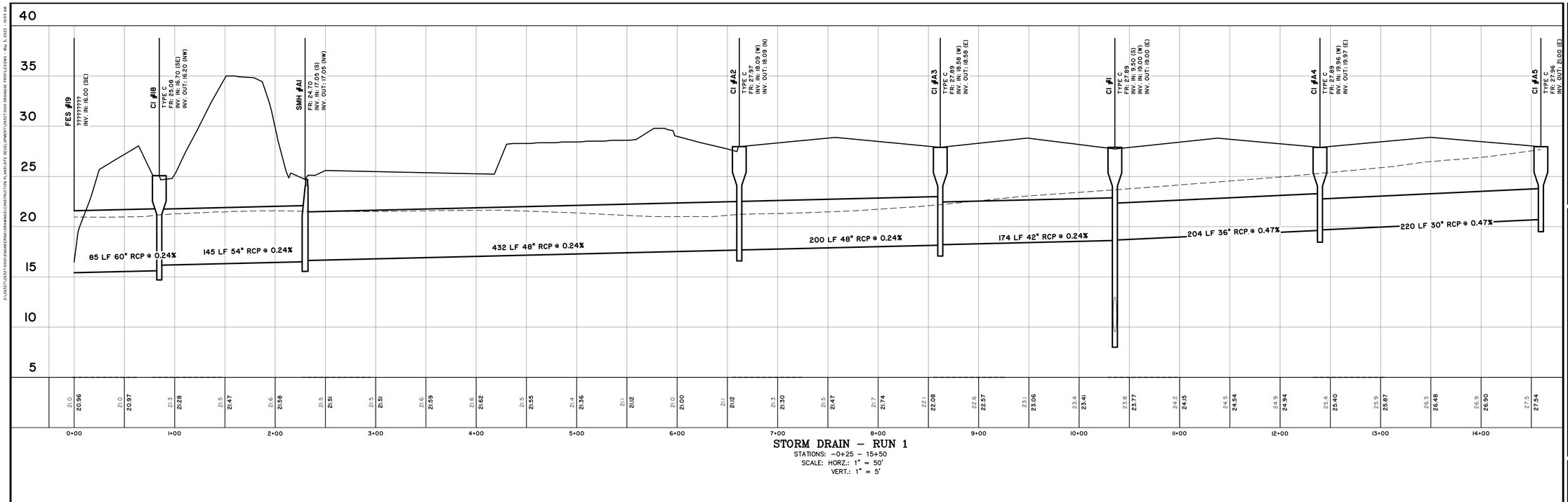
SITE DEVELOPMENT FOR BUILDINGS A & B

PAVING GRADING & DRAINAGE - SHEET 2

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

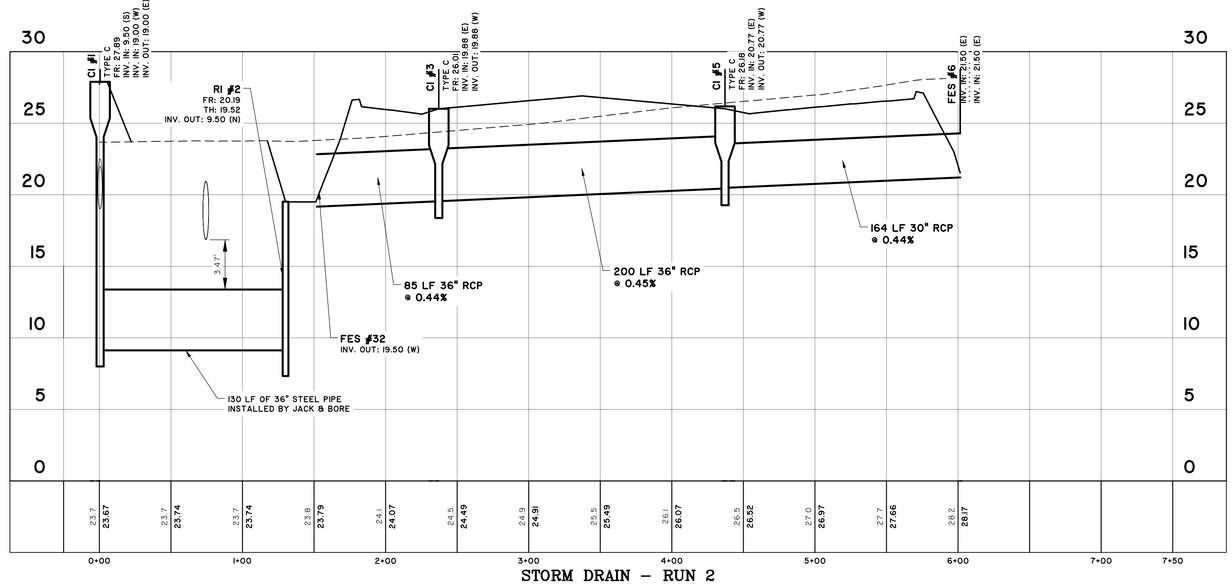
C3.2

21\26327\26327.0001\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE CIVIL\PRINTS\26327-0001 DRAINAGE PROFILES.DWG May 5, 2022 - 10:53 AM



STORM DRAIN – RUN 1

STATIONS: –0+25 – 15+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN – RUN 2

STATIONS: –0+25 – 7+50
SCALE: HORZ.: 1" = 50'

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

REGISTERED PROFESSIONAL ENGINEER
No. 029268
JOSEPH L. MERCER

NO.	REVISIONS	BY	DATE
----	----	----	----

PERMIT SET - FOR REVIEW PURPOSES ONLY

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

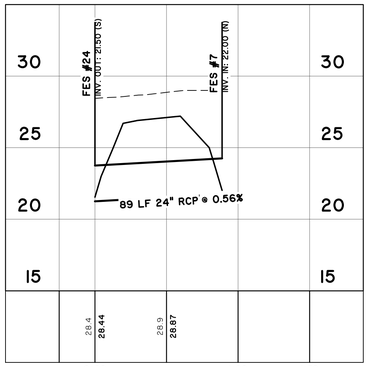
SITE DEVELOPMENT FOR BUILDINGS A & B

DRAINAGE PROFILES

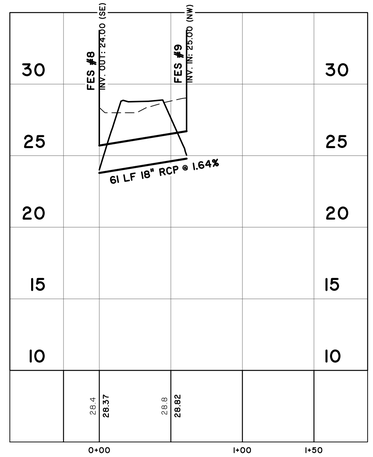
JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	AS NOTED

C3.3

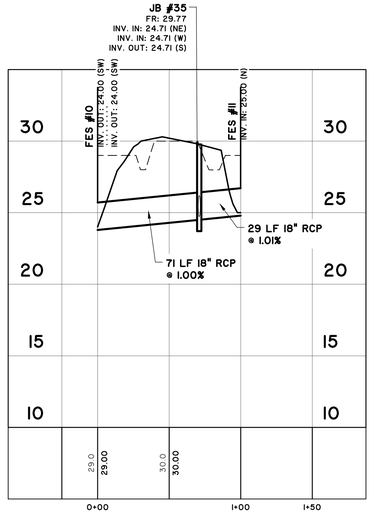
21\26327\26327-000\ENGR\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-000 DRAINAGE PROFILES.DWG May 5, 2022 - 10:53 AM



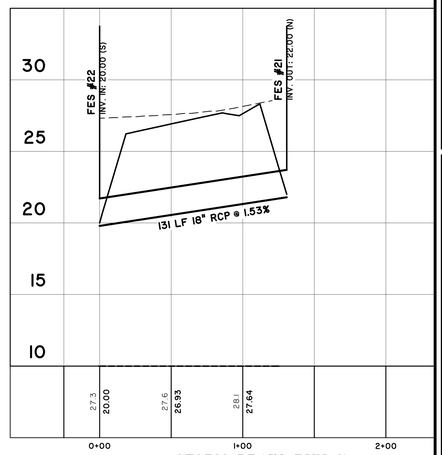
STORM DRAIN RUN 3
STATIONS: −0+25 – 1+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN RUN 4
STATIONS: −0+25 – 1+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN RUN 5
STATIONS: −0+25 – 1+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'



STORM DRAIN RUN 7
STATIONS: −0+25 – 2+50
SCALE: HORZ.: 1" = 50'
VERT.: 1" = 5'

GEORGIA REGISTERED No. 033268 PROFESSIONAL ENGINEER JOSEPH L. MERCER

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

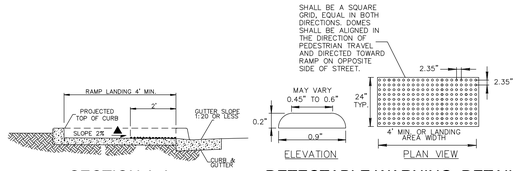
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

DRAINAGE PROFILES

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	AS NOTED

C3.4

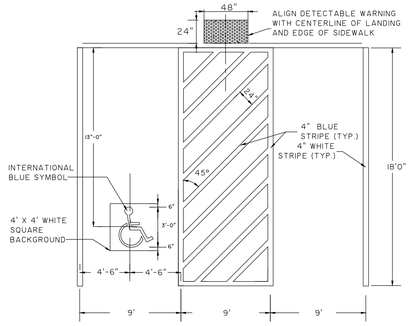


SECTION A-A

DETECTABLE WARNING DETAIL

NOTES:

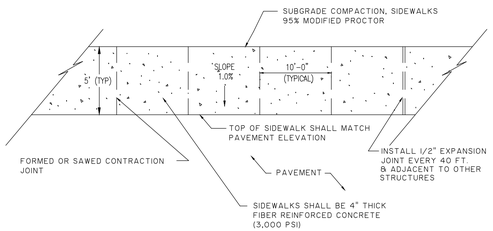
1. HANDICAP RAMP CONSTRUCTION SHALL CONFORM TO ALL FEDERAL, STATE AND GARDEN CITY CODES AND SPECIFICATIONS.
2. SURFACES SHALL MEET THE GUIDELINES OF THE ADA STANDARDS FOR ACCESSIBILITY, APPENDIX A, PART 36.
3. THE SLOPE OF THE GUTTER MUST NOT EXCEED 1:20 ADJACENT TO THE RAMP.
4. DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 INCHES, A HEIGHT OF NOMINAL 0.2 INCHES AND A CENTER TO CENTER SPACING OF NOMINAL 2.35 INCHES AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES. IF THE SIDEWALK AND RAMP ARE CONSTRUCTED OF CONCRETE, THE WARNING AREA SHALL BE RED BRICK IN COLOR. IF THE SIDEWALK AND RAMP ARE CONSTRUCTED OF RED BRICK, THE WARNING AREA SHALL BE GREY IN COLOR. THE COLOR USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.



NOTE:
STRIPING AND CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND SPECIFICATIONS

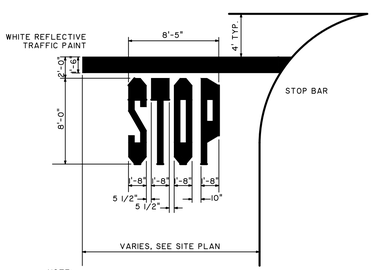
HANDICAP PARKING

NOT TO SCALE



SIDEWALK AND WALKWAY DETAILS

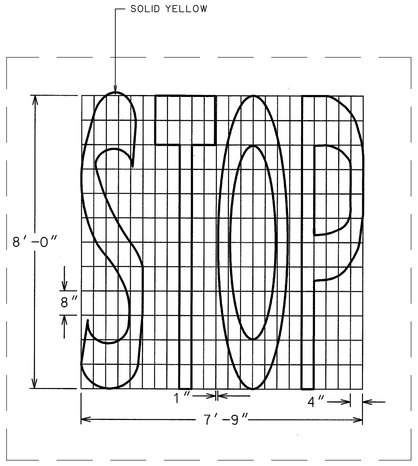
NOT TO SCALE

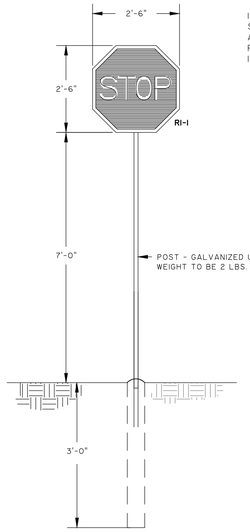


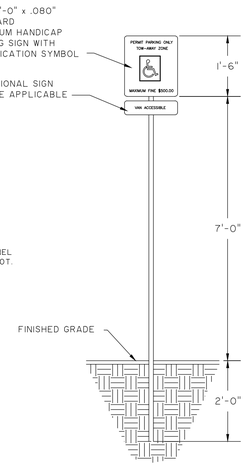
NOTE:
ALL TRAFFIC MARKINGS TO BE SOLID WHITE REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE

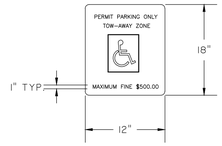
TYPICAL PAVEMENT MARKINGS

NOT TO SCALE







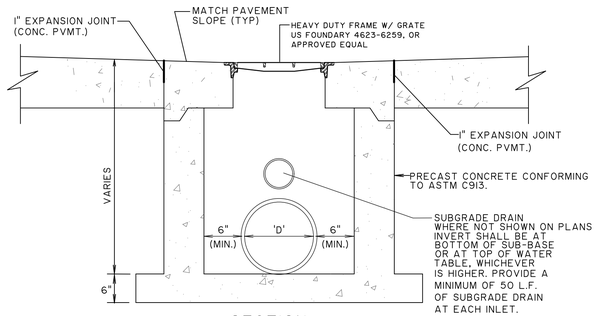


R1-1
(30)30

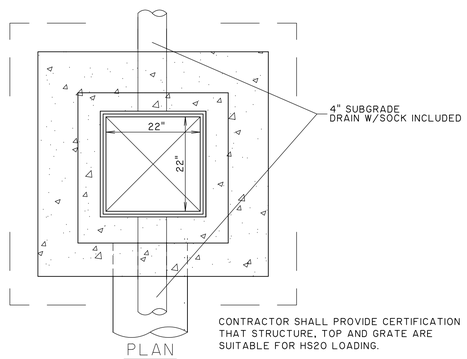
NOTE:

SIGNAGE SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND SPECIFICATIONS

NOT TO SCALE



SECTION

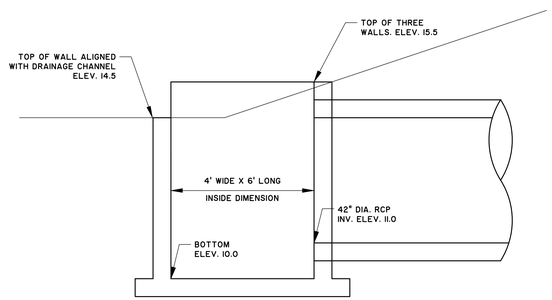


PLAN

CONTRACTOR SHALL PROVIDE CERTIFICATION THAT STRUCTURE, TOP AND GRATE ARE SUITABLE FOR HS20 LOADING.

GRATE INLET

NOT TO SCALE



CONTRACTOR SHALL PROVIDE CERTIFICATION THAT STRUCTURE IS SUITABLE FOR HS20 LOADING APPLIED IMMEDIATELY ADJACENT TO WALL.

JUNCTION BOX A AND B

NOT TO SCALE

GEORGIA REGISTERED No. 024760 PROFESSIONAL ENGINEER JOSEPH L. MUSSER

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Columbia, SC | Charleston, SC
Myrtle Beach, SC | Wilmington, NC

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

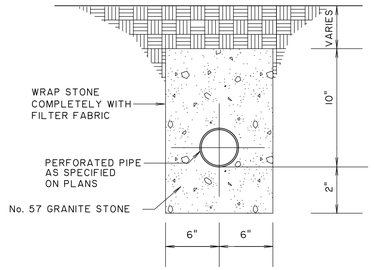
SITE DEVELOPMENT FOR BUILDINGS A & B

DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 1'

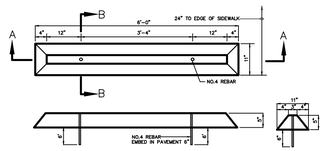
C3.5

Z:\26327\26327.0000\Engineering\Drawings\Construction Plans\26327.0000 BUILDING A SITE DEVELOPMENT\26327.0000 DETAIL SHEET.dwg - Jan 5, 2022 - 10:32:52 AM



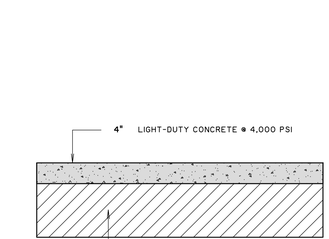
SUBGRADE DRAIN DETAIL AT NW TRUCK COURT

NOT TO SCALE



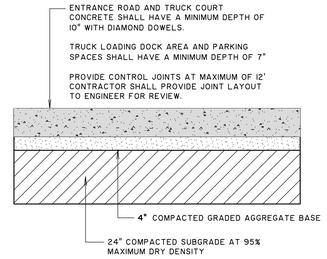
CONCRETE WHEEL STOP DETAIL

NOT TO SCALE



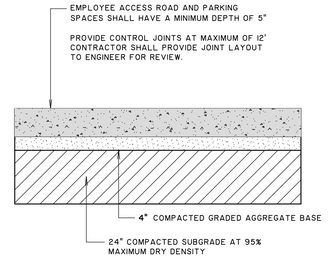
CONCRETE SIDEWALK SECTION

NOT TO SCALE - PAVEMENT RECOMMENDATION



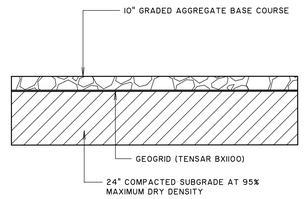
CONCRETE PAVEMENT SECTION

USE: ENTRANCE ROAD, TRUCK COURT AND DOCKING AREA
NOT TO SCALE - PAVEMENT RECOMMENDATION
PROVIDED BY TERRACON CONSULTANTS, INC.
MAY 4, 2021



CONCRETE PAVEMENT SECTION

USE: EMPLOYEE ACCESS ROAD AND PARKING AREA
NOT TO SCALE - PAVEMENT RECOMMENDATION
PROVIDED BY TERRACON CONSULTANTS, INC.
MAY 4, 2021

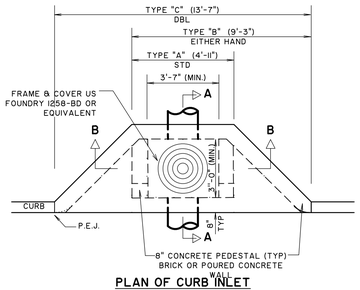


GRAVEL PAVEMENT SECTION

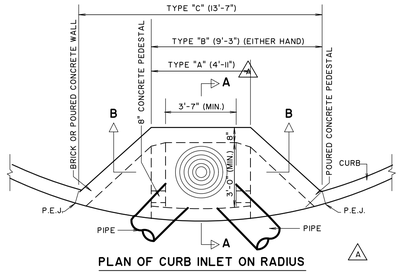
USE: FIRE ACCESS ROAD
NOT TO SCALE - PAVEMENT RECOMMENDATION

NOTE:
CEMENT-TREATED SUBGRADE MAY REPLACE SUITABLE FILL UNDERNEATH GAB FOR ASPHALT PAVEMENT (SEE GEOTECH REPORT)

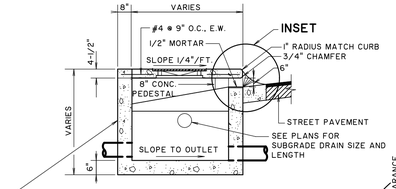
NOTE:
IF CONCRETE PAVEMENT IS PLACED OVER CEMENT-TREATED SUBGRADE, GAB MAY BE ELIMINATED (SEE GEOTECH REPORT)



PLAN OF CURB INLET

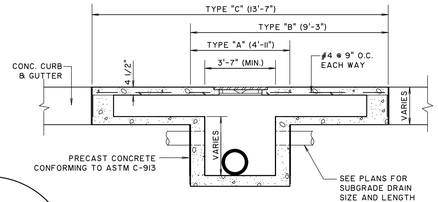


PLAN OF CURB INLET ON RADIUS



NOTE:
CHAMFER ALL EXPOSED CONCRETE EDGES 3/4"

SECTION A-A

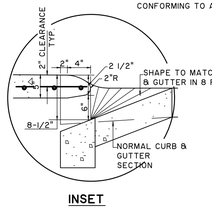


NOTE:
MATCH TOP OF PIPE ELEVATIONS WHERE DIFFERENT SIZE PIPES ARE CONSTRUCTED IN CURB INLET.

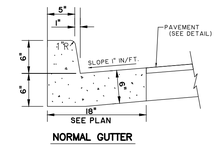
SECTION B-B

CURB INLET DETAIL

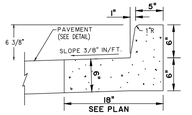
NOT TO SCALE



INSET



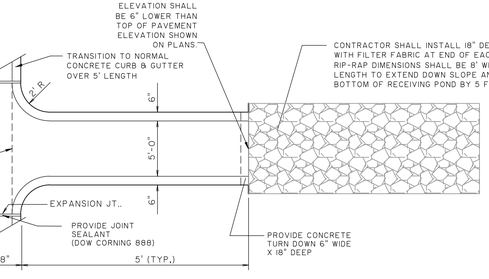
NORMAL GUTTER



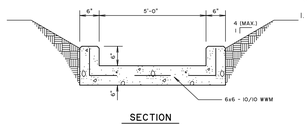
PITCHED GUTTER

CURB AND GUTTER DETAILS

NOT TO SCALE



PLAN



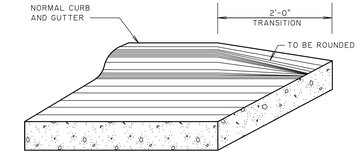
SECTION

NOTES:

1. CONTRACTOR SHALL TAKE CARE TO COMPACT AREA BELOW AND WITHIN 5' OF FLUME AND CURB AND GUTTER TO 98% MAXIMUM DENSITY (MODIFIED PROCTOR). AREA WITHIN 5' OF FLUME AND CURB AND GUTTER SHALL BE BROUGHT TO FINAL GRADE AND GRASSED IMMEDIATELY AFTER INSTALLATION OF CONCRETE. AREA SHALL BE PROTECTED FROM EROSION UNTIL FULL COVERAGE OF GRASS HAS BEEN ESTABLISHED.

5' WIDE CONCRETE FLUME

NOT TO SCALE



FEATHERING OF CURB AND GUTTER DETAIL

NOT TO SCALE

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 040161 PROFESSIONAL ENGINEER JASON T. HASSON

NO	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Construction Management
50 Park of Commerce Way • PO Box 2727
Savannah, GA 31402-2727 • 912.234.5300
www.thomasandhutton.com
Brunswick, GA | Charleston, SC | Myrtle Beach, SC | Wilmington, NC

NFI INDUSTRIES
FORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 1'

C3.6

Z:\26327\26270000\Engineering\Drawings\Construction Plans\26270000-C3 DETAIL SHEET (.dwg - Sep 6, 2016 - 2:05:39 PM

EROSION,SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST - STAND ALONE CONSTRUCTION PROJECTS

SWCD: COASTAL
PROJECT NAME: NFI BUILDINGS A & B SITE DEVELOPMENT
CITY/COUNTY: PORT WENTWORTH/CHATHAM

ADDRESS: CROSSGATE ROAD
DATE ON PLANS: 08/13/21
REVISED DATE:

ATTACHED | YES — 1. THE APPLICABLE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN CHECKLIST ESTABLISHED BY THE COMMISSION AS OF JANUARY 1 OF THE YEAR IN THE LAND-DISTURBING ACTIVITY WAS PERMITTED. (THE COMPLETED CHECKLIST MUST BE SUBMITTED WITH THE ES&PC PLAN OR THE PLAN WILL NOT BE REVIEWED) (PERMIT IV.D.1 PG 26)

PLEASE FIND THE CURRENT STAND ALONE EROSION, SEDIMENTATION AND POLLUTION CONTROL CHECKLIST ATTACHED WITH THIS PLAN

ALL | YES — 2. LEVEL II CERTIFICATION NUMBER ISSUED BY THE COMMISSION, SIGNATURE AND SEAL OF THE CERTIFIED DESIGN PROFESSIONAL. (SIGNATURE, SEAL AND LEVEL II NUMBER MUST BE ON EACH SHEET PERTAINING TO ES&PC PLAN OR THE PLAN WILL NOT BE REVIEWED)

PLEASE FIND ON EACH SHEET OF THIS PLAN THE GSWCC LEVEL II CERTIFICATION NUMBER, SIGNATURE AND SEAL FOR MR. JASON CHAMBLESS, PE.

ECOJ | YES — 3. LIMIT OF DISTURBANCE SHALL BE NO GREATER THAN 50 ACRES AT ANY ONE TIME WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE EPD DISTRICT OFFICE. IF EPD APPROVES THE REQUEST TO DISTURB 50 ACRES OR MORE AT ANY ONE TIME, THE PLAN MUST INCLUDE AT LEAST 4 OF THE BMPs LISTED IN APPENDIX 1 OF THIS CHECK LIST. (A COPY OF THE THE WRITTEN APPROVAL BY EPD MUST BE ATTACHED TO THE PLAN FOR THE PLAN TO BE REVIEWED. (PERMIT IV.D3 PG 27)

AREA OF DISTURBANCE DOES NOT EXCEED 50 ACRES.

ECOJ | YES — 4. THE NAME AND PHONE NUMBER OF 24-HOUR LOCAL CONTACT RESPONSIBLE FOR EROSION, SEDIMENTATION AND POLLUTION CONTROLS. (PERMIT II.B.1.c PG 12)

BRIAN WERRELL, PE
302-540-8025

ECOJ | YES — 5. PROVIDE NAME, ADDRESS, EMAIL ADDRESS AND PHONE NUMBER OF PRIMARY PERMITTEE. (PERMIT II.B.1 b PG 12)

NFI INDUSTRIES
TRIAD I828 CENTER, 2 COOPER STREET
CAMDEN, NJ 08102
BRIAN WERREL: (302)-540-8025 ; BRIAN.WERRELL@NFI INDUSTRIES.COM

ECOJ | YES — 6. NOTE TOTAL AND DISTURBED ACREAGE OF THE PROJECT OR PHASE UNDER CONSTRUCTION. (PERMIT IV.D.2 c PG 27)

TOTAL PARCEL ACREAGE IS 72.81 ACRES. DISTURBANCE FOR THIS PROJECT IS 35.5 ACRES.

ECOJ | YES — 7. PROVIDE THE GPS LOCATION OF THE CONSTRUCTION EXIT FOR THE SITE. GIVE THE LATITUDE AND LONGITUDE IN DECIMAL DEGREES. PERMIT II.B.1 a PG 12

CONSTRUCTION EXIT IS LOCATED AT:
LAT: N 32.14722 ; LONG: W 81.17250

ALL | YES — 8. INITIAL DATE OF THE PLAN AND THE DATES OF ANY REVISIONS MADE TO THE PLAN INCLUDING THE ENTITY WHO REQUESTED THE REVISIONS.

PLEASE FIND THE INITIAL DATE OF THE PLAN AND ALL REVISIONS ON THE COVER SHEET AS WELL AS EACH INDIVIDUAL SHEET OF THE PLAN.

ECOJ | YES — 9. DESCRIPTION OF THE NATURE OF CONSTRUCTION ACTIVITY. (PERMIT IV.D.2 a PG 27)

THE CONSTRUCTION ACTIVITY AT THE SITE WILL INVOLVE THE CONSTRUCTION OF A 332,500 SF AND I06,250 SF WAREHOUSE INCLUDING ASSOCIATED TRUCK COURTS AND EMPLOYEE PARKING, AND UTILITY INFRASTRUCTURE. EROSION CONTROL MEASURES, DRAINAGE INFRASTRUCTURE, AND PONDS WILL BE IMPLEMENTED TO FACILITATE DRAINAGE AND MINIMIZE EROSION. PRE-DEVELOPED SITE CONDITIONS CONSIST OF WOODED UPLANDS AND WETLANDS.

COVER | YES — 10. PROVIDE VICINITY MAP SHOWING SITE'S RELATION TO SURROUNDING AREAS. INCLUDE DESIGNATION OF SPECIFIC PHASE, IF NECESSARY. (PERMIT IV.D.2 e PG 27)

PLEASE FIND THE VICINITY MAP LOCATED ON THE COVER SHEET OF THE PLANS

ECOJ,0.3 | YES — 11. IDENTIFY THE PROJECT RECEIVING WATERS AND DESCRIBE ALL SENSITIVE ADJACENT AREAS INCLUDING STREAMS, LAKES, RESIDENTIAL AREAS, WETLANDS, MARSHLANDS, ETC. WHICH MAY BE AFFECTED. (PERMIT IV.D.2.f PG 27)

THE RECEIVING WATERS FOR THE PROJECT ARE PIPES AND DITCHES THAT ARE TRIBUTARY TO WETLANDS ALONG ST. AUGUSTINE CREEK WHICH ULTIMATELY OUTFALLS TO THE SAVANNAH RIVER.

ECOJ | YES — 12. DESIGN PROFESSIONAL'S CERTIFICATION STATEMENT AND SIGNATURE THAT THE SITE WAS VISITED PRIOR TO DEVELOPMENT OF THE ES&PC PLAN AS STATED ON PART IV PAGE 19 OF THE PERMIT.

I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR AUTHORIZED AGENT UNDER MY SUPERVISION.

JASON CHAMBLESS, PE
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000055539
EXPIRATION DATE: 9/12/2023

ECOJ | YES — 13. DESIGN PROFESSIONAL'S CERTIFICATION STATEMENT AND SIGNATURE THAT THE PERMITTEE'S ES&PC PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BMP'S AND SAMPLING TO MEET PERMIT REQUIREMENTS AS STATED ON PART IV PAGE 19 OF THE PERMIT.

I CERTIFY THAT THE PERMITEE'S EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR I0000I.

JASON CHAMBLESS, PE
GSWCC LEVEL II DESIGN PROFESSIONAL
CERTIFICATION #0000055539
EXPIRATION DATE: 9/12/2023

ECOJ | YES — 14. CLEARLY NOTE THE STATEMENT THAT "THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMP'S WITHIN 7 DAYS AFTER INSTALLATION, IN ACCORDANCE WITH PART IV.A.5 PAGE 25 OF THE PERMIT.

THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMP'S WITHIN 7 DAYS AFTER INSTALLATION.

DESIGN PROFESSIONAL 7-DAY VISIT CERTIFICATION

DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN IS TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPs WITHIN 7 DAYS AFTER INSTALLATION.

DATE OF INSPECTION: _____

I CERTIFY THE SITE WAS _____ WITH THE ES&PC PLAN ON THE DATE OF INSPECTION.

_____ _____
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION #

INSPECTION REVEALED THE FOLLOWING DISCREPANCIES FROM THE ES&PC PLAN

_____
_____
_____
_____

THESE DEFICIENCIES MUST BE ADDRESSED IMMEDIATELY AND A RE-INSPECTION SCHEDULED. WORK SHALL NOT PROCEED ON THE SITE UNTIL DESIGN PROFESSIONAL CERTIFICATION IS OBTAINED.

ECOJ | YES — 15. CLEARLY NOTE THE STATEMENT THAT "NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS." (PART IV.(i)-(iv) PG I9-24 OF THE PERMIT).

NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50 FOOT UNDISTURBED STREAM BUFFERS AS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION LINE WITHOUT FIRST ACQUIRING THE NECESSARY VARIANCES AND PERMITS.

N/A | — 16. PROVIDE A DESCRIPTION OF ANY BUFFER ENCROACHMENTS AND INDICATE WHETHER A BUFFER VARIANCE IS REQUIRED.

THERE WILL BE NO BUFFER ENCROACHMENTS AS PART OF THE PROJECT THUS A BUFFER VARIANCE IS NOT REQUIRED.

ECOJ | YES — 17. CLEARLY NOTE THE STATEMENT THAT "AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.", (PART IV.C PG 26 OF PERMIT).

AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

ECOJ | YES — 18. CLEARLY NOTE THE STATEMENT THAT "WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT. (PERMIT IV.D.3.c(I) PG 30).

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

ECOJ | YES — 19. CLEARLY NOTE THE STATEMENT THAT "THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES."

THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND DISTURBING ACTIVITIES.

ECOJ | YES — 20. CLEARLY NOTE THE STATEMENT THAT "EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE."

EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.

ECOJ | YES — 21. CLEARLY NOTE THE STATEMENT "ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN I4 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING." (PERMIT IV.D.3.a.(I) PG 28).

ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN I4 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

N/A | — 22. ANY CONSTRUCTION ACTIVITY WHICH DISCHARGES STORM WATER INTO AN IMPAIRED STREAM SEGMENT, OR WITHIN 1 LINEAR MILE UPSTREAM OF AND WITHIN THE SAME WATERSHED AS, ANY PORTION OF AN BIOTA IMPAIRED STREAM SEGMENT MUST COMPLY WITH PART III.C. OF THE PERMIT. INCLUDE THE COMPLETED APPENDIX 1 LISTING ALL THE BMP'S THAT WILL BE USED FOR THOSE AREAS OF THE SITE WHICH DISCHARGE TO THE IMPAIRED STREAM SEGMENT. (PART III.C.2.A - V. PG I9-2I)

THE SITE IS LOCATED MORE THAN 1 LINEAR MILE UPSTREAM OF THE NEAREST IMPAIRED STREAM SEGMENT.

N/A | — 23. IF A TMDL IMPLEMENTATION PLAN FOR SEDIMENT HAS BEEN FINALIZED FOR THE IMPAIRED STREAM SEGMENT (IDENTIFIED IN ITEM 22 ABOVE) AT LEAST SIX MONTHS PRIOR TO SUBMITTAL OF NOI, THE ES&PC PLAN MUST ADDRESS ANY SITE-SPECIFIC CONDITIONS OR REQUIREMENTS INCLUDED IN THE TMDL IMPLEMENTATION PLAN. (PERMIT III.C.1 PG I5)

THE SITE IS LOCATED MORE THAN 1 LINEAR MILE UPSTREAM OF THE NEAREST IMPAIRED STREAM SEGMENT.

NA | — 24. BMP'S FOR CONCRETE WASHDOWN OF TOOLS, CONCRETE MIXER CHUTES, HOPPERS AND THE REAR OF THE VEHICLES. WASHOUT OF THE DRUM AT THE CONSTRUCTION SITE IS PROHIBITED, (PERMIT IV.D.3.c(6) PG 3I).

CONCRETE WASHOUT AREA WILL NOT BE REQUIRED DURING THIS STAGE OF CONSTRUCTION

ECOJ | YES — 25. PROVIDE BMP'S FOR THE REMEDIATION OF ALL PETROLEUM SPILLS AND LEAKS, (PERMIT IV.D.3.c.(5) PG 3I).

PETROLEUM BASED PRODUCTS- CONTAINERS FOR PRODUCTS SUCH AS FUELS, LUBRICANTS AND TARS WILL BE INSPECTED DAILY FOR LEAKS AND SPILLS. THIS INCLUDES ON-SITE VEHICLE AND MACHINERY INSPECTIONS AND REGULAR PREVENTATIVE MAINTENANCE FOR SUCH EQUIPMENT. EQUIPMENT MAINTENANCE AREAS WILL BE LOCATED AWAY FROM STATE WATER, NATURAL DRAINS AND STORM WATER DRAINAGE INLETS. IN ADDITION, TEMPORARY FUELING TANKS SHALL HAVE A SECONDARY CONTAINMENT LINER TO PREVENT/MINIMIZE SITE CONTAMINATION. DISCHARGE OF OILS, FUELS AND LUBRICANTS IS PROHIBITED. PROPER DISPOSAL METHODS WILL INCLUDE COLLECTION IN A SUITABLE CONTAINER AND DISPOSAL AS REQUIRED BY LOCAL AND STATE REGULATIONS. HAVE EQUIPMENT TO CONTAIN AND CLEAN UP PETROLEUM SPILLS IN FUEL STORAGE AREAS OR ON MAINTENANCE AND FUELING VEHICLES. STORE IN COVERED AREAS PROTECTED WITH DIKES. REGULARLY INSPECT FOR CRACKS OR LEAKAGE IN CONTAINERS/TANKS.

SPILL CLEANUP AND CONTROL PRACTICES

- **LOCAL, STATE AND MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND PROCEDURES WILL BE MADE AVAILABLE TO SITE PERSONNEL.**
- **MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREAS. TYPICAL MATERIALS AND EQUIPMENT INCLUDES, BUT IS NOT LIMITED TO, BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, CAT LITTER, SAND, SAWDUST, AND PROPERLY LABELED PLASTIC AND MEAL WASTE CONTAINERS.**
- **SPILL PREVENTION PRACTICES AND PROCEDURES WILL BE REVIEWED AFTER A SPILL AND ADJUSTED AS NECESSARY TO PREVENT FUTURE SPILLS.**
- **FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1-800-424-8802.**
- **FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS**
- **FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE GEORGIA EPD WILL BE CONTACTED WITHIN 24 HOURS.**
- **FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.**

THE CONTRACTOR SHALL NOTIFY THE LICENSED PROFESSIONAL WHO PREPARED THIS PLAN IF MORE THAN 1320 GALLONS OF PETROLEUM IS STORED ONSITE (THIS INCLUDES CAPACITIES OF EQUIPMENT) OR IF ANY ONE PIECE OF EQUIPMENT HAS A CAPACITY GREATER THAN 660 GALLONS. THE CONTRACTOR WILL NEED A SPILL PREVENTION CONTAINMENT AND COUNTERMEASURES PLAN PREPARED BY THAT LICENSED PROFESSIONAL.

ECOJ | YES — 26. DESCRIPTION OF THE MEASURES THAT WILL BE INSTALLED DURING THE CONSTRUCTION PROCESS TO CONTROL POLLUTANTS IN STORM WATER THAT WILL OCCUR AFTER CONSTRUCTION OPERATIONS HAVE BEEN COMPLETED. (PERMIT IV.D.3.b PG 29).

THE MAIN PERMANENT EROSION CONTROL PRACTICE AT THE POND DISCHARGES IS RIP-RAP. THE PONDS INCLUDE DISCHARGE POINTS TO HELP SPREAD THE FLOW OVER A LARGE AREA AND TO DECREASE VELOCITIES. PERMANENT GRASSING AND LANDSCAPING WILL BE INSTALLED TO PROTECT EARTHEN AREAS FROM EROSION ONCE CONSTRUCTION IS COMPLETE.

ECOJ | YES — 27. DESCRIPTION OF PRACTICES TO PROVIDE COVER FOR BUILDING MATERIALS AND BUILDING PRODUCTS ON SITE, (PERMIT IV.D.3.c.(2) PG 30).

THE CONTRACTOR IS TO PROVIDE COVER FOR: BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS THAT ARE STORED ON SITE BY USING PLASTIC SHEETING AS COVER AND PROTECTION FROM PRECIPITATION. THE ABOVE PRODUCTS WILL BE STORED IN A LOCATION THAT WOULD MINIMIZE EXPOSURE TO PRECIPITATION AND TO STORMWATER.

ECOJ | YES — 28. DESCRIPTION OF THE PRACTICES THAT WILL BE USED TO REDUCE THE POLLUTANTS IN STORM WATER DISCHARGES. (PERMIT IV PG 24)

POLLUTANT PREVENTION

THE FOLLOWING MATERIALS ARE EXPECTED ONSITE DURING CONSTRUCTION: PETROLEUM BASED FUELS AND LUBRICANTS FOR EQUIPMENT, ADDITIVES FOR SOIL STABILIZATION, PESTICIDES, FERTILIZERS, HERBICIDES, CRUSHED STONE, CONCRETE PRODUCTS, ASPHALT, TAR, LUMBER, PAINTS/STAINS/FINISHING TREATMENTS, PAINT SOLVENTS, CLEANING SOLVENTS, PLASTICS AND METAL PIPES.

PRACTICES SUCH AS GOOD HOUSEKEEPING, PROPER HANDLING OF HAZARDOUS PRODUCTS AND PROPER SPILL CONTROL PRACTICES WILL BE FOLLOWED TO REDUCE THE RISK OF SPILLS FROM DISCHARGING INTO STORM WATER RUNOFF.

GOOD HOUSEKEEPING

- **QUANTITIES ONSITE WILL BE LIMITED TO THE AMOUNT NEEDED FOR THE JOB.**
- **PRODUCTS AND MATERIALS WILL BE STORED IN A NEAT, ORDERLY MANNER IN APPROPRIATE CONTAINERS PROTECTED FROM RAINFALL, WHERE POSSIBLE.**
- **PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH MANUFACTURER'S LABELS LEGIBLE AND VISIBLE.**
- **PRODUCT MIXING, DISPOSAL, AND DISPOSAL OF PRODUCT CONTAINERS WILL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.**
- **THE CONTRACTOR WILL INSPECT SUCH MATERIALS TO ENSURE PROPER USE, STORAGE AND DISPOSAL.**

PRODUCT SPECIFIC PRACTICES

FERTILIZER/HERBICIDES/PESTICIDES/DETERGENTS- THESE WILL BE APPLIED AT RATES THAT DO NOT EXCEED THE MANUFACTURER'S SPECIFICATIONS OR ABOVE THE GUIDELINES SET FORTH IN THE CROP ESTABLISHMENT OR IN THE GSWCC MANUAL FOR EROSION AND SEDIMENTATION CONTROL IN GEORGIA. ANY STORAGE OF THESE MATERIALS WILL BE UNDER ROOF IN SEALED CONTAINERS. DO NOT DISCHARGE WASH WATER INTO STORM WATER SYSTEM. INSTALL CURBS OR DIKES AROUND STORAGE AREA TO PROTECT AGAINST SPILLS. LIMIT USE OF DETERGENTS ON-SITE.

PAINTS/FINISHES/SOLVENTS- ALL PRODUCTS WILL BE STORED IN TIGHTLY SEALED ORIGINAL CONTAINERS WHEN NOT IN USE. EXCESS PRODUCT WILL NOT BE DISCHARGED TO THE STORM WATER COLLECTION SYSTEM. EXCESS PRODUCT, MATERIALS USED WITH THESE PRODUCTS AND PRODUCT CONTAINERS WILL BE DISPOSED OF ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

CONCRETE TRUCK WASHING- CONCRETE WASHOUT SHALL OCCUR ONLY IN THE WASH PAD VICINITY DELINEATED IN THE PLANS.

BUILDING MATERIALS- NO BUILDING OR CONSTRUCTION MATERIALS WILL BE BURIED OR DISPOSED OF ONSITE. ALL SUCH MATERIAL WILL BE DISPOSED OF IN PROPER WASTE DISPOSAL PROCEDURES.

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000002465
EXPIRES : 7/1/2024

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 24465 JOSEPH L. MCGEE

NO.	REVISIONS	BY	DATE

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

EROSION CONTROL NOTES

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	N.T.S.

EC0.1

Z:\JOBS\26327.0000\Engineering\Drawings\Construction Plans\26327.0000 Erosion Control Notes.dwg - Mar 25, 2022 - 3:38:06 PM

EROSION,SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST - STAND ALONE CONSTRUCTION PROJECTS

SWCD: COASTAL
PROJECT NAME: NFI BUILDINGS A & B SITE DEVELOPMENT
CITY/COUNTY: PORT WENTWORTH/CHATHAM

ADDRESS: CROSSGATE ROAD
DATE ON PLANS: 08/13/21
REVISED DATE:

ECO.2 | YES

29. DESCRIPTION AND CHART OR TIMELINE OF THE INTENDED SEQUENCE OF MAJOR ACTIVITIES WHICH DISTURB SOILS FOR THE MAJOR PORTIONS OF THE SITE (I.E., INITIAL PERIMETER AND SEDIMENT STORAGE BMP'S, CLEARING AND GRUBBING ACTIVITIES, EXCAVATION ACTIVITIES, UTILITY ACTIVITIES, TEMPORARY AND FINAL STABILIZATION). (PERMIT IV.D.2b PG 27)

A SPECIFIED WORK SCHEDULE IS NEEDED TO COORDINATE THE TIMING OF LAND DISTURBING ACTIVITIES WITH THE INSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES.

THE PURPOSE OF THE SCHEDULE IS TO REDUCE ON-SITE EROSION AND OFF-SITE SEDIMENTATION BY PERFORMING LAND DISTURBING ACTIVITIES AND INSTALLING EROSION AND SEDIMENTATION CONTROL PRACTICES IN ACCORDANCE WITH A PLANNED SCHEDULE.

IN PLANNING CONSTRUCTION WORK, IT MAY BE HELPFUL TO OUTLINE ALL LAND DISTURBING ACTIVITIES NECESSARY TO COMPLETE THE PROPOSED PROJECT. THEN LIST ALL PRACTICES NEEDED TO CONTROL EROSION AND SEDIMENTATION ON THE SITE. THESE TWO LISTS CAN THEN BE COMBINED IN LOGICAL ORDER TO PROVIDE A PRACTICAL AND EFFECTIVE CONSTRUCTION SEQUENCE SCHEDULE THAT BECOMES PART OF THE EROSION AND SEDIMENTATION CONTROL PLAN.

CONSTRUCTION ACTIVITY	SCHEDULE CONSIDERATION
1. OBTAIN ALL PLAN APPROVALS AND OTHER APPLICABLE PERMITS.	
2. FLAG THE WORK LIMITS AND MARK THE TREES AND BUFFER AREAS FOR PROTECTION.	
3. HOLD PRE CONSTRUCTION CONFERENCE AT LEAST ONE WEEK PRIOR TO STARTING CONSTRUCTION.	
4. CONSTRUCTION ACCESS - CONSTRUCTION ENTRANCE, CONSTRUCTION ROUTES, EQUIPMENT PARKING AREAS.	FIRST LAND DISTURBING ACTIVITY - STABILIZE BARE AREAS IMMEDIATELY WITH GRAVEL AND TEMPORARY VEGETATION AS CONSTRUCTION TAKES PLACE.
5. SEDIMENT TRAPS AND BARRIERS - BASIN TRAPS, SEDIMENT FENCES, AND OUTLET PROTECTION.	INSTALL PRINCIPAL BASINS AFTER CONSTRUCTION SITE IS ACCESSED. INSTALL ADDITIONAL TRAPS AND BARRIERS AS NEEDED DURING GRADING.
6. RUNOFF CONTROL - DIVERSIONS, PERIMETER DIKES, WATER BARS, AND OUTLET PROTECTION.	INSTALL KEY PRACTICES AFTER PRINCIPAL SEDIMENT TRAPS AND BEFORE LAND GRADING. INSTALL ADDITIONAL RUNOFF-CONTROL MEASURES DURING GRADING.
7. RUNOFF CONVEYANCE SYSTEM- STABILIZE STREAM BANKS, STORM DRAINS, CHANNELS, INLET AND OUTLET PROTECTION, SLOPE DRAINS.	WHERE NECESSARY, STABILIZE STREAM BANKS AS EARLY AS POSSIBLE. INSTALL PRINCIPAL RUNOFF CONVEYANCE SYSTEM WITH RUNOFF-CONTROL MEASURES. INSTALL REMAINDER OF SYSTEM AFTER GRADING.
8. LAND CLEARING AND GRADING - SITE PREPARATION CUTTING, FILLING AND GRADING, SEDIMENTATION TRAPS, BARRIERS, DIVERSIONS, DRAINS,SURFACE ROUGHENING.	BEGIN MAJOR CLEARING AND GRADING AFTER PRINCIPAL SEDIMENT AND KEY RUNOFF - CONTROL MEASURES ARE INSTALLED. INSTALL ADDITIONAL CONTROL MEASURES AS GRADING PROGRESSES. MARK TREES AND BUFFER AREAS FOR PRESERVATION.
9. SURFACE STABILIZATION - TEMPORARY AND PERMANENT SEEDING, MULCHING, SODDING, RIPRAP.	APPLY TEMPORARY OR PERMANENT STABILIZATION MEASURES IMMEDIATELY ON ALL DISTURBED AREAS WHERE WORK IS DELAYED OR COMPLETE.
10. BUILDING CONSTRUCTION- BUILDINGS UTILITIES, PAVING.	INSTALL NECESSARY EROSION AND SEDIMENTATION CONTROL PRACTICES AS WORK TAKES PLACE.
11. LANDSCAPING AND FINAL STABILIZATION - TOPSOILING, TREES AND SHRUBS, PERMANENT SEEDING, MULCHING, SODDING RIPRAP.	LAST CONSTRUCTION PHASE--STABILIZE ALL OPEN AREAS, INCLUDING BORROW AND SPOIL AREAS. REMOVE AND STABILIZE ALL TEMPORARY CONTROL MEASURES.

CONSTRUCTION SCHEDULE

ACTIVITY	MONTH 1					MONTH 12
PERIMETER BMPS	■					
TEMPORARY SEDIMENT CONTROL BMPS	■					
SITE CLEARING	■	■				
SITE GRADING		■	■	■	■	
TEMPORARY GRASSING		■	■	■		
PERMANENT GRASSING					■	■
FINAL STABILIZATION/ BMP REMOVAL						■
BMP MAINTENANCE	■	■	■	■	■	■

ECO.2 | YES

30. PROVIDE COMPLETE REQUIREMENTS OF INSPECTIONS AND RECORD KEEPING BY THE PRIMARY PERMITEE, (PERMIT IV.D.4.a PG 31-33).

INSPECTIONS AND RECORD KEEPING

A. PRIMARY PERMITTEE:

1. EACH DAY WHEN ANY TYPE OF CONSTRUCTION ACTIVITY HAS TAKEN PLACE AT A PRIMARY PERMITTEE'S SITE, CERTIFIED PERSONNEL PROVIDED BY THE PRIMARY PERMITTEE SHALL INSPECT: (a) ALL AREAS OF THE PRIMARY PERMITTEE'S SITE WHERE PETROLEUM PRODUCTS ARE STORED, USED, OR HANDLED FOR SPILLS AND LEAKS FROM VEHICLES AND EQUIPMENT. (b) ALL LOCATIONS AT THE PRIMARY PERMITTEE'S SITE WHERE VEHICLES ENTER OR EXIT THE SITE FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING. THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.
2. MEASURE AND RECORD RAINFALL WITHIN DISTURBED AREAS OF THE SITE THAT HAVE MET FINAL STABILIZATION ONCE EVERY 24 HOURS EXCEPT ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY AND NON-WORKING FEDERAL HOLIDAY. THE DATA COLLECTED FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY. MEASUREMENT OF RAINFALL MAY BE SUSPENDED IF ALL AREAS OF THE SITE HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION.
3. CERTIFIED PERSONAL (PROVIDED BY THE PRIMARY PERMITTEE) SHALL INSPECT THE FOLLOWING AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM THAT IS 0.5 INCHES OR GREATER (UNLESS SUCH STORM ENDS AFTER 5:00PM ON ANY FRIDAY OR ON ANY NON-WORKING SATURDAY, NON-WORKING SUNDAY OR ANY FEDERAL HOLIDAY IN WHICH CASE THE INSPECTION SHALL BE COMPLETED BY THE END OF THE NEXT BUSINESS DAY AND/OR WORKING DAY, WHICHEVER OCCURS FIRST): (a) DISTURBED AREAS OF THE PRIMARY PERMITTEE'S CONSTRUCTION SITE. (b) AREAS USED BY THE PRIMARY PERMITTEE FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION. AND (c) STRUCTURAL CONTROL MEASURES. EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN APPLICABLE TO THE PRIMARY PERMITTEE'S SITE SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S). FOR AREAS OF A SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION, THE PERMITTEE MUST COMPLY WITH PART IV.D.4.a.(4). THESE INSPECTIONS MUST BE CONDUCTED UNTIL A NOTICE OF TERMINATION IS SUBMITTED.
4. CERTIFIED PERSONNEL (PROVIDED BY PRIMARY PERMITTEE) SHALL INSPECT AT LEAST ONCE PER MONTH DURING THE TERM OF THIS PERMIT (i.e. UNTIL A NOTICE OF TERMINATION HAS BEEN SUBMITTED) THE AREAS OF THE SITE THAT HAVE UNDERGONE FINAL STABILIZATION OR ESTABLISHED A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET PERENNIALS APPROPRIATE FOR THE REGION. THESE AREAS SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM AND THE RECEIVING WATER(S). EROSION AND SEDIMENT CONTROL MEASURES IDENTIFIED IN THE PLAN SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY. WHERE DISCHARGE LOCATIONS OR POINTS ARE ACCESSIBLE, THEY SHALL BE INSPECTED TO ASCERTAIN WHETHER EROSION CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATER(S).
5. BASED ON THE RESULTS OF EACH INSPECTION, THE SITE DESCRIPTION AND THE POLLUTION PREVENTION AND CONTROL MEASURES IDENTIFIED IN THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, THE PLAN SHALL BE REVISED AS APPROPRIATE NOT LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION. IMPLEMENTATION OF SUCH CHANGES SHALL BE MADE AS SOON AS PRACTICAL BUT IN NO CASE LATER THAN SEVEN (7) CALENDAR DAYS FOLLOWING EACH INSPECTION.
6. A REPORT OF EACH INSPECTION THAT INCLUDES THE NAME(S) OF CERTIFIED PERSONNEL MAKING EACH INSPECTION, THE DATE(S) OF EACH INSPECTION, CONSTRUCTION PHASE (I.E., INITIAL, INTERMEDIATE OR FINAL), MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN, AND ACTIONS TAKEN IN ACCORDANCE WITH PART IV.D.4.a.(5). OF THE PERMIT SHALL BE MADE AND RETAINED AT THE SITE OR BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION UNTIL THE ENTIRE SITE OR THAT PORTION OF A CONSTRUCTION PROJECT THAT HAS BEEN PHASED HAS UNDERGONE FINAL STABILIZATION AND A NOTICE OF TERMINATION IS SUBMITTED TO EPD. SUCH REPORTS SHALL BE READILY AVAILABLE BY END OF THE SECOND BUSINESS DAY AND/OR WORKING DAY AND SHALL IDENTIFY ALL INCIDENTS OF BEST MANAGEMENT PRACTICES THAT HAVE NOT BEEN PROPERLY INSTALLED AND/OR MAINTAINED AS DESCRIBED IN THE PLAN. WHERE THE REPORT DOES NOT IDENTIFY ANY INCIDENTS, THE INSPECTION REPORT SHALL CONTAIN A CERTIFICATION THAT THE BEST MANAGEMENT PRACTICES ARE IN COMPLIANCE WITH THE EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN. THE REPORT SHALL BE SIGNED IN ACCORDANCE WITH PART V.G.2 OF THIS PERMIT.

AN "EROSION & SEDIMENTATION INSPECTION AND MAINTENANCE REPORT" SHEET IS ATTACHED. SHOULD THE INSPECTION REVEAL ANY DEFICIENCIES, A COPY SHALL BE SENT TO:

JASON CHAMBLESS
THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405
912.721.4170

ECO.2 | YES

31. PROVIDE COMPLETE REQUIREMENTS OF SAMPLING FREQUENCY AND REPORTING OF SAMPLING RESULTS. (PART IV.D.6.d PG 35-37 & PART IV.E PG 37)

RT IV.D.6.d PG 35-37 & PART IV.E PG 37)

SAMPLING REQUIREMENTS. THIS PERMIT REQUIRES THE MONITORING OF NEPHELOMETRIC TURBIDITY IN RECEIVING WATER(S) OR OUTFALLS IN ACCORDANCE WITH THIS PERMIT. THIS PARAGRAPH SHALL NOT APPLY TO ANY LAND DISTURBANCE ASSOCIATED WITH THE CONSTRUCTION OF SINGLE-FAMILY HOMES WHICH ARE NOT PART OF A SUBDIVISION OR PLANNED COMMON DEVELOPMENT UNLESS FIVE (5) ACRES OR MORE WILL BE DISTURBED. THE FOLLOWING PROCEDURES CONSTITUTE EPD'S GUIDELINES FOR SAMPLING TURBIDITY.

a. SAMPLING REQUIREMENTS SHALL INCLUDE THE FOLLOWING:

(1) A USGS TOPOGRAPHIC MAP, A TOPOGRAPHIC MAP OR A DRAWING (REFERRED TO AS A TOPOGRAPHIC MAP) THAT IS A SCALE EQUAL TO OR MORE DETAILED THAN A 1:24000 MAP SHOWING THE LOCATION OF THE SITE OR THE STAND ALONE CONSTRUCTION; (a) THE LOCATION OF ALL PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES LOCATED DURING MANDATORY FIELD VERIFICATION, INTO WHICH THE STORM WATER IS DISCHARGED AND (b) THE RECEIVING WATER AND/OR OUTFALL SAMPLING LOCATIONS. WHEN THE PERMITTEE HAS CHOSEN TO USE A USGS TOPOGRAPHIC MAP AND THE RECEIVING WATER(S) IS NOT SHOWN ON THE USGS TOPOGRAPHIC MAP, THE LOCATION FOR THE RECEIVING WATER(S) MUST BE HAND-DRAWN ON THE USGS TOPOGRAPHIC MAP FROM WHERE THE STORM WATER(S) ENTERS THE RECEIVING WATER(S) TO THE POINT WHERE THE RECEIVING WATER(S) COMBINES WITH THE FIRST BLUE LINE STREAM SHOWN ON THE USGS TOPOGRAPHIC MAP;

(2) A WRITTEN NARRATIVE OF SITE SPECIFIC ANALYTICAL METHODS USED TO COLLECT, HANDLE AND ANALYZE THE SAMPLES INCLUDING QUALITY CONTROL/QUALITY ASSURANCE PROCEDURES. THIS NARRATIVE MUST INCLUDE PRECISE SAMPLING METHODOLOGY FOR EACH SAMPLING LOCATION;

(3) WHEN THE PERMITTEE HAS DETERMINED THAT SOME OR ALL OUTFALLS WILL BE SAMPLED, A RATIONALE MUST BE INCLUDED ON THE PLAN FOR THE NTU LIMIT(S) SELECTED FROM APPENDIX b. THIS RATIONALE MUST INCLUDE THE SIZE OF THE CONSTRUCTION SITE, THE CALCULATION OF THE SIZE OF THE SURFACE WATER DRAINAGE AREA, AND THE TYPE OF RECEIVING WATER(S) (I.E., TROUT STREAM OR SUPPORTING WARM WATER FISHERIES); AND

(4) ANY ADDITIONAL INFORMATION EPD DETERMINES NECESSARY TO BE PART OF THE PLAN. EPD WILL PROVIDE WRITTEN NOTICE TO THE PERMITTEE OF THE INFORMATION NECESSARY AND THE TIME LINE FOR SUBMITTAL.

b. SAMPLE TYPE, ALL SAMPLING SHALL BE COLLECTED BY "GRAB SAMPLES" AND THE ANALYSIS OF THESE SAMPLES MUST BE CONDUCTED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 (UNLESS OTHER TEST PROCEDURES HAVE BEEN APPROVED); THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT, EPA 833-B-92-001" AND GUIDANCE DOCUMENTS THAT MAY BE PREPARED BY THE EPD.

1. SAMPLE CONTAINERS SHOULD BE LABELED PRIOR TO COLLECTING THE SAMPLES.
2. SAMPLES SHOULD BE WELL MIXED BEFORE TRANSFERRING TO A SECONDARY CONTAINER.
3. LARGE MOUTH, WELL CLEANED AND RINSED GLASS OR PLASTIC JARS SHOULD BE USED FOR COLLECTING SAMPLES. THE JARS SHOULD BE CLEANED THOROUGHLY TO AVOID CONTAMINATION.
4. MANUAL, AUTOMATIC OR RISING STAGE SAMPLING MAY BE UTILIZED. SAMPLES REQUIRED BY THIS PERMIT SHOULD BE ANALYZED IMMEDIATELY, BUT IN NO CASE LATER THAN 48 HOURS AFTER COLLECTION. HOWEVER, SAMPLES FROM AUTOMATIC SAMPLERS MUST BE COLLECTED NO LATER THAN THE NEXT BUSINESS DAY AFTER THEIR ACCUMULATION, UNLESS FLOW THROUGH AUTOMATED ANALYSIS IS UTILIZED. IF AUTOMATIC SAMPLING IS UTILIZED AND THE AUTOMATIC SAMPLER IS NOT ACTIVATED DURING THE QUALIFYING EVENT, THE PERMITTEE MUST UTILIZE MANUAL SAMPLING OR RISING STAGE SAMPLING DURING THE NEXT QUALIFYING EVENT. DILUTION OF SAMPLES IS NOT REQUIRED. SAMPLES MAY BE ANALYZED DIRECTLY WITH A PROPERLY CALIBRATED TURBIDIMETER. SAMPLES ARE NOT REQUIRED TO BE COOLED.
5. SAMPLING AND ANALYSIS OF THE RECEIVING WATER(S) OR OUTFALLS BEYOND THE MINIMUM FREQUENCY STATED IN THE PERMIT MUST BE REPORTED TO EPD AS SPECIFIED IN PART IV.E. OF THE PERMIT.

c. SAMPLING POINTS: THERE WILL BE 2 STORM WATER SAMPLING LOCATIONS. THE SAMPLING LOCATION WILL BE THE DOWNSTREAM POINTS, PER NPDES PERMIT GAR 100001, FOR CONSTRUCTION ACTIVITIES, THE PRIMARY PERMITTEE MUST COMPLETE ALL SAMPLING.

1. FOR CONSTRUCTION ACTIVITIES THE PRIMARY PERMITTEE MUST SAMPLE ALL RECEIVING WATER(S) OR ALL OUTFALL(S), OR A COMBINATION OF RECEIVING WATER(S) AND OUTFALL(S). SAMPLES TAKEN FOR THE PURPOSE OF COMPLIANCE WITH THIS PERMIT SHALL BE REPRESENTATIVE OF THE MONITORED ACTIVITY AND REPRESENTATIVE OF THE WATER QUALITY OF THE RECEIVING WATER(S) AND/OR THE STORM WATER OUTFALL(S) USING THE FOLLOWING MINIMUM GUIDELINES:

A. THE UPSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN IMMEDIATELY UPSTREAM OF THE CONFLUENCE OF THE FIRST STORM WATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST UPSTREAM AT THE SITE) BUT DOWNSTREAM OF ANY OTHER STORM WATER DISCHARGES NOT ASSOCIATED WITH THE PERMITTED ACTIVITY, WHERE APPROPRIATE, SEVERAL UPSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND THE ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE UPSTREAM TURBIDITY VALUE.

B. THE DOWNSTREAM SAMPLE FOR EACH RECEIVING WATER(S) MUST BE TAKEN DOWNSTREAM OF THE CONFLUENCE OF THE LAST STORM WATER DISCHARGE FROM THE PERMITTED ACTIVITY (I.E., THE DISCHARGE FARTHEST DOWNSTREAM AT THE SITE) BUT UPSTREAM OF ANY OTHER STORM WATER DISCHARGE NOT ASSOCIATED WITH THE PERMITTED ACTIVITY. WHERE APPROPRIATE, SEVERAL DOWNSTREAM SAMPLES FROM ACROSS THE RECEIVING WATER(S) MAY NEED TO BE TAKEN AND THE ARITHMETIC AVERAGE OF THE TURBIDITY OF THESE SAMPLES USED FOR THE DOWNSTREAM TURBIDITY VALUE.

C. IDEALLY THE SAMPLES SHOULD BE TAKEN FROM THE HORIZONTAL AND VERTICAL CENTER OF THE RECEIVING WATER(S) OR THE STORM WATER OUTFALL CHANNELS(S).

D. CARE SHOULD BE TAKEN TO AVOID STIRRING THE BOTTOM SEDIMENTS IN THE RECEIVING WATER(S) OR IN THE OUTFALL STORM WATER CHANNEL.

E. THE SAMPLING CONTAINER SHOULD BE HELD SO THAT THE OPENING FACES UPSTREAM.

F. THE SAMPLES SHOULD BE KEPT FREE FROM FLOATING DEBRIS.

G. PERMITTEES DO NOT HAVE TO SAMPLE SHEETFLOW THAT FLOWS ONTO UNDISTURBED NATURAL AREAS OR AREAS STABILIZED BY THE PROJECT. FOR PURPOSES OF THIS SECTION, STABILIZED SHALL MEAN, FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES AND AREAS LOCATED OUTSIDE THE WASTE DISPOSAL LIMITS OF A LANDFILL CELL THAT HAS BEEN CERTIFIED BY EPD FOR WASTE DISPOSAL, 100% OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION WITH A DENSITY OF 70% OR GREATER, OR LANDSCAPED ACCORDING TO THE PLAN (UNIFORMLY COVERED WITH LANDSCAPING MATERIALS IN PLANNED LANDSCAPED AREAS), OR EQUIVALENT PERMANENT STABILIZATION MEASURES AS DEFINED IN THE MANUAL (EXCLUDING A CROP OF ANNUAL VEGETATION AND A SEEDING OF TARGET CROP PERENNIALS APPROPRIATE FOR THE REGION).

A. ALL SAMPLING PURSUANT TO THIS PERMIT MUST BE DONE IN SUCH A WAY (INCLUDING GENERALLY ACCEPTED SAMPLING METHODS, LOCATIONS, TIMING AND FREQUENCY) AS TO ACCURATELY REFLECT WHETHER STORM WATER RUNOFF FROM THE CONSTRUCTION SITE IS IN COMPLIANCE WITH THE STANDARD SET FORTH IN PARTS II.D.3. OR II.D.4., WHICHEVER IS APPLICABLE.

d. SAMPLING FREQUENCY

1. THE PRIMARY PERMITTEE MUST SAMPLE IN ACCORDANCE WITH THE PLAN AT LEAST ONCE FOR EACH RAINFALL EVENT DESCRIBED BELOW. FOR A QUALIFYING EVENT, THE PERMITTEE SHALL SAMPLE AT THE BEGINNING OF ANY STORM WATER DISCHARGE TO A MONITORED RECEIVING WATER AND/OR FROM A MONITORED OUTFALL LOCATION WITHIN FORTY-FIVE (45) MINUTES OR AS SOON AS POSSIBLE.
2. HOWEVER, WHERE MANUAL AND AUTOMATIC SAMPLING ARE IMPOSSIBLE (AS DEFINED IN THIS PERMIT), OR ARE BEYOND THE PERMITTEE'S CONTROL, THE PERMITTEE SHALL TAKE SAMPLES AS SOON AS POSSIBLE, BUT IN NO CASE MORE THAN TWELVE (12) HOURS AFTER THE BEGINNING OF THE STORM WATER DISCHARGE.
3. SAMPLING BY THE PERMITTEE SHALL OCCUR FOR THE FOLLOWING QUALIFYING EVENTS:

A. FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORM WATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THIS PERMIT AFTER ALL CLEARING AND GRUBBING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO COMPLETION OF MASS GRADING OPERATIONS, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATION;

B. IN ADDITION TO (A.) ABOVE, FOR EACH AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL, THE FIRST RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH WITH A STORM WATER DISCHARGE THAT OCCURS DURING NORMAL BUSINESS HOURS AS DEFINED IN THE PERMIT EITHER 90 DAYS AFTER THE FIRST SAMPLING EVENT OR AFTER ALL MASS GRADING OPERATIONS HAVE BEEN COMPLETED, BUT PRIOR TO SUBMITTAL OF A NOT, IN THE DRAINAGE AREA OF THE LOCATION SELECTED AS THE SAMPLING LOCATIONS, WHICHEVER COMES FIRST;

C. AT THE TIME OF SAMPLING PERFORMED PURSUANT TO (A) AND (B) ABOVE, IF BMPS IN ANY AREA OF THE SITE THAT DISCHARGES TO A RECEIVING WATER OR FROM AN OUTFALL ARE NOT PROPERLY DESIGNED, INSTALLED AND MAINTAINED, CORRECTIVE ACTION SHALL BE DEFINED AND IMPLEMENTED WITHIN TWO (2) BUSINESS DAYS, AND TURBIDITY SAMPLES SHALL BE TAKEN FROM DISCHARGES FROM THAT AREA OF THE SITE FOR EACH SUBSEQUENT RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH DURING NORMAL BUSINESS HOURS* UNTIL THE SELECTED TURBIDITY STANDARD IS ATTAINED, OR UNTIL POST-STORM EVENT INSPECTIONS DETERMINE THAT BMPS ARE PROPERLY DESIGNED, INSTALLED AND MAINTAINED;

D. WHERE SAMPLING PURSUANT TO (A), (B) OR (C) ABOVE IS REQUIRED BUT NOT POSSIBLE (OR NOT REQUIRED BECAUSE THERE WAS NO DISCHARGE), THE PERMITTEE, IN ACCORDANCE WITH PART IV.D.4.a.(6), MUST INCLUDE A WRITTEN JUSTIFICATION IN THE INSPECTION REPORT OF WHY SAMPLING WAS NOT PERFORMED. PROVIDING THIS JUSTIFICATION DOES NOT RELIEVE THE PERMITTEE OF ANY SUBSEQUENT SAMPLING OBLIGATIONS UNDER (A), (B) OR (C) ABOVE; AND

E. EXISTING CONSTRUCTION ACTIVITIES, I.E., THOSE THAT ARE OCCURRING ON OR BEFORE THE EFFECTIVE DATE OF THIS PERMIT, THAT HAVE MET THE SAMPLING REQUIRED BY (A) ABOVE SHALL SAMPLE IN ACCORDANCE WITH (B). THOSE EXISTING CONSTRUCTION ACTIVITIES THAT HAVE MET THE SAMPLING REQUIRED BY (B) ABOVE SHALL NOT BE REQUIRED TO CONDUCT ADDITIONAL SAMPLING OTHER THAN AS REQUIRED BY (C) ABOVE.

*NOTE THAT THE PERMITTEE MAY CHOOSE TO MEET THE REQUIREMENTS OF (A) AND (B) ABOVE BY COLLECTING TURBIDITY SAMPLES FROM ANY RAIN EVENT THAT REACHES OR EXCEEDS 0.5 INCH AND ALLOWS FOR SAMPLING AT ANY TIME OF THE DAY OR WEEK.

REPORTING

1. THE APPLICABLE PERMITTEES ARE REQUIRED TO SUBMIT THE SAMPLING RESULTS TO THE EPD AT THE ADDRESS SHOWN IN PART II.C BY THE FIFTEENTH DAY OF THE MONTH FOLLOWING THE REPORTING PERIOD. REPORTING PERIODS ARE MONTHS DURING WHICH SAMPLES ARE TAKEN IN ACCORDANCE WITH THIS PERMIT. SAMPLING RESULTS SHALL BE IN A CLEARLY LEGIBLE FORMAT. UPON WRITTEN NOTIFICATION, EPD MAY REQUIRE THE APPLICABLE PERMITTEE TO SUBMIT THE SAMPLING RESULTS ON A MORE FREQUENT BASIS. SAMPLING AND ANALYSIS OF ANY STORM WATER DISCHARGE(S) OR THE RECEIVING WATER(S) BEYOND THE MINIMUM FREQUENCY STATED IN THIS PERMIT MUST BE REPORTED IN A SIMILAR MANNER TO THE EPD. THE SAMPLING REPORTS MUST BE SIGNED IN ACCORDANCE WITH PART V.G.2. SAMPLING REPORTS MUST BE SUBMITTED TO EPD USING THE ELECTRONIC SUBMITTAL SERVICE PROVIDED BY EPD. SAMPLING REPORTS MUST BE SUBMITTED TO EPD UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.
2. ALL SAMPLING REPORT SHALL INCLUDE THE FOLLOWING INFORMATION:

a. THE RAINFALL AMOUNT, DATE, EXACT PLACE AND TIME OF SAMPLING OR MEASUREMENTS;

b. THE NAME(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE SAMPLING AND MEASUREMENTS;

c. THE DATE(S) ANALYSES WERE PERFORMED;

d. THE TIME(S) ANALYSES WERE INITIATED;

e. THE NAMES(S) OF THE CERTIFIED PERSONNEL WHO PERFORMED THE ANALYSES;

f. REFERENCES AND WRITTEN PROCEDURES , WHEN AVAILABLE, FOR THE ANALYTICAL TECHNIQUES OR METHODS USED;

g. THE RESULTS OF SUCH ANALYSES, INCLUDING THE BENCH SHEETS, INSTRUMENT READOUTS, COMPUTER DISKS OR TAPES, ETC., USED TO DETERMINE THESE RESULTS;

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 34241 JASON L. MCRAE
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION # 0000012465 EXPIRES: 7/1/2024

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

EROSION CONTROL NOTES

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	N.T.S.

EC0.2

Z:\26327\0010\Engineering\Drawings\Construction Plans\26327x0010 Erosion Control Notes.dwg - Mar 25, 2022 - 3:38:04 PM

EROSION,SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST - STAND ALONE CONSTRUCTION PROJECTS

SWCD: COASTAL
PROJECT NAME: NFI BUILDINGS A & B SITE DEVELOPMENT
CITY/COUNTY: PORT WENTWORTH/CHATHAM

ADDRESS: CROSSGATE ROAD
DATE ON PLANS: 08/13/21
REVISED DATE:

h. RESULTS WHICH EXCEED 1000 NTU SHALL BE REPORTED AS "EXCEEDS 1000 NTU;" AND

i. CERTIFICATION STATEMENT THAT SAMPLING WAS CONDUCTED AS PER THE PLAN.

3. ALL WRITTEN CORRESPONDENCE REQUIRED BY THIS PERMIT SHALL BE SUBMITTED BY RETURN RECEIPT CERTIFIED MAIL (OR SIMILAR SERVICE) TO THE APPROPRIATE DISTRICT OFFICE OF THE EPD ACCORDING TO THE SCHEDULE IN APPENDIX A OF THIS PERMIT. THE PERMITTEE SHALL RETAIN A COPY OF THE PROOF OF SUBMITTAL AT THE CONSTRUCTION SITE OR THE PROOF OF SUBMITTAL SHALL BE READILY AVAILABLE AT A DESIGNATED LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOT IS SUBMITTED IN ACCORDANCE WITH PART VI.

EPD OFFICE:
COASTAL DISTRICT - BRUNSWICK OFFICE
GEORGIA ENVIRONMENTAL PROTECTION DIVISION
400 COMMERCE CENTER DRIVE
BRUNSWICK, GA 31523-8687
912-264-7284

ECO.3 | YES — 32. PROVIDE COMPLETE DETAILS FOR RETENTION OF RECORDS AS PER PART IV.F. PG 38 OF THE PERMIT.

RETENTION OF RECORDS

I. THE PRIMARY PERMITTEE SHALL RETAIN THE FOLLOWING RECORDS AT THE CONSTRUCTION SITE OR THE RECORDS SHALL BE READILY AVAILABLE AT A DESIGNATED ALTERNATE LOCATION FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOTICE OF TERMINATION IS SUBMITTED IN ACCORDANCE WITH PART VI.

- COPY OF ALL NOTICES OF INTENT SUBMITTED TO EPD.
- A COPY OF THE ES&PC PLAN REQUIRED IN PERMIT No. GAR 100001.
- THE DESIGN PROFESSIONALS REPORT OF THE THE RESULTS OF THE INSPECTION CONDUCTED IN ACCORDANCE WITH PART IV.A.5 IN PERMIT No. GAR 100001.
- A COPY OF ALL SAMPLING INFORMATION , RESULTS, AND REPORTS REQUIRED BY IN PERMIT No. GAR 100001.
- A COPY OF ALL INSPECTION REPORTS GENERATED IN ACCORDANCE WITH PART IV.D.4.a OF PERMIT No. GAR 100001.
- A COPY OF ALL VIOLATION SUMMARIES AND VIOLATION SUMMARY REPORTS GENERATED IN ACCORDANCE WITH PART III.D.2 IN PERMIT No. GAR 100001.
- DAILY RAINFALL INFORMATION COLLECTED IN ACCORDANCE WITH PART IV.D.4.a.(2). IN PERMIT No. GAR 100001.

2. COPIES OF ALL NOTICES OF INTENT, NOTICES OF TERMINATION, INSPECTION REPORTS, SAMPLING REPORTS (INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS AND ALL ORIGINAL STRIP CHART RECORDINGS FOR CONTINUOUS MONITORING INSTRUMENTATION) OR OTHER REPORTS REQUESTED BY THE EPD, EROSION, SEDIMENTATION AND POLLUTION CONTROL PLANS, RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THIS PERMIT AND ALL OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED BY THE PERMITTEE WHO EITHER PRODUCED OR USED IT FOR A PERIOD OF AT LEAST THREE YEARS FROM THE DATE THAT THE NOTICE OF TERMINATION IS SUBMITTED IN ACCORDANCE WITH PART VI OF THE GAR100001. THESE RECORDS MUST BE MAINTAINED AT THE PERMITTEE'S PRIMARY PLACE OF BUSINESS OR AT A DESIGNATED ALTERNATIVE LOCATION ONCE THE CONSTRUCTION ACTIVITY HAS CEASED AT THE PERMITTED SITE. THIS PERIOD MAY BE EXTENDED BY REQUEST OF THE EPD AT ANY TIME UPON WRITTEN NOTIFICATION TO THE PERMITTEE.

ECO.3 | YES — 33. DESCRIPTION OF ANALYTICAL METHODS TO BE USED TO COLLECT AND ANALYZE THE SAMPLES FROM EACH LOCATION. (PERMIT IV.D.6.a.(3) PG 33-35)

STORM WATER SAMPLES ARE TO BE ANALYZED IN ACCORDANCE WITH METHODOLOGY AND TEST PROCEDURES ESTABLISHED BY 40 CFR PART 136 AND THE GUIDANCE DOCUMENT TITLED "NPDES STORM WATER SAMPLING GUIDANCE DOCUMENT EPA 833-B-92-001.

ECO.3 | YES — 34. APPENDIX B RATIONALE FOR NTU VALUES AT ALL OUTFALL SAMPLING POINTS WHERE APPLICABLE. (PERMIT IV.D.6.a.(3) PG 33)

STORM WATER IS TO BE SAMPLED FOR NEPHELOMETRIC TURBIDITY UNITS (NTU) AT THE OUTFALL LOCATIONS. A DISCHARGE OF STORM WATER RUNOFF FROM DISTURBED AREAS WHERE BEST MANAGEMENT PRACTICES HAVE NOT BEEN PROPERLY DESIGNED, INSTALLED, AND MAINTAINED SHALL CONSTITUTE A SEPARATE VIOLATION FOR EACH DAY ON WHICH SUCH CONDITION RESULTS IN THE TURBIDITY OF THE DISCHARGE EXCEEDING 50, THE VALUE THAT WAS SELECTED FROM APPENDIX B IN PERMIT No. GAR 100001. THE NTU IS BASED UPON THE DISTURBED ACREAGE OF 35.5 ACRES FOR THE PROJECT SITE, THE SURFACE WATER DRAINAGE AREA OF LESS THAN 4.99 SQUARE MILES AND RECEIVING WATER WHICH SUPPORTS WARM WATER FISHERIES. APPENDIX B WAS USED TO DETERMINE THE NTU ALLOWABLE AND DOWNSTREAM SAMPLING WILL BE PERFORMED FOR THIS PROJECT.

Appendix B
Nephelometric Turbidty Unit (NTU) Table
Warm Water (Supporting Warm Water Fisheries)

	Surface Water Drainage Area, square miles							
	0-4.99	5-9.99	10-24.99	25-49.99	50-99.99	100-249.99	250-499.99	500+
1.00-10	75	150	200	400	750	750	750	750
10.01-25	50	100	100	200	300	500	750	750
25.01-50	(50)	50	100	100	200	300	750	750
50.01-100	50	50	50	100	100	150	300	600
100.01+	50	50	50	50	50	100	200	100

ECLI - L3 | YES — 35. DELINEATE ALL SAMPLING LOCATIONS, PERENNIAL AND INTERMITTENT STREAMS AND OTHER WATER BODIES INTO WHICH STORM WATER IS DISCHARGED. (PERMIT IV.D.6.a.(3) PG 33)

PLEASE SEE PLAN SHEETS FOR DELINEATION OF SAMPLING LOCATIONS, PERENNIAL, INTERMITTENT STREAMS AND OTHER WATER BODIES INTO WHICH STORM WATER IS DISCHARGED.

ECO.3 | YES — 36. A DESCRIPTION OF APPROPRIATE CONTROLS AND MEASURES THAT WILL BE IMPLEMENTED AT THE CONSTRUCTION SITE INCLUDING (1) INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMP'S, (2) INTERMEDIATE GRADING AND DRAINAGE BMP'S, AND (3) FINAL BMP'S. FOR CONSTRUCTION SITES WHERE THERE WILL BE NO MASS GRADING AND THE INITIAL PERIMETER CONTROL BMP'S, INTERMEDIATE GRADING AND DRAINAGE BMP'S, AND FINAL BMP'S ARE THE SAME, THE PLAN MAY COMBINE ALL OF THE BMP'S INTO A SINGLE PHASE. (PERMIT IV.D.3 PG 27)

INITIAL PHASE - THE INITIAL PHASE OF THE ES&PC PLAN WILL INCLUDE THE INSTALLATION OF THE CONSTRUCTION EXIT AND SILT FENCE. TYPE NS & S SILT FENCE WILL BE USED. STORM PONDS AND DITCHES WILL BE CONSTRUCTED AND MAINTAINED DURING SITE CLEARING. STORM DRAIN OUTLET PROTECTION WILL BE INSTALLED AND MAINTAINED AT DISCHARGE LOCATIONS. DUST CONTROL AND MULCHING WILL BE IMPLEMENTED AS NECESSARY TO PROVIDE INITIAL SEDIMENT STORAGE.
INTERMEDIATE PHASE - THE INTERMEDIATE GRADING AND DRAINAGE BMP'S WILL INCLUDE THE MAINTENANCE OF ALL SILT FENCE. STORM DRAIN OUTLET PROTECTION WILL BE INSTALLED AND MAINTAINED AT DISCHARGE LOCATIONS. DUST CONTROL, MULCHING, AND TEMPORARY SEEDING WILL BE IMPLEMENTED AS NECESSARY.

FINAL PHASE - THE FINAL GRADING AND DRAINAGE BMP'S WILL INCLUDE THE MAINTENANCE OF ALL SILT FENCE. STORM DRAIN OUTLET PROTECTION WILL BE MAINTAINED AT DISCHARGE LOCATIONS. PERMANENT SEEDING WILL BE IMPLEMENTED FOR SITE STABILIZATION. ONCE THE SITE IS STABILIZED, ALL TEMPORARY BMPS ARE TO BE REMOVED.

ALL | YES — 37. GRAPHIC SCALE AND NORTH ARROW.

GRAPHIC SCALE AND NORTH ARROW ARE LOCATED ON EACH PLAN SHEET.

ECLI-L3 | YES — 38. EXISTING AND PROPOSED CONTOUR LINES WITH CONTOUR LINES DRAWN AT AN INTERVAL IN ACCORDANCE WITH THE FOLLOWING:

EXISTING AND PROPOSED CONTOUR LINES DRAWN AT AN INTERVAL OF 1' ARE SHOWN ON EACH PLAN SHEET.

N/A | — 39. USE OF ALTERNATIVE BMP'S WHOSE PERFORMANCE HAS BEEN DOCUMENTED TO BE EQUIVALENT TO OR SUPERIOR TO CONVENTIONAL BMP'S AS CERTIFIED BY A DESIGN PROFESSIONAL (UNLESS DISAPPROVED BY EPD OR THE GEORGIA SOIL AND WATER CONSERVATION COMMISSION). PLEASE REFER TO THE ALTERNATIVE BMP GUIDANCE DOCUMENT FOUND AT www.gaswcc.org. (PERMIT IV.D.3.a(4) PG 29)

NOT APPLICABLE FOR THIS PROJECT.

N/A | — 40. USE OF ALTERNATIVE BMP FOR APPLICATION TO THE EQUIVALENT BMP LIST. PLEASE REFER TO APPENDIX A-2 OF THE MANUAL FOR EROSION & SEDIMENT CONTROL IN GEORGIA 2016 EDITION.

NOT APPLICABLE FOR THIS PROJECT.

N/A | — 41. DELINEATION OF THE APPLICABLE 25-FOOT OR 50-FOOT UNDISTURBED BUFFERS ADJACENT TO STATE WATERS AND ANY ADDITIONAL BUFFERS REQUIRED BY THE LOCAL ISSUING AUTHORITY. CLEARLY NOTE AND DELINEATE ALL AREAS OF IMPACT. (PERMIT IV.D.2.e PG 27)

THERE ARE NO BUFFERS ASSOCIATED WITH THIS PROJECT.

ECO.3 | YES — 42. DELINEATION OF ON-SITE WETLANDS AND ALL STATE WATERS LOCATED ON AND WITHIN 200 FEET OF THE PROJECT SITE.

THE WETLANDS ARE DELINEATED ON THE PLANS.

ALL | YES — 43. DELINEATION AND ACREAGE OF CONTRIBUTING DRAINAGE BASINS ON THE PROJECT SITE. (PERMIT IV.D.2.e PG 27)

ALL CONTRIBUTING DRAINAGE BASINS ON THE PROJECT SITE ARE CLEARLY DELINEATED IN AN EXHIBIT AS PART OF THE ATTACHED STORM WATER REPORT.

ATTACHED | YES — 44. PROVIDE HYDROLOGY STUDY AND MAPS OF DRAINAGE BASINS FOR BOTH PRE- AND POST-DEVELOPMENT CONDITIONS.

PLEASE SEE ATTACHED REPORT WITH DETAILS FOR PRE AND POST DEVELOPMENT HYDROLOGY..

ECO.3 | YES — 45. AN ESTIMATE OF THE RUNOFF COEFFICIENT OR PEAK DISCHARGE FLOW OF THE SITE PRIOR TO AND AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED. (PERMIT IV.D.2.d PG 27)

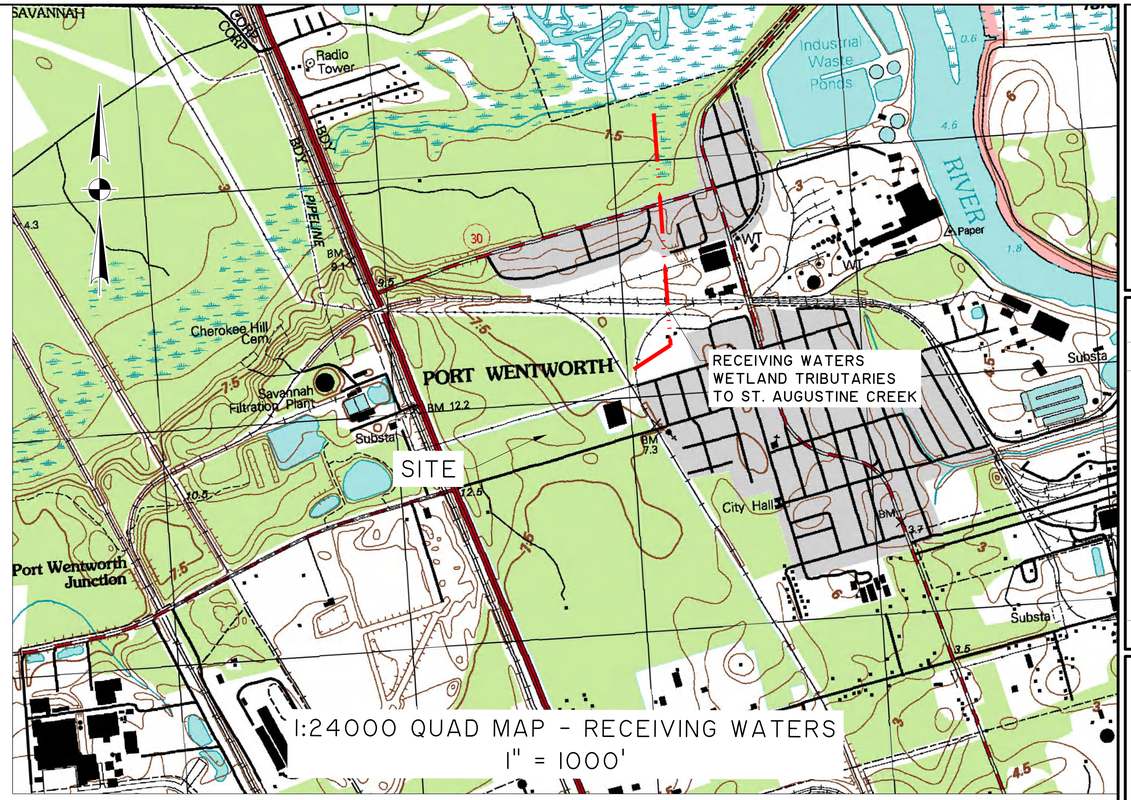
RUNOFF COEFFICIENT: PRE-CONSTRUCTION CN = 80
POST-CONSTRUCTION CN = 86

ECLI-L3 | YES — 46. STORM-DRAIN PIPE AND WEIR VELOCITIES WITH APPROPRIATE OUTLET PROTECTION TO ACCOMMODATE DISCHARGES WITHOUT EROSION. IDENTIFY/DELINEATE ALL STORM WATER DISCHARGE POINTS.

THE RIP-RAP CHARTS CONTAIN THE STORMWATER VELOCITIES. THE STORMWATER DISCHARGE POINTS ARE INDICATED ON THE PLANS.

ECO.3 | YES — 47. SOIL SERIES FOR THE PROJECT SITE AND THEIR DELINEATION.

SOILS ARE DELINEATED ON THE EROSION CONTROL SHEETS. THE SOILS FOR THE SITE ARE Lp - Lakeland sand (A), Ok - OGEECHEE LOAMY FINE SAND (B/D), Okc Ogeechee-Urban land complex (B/D), Pn - Pooler fine sandy loam (C/D), As - Albany fine sand (A/D).



1:24000 QUAD MAP - RECEIVING WATERS
1" = 1000'

ECLI-L3 | YES — 48. THE LIMITS OF DISTURBANCE FOR EACH PHASE OF CONSTRUCTION.

PLEASE SEE THE PLAN FOR THE DELINEATION OF THE LIMITS OF DISTURBANCE. THEY ARE THE SAME FOR ALL PHASES OF CONSTRUCTION.

ECO.3 | YES — 49. PROVIDE A MINIMUM OF 67 CUBIC YARDS OF SEDIMENT STORAGE PER ACRE DRAINED USING A TEMPORARY SEDIMENT BASIN, RETROFITTED DETENTION POND, AND/OR EXCAVATED INLET SEDIMENT TRAPS FOR EACH COMMON DRAINAGE LOCATION. SEDIMENT STORAGE VOLUME MUST BE IN PLACE PRIOR TO AND DURING ALL LAND DISTURBANCE ACTIVITIES UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED. A WRITTEN JUSTIFICATION EXPLAINING THE DECISION TO USE EQUIVALENT CONTROLS WHEN A SEDIMENT BASIN IS NOT ATTAINABLE MUST BE INCLUDED IN THE PLAN FOR EACH COMMON DRAINAGE LOCATION IN WHICH A SEDIMENT BASIN IS NOT PROVIDED. A WRITTEN JUSTIFICATION AS TO WHY 67 CUBIC YARDS OF STORAGE IS NOT ATTAINABLE MUST ALSO BE GIVEN. WORKSHEETS FROM THE MANUAL MUST BE INCLUDED FOR STRUCTURAL BMPs AND ALL CALCULATIONS USED BY THE STORAGE DESIGN PROFESSIONAL TO OBTAIN THE REQUIRED SEDIMENT WHEN USING EQUIVALENT CONTROLS. WHEN DISCHARGING FROM SEDIMENT BASINS AND IMPOUNDMENTS, PERMITEES ARE REQUIRED TO UTILIZE OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE, UNLESS INFEASIBLE. IF OUTLET STRUCTURES THAT WITHDRAW WATER FROM THE SURFACE ARE NOT FEASIBLE, A WRITTEN JUSTIFICATION EXPLAINING THIS DECISION MUST BE INCLUDED IN THE PLAN. (PERMIT IV.D.3.a.(3) PG 28)

AN RT-B WAS SELECTED AS THE DEWATERING STRUCTURE FOR THIS PROJECT. WHILE WE DO AGREE THAT AN RT-B DOES NOT ONLY DEWATER FROM THE TOP BUT IN THIS INSTANCE, WE BELIEVE IT IS THE BEST OPTION TO KEEP SEDIMENT FROM ESCAPING THE POND. THE USE OF SKIMMER MORE OFTEN THAN NOT RESULTS IN CLOGGING OR SEDIMENT LEAVING THE SITE THROUGH THE SPILLWAY. THE RT-B ALLOWS FOR A MORE SUSTAINED DEWATERING.

SEDIMENT STORAGE - THE PERMIT REQUIRES A MINIMUM OF 67 CUBIC YARDS OF SEDIMENT STORAGE PER ACRE DRAINED.

THE SEDIMENT STORAGE REQUIREMENT WILL BE ACHIEVED BY UTILIZING THE NEW STORM POND.
SEDIMENT STORAGE REQUIRED
ACREAGE = 35.5
REQUIRED ON SITE SEDIMENT STORAGE = 35.5 AC X 67 CY/AC = 2,378 CY
POND #1:
TOTAL AREA: 145,992 SF (AT BOTTOM - ELEV. 10.0), 162,052 SF (9' ABOVE BOTTOM - ELEV. 19.0)
(½(145,992 + 162,052) * 0.5 FT)/27 = 51,340 CY

51,340 CY EXCEEDS THE REQUIRED 2,378 CY

ECLI-L3 | YES — 50. LOCATION OF BEST MANAGEMENT PRACTICES THAT ARE CONSISTENT WITH AND NO LESS STRINGENT THAN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA. USE UNIFORM CODING SYMBOLS FROM THE MANUAL,CHAPTER 6, WITH LEGEND.

PLEASE SEE THE PLAN SHEETS FOR THE LOCATION OF BEST MANAGEMENT PRACTICES THAT ARE CONSISTENT WITH AND NO LESS STRINGENT THAN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA USING THE UNIFORM CODING SYMBOLS FROM THE MANUAL, CHAPTER 6 WITH ACCOMPANYING LEGEND.

ECLI-2.3 | YES — 51. PROVIDE DETAILED DRAWINGS FOR ALL STRUCTURAL PRACTICES. SPECIFICATIONS MUST, AT A MINIMUM, MEET THE GUIDELINES SET FORTH IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA.

PLEASE SEE THE DETAIL SHEET FOR DETAILED DRAWINGS FOR ALL STRUCTURAL PRACTICES WITH SPECIFICATIONS MEETING THE GUIDELINES SET FORTH IN THE MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA.

EC2.1-2.3 | YES — 52. PROVIDE VEGETATIVE PLAN, NOTING ALL TEMPORARY AND PERMANENT VEGETATIVE PRACTICES, INCLUDE SPECIES, PLANTING DATES AND SEEDING, FERTILIZER, LIME AND MULCHING RATES. VEGETATIVE PLAN SHALL BE SITE SPECIFIC FOR APPROPRIATE TIME OF YEAR THAT SEEDING WILL TAKE PLACE AND FOR APPROPRIATE GEOGRAPHIC REGION OF GEORGIA.

PLEASE SEE THE PLAN AND DETAIL SHEETS FOR THE VEGETATIVE PLAN NOTING ALL TEMPORARY AND PERMANENT VEGETATIVE PRACTICES INCLUDING SPECIES, PLANTING DATES AND SEEDING, FERTILIZER, LIME AND MULCHING RATES. THIS PLAN IS SPECIFIC TO THE SITE AND APPROPRIATE FOR TIME OF YEAR THAT SEEDING WILL TAKE PLACE AND FOR THE APPROPRIATE GEOGRAPHIC REGION OF GEORGIA.

EFFECTIVE JANUARY 1, 2021

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES : 7/1/2024

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 34241 JOSEPH L. MCKEEVER

NO.	REVISIONS	BY	DATE

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

EROSION CONTROL NOTES

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	N.T.S.

EC0.3

Z:\26327\26327.0001\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0001 SITE DEVELOPMENT ESPC PLAN - INITIAL.DWG - May 5, 2022 - 10:58 AM

BUILDING B
332,450 SF
FF ELEV. 30.0

MATCH LINE - SEE SHEET NO. EC1.2

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

14" GAS TRANSMISSION MAIN

GAS EASEMENT

NORFOLK SOUTHERN FOUNDATION LEAD

END OF CASING PIPE
TOP ELV: 23.38
N: 783261.52
E: 963508.54

Sd1-NS

CAUTION!! TEN BURIED POWER CABLES

GEORGIA POWER PAD MOUNTED TRANSFORMER

CAUTION!! UNDERGROUND POWER TO PUMP STATION

Sd1-S

Sd1-NS

Sd1-NS

CAUTION!! 48" CITY OF SAVANNAH I&D WATERMAIN

EXISTING 24" STEEL CASING PIPE INSTALLED BY DIRECTIONAL DRILLING. 2" WATERMAIN HAS BEEN INSTALLED WITHIN CASING.

EXISTING VAULT WITH 48" BUTTERFLY VALVE

END OF CASING PIPE
TOP ELV: 25.24
N: 782825.47
E: 963718.33

Du
Ds1
Ds2

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

BUILDING A
106,250 SF
FF ELEV. 32.0

Sd1-NS

Sd1-NS

Co
LAT: N032° 08' 50"
LONG: W081° 10' 21"
or
LAT: N32.14722
LONG: W81.17250

JIMMY DELOACH PARKWAY

NORITAKE WHSE
NPRH, INC.
7-0035-01-0

NORFOLK SOUTHERN

CROSSGATE ROAD

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (BUILDING SLAB)	DA1
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	DA2
DISTURBED AREA STABILIZATION (PERMANENT SEEDING)	DA3
DUST CONTROL	DC
CONSTRUCTION EXIT	CE
SILT FENCE - TYPE SB	SF
STORM DRAIN OUTLET PROTECTION	SO
SEDIMENT BASIN	SB

INITIAL THRU FINAL PHASE:
1. INSTALL CONSTRUCTION EXIT (CE).
2. INSTALL PERIMETER SILT FENCE (SxF1-NS).
3. INSTALL INLET PROTECTION AS SHOWN (SIS).
4. INSTALL SILT FENCE (SxF1-S).
5. PROVIDE DUST CONTROL (DU) AND TEMPORARY GRASSING.
6. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (DA3) THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT.

SOILS
Ds Lakeland sand - Hydrologic Soil Group A
Du Urban land-Duplin complex - Hydrologic Soil Group B/D
Ka Albany fine sand - Hydrologic Soil Group A/D
Ok Otalako fine sand - Hydrologic Soil Group C
Opc Ocilla - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
LIMITS OF DISTURBANCE

NOTE:
1. SEE SHEET EC0.1 - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEETS EC2.1 TO EC2.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEDIMS SCHEDULE.

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 34241 JOSEPH L. MCGEE

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES : 7/1/2024

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

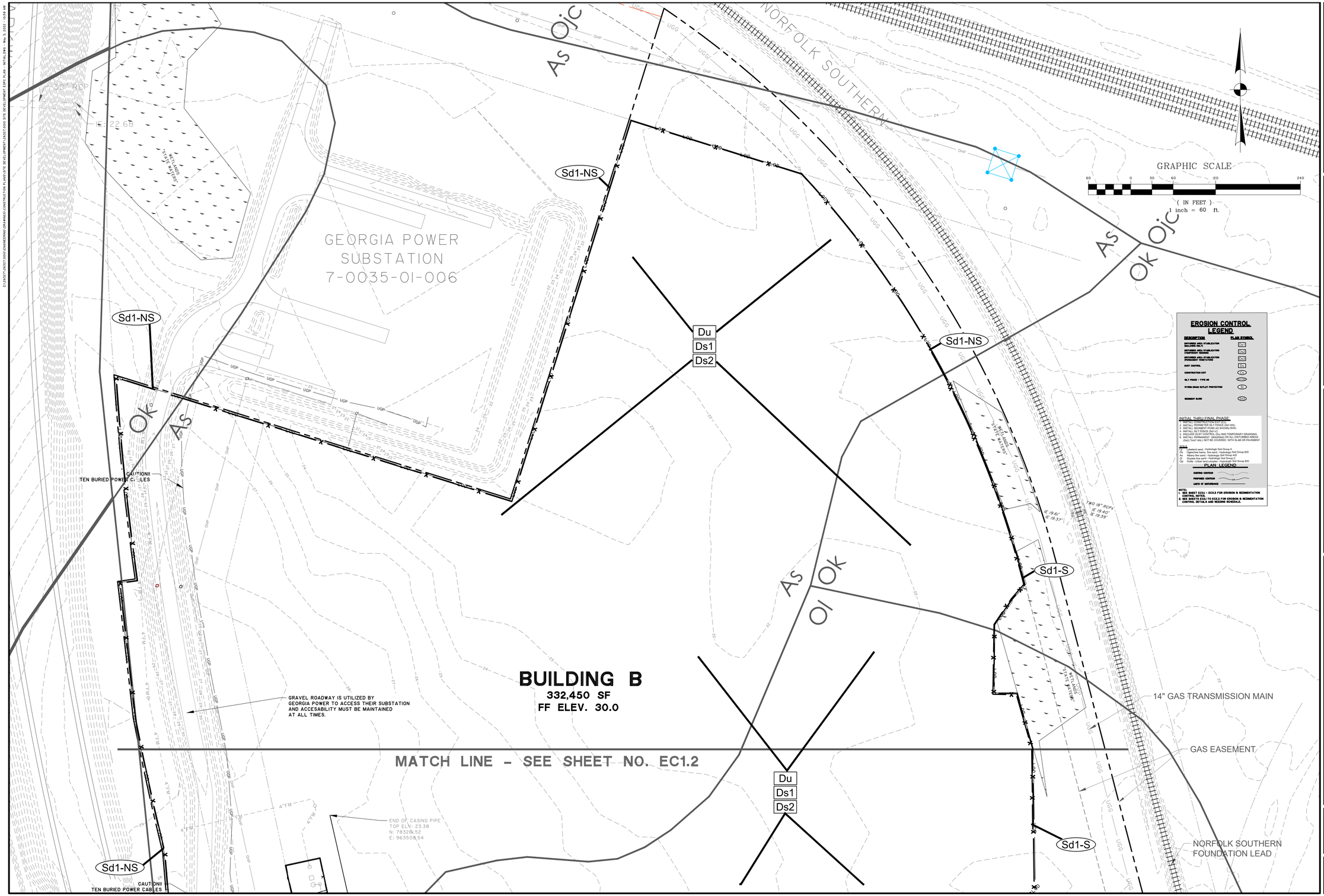
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

INITIAL ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

EC1.1



EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (BLANKET/MULCH)	Ds1
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (PERMANENT VEGETATION)	Ds3
DUST CONTROL	Du
CONSTRUCTION EXIT	CE
SILT FENCE - TYPE NS	SFNS
STORM DRAIN OUTLET PROTECTION	SP
SEDIMENT BARN	SB

INITIAL THRU FINAL PHASE:
1. INSTALL CONSTRUCTION EXIT.
2. INSTALL PERIMETER SILT FENCE (Sd1-NS).
3. INSTALL SEDIMENT POND AS SHOWN (SW).
4. INSTALL SILT FENCE (Sd1-S).
5. INSTALL TEMPORARY SEEDING (Ds2) AND TEMPORARY GRASSING.
6. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (Ds3) THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT

SOILS:
Ok - Okeetland sand - Hydrologic Soil Group A
Oi - Ogeechee loamy fine sand - Hydrologic Soil Group B/D
As - Albany fine sand - Hydrologic Soil Group A/D
Oj - Ogeechee loamy fine sand - Hydrologic Soil Group B/D
Ou/a - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
LIMITS OF DISTURBANCE

NOTES:
1. SEE SHEET EC0.J - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEETS EC2.1 TO EC2.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEEDING SCHEDULE.

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES : 7/1/2024

GEORGIA REGISTERED No. 36764 PROFESSIONAL ENGINEER JOSEPH L. MOSCHER

NO.	REVISIONS	BY	DATE
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

INITIAL ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

EC1.2

Z:\26327\Civil\26327.0010\Drawings\CAD\Permits\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0010 SITE DEVELOPMENT ESPC PLAN - INITIAL.DWG - May 3, 2022 - 10:58 AM

BUILDING B
332,450 SF
FF ELEV. 30.0

MATCH LINE - SEE SHEET NO. EC1.4

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

END OF CASING PIPE
TOP ELV: 23.38
N: 783261.52
E: 963508.54

CAUTION!! TEN BURIED POWER CABLES

GEORGIA POWER PAD MOUNTED TRANSFORMER

CAUTION!! UNDERGROUND POWER TO PUMP STATION

CAUTION!! 48" CITY OF SAVANNAH I&D WATERMAIN

EXISTING 24" STEEL CASING PIPE INSTALLED BY DIRECTIONAL DRILLING. 2" WATERMAIN HAS BEEN INSTALLED WITHIN CASING.

EXISTING VAULT WITH 48" BUTTERFLY VALVE

14" GAS TRANSMISSION MAIN

GAS EASEMENT

NORFOLK SOUTHERN FOUNDATION LEAD

NORFOLK SOUTHERN

Du
Ds1
Ds2

Sd1-S
DOUBLE ROW

Sd1-NS

JIMMY DELOACH PARKWAY

CROSSGATE ROAD

NORITAKE WHSE
NPRH, INC.
7-0035-01-0

END OF CASING PIPE
TOP ELV: 25.24
N: 782825.47
E: 963718.33

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

BUILDING A
106,250 SF
FF ELEV. 32.0

Co
LAT: N032° 08' 50"
LONG: W081° 10' 21"
or
LAT: N32.14722
LONG: W81.17250

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	DS1
DISTURBED AREA STABILIZATION (TEMPORARY MULCH)	DS2
DISTURBED AREA STABILIZATION (PERMANENT VEGETATION)	DU
DIVET CONTROL	DC
CONSTRUCTION EXIT	CE
SILT FENCE - TYPE SS	SSF
STORM DRAIN OUTLET PROTECTION	SP
SEDIMENT BASIN	SB

INITIAL THRU FINAL PHASE:
1. INSTALL PERIMETER SILT FENCE (SILT-NS).
2. INSTALL SEDIMENT POND AS SHOWN (SeD).
3. INSTALL SILT FENCE (SILT-NS).
4. INSTALL TEMPORARY SEEDING, COIL AND TEMPORARY GRASSING.
5. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (EXCEPT THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT

SOILS
Ld Leeland sand - Hydrologic Soil Group A
Ok Ogeechee loamy fine sand - Hydrologic Soil Group B/D
Oc Ocilla fine sand - Hydrologic Soil Group A/D
Oi Ocilla fine sand - Hydrologic Soil Group C
Oc Ocilla - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
LIMITS OF DISTURBANCE

NOTE:
1. SEE SHEET EC0.1 - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEETS EC0.1 TO EC0.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEEDING SCHEDULE.

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 36264 JOSEPH L. MCGEE

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES: 7/1/2024

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

INTERMEDIATE ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

EC1.3

P:\26327\0010\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-0010 SITE DEVELOPMENT ESPC PLANS - INTERMEDIATE.DWG - May 3, 2022 - 9:09 AM

GEORGIA POWER SUBSTATION
7-0035-01-006

POND I

BUILDING B
332,450 SF
FF ELEV. 30.0

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

MATCH LINE - SEE SHEET NO. EC1.3

NORFOLK SOUTHERN

14" GAS TRANSMISSION MAIN

GAS EASEMENT

CAUTION!! TEN BURIED POWER CABLES

END OF CASING PIPE
TOP ELEV: 23.38
N: 783201.52
E: 963508.54

"TWO 18" RCPs" E 19.62' E 19.37'

"TWO 18" RCPs" E 19.43' E 19.39'

SAMPLING LOCATION

WETLANDS "JURISDICTIONAL WATERS"

Sd1-NS

Sd1-S
DOUBLE ROW

Du
Ds1
Ds2

St

Rt-B

Oc Ojc As Ok

OUTLET PROTECTION DESIGN CRITERIA (St)

OUTLET OPENING:	36"
FLOW RATE (CFS):	30.0 CFS
VELOCITY (FPS):	4.1 FPS
TAILWATER CONDITION: (MIN, AI MAX.)	MIN
d_{50} RIPRAP SIZE:	0.5'
d_{100} RIPRAP SIZE:	0.75'
MIN. RIPRAP THICKNESS(D):	1.125'
W:	12'
Wop:	36'
Widen:	1.5'

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (BELOW SILT)	Ds1
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (PERMANENT VEGETATION)	Ds3
DUST CONTROL	Du
CONSTRUCTION EXIT	CE
SILT FENCE - TYPE HR	SF(HR)
STORM DRAIN OUTLET PROTECTION	SP
SEDIMENT BARN	SB

INITIAL THRU FINAL PHASE:
1. INSTALL PERIMETER SILT FENCE (Sd1-NS).
2. INSTALL SEDIMENT POND AS SHOWN (SD).
3. INSTALL SILT FENCE (Sd1-S).
4. INSTALL TEMPORARY GRASSING (Ds2) AND TEMPORARY GRASSING.
5. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (Ds3) THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT

SOILS:
As - Leeland sand - Hydrologic Soil Group A
Oc - Ogeechee loamy fine sand - Hydrologic Soil Group B/D
Ao - Albany fine sand - Hydrologic Soil Group A/D
Ok - Kingsland complex - Hydrologic Soil Group B/D
Oj/Oc - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
LIMITS OF DISTURBANCE

NOTES:
1. SEE SHEET EC0.J - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEETS EC0.J TO EC0.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEEDING SCHEDULE.

GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED No. 3362 PROFESSIONAL ENGINEER JOSEPH L. MCGEE

GEWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES : 7/1/2024

NO.	REVISIONS	BY	DATE
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

INTERMEDIATE ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

EC1.4

P:\26327\126327.0010\ENGINEERING\204-MASS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327.0010 SITE DEVELOPMENT ESPC PLAN - INTERMEDIATE.DWG - May 3, 2022 - 9:00 AM

BUILDING B
332,450 SF
FF ELEV. 30.0

MATCH LINE - SEE SHEET NO. EC1.6

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

END OF CASING PIPE
TOP ELV: 23.38
N: 783204.52
E: 963508.54

CAUTION!! TEN BURIED POWER CABLES

GEORGIA POWE
PAD MOUNTE
TRANSFORME

CAUTION!! UNDERGROUND POWER TO PUMP STATION

CAUTION!! 48" CITY OF SAVANNAH I&D WATERMAIN

EXISTING VAULT WITH 48" BUTTERFLY VALVE

END OF CASING PIPE
TOP ELV: 25.24
N: 782825.47
E: 963718.33

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

BUILDING A
106,250 SF
FF ELEV. 32.0

Sd1-NS

Sd1-S
DOUBLE ROW

Du
Ds1
Ds3

Co
LAT: N032° 08' 50"
LONG: W081° 10' 21"
or
LAT: N32.14722
LONG: W81.17250

14" GAS TRANSMISSION MAIN

GAS EASEMENT

NORFOLK SOUTHERN FOUNDATION LEAD

NORFOLK SOUTHERN

NORITAKE WHSE
NPRH, INC.
7-0035-01-0

JIMMY DELOACH PARKWAY

CROSSGATE ROAD

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (BUILDING ONLY)	(DS1)
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	(DS2)
DISTURBED AREA STABILIZATION (PERMANENT SEEDING)	(DS3)
DUST CONTROL	(DU)
CONSTRUCTION EXIT	(CE)
SILT FENCE - TYPE SB	(SF)
STORM DRAIN OUTLET PROTECTION	(SP)
SEDIMENT BASIN	(SB)

INITIAL THRU FINAL PHASE:
1. INSTALL CONSTRUCTION EXIT (CE).
2. INSTALL PERIMETER SILT FENCE (Sd1-NS).
3. INSTALL INLET SILT FENCE (SHOWN) (Sd1-IS).
4. INSTALL SILT FENCE (Sd1-S).
5. PROVIDE DUST CONTROL (Du) AND TEMPORARY GRASSING.
6. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (Ds3) THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT.

Soils
- Ca Leeland sand - Hydrologic Soil Group C
- Ok Kingsland sand, 0 to 2 percent slopes Hydrologic Soil Group B/D
- Aa Albany fine sand - Hydrologic Soil Group A/D
- Or Otustee fine sand - Hydrologic Soil Group C
- Op Ocilla - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
- EXISTING CONTOUR
- PROPOSED CONTOUR
- LIMITS OF DISTURBANCE

NOTE:
1. SEE SHEET EC0.1 - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEETS EC2.1 TO EC2.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEDIMS SCHEDULE.

GRAPHIC SCALE
60 0 30 60 120 240
(IN FEET)
1 inch = 60 ft.

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 27611 JOSEPH L. MCGEE

GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000012465
EXPIRES : 7/1/2024

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

FINAL ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

EC1.5

Z:\26327\26327.0010\LANDSCAPE ARCHITECTURE\CONSTRUCTION PLANS\26327.0010_L2.3.DWG - May 5, 2022 - 9:09 AM

GRASSING SPECIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Seeding, planting grass, and fertilizing graded areas around buildings, structures, soccer fields and sidewalk shoulders and other disturbed areas.

B. Seed protection.

C. Maintaining grassed areas until final acceptance.

1.2 RELATED WORK

A. Civil and Landscape plans and specifications.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable. Store in cool, dry locations away from contaminants.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Damaged bags are not acceptable. Store in cool, dry locations away from contaminants.

C. Deliver sod on pallets.

D. All material shall be acceptable to Engineer prior to use.

1.4 PLANTING DATES

A. This specification provides for establishment of a permanent grass cover between the dates of March 1 and September 30. If finished earth grades are not completed in time to permit planting and establishment of permanent grass during the favorable season between dates specified above unless otherwise accepted, Contractor will be required to plant a temporary cover to protect new graded areas from erosion and to keep windborne dust to a minimum. The temporary cover shall be planted between October 1 and February 28 unless otherwise permitted.

1.5 MEASUREMENT AND PAYMENT

A. When the season or stage of project is such results of grassing work cannot be determined, conditional acceptance will be made on work completed. When conditional acceptance is made for items of work covered, Contractor shall be entitled to 50% of bid price for the actual work placed and shall receive remaining 50% of bid price when final acceptance is made. Conditional acceptance shall not apply to the remaining items of work, and full bid price payment shall be made when work is acceptably placed and completed in accordance with specifications.

B. Payment for grassing will be made at contract unit price for the item "Grassing" and such payment shall constitute full compensation for furnishing and placing seed and fertilizer or sod where directed and protecting and maintaining seed and sod in all graded and disturbed areas.

PART 2 - PRODUCTS

Contractor shall submit source and species certification documents to Engineer and Owner's Representative for review prior to installation. Supply complete information on all analysis / test methodologies and results; laboratory certifications, manufacturer's specifications, and agency approvals to the Landscape Architect prior to placement of soil mixtures. In addition, provide the Landscape Architect with thoroughly mixed sample of soil mixes for approval prior to placement. Landscape Contractor shall make modifications and improvements to soil mixes deemed necessary by the soil analysis to meet requirements specified here in before, and to ensure proper growing medium for plant material.

2.1 SEED

A. All seed shall conform to all State Laws and to all requirements and regulations of the State Department of Agriculture.

B. The varieties of seed, as specified in Section 2.2, shall be individually packaged or bagged, and tagged to show name of seed, net weight, origin, germination, lot number, and other information required by the State Department of Agriculture.

C. The Engineer reserves the right to test, reject, or accept all seed before seeding.

2.2 SEEDING SCHEDULE

A. SEED	RATE	PLANTING DATES
'Princess 77' Bermuda	75 lbs/ acre	March 1 - September 30
Annual Rye (Temp only)	75 lbs/acre	October 1 - February 28

2.3 FERTILIZER

A. Commercial fertilizer of approved type, conforming to state fertilizer laws at the rate as recommended by soils test.

2.4 LIME

A. Agricultural grade, ground limestone at the rate as recommended by soils test.

2.5 SPRIG

A. Healthy living stems, stolons, or rhizomes and attached roots of locally adapted grass without adhering soil, including two to three nodes and from 4 to 6 inches long. Obtain from heavy, dense certified sod. Provide sprigs which have been grown under climatic conditions similar to those in the locality of the project. Coordinate harvesting and planting operations to prevent exposure of sprigs to the sun for more than 30 minutes before covering and moistening. Sprigs showing signs of wilt, mold, containing weeds or other detrimental material or that are heat damaged will be rejected.

B. The varieties of sprig, as specified in section 2.6, shall be individually packaged or bagged, and tagged to show name of sprig, net weight, origin and other information required by the State Department of Agriculture.

C. Sprigs shall be pure to variety specified and shall be free of other grass species, weeds or foreign matter.

D. Sprigs shall be harvested by digging (not collected above soil level) shredding sod, by rototilling sod and raking, by vericutting or by a sprig harvester. Sprigs shall consist of mostly rhizomes and crowns with only a few green leaves.

2.6 SPRIGGING SCHEDULE

A. SPRIG	RATE	PLANTING DATES
'Tifway 419' Bermuda (or approved equal)	1,000 bushels / ac. (Coverage in 3 months)	April 1 - August 31
Stabilize site with temporary grass seed (See section 2.2)		September 1 - March 31

B. In areas where existing grass is to be matched, Contractor shall sprig at the rate and dates recommended by sprig distributor.

2.7 SOD

A. Sod shall be premium grade, densely rooted, good quality grass of the species and certified variety as shown on the plans, free from noxious weeds with no surface soil being visible. The sod shall be obtained from areas where the soil is reasonably fertile. Sod of specified species with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed. The sod shall be machine cut to a uniform soil thickness that shall contain practically all of the dense root system and not be less than 1-inch thick.

B. Before cutting, sod shall be mowed to a height of not less that 1-1/2" or more than 2". Sod shall be cut in uniform widths min. 12" and in lengths min. 24 inches.

C. Sod shall be delivered to site in a fresh, moist condition with healthy green foliage. It shall be unloaded from delivery trucks on pallets or rolls and placed in final position within 24 hours of delivery. Sod shall be protected from wind and sun and shall not be allowed to dry out before planting.

D. Sod shall be strong enough to support its own weight and retain its size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

2.8 ACCESSORIES

A. Straw Mulch: Oat or wheat straw, reasonably free from weeds, foreign matter detrimental to plant life, and in dry condition.

B. Excelsior Mulch: Excelsior mulch shall consist of wood fibers cut from sound, green timber. The average length of fibers shall be 4 to 6 inches. Cut shall be made in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood to cause splintering of fibers when weathering in order to provide adherence to each other and to soil.

C. Wood cellulose fiber shall be made from wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. It shall remain in uniform suspension in water under agitation and blend with grass seed and fertilizer to form a homogenous slurry. Mulch fibers shall intertwine physically to form a strong moisture holding mat on the ground surface and allow rainfall to percolate into underlying soil. The mulch shall be heat processed to contain no germination or growth-inhibiting factors. It shall be dyed (non-toxic) an appropriate color to facilitate metering of material.

2.9 PRODUCT REVIEW

A. Contractor shall provide the Engineer with a complete description of all products before ordering. The Engineer will review all products before they are ordered.

PART 3 - EXECUTION

3.1 PREPARATION

A. Areas to be seeded or sprigged shall be made smooth and uniform and shall conform to the finished grade indicated on plans.

B. Remove foreign materials, plants, roots, stones, and debris from surfaces to be seeded.

C. Grassing areas, if not loose, shall be loosened to a minimum depth of 3 inches before fertilizer, seed, sprig or sod is applied.

D. Amendments to soils shall be incorporated into loosened 3 inch top soil layer as recommended by soils test.

E. No seeding shall occur until acceptance of the seed bed preparation has occurred. Contractor shall notify owner and landscape architect once seed bed is prepared for review and acceptance.

3.2 STAND OF GRASS

A. Before acceptance of seeding or sprigging is performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of re-establishment in spring.

B. Before acceptance of seeding performed for the establishment of temporary vegetation, Contractor will be required to produce a stand of grass sufficient to control erosion for a given area and length of time before the next phase of construction or establishment of permanent vegetation is to commence.

3.3 SEEDING AND SPRIGGING DATES

A. Seeding and sprigging shall be performed during periods and at rates specified in their respective schedules. Seeding and sprigging work may, at discretion of Contractor, be performed throughout the year using schedule prescribed for given period. Seeding and sprigging work shall not be conducted when the ground is frozen or excessively wet. Contractor will be required to produce a satisfactory stand of grass regardless of the period of year work is performed.

3.4 APPLYING LIME AND FERTILIZER

A. Following advance preparation and placing selected material for shoulders and slopes, lime and fertilizer, if called for based on soil tests, shall be spread uniformly over the designated areas, and shall be thoroughly mixed with the soil to a depth of approximately 2 inches. Fertilizer and lime shall be applied at the rate at the rate recommended by required soils test. Unless otherwise provided, lime will not be applied for temporary seeding. In all cases where practicable, acceptable mechanical spreaders shall be used for spreading fertilizer. On steep slopes subject to slides and inaccessible to power equipment, the slopes shall be adequately scarified. Fertilizer may be applied on steep slopes by hydraulic methods as a mixture of fertilizer and seed. When fertilizer is applied with combination seed and fertilizer drills, no further incorporation will be necessary. The fertilizer and seed shall be applied together when Wood Cellulose Fiber Mulch is used. Any stones larger than 2 ½ inches in any dimension, larger clods, roots, or other debris brought to the surface shall be removed.

3.5 SEEDING

A. Seed shall be sown within 24 hours following application of fertilizer and lime and preparation of the seedbed as specified in Section 3.4. Seed shall be uniformly sown at rate specified by the use of acceptable mechanical seed drills. Rotary hand seeders, power sprayers or other satisfactory equipment may be used on steep slopes or on other areas inaccessible to seed drills.

B. Seeds shall be covered and lightly compacted by means of cultipacker or light roller if the drill does not perform this operation. On slopes inaccessible to compaction equipment, the seed shall be covered by dragging spiked chains, by light harrowing or by other satisfactory methods.

C. Apply water with fine spray immediately after each area has been sown.

D. Do not sow seed when ground is too dry, during windy periods or immediately following a rain.

E. If permitted by the special provisions, wood cellulose fiber mulch or excelsior fiber mulch may be used.

3.6 SEED PROTECTION (STRAW MULCH)

A. All seeded areas seeded with permanent grasses shall be uniformly mulched in a continuous blanket immediately following seeding and compacting operations, using at least 2 tons of straw per acre.

3.7 SEED PROTECTION (EXCELSIOR MULCH)

A. Seed shall be sown as specified in Section 3.5. Within 24 hours after covering of seed, excelsior mulch shall be uniformly applied at the rate of 2 tons per acre. The mulch may be applied hydraulically or by other acceptable methods. Should the mulch be placed in a dry condition, it shall be thoroughly wetted immediately after placing. Engineer may require light rolling of the mulch to form a fight mat.

3.8 SEED PROTECTION (WOOD CELLULOSE FIBER MULCH)

A. After the lime has been applied and ground prepared as specified in Section 3.4, wood cellulose fiber mulch shall be applied at a rate of 1,500 pounds per acre in a mixture of seed and fertilizer. Hydraulic equipment shall be used for application of fertilizer, seed, and slurry of the prepared wood pulp. This equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed, and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which will provide an even distribution of slurry on various areas to be seeded. The slurry tank shall have a minimum capacity of 1,000 gallons.

Seed, fertilizer, wood pulp mulch, and water shall all be combined into the slurry tank for distribution of all ingredients in one operation by hydraulic seeding method specified herein. Materials shall be combined in a manner recommended by the manufacturer. The slurry mixture shall be regulated so amounts and rates of application shall result in a uniform application of all materials at rates not less than amount specified. Using the color of wood pulp as a guide, equipment operator shall spray prepared seedbed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream to fall like rain, allowing wood fibers to build upon each other until an even coat is achieved.

3.9 SPRIGGING

A. Sprigs shall be placed at the date and rates as shown in section 2.6. The sprigging method shall be by broadcast sprigging, hydroplanting or row planter. Sprigging procedure shall ensure even coverage.

B. Sprigs applied by broadcast over the site with a distributor or hydroseeder shall be planted at the rates listed in section 2.6. Cover broadcast sprigs with straw mulch immediately after broadcast and water in immediately (within 2 hours).

C. Sprigs installed by row planter creating a narrow furrow that covers 50 to 80% of the sprig with soil may use less sprig material. Rate shall be as recommended by sprig supplier to provide a solid stand of turf within the time required in Section 2.6. Water in immediately (within 1 hour).

3.10 SODDING

A. Sod shall be placed between March 1st and December 1st. However, if sod is to be placed during periods of temperatures over 90 degrees F., the contractor shall take extra care for quick placement of sod with adequate, consistent watering necessary to ensure sod thrives as planted.

B. Sod shall be placed within 24 hours of cutting.

C. Place top elevation of sod 1/2 inch below adjoining paving or curbs.

D. All areas to be sodded shall be brought to the proper line grade or cross section as was existing prior to construction. Sod shall be placed so that, upon completion, the edges of the sodded areas will be smooth and will conform to the proposed finished grade. Sod shall be laid smooth, edge to edge, with staggered joints. Sod shall be immediately pressed firmly into contact with the sod bed by tamping or rolling, to eliminate any air pockets. A true and even surface shall be provided, to insure knitting without displacement of the sod or deformation of the surfaces of the sodded areas. Do not stretch or overlap sod pieces. Following compaction, screened soil of good quality shall be used to fill all cracks, and excess soil shall be worked into the grass with rakes or other suitable equipment. On slopes steeper than 4 to1, the sod shall be fastened in place with suitable wood or metal pins to hold the sod in place. Any damage by erosion or other causes that may have occurred after completion of grading operations shall be repaired, before commencing with the sodding operations.

E. Immediately before sodding, moisten topsoil with a fine spray to a minimum 1" depth. Sod shall not be laid on soil that is dry and powdery.

F. Sod shall be moist when laid and placed on moist ground. The sod shall be carefully placed by hand, beginning at the toe of slopes and working upwards. The length of the strips shall be at right angles to the flow of surface water. All joints shall be tightly butted and end joints shall be staggered at least 12 inches. The sod shall be immediately pressed firmly into the ground by tamping or rolling. Fill all joints between strips with fine screened soil. Sod on slopes shall be pegged with sod pegs to prevent movement. The sod shall be watered, mowed, weeded, repaired, or otherwise maintained, to insure the establishment of a uniform healthy stand of grass until acceptance.

G. Within 2 hours after sod has been placed, thoroughly water to a minimum depth of 4". After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove depressions and irregularities. Roll sodded areas with a roller not exceeding 150 lbs. per foot of roller width. Top dress and roll again as necessary to create a smooth even surface.

PART 4 - MAINTENANCE, WARRANTY AND ACCEPTANCE

4.1 MAINTENANCE

A. Maintenance shall consist of providing protection against traffic, watering to ensure uniform seed germination and to keep surface of soil damp, and repairing any areas damaged as a result of construction operations or erosion. Maintenance shall also include, but is not limited to, watering, weeding, cultivating, removal of dead material, lawn mowing, fertilizing, and other necessary operations.

B. The Contractor shall maintain all proposed plantings until the date of final acceptance by the Owner.

4.2 WARRANTY

A. All grassed areas shall be guaranteed by the Contractor to be alive and healthy for a one year period from the date of substantial completion issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any areas require replanting. At the end of the warranty period, the sod shall show evidence of rooting to the underlying soil and shall have no competitive weed growth from either the sod or from between the sod joints.

B. Any grassed area which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind. Replacements required because of vandalism, excessive use or other causes beyond the control of the Contractor are not part of this contract.

4.3 ACCEPTANCE

A. Before acceptance of seeding performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of reestablishment in spring.

B. A minimum coverage of 80% density over 100% of the disturbed area is required for seeded areas before project acceptance. Sprig and sod areas shall have 95 % coverage over 100% of the disturbed area prior project acceptance.

END OF SECTION

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

GRASSING SPECIFICATIONS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	NO SCALE

L2.3

Z:\26327\0010\ENGINEERING\DRAWINGS\CONSTRUCTION PLANS\SITE DEVELOPMENT\26327-0010-SITE DEVELOPMENT ESPC PLAN - FINAL.DWG - May 3, 2022 - 9:08 AM

GEORGIA POWER SUBSTATION
7-0035-01-006

POND I

BUILDING B
332,450 SF
FF ELEV. 30.0

GRAVEL ROADWAY IS UTILIZED BY GEORGIA POWER TO ACCESS THEIR SUBSTATION AND ACCESABILITY MUST BE MAINTAINED AT ALL TIMES.

MATCH LINE - SEE SHEET NO. EC1.5

NORFOLK SOUTHERN

14" GAS TRANSMISSION MAIN

GAS EASEMENT

SAMPLING LOCATION

"TWO 18" RCP"
E: 19.40'
E: 19.39'

E: 19.61'
E: 19.37'

END OF CASING PIPE
TOP ELV: 23.38
N: 783208.52
E: 963508.54

CAUTION!!
TEN BURIED POWER CABLES

Sd1-NS
Sd1-S
DOUBLE ROW
Du
Ds1
Ds3
St
Rt-B

WETLANDS
"STATE WATERS"

EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
DISTURBED AREA STABILIZATION (BALE/WIND BALE)	(Du)
DISTURBED AREA STABILIZATION (TEMPORARY SEEDING)	(Ds1)
DISTURBED AREA STABILIZATION (PERMANENT VEGETATION)	(Ds3)
DUST CONTROL	(Du)
CONSTRUCTION EXIT	(CE)
SILT FENCE - TYPE HS	(HS)
STORM DRAIN OUTLET PROTECTION	(St)
SEDIMENT BARN	(SB)

OUTLET PROTECTION DESIGN CRITERIA (St)

OUTLET OPENING:	36"
FLOW RATE (CFS):	30.0 CFS
VELOCITY (FPS):	4.1 FPS
TAILWATER CONDITION: (MIN, M OR MAX.)	MIN
d50 RIPRAP SIZE:	0.5'
dmax RIPRAP SIZE:	0.75'
MIN. RIPRAP THICKNESS(D):	1.125'
Lo:	42'
W(d):	9'
W(dmax):	12'

INITIAL THRU FINAL PHASE:
1. INSTALL CONSTRUCTION EXIT (CE)
2. INSTALL PERIMETER SILT FENCE (SH1-NS);
3. INSTALL SEDIMENT POND AS SHOWN (SB)
4. INSTALL SILT FENCE (SH1-S)
5. PROVIDE DUST CONTROL (Du) AND TEMPORARY GRASSING.
6. INSTALL PERMANENT GRASSING ON ALL DISTURBED AREAS (Du) THAT WILL NOT BE COVERED WITH SLAB OR PAVEMENT

SOILS:
Ly Leyland sand - Hydrologic Soil Group A
Ch Chewacla loamy fine sand - Hydrologic Soil Group B/D
As Albany fine sand - Hydrologic Soil Group A/D
Os Ousley fine sand - Hydrologic Soil Group C
Oc Ocilla - Urban land complex - Hydrologic Soil Group B/D

PLAN LEGEND
EXISTING CONTOUR
PROPOSED CONTOUR
LIMITS OF DISTURBANCE

NOTE:
1. SEE SHEET EC0.2 - EC0.3 FOR EROSION & SEDIMENTATION CONTROL NOTES.
2. SEE SHEET EC1.7 - EC2.3 FOR EROSION & SEDIMENTATION CONTROL DETAILS AND SEEDING SCHEDULE.

GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.
60 0 30 60 120 240

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
----	----	----	----

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

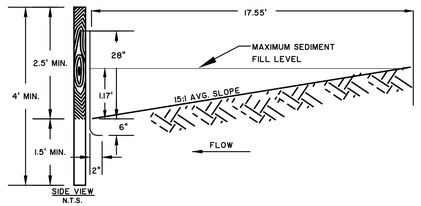
FINAL ESPC PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	1" = 60'

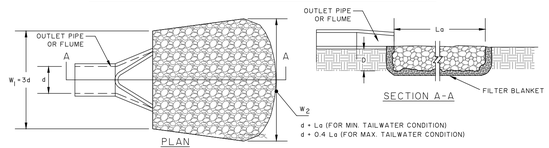
EC1.6

Z:\JOBS\26200\26327.000\Engineering\Drawings\Construction Plans\26327.000 - Erosion Control Details.dwg - Mar 24, 2023 - 10:32:25 AM

STORAGE VOLUME PER LINEAR FOOT OF SILT FENCE



PIPE (OR FLUME) TO FLAT AREA - NO WELL-DEFINED CHANNEL



d = Lo (FOR MIN. TAILWATER CONDITION)
d = 0.4 Lo (FOR MAX. TAILWATER CONDITION)

NOTES:
1. L_o = LENGTH THE RIP-RAP APRON
2. d = OUTLET PIPE DIAMETER
3. d_{50} = AVERAGE RIP RAP STONE DIAMETER
5. d_{MAX} = MAXIMUM RIP RAP STONE DIAMETER = 1.5 TIMES d_{50}
6. D = RIP RAP APRON DEPTH = 1.5 TIMES d_{MAX} BUT NOT LESS THAN 6"
7. W_1 = UPSTREAM RIP RAP APRON WIDTH = 3d
8. W_2 = DOWNSTREAM RIP RAP APRON WIDTH, SEE DETAIL
7. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
8. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIP-RAP AND SOIL FOUNDATION.
9. INSPECT RIP RAP OUTLET STRUCTURES AFTER HEAVY RAINS TO SEE IF ANY EROSION AROUND OR BELOW THE RIP RAP HAS TAKEN PLACE OR IF STONES HAVE BEEN DISLODGED. IMMEDIATELY MAKE ALL NEEDED REPAIRS TO PREVENT FURTHER DAMAGE.

STORM DRAIN OUTLET PROTECTION FOR PIPE OR CONCRETE FLUME

NOT TO SCALE

St

Table 1. Mulching Application Requirements

Material	Rate	Depth
Straw or hay	-	2" to 4"
Wood waste, chips, sawdust, bark	-	2" to 3"
Polyethylene film	Secure with soil, anchors, weights	-
Geotextiles, jute matting, netting, etc.	See manufac-turer's recom-mentations	-

Ds1

SEEDING RATES FOR TEMPORARY & PERMANENT COVER

MONTH	TEMPORARY COVER	RATE PER ACRE: SEEDED ALONE	RATE PER ACRE: ADDED TO MIX	PERMANENT COVER	RATE PER ACRE: SEEDED ALONE	RATE PER ACRE: ADDED TO MIX
JANUARY	* LESPEDEZA, ANNUAL * RYE * RYEGRASS, ANNUAL * WHEAT	40 lbs. 3 bu. 40 lbs. 3 bu.	10 lbs. .5 bu. - .5 bu.	* BAHIA, PENSACOLA BERMUDA, UNHULLED CENTIPEDE, SOD LESPEDEZA, SERICEA 1	60 lbs. 10 lbs. - 75 lbs.	30 lbs. 6 lbs. - -
FEBUARY	LESPEDEZA, ANNUAL * LOVEGRASS, WEEPING * RYE * RYEGRASS, ANNUAL	40 lbs. 4 lbs. 3 bu. 40 lbs.	10 lbs. 2 lbs. .5 bu. -	* BAHIA, PENSACOLA CENTIPEDE, SOD LESPEDEZA, SEDICEA 1 * LESPEDEZA, SEDICEA 2 * LOVEGRASS, WEEPING	60 lbs. - 75 lbs. 75 lbs. 4 lbs.	30 lbs. - - - 2 lbs.
MARCH	* LESPEDEZA, ANNUAL LOVEGRASS, WEEPING * RYEGRASS, ANNUAL * SUDANGRASS	40 lbs. 4 lbs. 40 lbs. 60 lbs.	10 lbs. 2 lbs. - -	BAHIA, PENSACOLA BERMUDA, UNHULLED CENTIPEDE, SOD * LESPEDEZA, SEDICEA 1 LESPEDEZA, SEDICEA 2 LOVEGRASS, WEEPING	60 lbs. 10 lbs. - 75 lbs. 75 lbs. 4 lbs.	30 lbs. 6 lbs. - - - 2 lbs.
APRIL	LOVEGRASS, WEEPING MILLET, BROWNTOP * MILLET, PEARL SUDANGRASS	4 lbs. 40 lbs. 50 lbs. 60 lbs.	2 lbs. 10 lbs. - -	BAHIA, PENSACOLA BERMUDA, HULLED CENTIPEDE, SOD * LESPEDEZA, SEDICEA 1 LESPEDEZA, SEDICEA 2 LOVEGRASS, WEEPING	60 lbs. 10 lbs. - 75 lbs. 75 lbs. 4 lbs.	30 lbs. 6 lbs. - - - 2 lbs.
MAY	LOVEGRASS, WEEPING MILLET, BROWNTOP MILLET, PEARL SUDANGRASS	4 lbs. 40 lbs. 50 lbs. 60 lbs.	2 lbs. 10 lbs. - -	BAHIA, PENSACOLA BERMUDA, HULLED CENTIPEDE, SOD * LESPEDEZA, SEDICEA 1 LESPEDEZA, SEDICEA 2 LOVEGRASS, WEEPING	60 lbs. 10 lbs. - 75 lbs. 75 lbs. 4 lbs.	30 lbs. 6 lbs. - - - 2 lbs.
JUNE	* LOVEGRASS, WEEPING MILLET, BROWNTOP MILLET, PEARL SUDANGRASS	4 lbs. 40 lbs. 50 lbs. 60 lbs.	2 lbs. 10 lbs. - -	BAHIA, PENSACOLA * BERMUDA, UNHULLED * LESPEDEZA, SEDICEA 1 * LESPEDEZA, SEDICEA 2 * LOVEGRASS, WEEPING	60 lbs. 10 lbs. 75 lbs. 75 lbs. 4 lbs.	30 lbs. 6 lbs. - - 2 lbs.

SEEDING RATES FOR TEMPORARY & PERMANENT COVER

MONTH	TEMPORARY COVER	RATE PER ACRE: SEEDED ALONE	RATE PER ACRE: ADDED TO MIX	PERMANENT COVER	RATE PER ACRE: SEEDED ALONE	RATE PER ACRE: ADDED TO MIX
JULY	* MILLET, BROWNTOP MILLET, PEARL SUDANGRASS	40 lbs. 50 lbs. 60 lbs.	10 lbs. - -	* BAHIA, PENSACOLA * LESPEDEZA, SEDICEA 1	60 lbs. 75 lbs.	30 lbs. -
AUGUST	* MILLET, PEARL * RYEGRASS, ANNUAL	50 lbs. 40 lbs.	- -	* BAHIA, PENSACOLA * LESPEDEZA, SEDICEA 1	60 lbs. 75 lbs.	30 lbs. -
SEPTEMBER	* BARLEY * OATS * RYE RYEGRASS, ANNUAL * WHEAT	3 bu. 4 bu. 3 bu. 40 lbs. 3 bu.	.5 bu. 1 bu. .5 bu. - .5 bu.	* BAHIA, PENSACOLA LESPEDEZA, SEDICEA 1	60 lbs. 75 lbs.	30 lbs. -
OCTOBER	BARLEY OATS RYE RYEGRASS, ANNUAL WHEAT	3 bu. 4 bu. 3 bu. 40 lbs. 3 bu.	.5 bu. 1 bu. .5 bu. - .5 bu.	* BAHIA, PENSACOLA LESPEDEZA, SEDICEA 1	60 lbs. 75 lbs.	30 lbs. -
NOVEMBER	BARLEY OATS RYE RYEGRASS, ANNUAL WHEAT	3 bu. 4 bu. 3 bu. 40 lbs. 3 bu.	.5 bu. 1 bu. .5 bu. - .5 bu.	* BAHIA, PENSACOLA BERMUDA, UNHULLED CENTIPEDE, SOD LESPEDEZA, SEDICEA 1	60 lbs. 10 lbs. - 75 lbs.	30 lbs. 6 lbs. - -
DECEMBER	BARLEY OATS RYE RYEGRASS, ANNUAL WHEAT	3 bu. 4 bu. 3 bu. 40 lbs. 3 bu.	.5 bu. 1 bu. .5 bu. - .5 bu.	* BAHIA, PENSACOLA BERMUDA, UNHULLED CENTIPEDE, SOD LESPEDEZA, SEDICEA 1	60 lbs. 10 lbs. - 75 lbs.	30 lbs. 6 lbs. - -

NOTES
ALL PERMANENT GRASS PLANTINGS SHALL BE MULCHED
** INDICATES MARGINAL (BUT PERMISSIBLE) PLANTING DATE*
1. UNSCARIFIED
2. SCARIFIED
3. CENTIPEDE SOD CAN BE USED AS PERMANENT COVER ANYTIME EXCEPT JUNE THRU OCTOBER

Table 2. Fertilizer Requirements for Temporary Vegetation

Types of Species	Planting Year	Fertilizer (N-P-K)	Rate (lbs./acre)	N Top Dressing Rate (lbs./acre)
Cool season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 1000 400	50-100 --- 30
Cool seasn grasses & legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 1000 400	0-50 --- ---
Temporary cover crops seeded alone	First	10-10-10	500	30
Warm season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 800 400	50-100 50-100 30

- Apply agricultural lime at the rate determined by soil test pH.

Table 2. Fertilizer Requirements for Permanent Vegetation

Types of Species	Planting Year	Fertilizer (N-P-K)	Rate (lbs./ acre)	N Top Dressing Rate (lbs./acre)
Cool season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 1000 400	50-100 --- 30
Cool grasses and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 1000 400	0-50 --- ---
Warm season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 800 400	50-100 50-100 30
Warm season grasses and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 1000 400	50 --- ---

- Apply agricultural lime at a rate of 1-2 tons/ acre unless soil tests indicate otherwise.

DUST CONTROL

DEFINITION: CONTROLLING SURFACE AND AIR MOVEMENT OF DUST ON LAND-DISTURBING ACTIVITIES.

PURPOSE: PREVENT THE MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES AND PREVENT THE MOVEMENT OF AIRBORNE SUBSTANCES THAT MAY BE HARMFUL TO HEALTH.

TEMPORARY METHODS	PERMANENT METHODS
- MULCHES - TEMPORARY VEGETATIVE COVER - SPRAY ON ADHESIVES - TILLAGE - IRRIGATION - BARRIERS - CALCIUM CHLORIDE	- PERMANENT VEGETATION - TOPSOILING - STONE COVER

INSTALLATION:
APPLY ACCORDING TO APPROVED PLAN, IF SHOWN. MULCH DISTURBED AREAS AND TACKIFY WITH REDSINS SUCH AS ASPHALT, CURASOL OR TERRATACK ACCORDING TO MANUFACTURES RECOMMENDATIONS. STABILIZE DISTURBED AREAS WITH TEMPORARY OR PERMANENT VEGETATION. COVER SURFACES WITH CRUSHED STONE OR GRAVEL. APPLY CALCIUM CHLORIDE AT A RATE TO KEEP SURFACES MOIST. APPLY SPRAY-ON ADHESIVES TO MINERAL SOILS (NOT MUCK SOILS AS DESCRIBED IN TABLE I.

TABLE I. SPRAY-ON ADHESIVE APPLICATION REQUIREMENTS

ADHESIVE	WATER DILUTION	NOZZLE TYPE	APPLICATION (GAL / ACRE)
ANIONIC ASPHALT EMULSION	7:1 *	COARSE SPRAY	1,200
LATEX EMULSION	12.5:1 *	FINE SPRAY	235
RESIN-IN-WATER EMULSION	4:1 *	FINE SPRAY	300

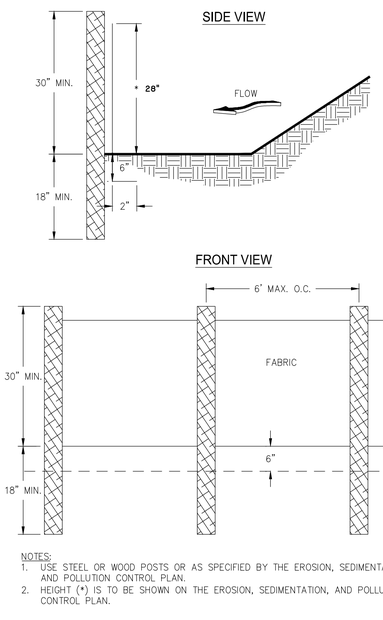
MAINTENANCE:
PROHIBIT TRAFFIC ON SURFACE AFTER SPRAYING.
SUPPLEMENT SURFACE COVERING AS NEEDED.

Du

DUST CONTROL

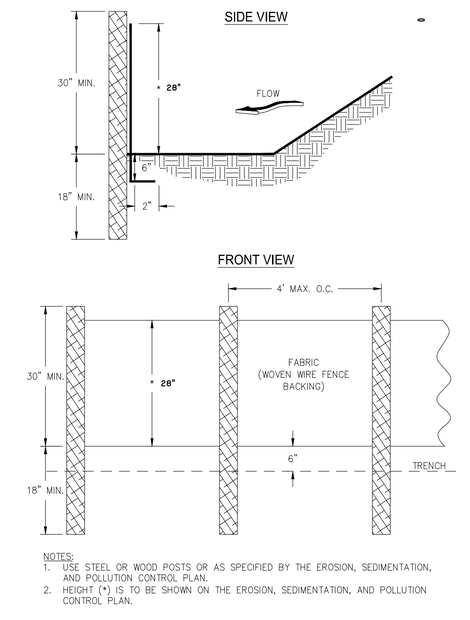
NOT TO SCALE

SILT FENCE - TYPE NON-SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

SILT FENCE - TYPE SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

GEORGIA REGISTERED No. 033972 PROFESSIONAL ENGINEER JASON ORME CHAMBLESS

JASON O. CHAMBLESS
GA PE LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000055539
EXPIRES: 9/12/23

NO.	REVISIONS	BY	DATE
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

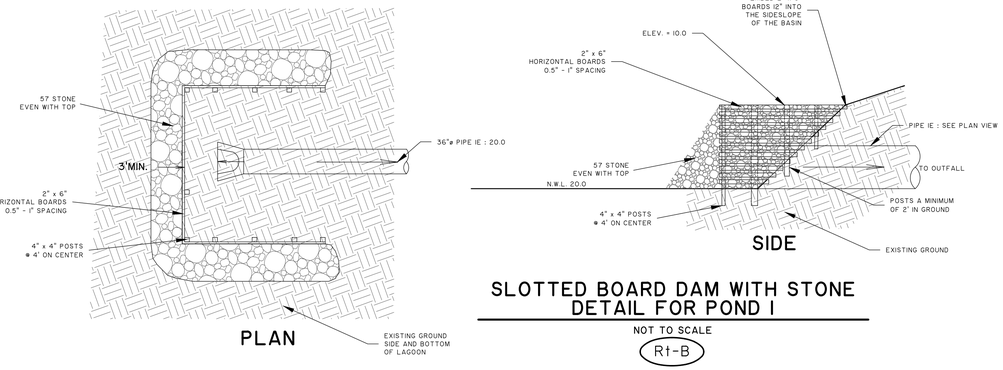
NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

EROSION CONTROL DETAILS

JOB NO:	J-26327.000
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	NOT TO SCALE

EC2.1



SLOTTED BOARD DAM WITH STONE DETAIL FOR POND I

NOT TO SCALE

R1-B

STORAGE CALCULATIONS PROPOSED POND

1. REQUIRED STORMWATER STORAGE = 2,379 CY (SEDIMENT STORAGE BELOW N.W.L.)
2. REQUIRED SEDIMENT STORAGE = 2,379 CY
   (67 CY/AC X 35.5 AC. DISTURBED AREA)
3. TOTAL REQUIRED STORAGE = 0 + 2,379 = 2,379 CY
4. AVAILABLE STORAGE = 51,340 CY
5. IS THE AVAILABLE STORAGE (4) GREATER THAN THE TOTAL REQUIRED STORAGE (3)
   X YES _____ NO
6. IF "NO", THE SEDIMENT STORAGE CAPACITY OF THE POND MUST BE INCREASED. CHOOSE THE METHOD TO BE USED:
   N/A RAISE THE INVERT OF THE OUTLET STRUCTURE ____ INCHES
   N/A UNDERCUT THE POND ____ FEET
   _____ OTHER
7. CLEAN-OUT ELEVATION = VARIES FEET (SEE IE)
   (ELEVATION CORRESPONDING TO 45 CY/AC * 35.5 AC OF DISTURBED AREA)
8. IS THE LENGTH-WIDTH RATIO 2:1 OR GREATER?
   X YES ____ NO
9. IF "NO", THE LENGTH OF FLOW MUST BE INCREASED. CHOOSE THE METHOD TO BE USED:
   N/A BAFFLES (TYPE OF BAFFLE: _____)
   N/A OTHER _____

NOTE THE CMP DIAMETER AND HEIGHT IF A HALF-ROUND CMP RETROFIT IS TO BE USED.
DIAMETER = N/A INCHES HEIGHT = N/A FEET

SILT FENCE MAINTENANCE

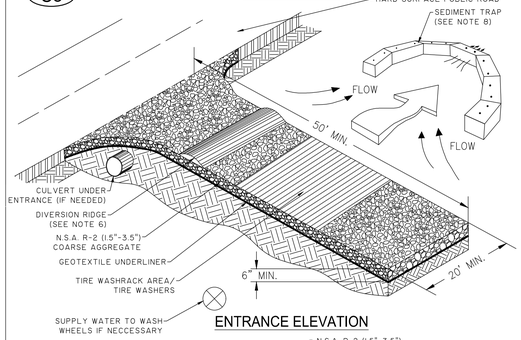
MAINTENANCE

- Remove the sediment once it has accumulated to one-half the original height of the barrier.
- Replace barrier whenever it has deteriorated to such an extent that the effectiveness of the product is reduced (~ 6 months) or the height of the product is not maintaining 80% of its properly installed height.
- Remove and dispose of all accumulated sediment at the barrier before it is removed.
- Leave in place until all disturbed areas are permanently stabilized.

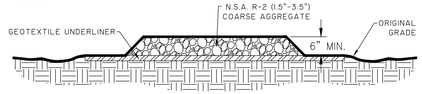
CRUSHED STONE CONSTRUCTION EXIT

Co

EXIT DIAGRAM

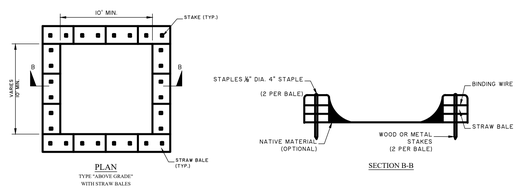


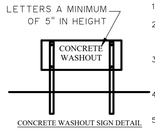
ENTRANCE ELEVATION



NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

STRAW BALE BARRIER CONCRETE WASHOUT





CONCRETE WASHOUT SIGN DETAIL

NOTES:
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. INSTALL CONCRETE WASHOUT SIGN (24"X24", MINIMUM) WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. TEMPORARY WASHOUT AREA MUST BE AT LEAST 50' FROM A STORM DRAIN, CREEK BANK OR PERIMETER CONTROL.
4. CLEAN OUT CONCRETE WASHOUT AREA WHEN 50% FULL.
5. THE KEY TO FUNCTIONAL CONCRETE WASHOUTS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR CLEAN OUT.
6. SILT FENCE SHALL BE INSTALLED AROUND PERIMETER OF CONCRETE WASHOUT AREA EXCEPT FOR THE SIDE UTILIZED FOR ACCESSING THE WASHOUT.
7. A ROCK CONSTRUCTION ENTRANCE MAY BE NECESSARY ALONG ONE SIDE OF THE WASHOUT TO PROVIDE VEHICLE ACCESS.

DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)

Ds1

DEFINITION

Applying plant residues or other suitable materials, produced on the site if possible, to the soil surface.

CONDITIONS

Mulch or temporary grassing shall be applied to all exposed areas within 14 days of disturbance. Mulch can be used as a singular erosion control device for up to six months, but it shall be applied at the appropriate depth, depending on the material used, anchored, and have a continuous 90% cover or greater of the soil surface. Maintenance shall be required to maintain appropriate depth and 90% cover. Temporary vegetation may be employed instead of mulch if the area will remain undisturbed for less than six months. If an area will remain undisturbed for greater than six months, permanent vegetative techniques shall be employed.

SPECIFICATIONS

MULCHING WITHOUT SEEDING

This standard applies to grades or cleared areas where seedings may not have a suitable growing season to produce an erosion retardant cover, but can be stabilized with a mulch cover.

Site Preparation

1. Grade to permit the use of equipment for applying and anchoring mulch.
2. Install needed erosion control measures as required such as dikes, diversions, berms, terraces and sediment barriers.
3. Loosen compact soil to a minimum depth of 3 inches.

Mulching Materials

Select one of the following materials and apply at the depth indicated:

1. Dry straw or hay shall be applied at a depth of 2 to 4 inches providing complete soil coverage. One advantage of this material is easy application.
2. Wood waste (chips, sawdust or bark) shall be applied at a depth of 2 to 3 inches. Organic material from the clearing stage of development should remain on site, be chipped, and applied as mulch. This method of mulching can greatly reduce erosion control costs.
3. Cutback asphalt (slow curing) shall be applied at 1200 gallons per acre (or 1/4 gallon per sq.yd.).
4. Polyethylene film shall be secured over banks or stockpiled soil material for temporary protection. This material can be salvaged and reused.

Applying Mulch

When mulch is used without seeding, mulch shall be applied to provide full coverage of the exposed area.
1. Dry straw or hay mulch and wood chips shall be applied uniformly by hand or by mechanicalequipment.
2. If the area will eventually be covered with perennial vegetation, 20-30 pounds of nitrogen per acre in addition to the normal amount shall be applied to offset the uptake of nitrogen caused by the decomposition of the organic mulches.
3. Cutback asphalt shall be applied uniformly. Care should be taken in areas of pedestrian traffic due to problems of 'tracking in" or damage to shoes, clothing, etc.
4. Apply polyethylene film on exposed areas.

Anchoring Mulch

1. Straw or hay mulch can be pressed into the soil with a disk harrow with the disk set straight or with a special "packer disk." Disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disk should be dull enough not to cut the mulch but to press it into the soil leaving much of it in an erect position. Straw or hay mulch shall be anchored immediately after application. Straw or hay mulch spread with special blower-type equipment may be anchored with emulsified asphalt (Grade AE-5 or SS-1). The asphalt emulsion shall be sprayed onto the mulch as it is ejected from the machine. Use 100 gallons of emulsified asphalt and 100 gallons of water per ton of mulch. Tackifers and binders can be substituted for emulsified asphalt. Please refer to specification Tb -Tackifers and Binders. Plastic mesh or netting with mesh no larger than one inch by one inch shall be installed according to manufacturer's specifications.
2. Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips.
3. Polyethylene film shall be anchor trenched at the top as well as incrementally as necessary.

GEORGIA REGISTERED No. 033172 PROFESSIONAL Engineer JASON CHAMBLESS

JASON O. CHAMBLESS
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #
0000055539
EXPIRES: 9/12/23

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

EROSION CONTROL DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	SSF
DESIGNED:	SSF
REVIEWED:	FIT
APPROVED:	FIT
SCALE:	NOT TO SCALE

EC2.2

C:\H\2019\219437\2019437000\ARCHIVE\PRELIMINARY\CONSTRUCTION PLANS\SITE DEVELOPMENT\219437000 SITE DEVELOPMENT EROSION CONTROL DETAILS.DWG - May 5, 2022 - 8:09 AM

DEFINITION

The establishment of temporary vegetative cover with fast growing seedings for seasonal protection on disturbed or denuded areas.

CONDITIONS

Temporary grassing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established.
eeded.

SEEDING RATES FOR TEMPORARY SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
Rye	3.9 pounds	3 bu.	9/1-3/1
Ryegrass	0.9 pound	40 lbs.	8/15-4/1
Annual Lespedeza	0.9 pound	40 lbs.	1/15-3/15
Weeping Lovegrass	0.4 pound	4 lbs.	2/15-6/15
Sudangrass	1.4 pounds	60 lbs.	**3/1-8/1**
Browntop Millet	0.9 pound	40 lbs.	**4/1-7/15**
Wheat	4.1 pounds	3 bu.	9/15-2/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperture variations and conditions.

Ds2 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

SPECIFICATIONS

Grading and Shaping

Excessive water run-off shall be reduced by properly designed and installed erosion control practices such as closed drains, ditches, dikes, diversions, sediment barriers and others.

No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used.

Seedbed Preparation

When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or handseeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall.

When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.

Lime and Fertilizer

Agricultural lime is required unless soil tests indicate otherwise. Apply agricultural lime at a rate of one ton per acre. Graded areas require lime application. Soils can be tested to determine if fertilizer is needed. On reasonably fertile soils or soil material, fertilizer is not required. For soils with very low fertility, 500 to 700 pounds of 10-10-10 fertilizer or the equivalent per acre (12-16 lbs./1,000 sq. ft.) shall be applied. Fertilizer should be applied before land preparation and incorporated with a disk, ripper or chisel.

Seeding

Select a grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, cultipacker seeder, or hydraulic seeder (slurry including seed and fertilizer). Drill or cultipacker seeders should normally place seed one-quarter to one-half inch deep. Appropriate depth of planting is ten times the seed diameter. Soil should be "raked" lightly to cover seed with soil if seeded by hand.

Mulching

Temporary vegetation can, in most cases, be established without the use of mulch. Mulch without seeding should be considered for short term protection. Refer to Ds1 - Disturbed Area Stabilization (With Mulching Only).

Irrigation

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will insure germination of the seed. Subsequent applications should be made when needed.

DEFINITION

The planting of perennial vegetation such as trees, shrubs, vines, grasses, or legumes on exposed areas for final permanent stabilization. Permanent perennial vegetation shall be used to achieve final stabilization..

CONDITIONS

Permanent perennial vegetation is used to provide a protective cover for exposed areas including cuts, fills, dams, and other denuded areas.

SPECIFICATIONS

Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment.

When conventional seeding and fertilizing are to be done, grade and shape where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation.

oncentrations of water that will cause excessive soil erosion shall be diverted to a safe outlet. Diversions and other treatment practices shall conform with the appropriate standards and specifications.

Seedbed Preparation

Seedbed preparation may not be required where hydraulic seeding and fertilizing equipment is to be used. When conventional seeding is to be used, seedbed preparation will be done as follows:

Broadcast plantings

1. Tillage at a minimum, shall adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate lime and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow for the anchoring of straw or hay mulch if a disk is to be used.
2. Tillage may be done with any suitable equipment.
3. Tillage should be done on the contour where feasible.
4. On slopes too steep for the safe operation of tillage equipment, the soil surface shall be pitted or trenched across the slope with appropriate hand tools to provide two places 6 to 8 inches apart in which seed may lodge and germinate. Hydraulic seeding may also be used.

Individual Plants

1. Where individual plants are to be set, the soil shall be prepared by excavating holes, opening furrows, or dibble planting.
2. For nursery stock plants, holes shall be large enough to accommodate roots without crowding.
3. Where pine seedlings are to be planted, subsoil under the row 36 inches deep on the contour four to six months prior to planting. Subsoiling should be done when the soil is dry, preferably in August or September.

Planting

Hydraulic Seeding

Mix the seed (innoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made.

Conventional Seeding

Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a cultipacker seeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

Individual Plants

Shrubs, vines and sprigs may be planted with appropriate planters or hand tools. Pine trees shall be planted manually in the subsoil furrow. Each plant shall be set in a manner that will avoid crowding the roots. Nursery stock plants shall be planted at the same depth or slightly deeper than they grew at the nursery. The tips of vines and sprigs must be at or slightly above the ground surface. Where individual holes are dug, fertilizer shall be placed in the bottom of the hole, two inches of soil shall be added and the plant shall be set in the hole.

Mulching

Mulch is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75% soil cover. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.
2. Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Drystraw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.
3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.
4. Sericea lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.
5. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantity may be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.
6. When using temporary erosion control blankets or block sod, mulch is not required.
7. Bituminous treated roving may be applied on planted areas on slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

Applying Mulch

Straw or hay mulch will be spread uniformly within 24 hours after seeding and/or planting. The mulch may be spread by blower-type spreading equipment, other spreading equipment or by hand. Mulch shall be applied to cover 75% of the soil surface.

Wood cellulose or wood fiber mulch shall be applied uniformly with hydraulic seeding equipment.

Anchoring Mulch

Anchor straw or hay mulch immediately after application by one of the following methods:
1. Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or (b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment.

The combination of asphalt emulsion and water shall consist of a homogeneous mixture satisfactory for spraying. The mixture shall consist of 100 gallons of grade SS-1h or CSS-1h emulsified asphalt and 100 gallons of water per ton of mulch.
Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs, sidewalks, and all other structures from asphalt discoloration.
2. Hay and straw mulch shall be pressed into the soil immediately after the mulch is spread. A special "packer disk" or disk harrow with the disks set straight may be used. The disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting it, leaving much of it in an erect position. Mulch shall not be plowed into the soil.
3. Synthetic tackifiers or binders approved by GDOT shall be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers shall be mixed and applied according to manufacturer's specifications. Refer to Tb - Tackifiers and Binders.
4. Rye or wheat can be included with Fall and Winter plantings to stabilize the mulch. They shall be applied at a rate of one-quarter to one half bushel per acre.
5. Plastic mesh or netting with mesh no larger than one inch by one inch may be needed to anchor straw or hay mulch on unstable soils and concentrated flow areas. These materials shall be installed and anchored according to manufacturer's specifications.

Irrigation

Irrigation shall be applied at a rate that will not cause runoff.

SEEDING RATES FOR PERMANENT SEEDING

SPECIES	RATE Per 1,000 sq.ft.	RATE Per Acre *	PLANTING DATES **
BAHIA	1.4 POUNDS	60 LBS.	1/1-12/31
BERMUDA	0.2 POUND	10 LBS.	2/15-7/1
CENTIPEDE	BLOCK SOD ONLY	BLOCK SOD ONLY	4/1-7/1
LESPEDEZA	1.7 POUNDS	75 LBS.	1/1-12/31
WEEPING LOVE GRASS	0.4 POUND	4 LBS.	2/1-6/15
SWITCH GRASS	0.9 POUND	40 LBS.	3/15-6/1

* Unusual site conditions may require heavier seeding rates
** Seeding dates may need to be altered to fit temperature variations and conditions.

Ds3 DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION)

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---		---	---
		---	---

THOMAS & HUTTON
Engineering | Surveying | Planning | GIS | Consulting
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
5 Concourse Pkwy, Suite 2600
Atlanta, GA 30328 • 770.325.8444
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA
BUILDING #2
EROSION CONTROL DETAILS

JOB NO:	J-28219.0004
DATE:	04/30/21
DRAWN:	MLM
DESIGNED:	SSF
REVIEWED:	JOC
APPROVED:	JOC
SCALE:	NOT TO SCALE

EC2.3

MATCH LINE - SEE SHEET NO. L1.2

L1.4

L1.5

L1.2

L1.3

L1.1

STORMWATER
DETENTION POND I
3H:IV SIDESLOPES (TYP. ABOVE ELEV. 15
IH:IV SIDESLOPES FROM ELEV. 10 TO 19))
BOTTOM 10.0'
NWL 20.00'
TOP 24.0'
25-YR 22.81'
50-YR 23.48'
100-YR 23.92'

BUILDING B
332,450 SF
FF ELEV. 30.0

BUILDING A
106,250 SF
FF ELEV. 32.0

JIMMY DELOACH PKWY

CROSSGATE RD.

GRAPHIC SCALE
100 0 100 200 400
(IN FEET)
1 inch = 100 ft.

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

OVERALL LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 100'

L1.0

MATCH LINE - SEE SHEET NO. L1.2

BUILDING A

106,250 SF

FF ELEV. 32.0

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
6	LIM	Lagerstroemia indica 'Muskogee'	'Muskogee' Crape Myrtle	B & B OR CONT. ; 10 - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
15	MGBB	Magnolia grandiflora 'Bracken's Brown Beauty'	'Bracken's Brown Beauty' Southern Magnolia	B & B OR CONT. ; 6 - 8' HT.	AS SHOWN	Specimen, Full to Ground
58	QP	Quercus phellos	Willow Oak	B & B OR CONT. ; 3" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen
94	TD	Taxodium distichum	Bald Cypress	B & B OR CONT. ; 2.5" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
278	AZE	Azalea x 'Conlee' PP#10567	Encore Azalea Autumn Amethyst™	CONT. ; 18" X 18"	AS SHOWN	Full to Ground
102	CGD	Distylium 'Cinnamon Girl' PP #027631	Cinnamon Girl Distylium	CONT. ; 18" X 18"	AS SHOWN	Full
296	ICBN	Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	5 GAL. ; 24" X 24"	AS SHOWN	Full to ground and well formed
416	ILVN	Ilex vomitoria 'Nana'	Dwarf Youpon Holly	CONT. ; 24" X 24"	AS SHOWN	Full & Vigorous
33	MYRC	Myrica cerifera	Wax Myrtle	CONT. ; 36" X 36"	AS SHOWN	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
794	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	CONT. ; 6" X 10"	18"	Full and well formed
141	LOMD	Lomandra longifolia 'LM300' P.P. #15420	Dwarf Mat Rush	CONT. ; 6" X 10"	3'	Full
98	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	CONT. ; 6" X 10"	3'	Full
443	PENA	Pennisetum alopecuroides 'Hameln'	Fountain Grass	CONT. ; 6" X 10"	3'	Full
1947	SPAR	Spartina bakeri	Cord Grass	CONT. ; 6" X 10"	5'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
157,000 SF	SOD	Cynodon dactylon 'Tif-Tuff'	Tif-Tuff Bermudagrass	----------	12"	Dense roots, measure in square feet

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

EXISTING VEGETATION TO REMAIN, TYP.

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

OVERHEAD POWER LINE, TYP.

JIMMY DELOACH PKWY

CROSSGATE RD.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 30'

L1.1

MATCH LINE - SEE SHEET NO. L1.4

MATCH LINE - SEE SHEET NO. L1.3

BUILDING B

332,450 SF

FF ELEV. 30.0

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
6	LIM	Lagerstroemia indica 'Muskogee'	'Muskogee' Crape Myrtle	B & B OR CONT. ; 10 - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
15	MGBB	Magnolia grandiflora 'Bracken's Brown Beauty'	'Bracken's Brown Beauty' Southern Magnolia	B & B OR CONT. ; 6 - 8' HT.	AS SHOWN	Specimen, Full to Ground
58	QP	Quercus phellos	Willow Oak	B & B OR CONT. ; 3" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen
94	TD	Taxodium distichum	Bald Cypress	B & B OR CONT. ; 2.5" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
278	AZE	Azalea x 'Conlee' PP#10567	Encore Azalea Autumn Amethyst™	CONT. ; 18" X 18"	AS SHOWN	Full to Ground
102	CGD	Distylium 'Cinnamon Girl' PP #027631	Cinnamon Girl Distylium	CONT. ; 18" X 18"	AS SHOWN	Full
296	ICBN	Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	5 GAL. ; 24" X 24"	AS SHOWN	Full to ground and well formed
416	ILVN	Ilex vomitoria 'Nana'	Dwarf Youpon Holly	CONT. ; 24" X 24"	AS SHOWN	Full & Vigorous
33	MYRC	Myrica cerifera	Wax Myrtle	CONT. ; 36" X 36"	AS SHOWN	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
794	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	CONT. ; 6" X 10"	18"	Full and well formed
141	LOMD	Lomandra longifolia 'LM300' P.P. #15420	Dwarf Mat Rush	CONT. ; 6" X 10"	3'	Full
98	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	CONT. ; 6" X 10"	3'	Full
443	PENA	Pennisetum alopecuroides 'Hameln'	Fountain Grass	CONT. ; 6" X 10"	3'	Full
1947	SPAR	Spartina bakeri	Cord Grass	CONT. ; 6" X 10"	5'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
157,000 SF	SOD	Cynodon dactylon 'Tif-Tuff'	Tif-Tuff Bermudagrass	----------	12"	Dense roots, measure in square feet

EXISTING VEGETATION TO REMAIN, TYP.

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

GRAPHIC SCALE

(IN FEET)

1 inch = 30 ft.

MATCH LINE - SEE SHEET NO. L1.1

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 30'

L1.2

J:\26327\DESIGN\LANDSCAPE ARCHITECTURE\DRAWINGS\CONSTRUCTION PLANS\26327DOIO_LA-PL.DWG - May 5, 2022 - 7:11 AM

MATCH LINE – SEE SHEET NO. L1.2

MATCH LINE – SEE SHEET NO. L1.5

QP 1

RAMP 1

ILVN 15

ILVN 14

ILVN 14

ILVN 14

ILVN 13

ILVN 10

ILVN 31

QP 1

ICBN 13

ICBN 10 AZE 10

ICBN 13 AZE 10

ICBN 10 AZE 10

ICBN 10

AZE 10

ICBN 10

AZE 10

ICBN 10

AZE 10

ICBN 10

AZE 8

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

EXISTING VEGETATION TO REMAIN, TYP.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET) 1 inch = 30 ft.

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
6	LIM	Lagerstroemia indica 'Muskogee'	'Muskogee' Crape Myrtle	B & B OR CONT. ; 10 - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
15	MGBB	Magnolia grandiflora 'Bracken's Brown Beauty'	'Bracken's Brown Beauty' Southern Magnolia	B & B OR CONT. ; 6 - 8' HT.	AS SHOWN	Specimen, Full to Ground
58	QP	Quercus phellos	Willow Oak	B & B OR CONT. ; 3" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen
94	TD	Taxodium distichum	Bald Cypress	B & B OR CONT. ; 2.5" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
278	AZE	Azalea x 'Conlee' PP#10567	Encore Azalea Autumn Amethyst™	CONT. ; 18" X 18"	AS SHOWN	Full to Ground
102	CGD	Distylium 'Cinnamon Girl' PP #027631	Cinnamon Girl Distylium	CONT. ; 18" X 18"	AS SHOWN	Full
296	ICBN	Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	5 GAL. ; 24" X 24"	AS SHOWN	Full to ground and well formed
416	ILVN	Ilex vomitoria 'Nana'	Dwarf Youpon Holly	CONT. ; 24" X 24"	AS SHOWN	Full & Vigorous
33	MYRC	Myrica cerifera	Wax Myrtle	CONT. ; 36" X 36"	AS SHOWN	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
794	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	CONT. ; 6" X 10"	18"	Full and well formed
141	LOMD	Lomandra longifolia 'LM300' P.P. #15420	Dwarf Mat Rush	CONT. ; 6" X 10"	3'	Full
98	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	CONT. ; 6" X 10"	3'	Full
443	PENA	Pennisetum alopecuroides 'Hameln'	Fountain Grass	CONT. ; 6" X 10"	3'	Full
1947	SPAR	Spartina bakeri	Cord Grass	CONT. ; 6" X 10"	5'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
157,000 SF	SOD	Cynodon dactylon 'Tif-Turf'	Tif-Tuff Bermudagrass	----------	12"	Dense roots, measure in sqoure feet

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 30'

L1.3

Z:\26327.0010\LANDSCAPE ARCHITECTURE\DRAWINGS\CONSTRUCTION PLANS\26327.0010_LP-DWG - May 5, 2022 - 11:38 AM

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
6	LIM	Lagerstroemia indica 'Muskogee'	'Muskogee' Crape Myrtle	B & B OR CONT. ; 10 - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
15	MGBB	Magnolia gradiflora 'Bracken's Brown Beauty'	'Bracken's Brown Beauty' Southern Magnolia	B & B OR CONT. ; 6 - 8' HT.	AS SHOWN	Specimen, Full to Ground
58	QP	Quercus phellos	Willow Oak	B & B OR CONT. ; 3" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen
94	TD	Taxodium distichum	Bald Cypress	B & B OR CONT. ; 2.5" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
278	AZE	Azalea x 'Conlee' PP#10567	Encore Azalea Autumn Amethyst™	CONT. ; 18" X 18"	AS SHOWN	Full to Ground
102	CGD	Distylium 'Cinnamon Girl' PP #027631	Cinnamon Girl Distylium	CONT. ; 18" X 18"	AS SHOWN	Full
296	ICBN	Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	5 GAL. ; 24" X 24"	AS SHOWN	Full to ground and well formed
416	ILVN	Ilex vomitoria 'Nana'	Dwarf Youpon Holly	CONT. ; 24" X 24"	AS SHOWN	Full & Vigorous
33	MYRC	Myrica cerifera	Wax Myrtle	CONT. ; 36" X 36"	AS SHOWN	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
794	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	CONT. ; 6" X 10"	18"	Full and well formed
141	LOMD	Lomandra longifolia 'LM300' P.P. #15420	Dwarf Mat Rush	CONT. ; 6" X 10"	3'	Full
98	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	CONT. ; 6" X 10"	3'	Full
443	PENA	Pennisetum alopecuroides 'Hameln'	Fountain Grass	CONT. ; 6" X 10"	3'	Full
1947	SPAR	Spartina bakeri	Cord Grass	CONT. ; 6" X 10"	5'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
157,000 SF	SOD	Cynodon dactylon 'Tif-Tuft'	Tif-Tuft Bermudagrass	----------	12"	Dense roots, measure in square feet

PROPERTY LINE, TYP.

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

STORMWATER
DETENTION POND 1
3H:1V SIDESLOPES (TYP. ABOVE ELEV. 19
1H:1V SIDESLOPES FROM ELEV. 10 TO 19))
BOTTOM: 10.0'
NWL: 20.00'
TOP: 24.0'
25-YR: 22.81'
50-YR: 23.48'
100-YR: 23.92'

MATCH LINE - SEE SHEET NO. L1.5

MATCH LINE - SEE SHEET NO. L1.2

GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 30'

L1.4

J:\26327\26327-0010\LANDSCAPE ARCHITECTURE\DRAWINGS\CONSTRUCTION PLANS\26327-0010_LA-PLAN.DWG - May 5, 2022 - 8:11 AM

PROPERTY LINE, TYP.

STORMWATER
DETENTION POND 1
3H:1V SIDESLOPES (TYP. ABOVE ELEV. 19
1H:1V SIDESLOPES FROM ELEV. 10 TO 19))
BOTTOM: 10.0'
NWL: 20.00'
TOP: 24.0'
25-YR: 22.81'
50-YR: 23.48'
100-YR: 23.92'

NOTE: ALL DISTURBED AREAS NOT SHOWN AS SOD, MULCH, IN PLANTING BEDS OR OTHERWISE IMPROVED SHALL BE SEEDED WITH PERMANENT SEEDING PER EROSION CONTROL PLANS AND GRASSING SPECIFICATIONS

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
6	LIM	Lagerstroemia indica 'Muskogee'	'Muskogee' Crape Myrtle	B & B OR CONT. ; 10 - 12' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min
15	MGBB	Magnolia grandiflora 'Bracken's Brown Beauty'	'Bracken's Brown Beauty' Southern Magnolia	B & B OR CONT. ; 6 - 8' HT.	AS SHOWN	Specimen, Full to Ground
58	QP	Quercus phellos	Willow Oak	B & B OR CONT. ; 3" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen
94	TD	Taxodium distichum	Bald Cypress	B & B OR CONT. ; 2.5" CAL. ; 10' - 12' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
278	AZE	Azalea x 'Conlee' PP#10567	Encore Azalea Autumn Amethyst™	CONT. ; 18" X 18"	AS SHOWN	Full to Ground
102	CGD	Distylium 'Cinnamon Girl' PP #027631	Cinnamon Girl Distylium	CONT. ; 18" X 18"	AS SHOWN	Full
296	ICBN	Ilex cornuta 'Burfordii Nana'	Dwarf Burford Holly	5 GAL. ; 24" X 24"	AS SHOWN	Full to ground and well formed
416	ILVN	Ilex vomitoria 'Nana'	Dwarf Youpon Holly	CONT. ; 24" X 24"	AS SHOWN	Full & Vigorous
33	MYRC	Myrica cerifera	Wax Myrtle	CONT. ; 36" X 36"	AS SHOWN	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
794	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	CONT. ; 6" X 10"	18"	Full and well formed
141	LOMD	Lomandra longifolia 'LM300' P.P. #15420	Dwarf Mat Rush	CONT. ; 6" X 10"	3'	Full
98	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	CONT. ; 6" X 10"	3'	Full
443	PENA	Pennisetum alopecuroides 'Hameln'	Fountain Grass	CONT. ; 6" X 10"	3'	Full
1947	SPAR	Spartina bakeri	Cord Grass	CONT. ; 6" X 10"	5'	Full

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
157,000 SF	SOD	Cynodon dactylon 'Tif-Tuff'	Tif-Tuff Bermudagrass	----------	12"	Dense roots, measure in square feet

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

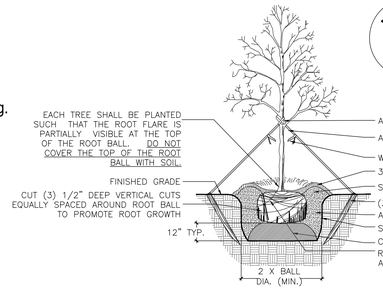
SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE PLAN

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	1" = 30'

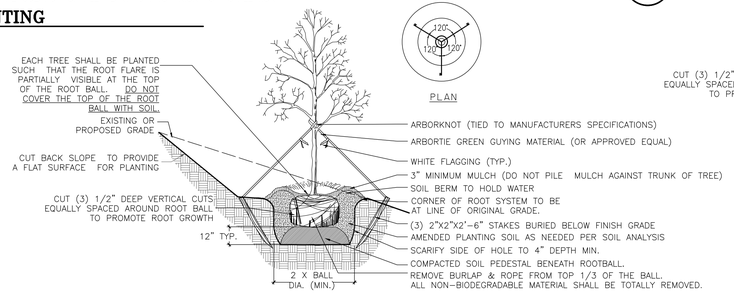
L1.5

Know what's below.
Call before you dig.



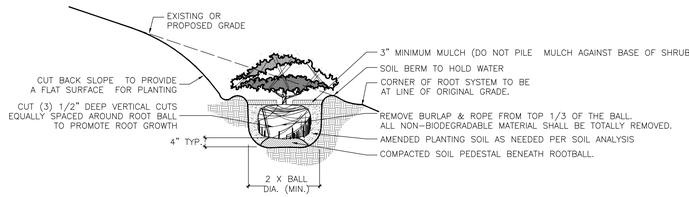
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) ONLY GUY TREES WHEN SITE CONDITIONS REQUIRE IT.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
4) REMOVE ALL BRANCHES THAT ARE DAMAGED, RUBBING, OR CROSSING OTHER BRANCHES.
5) NEVER CUT A CENTRAL LEADER.
6) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
7) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

TREE PLANTING
NOT TO SCALE



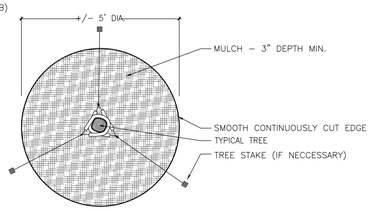
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) ONLY GUY TREES WHEN SITE CONDITIONS REQUIRE IT.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
4) REMOVE ALL BRANCHES THAT ARE DAMAGED, RUBBING, OR CROSSING OTHER BRANCHES.
5) NEVER CUT A CENTRAL LEADER.
6) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
7) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

TREE PLANTING ON A SLOPE
NOT TO SCALE



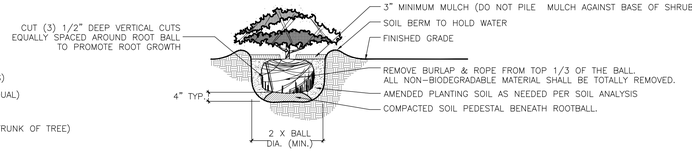
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) WHEN GROUNDCOVER AND SHRUBS ARE USED IN MASSES, DO NOT FORM SOIL BERMS ON INDIVIDUAL PLANTS AND ENTIRE PLANTING BED SHALL BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE. COORDINATE WITH OWNER'S REP. PRIOR TO SETTING ROOTBALL ELEVATIONS.
4) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

SHRUB PLANTING ON A SLOPE
NOT TO SCALE



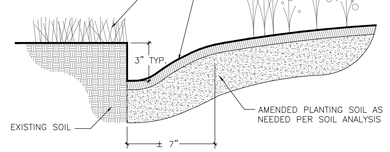
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) APPLY MULCH IN A +/- 5' DIAMETER WHERE PROPOSED TREE PLANTINGS OCCUR IN SOD OR SEEDED AREA.

TREE RING
NOT TO SCALE



NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) WHEN GROUNDCOVER AND SHRUBS ARE USED IN MASSES, DO NOT FORM SOIL BERMS ON INDIVIDUAL PLANTS AND ENTIRE PLANTING BED SHALL BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE. COORDINATE WITH OWNER'S REP. PRIOR TO SETTING ROOTBALL ELEVATIONS.
4) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

SHRUB PLANTING
NOT TO SCALE



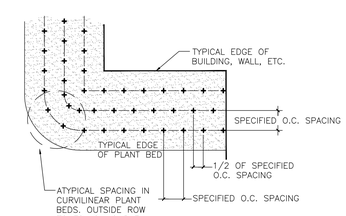
NOTES:
1) TRENCH EDGE TO BE LOCATED BETWEEN PLANTING BEDS AND ALL LAWN AREAS.

SOD TO PLANT BED EDGE
NOT TO SCALE

GENERAL PLANTING / IRRIGATION NOTES:

1. REQUIREMENTS FOR THE MEASUREMENTS, BRANCHING, GRADING, QUALITY, BALLING AND BURLAPPING OF PLANTS IN THE PLANT LIST SHOULD FOLLOW OR EXCEED THE STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN THE AMERICAN STANDARD FOR NURSERY STOCKS (ASNS). UNLESS OTHERWISE SPECIFIED, ANY SIZE SPECIFIED SHALL BE CONSIDERED MINIMUM. MINIMUMS FOR HEIGHT, SPREAD, CALIPER, ETC. SHALL TAKE PRECEDENT OVER A SPECIFIED CONTAINER SIZE. (I.E. - IF 7 GALLON IS REQUIRED, TO PROVIDE A SPECIFIED HEIGHT OR SPREAD THAT IS SPECIFIED AS A 3 GALLON, THEN THE 7 GALLON SHALL BE SHALL BE REQUIRED AND INCLUDED IN THE BASE BID AND SHALL NOT BE CONSIDERED A CHANGE ORDER.)
2. ALL PLANTS SHALL HAVE A WELL FORMED HEAD WITH MINIMUM CALIPER, HEIGHT AND SPREAD OF THE SIDE BRANCHES AS SHOWN ON THE PLANT LIST. TRUNKS SHALL BE UNDAMAGED AND SHAPE SHALL BE TYPICAL OF THE SPECIES.
3. MEASUREMENT OF CONIFER HEIGHT SHALL INCLUDE NOT MORE THAN FIFTY (50) PER CENT OF THIS YEARS' VERTICAL GROWTH (TOP CANDLE).
4. THE LANDSCAPE CONTRACTOR IS HEREBY NOTIFIED OF THE EXISTENCE OF UNDERGROUND UTILITIES WITHIN THE LIMITS OF THE PROJECT AREA. THE CONTRACTOR SHOULD VERIFY THE EXACT LOCATION OF ALL UTILITY LINES PRIOR TO COMMENCEMENT OF DIGGING OPERATIONS. CONTRACTOR RESPONSIBLE FOR LOCATING, PROTECTING, AND REPAIRING ALL DAMAGE TO BUILDINGS, UTILITIES, PAVEMENT, AND CURB & GUTTER. ANY REPAIRS SHALL BE DONE PROMPTLY AT CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR STAKING AND LAYOUT OF PLANTINGS ON THIS PROJECT. THE LANDSCAPE ARCHITECT OR OWNER SHALL BE ADVISED WHEN STAKES ARE READY FOR INSPECTION ON VARIOUS PLANTING AREAS. ALL LAYOUT WORK SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO OPENING ANY PLANTING PITS.
6. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO VERIFY THAT EACH EXCAVATED TREE OR SHRUB PIT WILL PERCOLATE (DRAIN) PRIOR TO ADDING TOPSOIL AND INSTALLING TREES OR SHRUBS. THE CONTRACTOR SHALL FILL THE BOTTOM OF HOLES WITH SIX (6) INCHES OF WATER. THIS WATER SHOULD PERCOLATE WITHIN A TWENTY-FOUR (24) HOUR PERIOD. IF WATER DOESN'T PERC, CONTRACTOR SHALL NOTIFY THE OWNER'S REP PRIOR TO INSTALLING PLANTS.
7. SHOULD THE LANDSCAPE CONTRACTOR ENCOUNTER UNSATISFACTORY SURFACE OR SUBSURFACE DRAINAGE CONDITIONS, SOIL DEPTH, LATENT SOILS, HARD PANS, STEAM OR OTHER UTILITY LINES OR OTHER CONDITIONS THAT WILL JEOPARDIZE THE HEALTH AND VIGOR OF THE PLANTS, HE MUST ADVISE THE LANDSCAPE ARCHITECT IN WRITING OF THE CONDITIONS PRIOR TO INSTALLING THE PLANTS. OTHERWISE, THE LANDSCAPE CONTRACTOR WARRANTS THAT THE PLANTING AREAS ARE SUITABLE FOR PROPER GROWTH AND DEVELOPMENT OF THE PLANTS TO BE INSTALLED.
8. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP THE SITE AT THE COMPLETION OF THE PROJECT AND SHALL MAINTAIN THE SITE IN A REASONABLY NEAT AND CLEAN STATE THROUGHOUT THE INSTALLATION PROCESS. STREETS AND PAVED AREAS SHALL BE CLEANED REGULARLY TO REMOVE CONSTRUCTION MATERIALS AND OTHER DEBRIS RESULTING FROM WORK OF THE PROJECT.
9. REPLACEMENTS OF DEAD OR UNSATISFACTORY MATERIAL SHALL BE MADE AS SPECIFIED IN THE PLANT LIST. THE OWNER OR LANDSCAPE ARCHITECT SHALL INSPECT REPLACED PLANTS WHEN ALL REPLACEMENTS HAVE BEEN MADE. REPLACEMENTS ARE TO BE ALIVE AND IN A HEALTHY CONDITION WHEN THE REPLACEMENTS ARE COMPLETE. REPLACEMENTS ARE NOT SUBJECT TO AN ADDITIONAL GUARANTEE, BUT THE LANDSCAPE CONTRACTOR SHALL CONSULT WITH THE LANDSCAPE ARCHITECT ON REASON FOR PLANT DECLINE/DEATH AND HOW TO AVOID FUTURE INSTANCES.
10. SHOULD THE CONTRACTOR NOT MAKE REPLACEMENTS IN A SATISFACTORY AND TIMELY FASHION IN ACCORD WITH THE PLANTING NOTES, THE OWNER, AFTER PROPER NOTIFICATION TO THE CONTRACTOR MAY UTILIZE THE FUNDS OF THE RETAINAGE TO HAVE THE REPLACEMENTS MADE IN ACCORDANCE WITH THE SPECIFICATIONS BY ANOTHER CONTRACTOR.
11. NO EXCAVATION OR PLANTING PIT SHALL BE LEFT UNATTENDED OVERNIGHT.
12. PLANT MATERIAL QUANTITIES PROVIDED IN THE PLANT LIST ARE FOR REFERENCE ONLY AND THE CONTRACTOR IS RESPONSIBLE FOR THE ACTUAL PLANT MATERIAL COUNTS. DISCREPANCIES BETWEEN QUANTITIES SHOWN ON THE PLANTING PLAN AND THOSE IN THE PLANT LIST SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. IF CLARIFICATION OF DISCREPANCIES FROM THE LANDSCAPE ARCHITECT IS NOT POSSIBLE, THEN QUANTITIES SHOWN ON THE PLANTING PLAN SHALL TAKE PRECEDENCE.
13. REMOVE BURLAP/STRAPPING AND WIRE BASKET FROM TOP 1/3 OF ROOT BALL ON TREES.
14. REMOVE PAPER, PLASTIC OR METAL AROUND ROOT BALLS OF SHRUBS.
15. DO NOT WRAP TREES.
16. WATER ALL PLANT MATERIAL IMMEDIATELY AFTER PLANTING.
17. TREE GUYING MATERIAL SHALL BE 'ARBOR-TIE' OR EQUIVALENT.
18. ALL PLANT BEDS TO BE MULCHED WITH 3" DEPTH OF PINE STRAW MULCH.
19. ALL AREAS OF PLANTING, INCLUDING AREAS OF GRASS SEEDING AND SOD, SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AND SHALL BE PROVIDED APPROPRIATE SOIL FOR THE PROPOSED PLANTINGS. THE LANDSCAPE CONTRACTOR SHALL ADJUST PH AND / OR SOIL FERTILITY BY UNIFORMLY INCORPORATING REQUIRED SOIL CONDITIONING MATERIALS AT THE RATE AND DEPTH DETERMINED BY THE ANALYSIS OF THE SOIL TEST (AS REQUIRED IN 3.02 AND 3.13 OF THE LANDSCAPING SPECIFICATIONS). EACH SOIL TEST SHALL BE SPECIFIC TO THE PROPOSED PLANT MATERIAL TO BE INSTALLED IN A GIVEN AREA.
20. ALL EXISTING VEGETATION WITHIN AREAS TO BE PLANTED / SODDED / SEEDED SHALL BE REMOVED PRIOR TO PLANTING / SODDING / SEEDING. ALL AREAS INDICATED TO BE GRASS SEED SHALL BE SEEDED PER GRASSING SPECIFICATIONS FOR PERMANENT STABILIZATION.
21. CONTRACTOR TO SUPPLY AUTOMATIC IRRIGATION SYSTEMS, COMPLETE AND INSTALLED. SYSTEM TO INCLUDE ALL VALVES, PIPES, HEADS, FITTINGS, RAIN SENSOR, AND CLOCK AND TO PROVIDE 100% COVERAGE OF ALL NEW SODDED AND IMPROVED EXISTING GRASS AREAS, TREES, SHRUBS AND PLANTING BEDS. COORDINATE IRRIGATION WITH OWNER'S REPRESENTATIVE. (CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PROPOSED IRRIGATION SYSTEM FOR OWNER ACCEPTANCE)
22. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR AUTOMATIC IRRIGATION SYSTEMS. CONTRACTOR SHALL PROVIDE ELECTRIC METER AND SERVICE IN ACCORDANCE WITH STATE AND LOCAL CODES FOR IRRIGATION SYSTEM. LOCATION OF METERS AND CONTROL PANELS FOR IRRIGATION SHALL BE APPROVED BY OWNER'S REP. PRIOR TO INSTALLATION.
23. WHERE IRRIGATION SYSTEM WILL BE INSTALLED WITH ANY WATER SOURCE OTHER THAN DOMESTIC POTABLE WATER, LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR IRRIGATION WATER TESTING. IRRIGATION WATER SHALL BE TESTED FOR LEVELS OF pH, ALKALINITY AND SOLUBLE SALTS. SUBMIT TEST RESULTS TO OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO INSTALLATION OR ORDERING OF IRRIGATION EQUIPMENT, PUMPS OR WELL DIGGING.
24. ALL TREES SHALL BE INSTALLED PER THE REQUIREMENTS OF THE PORT WENTWORTH, GEORGIA APPLICABLE ORDINANCES.
25. ALL PLANT BEDS TO RECEIVE WEED INHIBITOR OF PREEN OR ACCEPTED ALTERNATE.
26. FOR SUMMERTIME PLANTINGS, CONTRACTOR TO USE EITHER CONTAINERIZED OR PRE-DUG B & B PLANT MATERIAL.
27. AS AN ADD ALTERNATE BID, THE CONTRACTOR SHALL PROVIDE "SOIL MOIST TRANSPLANT" (OR ACCEPTED EQUIVALENT) AT THE APPLICATION RATES SHOWN BELOW FOR ALL NEWLY INSTALLED PLANTINGS.

Container Size/Amount	Caliper Size/Amount
1 Gallon/.75 oz.	1"/3.0 oz.
2 Gallon/1.5 oz.	2"/6.0 oz.
3 Gallon/1.5 oz.	3"/9.0 oz.
5 Gallon/2.0 oz.	4"/12.0 oz.
7 Gallon/3.0 oz.	5"/15.0 oz
10 Gallon/3.0 oz.	6"/18.0 oz
15 Gallon/5.0 oz.	7"/21.0 oz
20 Gallon/7.0 oz.	8"/24.0 oz
Plant Height/Amount	**Box Size/Amount**
2'/1.5 oz.	16"/5.0 oz.
3'/2.0 oz.	20"/6.0 oz.
4'/3.0 oz.	24"/9.0 oz.
5'/4.0 oz.	30"/12.0 oz.
6'/5.0 oz.	36"/18.0 oz
7'/6.0 oz.	42"/27.0 oz
	60"/30.0 oz.



NOTES:
1) EXCAVATE ENTIRE BED SPECIFIED FOR GROUNDCOVER PLANTING TO A DEPTH OF 12".

PLANT SPACING DETAIL
NOT TO SCALE

NO.	REVISIONS	BY	DATE
---	---	---	---
---	---	---	---

PERMIT SET - FOR REVIEW PURPOSES ONLY

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA
SITE DEVELOPMENT FOR BUILDINGS A & B
LANDSCAPE DETAILS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	NTS

L2.1

J:\26327\026327-0010\LANDSCAPE ARCHITECTURE\DRAWINGS\CONSTRUCTION PLANS\026327-0010_LA-PL.DWG - May 5, 2022 - 7:18 AM

J:\26327.0010\LANDSCAPE ARCHITECTURE\DRAWINGS\CONSTRUCTION PLANS\26327-0010_LA-PL.DWG - May 5, 2022 - 9:18 AM

LANDSCAPING SPECIFICATION

LANDSCAPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work covered in this section consists of soil preparation, fine grading, lawns, trees, shrubs and ground cover plantings, their protection and maintenance of planted areas until acceptance.

1.2 RELATED WORK

A. See Civil and Landscape plans and specifications.

1.3 QUALITY ASSURANCE

A. Qualifications of Workmen: Contractor shall provide at least one person present at all times during execution of work that is thoroughly familiar with the type of materials being installed and proper equipment and methods for their installation and who shall direct all work performed under this section.

B. Standards: All seed, sod, trees, shrubs, and ground covers shall meet or exceed the specifications of Federal, State, County and / or Municipality laws requiring inspection for disease and insect control.

1. Plants and planting methods shall conform to the latest edition of American Standard for Nursery Stock, American Nursery & Landscape Association, 1000 Vermont Avenue, NW, Suite 300, Washington, DC 20005

2. Plants shall be true and representative of their genus, species, cultivar, or variety. Nursery stock shipped in accordance with the required specifications shall be deemed to be acceptable within the terms of this section if it is typical in size and habit for the species in the region of the country in which it is grown unless the specifications include additional details.

3. **Prior to ordering any plant material, representative photos of each species shall be provided for review and acceptance.**

4. One of each bundle or lot shall be tagged with name and size of the plant in accordance with American Nursery & Landscape Association standards. In all cases, botanical names shall take precedence over common names. Landscape Architect should be consulted in the event questions arise about nomenclature of plants to be used and their availability.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Deliver sod on pallets.

D. Handling of plants shall be by lifting the root mass or container and not by lifting plant by trunk or branches. Handling of plants in an improper fashion shall be cause for rejection of plant materials. Care must be taken during all phases of the location and planting procedures not to damage root system, trunk or branches. All plant materials shall be planted as soon after arrival at the site as possible. Contractor is responsible for keeping plants safe from injury by the construction activity and watered to prevent drying out before planting. Balled and burlapped plants shall be "Healed-in" and protected with burlap or other accepted material if they cannot be planted upon delivery. Plants with broken major branches, badly bruised or damaged bark are not acceptable and will be rejected.

1.5 PLANTING DATES

A. The planting season for trees, shrubs and groundcovers is between October 1st and June 1st of the following year. Do not plant if temperature is below freezing or above 90 degrees. Planting at any other time other than the planting season is the Contractor's option and full responsibility and without additional compensation. Planting may, at the option of the Contractor, be postponed into the following planting season but without additional compensation provided the Owner and local governing jurisdiction have approved.

C. Planting dates for sod, sprigging or seeding shall be per the grassing specification.

1.6 MEASUREMENT AND PAYMENT

A. Measurement - The items listed in the proposal shall be considered as sufficient to complete the work in accordance with the plans and specifications. Any portion of the work not listed in bid form, but required to complete the work, shall be deemed to be a part of the item with which it is associated and shall be included in the cost of the unit shown on the bid form.

B. Payment - Payment for the unit shown on the bid form shall be considered to cover the cost of all labor, material, equipment, and performing all operations necessary to complete the work in place. No payment will be made for any material wasted, used for the convenience of the Contractor, unused or rejected.

1. Trees, Shrubs, and Groundcovers - Will be paid for at the contract unit price for planted/installed and accepted trees, shrubs, and groundcovers.

2. Payment for grassing will be made per the grassing specification.

3. Clearing - Will be paid for at the lump sum price for clearing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Contractor shall, at time of delivery, furnish Owner and / or Landscape Architect with invoices of all materials received; in order the quality and source of materials may be reviewed.

2.2 TOPSOIL

A. TOPSOIL SHALL BE FERTILE, FRIABLE SOIL CONTAINING LESS THAN 5% TOTAL VOLUME OF THE COMBINATION OF SUBSOIL, REFUSE, ROOTS LARGER THAN 1 INCH DIAMETER, HEAVY, STICKY OR STIFF CLAY, STONES LARGER THAN 2 INCHES IN DIAMETER, NOXIOUS SEEDS, STICKS, BRUSH, LITTER, OR ANY SUBSTANCES DELETERIOUS TO PLANT GROWTH. THE PERCENT (%) OF THE ABOVE OBJECTS SHALL BE CONTROLLED BY SOURCE SELECTION NOT BY SCREENING THE SOIL. TOPSOIL SHALL BE SUITABLE FOR THE GERMINATION OF SEEDS AND THE SUPPORT OF VEGETATIVE GROWTH. IMPORTED TOPSOIL SHALL NOT CONTAIN WEED SEEDS IN QUANTITIES THAT CAUSE NOTICEABLE WEED INFESTATIONS IN THE FINAL PLANTING BEDS. IMPORTED TOPSOIL SHALL MEET THE FOLLOWING PHYSICAL AND CHEMICAL CRITERIA:

1. SOIL TEXTURE: USDA LOAM, SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%. AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%.
2. PH VALUE SHALL BE BETWEEN 5.5 AND 7.0.
3. PERCENT ORGANIC MATTER (OM): 2.0-5.0%, BY DRY WEIGHT.
4. SOLUBLE SALT LEVEL: LESS THAN 2 MMHO/CM.
5. SOIL CHEMISTRY SUITABLE FOR GROWING THE PLANTS SPECIFIED.

B. IMPORTED TOPSOIL SHALL BE A HARVESTED SOIL FROM FIELDS OR DEVELOPMENT SITES. THE ORGANIC CONTENT AND PARTICLE SIZE DISTRIBUTION SHALL BE THE RESULT OF NATURAL SOIL FORMATION. MANUFACTURED SOILS WHERE COARSE SAND, COMPOSTED ORGANIC MATERIAL OR CHEMICAL ADDITIVES HAS BEEN ADDED TO THE SOIL TO MEET THE REQUIREMENTS OF THIS SPECIFICATION SECTION SHALL NOT BE ACCEPTABLE. RETAINED SOIL PEDS SHALL BE THE SAME COLOR ON THE INSIDE AS IS VISIBLE ON THE OUTSIDE.

C. IMPORTED TOPSOIL FOR PLANTING SOIL SHALL NOT HAVE BEEN SCREENED AND SHALL RETAIN SOIL PEDS OR CLODS LARGER THAN 2 INCHES IN DIAMETER THROUGHOUT THE STOCKPILE AFTER HARVESTING.

D. STOCKPILED EXISTING TOPSOIL AT THE SITE MEETING THE ABOVE CRITERIA MAY BE ACCEPTABLE.

E. PROVIDE A ONE GALLON SAMPLE FROM EACH IMPORTED TOPSOIL SOURCE(S) WITH REQUIRED SOIL TESTING RESULTS OF ALL EXISTING TOPSOIL TO BE USED. THE SAMPLE SHALL BE A MIXTURE OF THE RANDOM SAMPLES TAKEN AROUND THE SOURCE STOCKPILE OR FIELD.

2.3 SEED

A. See grassing specification.

2.4 SPRIG

A. See grassing specification.

2.5 SOD

A. See grassing specification.

2.6 PLANT MATERIALS

A. Provide all plant materials as indicated on the plans. In the event of any discrepancies between quantities of plants indicated on the plant schedule and those indicated on the plan, plan quantities shall govern.

B. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae, and shall have healthy, well developed root systems. Plants shall be from a nursery within 300 miles north or south of the project location and shall have been grown under climate conditions similar to those in the locality of project. Trees for planting in rows shall be uniform in size and shape.

B. Plants shall possess a normal balance between height and width. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to the main body of plant and not from branch tip to tip. Plants larger in size than specified may be used with no change in contract price.

C. Plants shall be dug with firm natural balls of earth, of diameter not less than recommended by American Standard for Nursery Stock and of sufficient depth to include fibrous and feeding roots. Plants will not be accepted if ball is cracked or broken before or during planting operations.

D. Trees specified for Street Tree Grade shall conform to standards of the A.N.L.A.:

1. Suitable for planting as street trees.

2. Free of branches to approximately 50% of height from ground.

3. Crown of tree shall be in good balance with the trunk.

2.7 FERTILIZER

A. Commercial fertilizer shall be slow release 5-10-10 or 6-12-12 (or as recommended by soil test), uniform in composition, free flowing, and suitable for application with appropriate equipment. Deliver to site unopened in manufacturer's standard containers showing weight, analysis and name of manufacturer. If stored on site, protect from the elements.

2.8 PEAT MOSS

A. Peat moss shall be finely shredded, 90% organic moss peat, brown in color and suitable for horticultural purposes. Peat shall be measured in air dry condition, containing not more than 35% moisture by weight. Ash content shall not exceed 10%.

2.9 MULCH FOR TREES, SHRUBS, AND GROUND COVERS

A. Mulch for non bio-retention areas shall be as shown on plans.

B. Mulch for bio-retention areas shall be shredded hardwood.

2.10 STAKING EQUIPMENT

A. Trees and palms shall be staked as shown in landscape plans.

2.11 WATER

A. Contractor shall provide water to the project via the installation of a new irrigation system for the area shown on the plans. For bidding purposes, the contractor shall assume drilling a new well with associated pumps and controls as needed for irrigation.

PART 3 - EXECUTION

3.1 FINE GRADING

A. All areas within limits of construction shall be fine graded to the desired grades. All areas within limits of construction are to be fine graded, free of roots, debris and/or other objectionable material, before planting or grassing commence. Any additional fill material needed to fill low or uneven areas shall be provided by the Contractor. Positive drainage away from structures shall be provided in all plant beds so standing water does not occur. Planting beds shall be raised above adjacent lawn areas to provide good drainage conditions.

B. Planting and grassed areas, if not loose, shall be loosened to a minimum depth of 3-inches before fertilizer, seed or sod is applied.

3.2 FERTILIZER AND SOIL AMENDMENTS

A. Contractor shall provide Topsoil Analysis Tests that has been performed by a State Agricultural Experiment Station, Soil and Water Conservation District, State University, or other qualified private testing laboratory, as approved by Landscape Architect.

B. Apply fertilizer and soil amendments after fine grading and mix thoroughly into upper 2 inches of soil.

C. Fertilizer and other necessary soil amendments shall be applied at the rate recommended by Topsoil Analysis Test.

3.3 SODDING

A. See grassing specification.

3.4 SPRIGGING

A. See grassing specification.

3.5 SEEDING

A. See grassing specification.

3.6 SEED PROTECTION

A. See grassing specification.

3.7 LAYOUT OF TREES, SHRUBS, AND GROUND COVERS

A. All plants shall be placed in the proper location as shown on construction plans, allowing Landscape Architect to review all plant locations prior to actual planting. Landscape Architect may make minor adjustments which shall not be cause for changes to the contract price.

3.8 OBSTRUCTIONS BELOW GROUND

A. Prior to excavating planting holes, Contractor shall determine the exact location of electrical, phone, or television cables or conduits, water, drainage or sewer lines, and any other subsurface structures and take precautions to protect them. Any damage to underground utilities shall be repaired immediately at the Contractor's expense.

B. In the event rock, underground construction work, or other obstructions are encountered in any plant hole excavation under this contract, alternate locations may be selected. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3) feet below grade and not less than six (6) inches below bottom of ball or roots when plant is properly set at the required grade. The Contractor shall be responsible for the removal of such rock or other underground obstructions encountered.

3.9 PLANTING HOLES

A. For trees, shrubs and ground covers the planting hole shall be as shown on planting details in the plans. Do not leave planting holes open overnight. In the event that plant holes are dug and not planted in a timely manner, install four (4) foot high orange safety fencing around all excavated areas.

3.10 PLANTING TREES AND SHRUBS

A. Shall be same as grown in the nursery and/or container soil level. Adjust bottom soil mix to insure proper planting level with the proposed surrounding grades. Check plants to insure proper vertical alignment.

B. Fill holes to proper height to receive plant, and thoroughly tamp before setting the plant. Set plant in upright position in the center of the hole, and compact the backfill mixture around the ball or roots. Add soil amendments as required to improve fertility of existing soil and plant growing conditions.

1. When balled or burlapped plants are set, compact topsoil around base of ball to fill all voids. All bindings shall be removed and the top half of burlap removed from around root ball. If burlap is made of natural fibers it can be laid back from the root mass or can be cut away. Remove all burlap if it is made of non-degradable material/fabric. All weeds growing on the root mass shall be removed prior to planting.

2. Containerized plants shall have the container removed prior to planting. Care shall be taken to protect root mass from injury and the root mass intact. If root mass shows evidence of being bound or matted, three vertical 1/2" deep cuts shall be made on alternate sides of the root mass and roots pulled away slightly. This is to untangle roots which have begun to "circle" the root mass and to encourage new root growth. All weeds growing in the root mass shall be removed prior to planting.

3. Roots of bare root plants shall be spread out and topsoil carefully worked in among them. Remove with a clean cut, any broken or frayed roots.

3.11 PLANTING GROUND COVERS

A. Planting beds shall be thoroughly worked to a depth of twelve (12) inches incorporating fertilizer and other soil improvements at the recommended rate suggest by the soils test. Rake prepared planting bed until level, smooth and free from all soil, lumps, rocks, sticks and other deleterious materials. Bed area should be neatly outlined. Space the plants evenly as indicated on the drawings. Plant only in soil that is moist and friable, and not wet or soggy. In the case of planting in the open on hot days, shorten the time between planting and watering.

3.12 WATERING

A. Thoroughly water each plant when the hole is 1/3 full, again at 2/3 full and then complete backfilling. Once backfilling is complete, water again, then tamp the soil in place until the surface of the backfill is level with the surrounding area and the plant bears the same relation of finished grade as it bore to existing grade before being dug.

B. Earth saucers shall be constructed around the perimeter of planting holes of all trees and all single planted shrubs. Earth saucers shall be minimum 3" high and compacted to retain water. Earth saucers shall not be installed in areas where the subsoil is very poorly drained or around mass shrub / groundcover plantings.

C. All trees and shrubs to be hand watered on a regular basis as necessary during the warranty period.

3.13 SOIL MIX

A. Shall be per existing soils on site with recommended amendments from soils test.

3.14 STAKING OF TALL PLANTS

A. Shall be done only if site / environment conditions make if required. If required, trees and palms shall be staked as indicated on the plans.

3.15 MULCHING

A. All plants shall be mulched with an evenly thick layer of clean mulch immediately after planting. Mass plant beds shall be completely mulched to the limits of the bed as shown on the plans. Limit of mulching for individual trees and shrubs shall be slightly beyond the saucer berm. The areas mulched shall be tidy and clean in appearance.

3.16 PRUNING

A. Remove dead, broken or bruised branches after planting using clean, sharp tools.

3.17 WEEDING

A. All planted areas shall be kept free from weeds and undesirable grasses until final acceptance by the Owner. See General notes on plans for additional information.

3.18 INSECT AND DISEASE CONTROL

A. All plant materials shall be disease or insect free upon arrival to the site, however, should any plants show signs of insect or disease infestations, Contractor shall identify nature of infestation and submit to Landscape Architect a proposed method of control. Contractor shall treat all infested plants at its expense. Should the infestation be wide spread and uncontrollable, plants affected shall be removed from site, fresh plants brought in and all other plants treated to prevent infestation of remaining plants at Contractor's expense.

3.19 CLEAN UP

A. Contractor is responsible for removing all trash, debris, rubbish and all other materials associated with the construction from site on a daily basis. All tags, flags, and labels will be removed from plants and trees. The site shall be left broom clean and tidy. Clean up of the site is a prerequisite to final acceptance by the Owner.

PART 4 - MAINTENANCE AND WARRANTY

4.1 MAINTENANCE

A. Protect all plantings (grass, plants and trees) until accepted by Owner. All damage, regardless of cause, shall be immediately repaired and plants replaced if necessary. Erect temporary fences, barricades, signs and other protection as needed to prevent trampling. Contractor is not responsible for replacement of damaged or missing plants and plant materials due to vandalism or other acts beyond the control of the Contractor if proper barriers or other safeguards have been maintained.

B. Maintenance shall include but is not limited to watering, weeding, cultivating, removal of dead material, mulch reapplication, resetting plants to proper grades or upright position, lawn mowing, fertilizing, and other necessary operations.

C. The Contractor shall repair immediately any areas damaged as a result of construction operations or erosion.

E. The Contractor shall maintain all proposed plantings until final acceptance is issued by the Owner.

F. At the end of the maintenance period, all plants shall be in a healthy growing condition. During the maintenance period, should the appearance of any plant indicate weakness and probability of dying, immediately replace without additional cost to the Owner. Replacements required because of vandalism or other causes beyond the control of the Contractor are not part of this contract.

4.2 WARRANTY

A. All shrubs, ground cover, and trees shall be guaranteed by the Contractor to be alive and healthy for a one year period after substantial completion is issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any plants will be required to be replaced.

B. Any lawn, plant, or tree which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind.

END OF SECTION

PERMIT SET - FOR REVIEW PURPOSES ONLY

NO.	REVISIONS	BY	DATE
---		---	---

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

NFI INDUSTRIES
PORT WENTWORTH, GEORGIA

SITE DEVELOPMENT FOR BUILDINGS A & B

LANDSCAPE SPECIFICATIONS

JOB NO:	J-26327.0010
DATE:	2/14/22
DRAWN:	MAR
DESIGNED:	MAR
REVIEWED:	RPT
APPROVED:	RPT
SCALE:	NO SCALE

L2.2

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT FOR:

NFI BUILDINGS A & B

PORT WENTWORTH, GEORGIA

PREPARED FOR:
NFI INDUSTRIES

J – 26327.0004

AUGUST 2021

TABLE OF CONTENTS

Section 1 – Summary of Results ..... Page 1
Section 2 – Project Narrative ..... Page 2
Section 3 – Purpose ..... Page 2
Section 4 – Pre–Development Conditions ..... Page 3
Section 5 – Post–Development Conditions ..... Page 3
Section 6 – Stormwater Runoff Reduction Methodology ..... Page 3
Section 7 – Stormwater Quality Treatment Methodology ..... Page 4
Section 8 – Stormwater Quantity Methodology ..... Page 5
Section 9 – Hydrology ..... Page 5
Section 10 – Runoff Calculations ..... Page 6
Section 11 – Aquatic Resource Protection ..... Page 7
Section 12 – Conclusion ..... Page 7

FIGURES/ TABLES

Table 1 – Summary of Results – Peak Runoff ..... Page 1
Table 2 – Summary of Results – Peak Pond Stages ..... Page 1
Table 3 – Rainfall Depths ..... Page 6

APPENDICES

Curve Number & Time of Concentration Calculations ..... Appendix A
Pre–Development ICPR Model Input and Output ..... Appendix B
Post–Development ICPR Model Input and Output ..... Appendix C
CSS Spreadsheet ..... Appendix D
Aquatic Resource Protection Calculations ..... Appendix E

The following can be found at the end of this report:

Pre–Development Drainage Exhibit

Post–Development Drainage Exhibit

Soils Map

Location Map

FEMA Flood Map

CSS Exhibit

SECTION 1 – SUMMARY OF RESULTS

TABLE 1
Summary of Results

Analysis Point	Peak Runoff (cfs)									
	2–yr		*10–yr*		*25–yr*		*50–yr*		*100-yr*	
	Pre	*Post*	*Pre*	*Post*	*Pre*	*Post*	*Pre*	*Post*	*Pre*	*Post*
Outfall 1	17.6	17.6	27.2	26.2	31.3	30.3	35.2	34.1	37.8	36.4

**All flows are reported in cfs.*

TABLE 2
Summary of Results – Peak Pond Stages

Pond	NWL (ft)	TOB (ft)*	Peak Pond Stage (ft)				
			2–yr	*10–yr*	*25–yr*	*50–yr*	*100–yr*
A1	20	24	21.5	22.3	22.9	23.4	23.8
A2	20	24	21.5	22.3	22.9	23.4	23.8
A3	22	28	22.0	22.3	22.9	23.4	23.8
B1	19.5	24	21.5	22.7	23.5	24.2	25.0
B2	21.5	26	22.5	22.7	23.6	24.3	25.0
B3	22	27	22.6	22.9	23.6	24.3	25.0
B4	25	29	25.7	25.9	26.1	26.2	26.3

*TOB – Top of Bank

SECTION 2 – PROJECT NARRATIVE

NFI Buildings A & B includes the clearing, grading, erosion control, and construction of approximately 106,250 (Building A) and 332,450 (Building B) million–square–foot industrial building and associated service utilities and parking. The development is located on approximately 41.52 acres of undeveloped land, south of Bonnybridge Road and east of Jimmy DeLoach Parkway in Port Wentworth, Georgia. The existing elevations on site range from 20 to 29 feet (NAVD 88).

Stormwater from the proposed site will be collected by a stormwater drainage system and a series of interconnected ponds and swales before discharging to two existing 18" RCP crossing pipes underneath the existing Norfolk Southern Railroad along the eastern boundary of the development. This drainage will then be conveyed through existing tributaries of St. Augustine Creek and ultimately outfall into the Savannah River.

SECTION 3 – PURPOSE

- To define the limits of the drainage basin(s) that contains this project.
- To document that major drainage infrastructure such as road crossings, drainage connectors, ponds, and outfalls are adequately sized for all existing and proposed development within the drainage basin.
- To document compliance with regulatory requirements of the City of Port Wentworth and the State of Georgia summarized as follows:

City of Port Wentworth

- Post–Development peak runoff rates shall not exceed the 2–, 5–, 10–, 25–, and 50–year, 24–hour storm pre–developed rates.
- Storm drainage culverts and pipe systems shall be sized to accommodate runoff from the 25–year, 24–hour storm.
- Aquatic Resource Protection shall be provided for each site through management and extended detention of the 1–year, 24–hour storm event released over a period of 24–hours.
- Reduce on–site the stormwater runoff volume generated by the 85th percentile storm event to the maximum extent practicable. This equates to reducing the storm water runoff volume generated by the 1.2–inch rainfall event and first 1.2 inches of all larger events.
- Intercept and treat any of the stormwater runoff generated by the 1.2–inch rainfall event (and the first 1.2 inches of all larger events) that is not reduced by runoff reduction in one or more storm water management practices that: (1) provide for at least an 80 percent reduction in TSS loads; and (2) reduce nitrogen and bacteria loads to the maximum extent practical.
- All stormwater management systems shall be designed to control and/or safely convey the post–development peak discharge generated by the 100–year, 24–hour storm event.

Georgia EPD

- Sediment shall be prevented from leaving the site during construction.

SECTION 4 – PRE–DEVELOPMENT CONDITIONS

The existing site is largely pervious and wooded. Pre–development site soils consist of Hydrologic Soil Group (HSG) B/D. Currently, runoff on–site sheet flows from the west towards the east and outfalls to two existing 18" RCP crossing pipes underneath the existing Norfolk Southern Railroad along the eastern boundary of the development. This drainage will then be conveyed through existing tributaries of St. Augustine Creek and ultimately outfall into the Savannah River.

SECTION 5 – POST–DEVELOPMENT CONDITIONS

The proposed site will be graded and developed, altering the land use from wooded areas to mostly impervious. Stormwater runoff from Buildings A & B will be intercepted by a stormwater drainage network and conveyed to interconnected on–site detention ponds shown in the Post–Development Drainage Exhibit and discharged into the existing stormwater system at the eastern outfall as outlined in the pre-development conditions.

SECTION 6 – STORMWATER RUNOFF REDUCTION METHODOLOGY

The Port Wentworth Ordinance mandates developments to meet the guidelines set for in the Coastal Stormwater Supplement Section 4.4.1. The criteria state the following:

> "Reduce the storm water runoff volume generated by the 85th percentile storm event (and the "first flush" of the storm water runoff volume generated by all larger storm events) on a development site through the use of appropriate green infrastructure practices. In coastal Georgia, this equates to reducing the storm water runoff volume generated by the 1.2–inch rainfall event (and the storm water runoff generated by the first 1.2 inches of all larger rainfall events)."

The following equation is used to determine the Runoff Reduction Volume:

$$RR_v = (P)\ (R_v)\ (A) \div (12)$$

Where:
RR_v = runoff reduction volume (acre–feet)
P = target runoff reduction rainfall (inches)
R_v = volumetric runoff coefficient
A = site area (acres)
12 = unit conversion factor (in./ft.)

$R_v = 0.05 + 0.009(I)$
Where:
I = site imperviousness (%)

The spreadsheet included with the Coastal Stormwater Supplement provides various techniques/devises that may be implemented within a development to meet the Runoff Reduction Volume. The proposed design dry swales, vegetated filter strips and stormwater detention ponds to reduce the runoff reduction volume to the maximum extent practicable. Any remaining volume to be treated shall be conveyed through stormwater wetlands in order to achieve the required 80

percent reduction in TSS loads and reduce nitrogen and bacteria loads to the maximum extent practical. The applicant is requesting a waiver from the City of Port Wentworth for the remaining runoff reduction volume. See Appendix D for the CSS spreadsheet calculations.

SECTION 7 – STORMWATER QUALITY TREATMENT METHODOLOGY

The Port Wentworth Ordinance mandates developments to meet the guidelines set for in the Coastal Stormwater Supplement Section 4.4.2. The criteria state the following:

> "Adequately treat post–construction storm water runoff before it is discharged from a *development site. In coastal Georgia, these criteria can be satisfied simply by satisfying the storm water runoff reduction criteria. However, if any of the storm water runoff generated by the 1.2–inch storm event (and the first 1.2 inches of all larger rainfall events), cannot be reduced on a development site, due to site characteristics or constraints, it should be intercepted and treated in one or more storm water management practices that: (1) provide for at least an 80 percent reduction in TSS loads; and (2) reduce nitrogen and bacteria loads to the maximum extent practical.*"

Stormwater Quality Treatment is calculated in the same manner as Runoff Reduction with the exception that the volume reduction made in Section 5 may be deducted from the "Water Quality Volume" in this section.

Stormwater Quality Treatment is essentially equivalent to the standard set forth in the Georgia Storm Water Management Manual for water quality. Per Section 1.2.2.2 "Minimum Standard #2– Storm Water Runoff Quality" of the Georgia Storm Water Management Manual, it is presumed that a storm water management system complies with the performance standard if:

- It is sized to capture and treat the prescribed water quality treatment volume, which is defined as the runoff volume resulting from the first 1.2 inches of rainfall from impervious areas; and
- Appropriate structural storm water controls are selected, designed, constructed and maintained according to the specific criteria in this Manual.

In order to meet stormwater quality treatment requirements from the first 1.2 inches of rainfall from impervious areas, stormwater wetlands are used. According to the Georgia Storm Water Management Manual Section 3.2.1 stormwater wetlands reduce TSS by 80%, total phosphorus by 50%, nitrogen by 30%, metals by 50%, and pathogens by 70%.

As illustrated in Appendix D, the proposed site meets the requirements set forth in the CSS.

SECTION 8 – STORMWATER QUANTITY METHODOLOGY

The existing and proposed conditions will be analyzed using the Advanced Interconnected Channel and Pond Routing (ICPR) computer program developed by Streamline Technologies. The program is used to model rainfall and stormwater runoff and to perform hydraulic routing through the storm drainage system. The ICPR program is a FEMA approved model that has the ability to analyze complex interconnected drainage systems dynamically over extended time periods.

The hydrologic input data consists of information for each drainage basin, or subwatershed, within the project. Input variables include runoff curve number, rainfall distribution pattern, hydrograph peaking factor, area of each drainage basin, and time of concentration (see below section

"Hydrology" for specifics on the values of these variables that were used in this model). The ICPR program generates runoff hydrographs for each subwatershed based on the user–specified variables. Hydrographs are generated by ICPR using the SCS Unit Hydrograph Method.

The model hydraulic input data consists of a system of nodes and links. Nodes represent locations where flows enter or exit the system, pipe or channel characteristics change, or where stage/storage/time relationships are provided. Links represent traditional types of hydraulic conveyance such as pipes, channels, drop structures, weirs, etc. The sizes, inverts, lengths, and Manning n values for all pipes connecting the lagoons are input into the model. In addition to pipe information, all lagoon and detention area stage–storage information and the respective outfall structure information is input into the model. The node and link conditions are analyzed within the model for a given storm, and flow conditions are determined.

The basic equation used by ICPR to route flows through the system is:

$$\Delta s = (Q_{in} - Q_{out})\ \Delta t$$

Where:
- Δs = Change in storage for time step
- Q_{in} = Flow into a node at time "t"
- Q_{out} = Flow out of a node at time "t"
- Δt = Length of time step; user defined range from 1.0 sec to 0.1 sec.

Hydrographs for each drainage area are merged within the ICPR program, and the hydrologic results are then combined with the hydraulic information to model the hydraulic interactions of the entire drainage system. The results include lagoon and detention area discharge rates and stage/storage information during the design storm.

For the design of the storm drainage system, a warning stage elevation is set for each lagoon and detention area and structure to assure no stormwater ponding. In addition, stages are compared to determine adequate pipe and control structure sizes. Knowing these two factors, the drainage system is designed by trial and error.

SECTION 9 – HYDROLOGY

- SCS Unit Hydrograph Method is used.
- Amount of rainfall for each storm frequency is determined based on NOAA, Atlas 14 The following 24–hour design storms are used in the model simulations:

TABLE 3
Rainfall Depths

Storm Event	Rainfall (inches)
2–year	4.4
10–year	6.5
25–year	8.1
50–year	9.5
100–year	10.9

- SCS Type III Statistical Rainfall Distribution is used. This distribution pattern is determined by the Soil Conservation Service comparing regional rain–gage data.

- A 323 Hydrograph Peaking Factor is used. The 323 Factor is based on statistical analysis of actual rainfall and runoff data from the Southeastern United States and is typical for coastal areas.

SECTION 10 – RUNOFF CALCULATIONS

Peak flow rates for each design storm are calculated by ICPR based on drainage area, hydrologic and hydraulic parameters, and the following runoff parameters:

10.1 Curve Numbers

Curve numbers are generated according to procedures set forth in SCS Technical Release 55 (TR–55). The composite curve numbers for each drainage basin are calculated using soils information from the SCS Soil Survey of Chatham County. Pre–Development Curve Numbers were weighted based on the type and amount of soil within the basin. WinTR–55 was used to calculate the weighted curve number. Curve number calculations from WinTR–55 can be found in Appendix A.

10.2 Time of Concentration

Times of concentration were calculated according to procedures set forth in SCS Hydrology Technical Note No. N4, as referenced in TR–55. The travel times (T_t) for overland flow, shallow concentrated flow, and channel flow are added together for the drainage basin to get the total time of concentration T_c. The total time of concentration path used for each basin is shown on the Pre–Development Drainage Basins Exhibit and the Post–Development Drainage Basins Exhibit.

- Overland Flow

  The equation for overland flow travel time is as follows:

  $$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5} S^{0.4}}$$

  Where: n = Manning's friction factor
  L = slope length (ft)
  S = Slope (ft/ft)
  P_2 = 24–hour precipitation (inches)

  The travel time as calculated in the above equation in hours.

- Shallow Concentrated Flow

  The equation for shallow concentrated flow travel time is as follows:

  $$T_t = \frac{L}{60v} \text{ (min)}$$

  Where: L = length (ft)
  v = velocity (ft/sec)

- Channel and Pipe Flow

  The equation for channel flow travel time is as follows:

  $$T_t = \frac{L}{60v} \text{ (min)}$$

  Where: L = length of channel (ft)
  v = velocity (ft/sec)

The velocity is determined using Manning's equation:

$v = (1.49/n)r^{2/3}S^{1/2}$ Where: r = hydraulic radius (ft) = A/P
A_x = cross–sectional area (sf)
P = wetted perimeter (ft)
S = slope (ft/ft)

Channel flow was assumed to have a velocity of 2 fps.

SECTION 11 – AQUATIC RESOURCE PROTECTION

The Port Wentworth Ordinance mandates developments to meet the guidelines set forth in the Coastal Stormwater Supplement Section 4.4.3. The criteria states the following:

> *"24 hours of extended detention be provided for the stormwater runoff volume generated by the 1–year, 24–hour storm event before it is discharged from a development site. Providing the storage needed to provide 24 hours of extended detention for the stormwater runoff volume generated by the 1–year, 24–hour storm event, which is known as the aquatic resource protection volume (ARPv) (Section 5.3), will not only help control streambank erosion in coastal Georgia's freshwater rivers and streams (by reducing the frequency and duration of channel forming bankfull and near bankfull events), but will also help control the harmful salinity fluctuations that occur in the region's tidal creeks, coastal marshlands and other vital estuarine resources."*

The drawdown showing extended detention over 24 hours for the 1–year 24–hour storm event can be found in the 1–year simulation graph in Appendix F. The graph demonstrates that the ponds release runoff for 72 hours and are therefore in compliance with the CSS and Port Wentworth Ordinance.

SECTION 12 – CONCLUSIONS

In accordance with the City of Port Wentworth Ordinance, post–development peak runoff rates are less than pre–development rates for the 2– though 50–year rainfall events and are safely conveyed for the 100–year storm event. Stormwater runoff reduction, water quality treatment, and aquatic resource protection have been addressed on–site per the City of Port Wentworth's Stormwater Management Ordinance. The proposed development was analyzed using the methods identified in this report and were found to be compliant with the City of Port Wentworth's requirements and Georgia EPD regulations.

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

APPENDIX A

CURVE NUMBER & TIME OF CONCENTRATION CALCULATIONS

26327.0010

WinTR-55 Current Data Description

--- Identification Data ---

User: EMD
Project: NFI Crossgate NE Quadrant
SubTitle: Pre Dev Basins
State: Georgia
County: Chatham
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\Basins\Pre\Pre CN TC.w55

Date: 7/20/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
WS-101A			41.78	87	0.684
WS-101			3.6	90	0.247
WS-100			22.82	87	.684
NORITAKE			10.04	90	.247

Total area: 78.24 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

NFI Crossgate NE Quadrant
Pre Dev Basins
Chatham County, Georgia

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

EMD

NFI Crossgate NE Quadrant
Pre Dev Basins
Chatham County, Georgia

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
WS-101A	41.78	0.684	87		
WS-101	3.60	0.247	90		
WS-100	22.82	0.684	87		
NORITAKE	10.04	0.247	90		

Total Area: 78.24 (ac)

NFI Crossgate NE Quadrant
Pre Dev Basins
Chatham County, Georgia

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
WS-101A							
SHEET	100	0.0100	0.240				0.270
SHALLOW	1300	0.0050	0.050				0.317
CHANNEL	695					2.000	0.097
					Time of Concentration		0.684
WS-101							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		0.247
WS-100							
SHEET	100	0.0100	0.240				0.270
SHALLOW	1300	0.0050	0.050				0.317
CHANNEL	695					2.000	0.097
					Time of Concentration		.684
NORITAKE							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247

NFI Crossgate NE Quadrant
Pre Dev Basins
Chatham County, Georgia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
WS-101A	Paved; curbs and storm sewers		D	5	98
	Woods - grass combination	(poor)	D	36.78	86
	Total Area / Weighted Curve Number			41.78	87
WS-101	Open space; grass cover > 75%	(good)	D	1.6	80
	Paved parking lots, roofs, driveways		D	2	98
	Total Area / Weighted Curve Number			3.6	90
WS-100	Paved; curbs and storm sewers		D	1.49	98
	Woods - grass combination	(poor)	D	21.33	86
	Total Area / Weighted Curve Number			22.82	87
NORITAKE	Open space; grass cover > 75%	(good)	D	3.54	80
	Paved parking lots, roofs, driveways		D	5.5	98
	Woods - grass combination	(poor)	D	1	86
	Total Area / Weighted Curve Number			10.04	90

WinTR-55 Current Data Description

--- Identification Data ---

User: EMD
Project: NFI Crossgate NE Quadrant
SubTitle: Post Dev Basins
State: Georgia
County: Chatham
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\Basins\Post\Post CN TC.w55

Date: 8/11/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
WS-101A			23.02	87	0.684
WS-101			3.6	90	0.247
WS-100			6.27	87	.684
NORITAKE			9.37	91	0.247
WS-200			12.37	96	.247
WS-201			6.46	96	.247
WS-202			3.17	96	.247
WS-203			4.86	90	.247
WS-204			2.1	96	.247
WS-205			0.9	90	0.247

Total area: 72.12 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

EMD

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
WS-101A	23.02	0.684	87		
WS-101	3.60	0.247	90		
WS-100	6.27	0.684	87		
NORITAKE	9.37	0.247	91		
WS-200	12.37	0.247	96		
WS-201	6.46	0.247	96		
WS-202	3.17	0.247	96		
WS-203	4.86	0.247	90		
WS-204	2.10	0.247	96		
WS-205	.90	0.247	90		

Total Area: 72.12 (ac)

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
WS-101A							
SHEET	100	0.0100	0.240				0.270
SHALLOW	1300	0.0050	0.050				0.317
CHANNEL	695					2.000	0.097
					Time of Concentration		0.684
WS-101							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		0.247
WS-100							
SHEET	100	0.0100	0.240				0.270
SHALLOW	1300	0.0050	0.050				0.317
CHANNEL	695					2.000	0.097
					Time of Concentration		.684
NORITAKE							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		0.247
WS-200							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-201							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-202							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-203							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-204							
SHEET	100	0.0100	0.011				0.023
SHALLOW	1000	0.0025	0.050				0.434

Sub-Area Time of Concentration Details (continued)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
					Time of Concentration		.247
WS-205							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		0.247

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use		Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
WS-101A	Paved; curbs and storm sewers		D	2.755	98
	Woods - grass combination	(poor)	D	20.26	86
	Total Area / Weighted Curve Number			23.02	87
WS-101	Open space; grass cover > 75%	(good)	D	1.6	80
	Paved parking lots, roofs, driveways		D	2	98
	Total Area / Weighted Curve Number			3.6	90
WS-100	Paved; curbs and storm sewers		D	.41	98
	Woods - grass combination	(poor)	D	5.86	86
	Total Area / Weighted Curve Number			6.27	87
NORITAKE	Open space; grass cover > 75%	(good)	D	3.67	80
	Paved parking lots, roofs, driveways		D	5.5	98
	Woods - grass combination	(poor)	D	.2	86
	Total Area / Weighted Curve Number			9.37	91
WS-200	Open space; grass cover > 75%	(good)	D	1.37	80
	Paved parking lots, roofs, driveways		D	11	98
	Total Area / Weighted Curve Number			12.37	96
WS-201	Open space; grass cover > 75%	(good)	D	.66	80
	Paved parking lots, roofs, driveways		D	5.8	98
	Total Area / Weighted Curve Number			6.46	96
WS-202	Open space; grass cover > 75%	(good)	D	.37	80
	Paved parking lots, roofs, driveways		D	2.8	98
	Total Area / Weighted Curve Number			3.17	96
WS-203	Open space; grass cover > 75%	(good)	D	2.26	80
	Paved parking lots, roofs, driveways		D	2.6	98
	Total Area / Weighted Curve Number			4.86	90
WS-204	Open space; grass cover > 75%	(good)	D	.2	80
	Paved parking lots, roofs, driveways		D	1.9	98
	Total Area / Weighted Curve Number			2.1	96
WS-205	Open space; grass cover > 75%	(good)	D	.4	80
	Paved parking lots, roofs, driveways		D	.5	98
	Total Area / Weighted Curve Number			.9	90

WinTR-55 Current Data Description

--- Identification Data ---

User: EMD
Project: NFI Crossgate NE Quadrant
SubTitle: Post Dev Basins
State: Georgia
County: Chatham
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\Basins\Post\Post1 CN TC.w5

Date: 8/11/2021
Units: English
Areal Units: Acres

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
WS-206			0.24	98	.247
WS-207			0.58	98	.247
WS-208			1.72	96	.247

Total area: 2.54 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
4.33	5.46	6.5	8.09	9.44	10.9	3.7

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type III
Dimensionless Unit Hydrograph: <standard>

EMD

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
WS-206	.24	0.247	98		
WS-207	.58	0.247	98		
WS-208	1.72	0.247	96		

Total Area: 2.54 (ac)

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)
WS-206							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-207							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247
WS-208							
SHEET	100	0.0100	0.011				0.023
SHALLOW	650	0.0025	0.050				0.224
					Time of Concentration		.247

NFI Crossgate NE Quadrant
Post Dev Basins
Chatham County, Georgia

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
WS-206	Paved parking lots, roofs, driveways	D	.24	98
	Total Area / Weighted Curve Number		.24	98
WS-207	Paved parking lots, roofs, driveways	D	.58	98
	Total Area / Weighted Curve Number		.58	98
WS-208	Open space; grass cover > 75% (good)	D	.22	80
	Paved parking lots, roofs, driveways	D	1.5	98
	Total Area / Weighted Curve Number		1.72	96

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

APPENDIX B

PRE–DEVELOPMENT ICPR INPUT AND OUTPUT

26327.0010

==========
==== Basins ====
==========

Name: Noritake Node: NORITAKE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 15.00
Area(ac): 10.040 Time Shift(hrs): 0.00
Curve Number: 90.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-100 Node: RR-US Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 41.00
Area(ac): 22.820 Time Shift(hrs): 0.00
Curve Number: 87.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-101 Node: SUBSTATION Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 10.00
Area(ac): 3.600 Time Shift(hrs): 0.00
Curve Number: 90.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-101A Node: D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 41.00
Area(ac): 41.780 Time Shift(hrs): 0.00
Curve Number: 87.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

==========
==== Nodes ====
==========

Name: D1 Base Flow(cfs): 0.000 Init Stage(ft): 21.100
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
21.000	16.5000
22.000	25.6000
23.000	32.0000
24.000	41.7800

Name: NORITAKE Base Flow(cfs): 0.000 Init Stage(ft): 23.000
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
23.000	6.0000
24.000	10.0000

Name: Rail Outfall Base Flow(cfs): 0.000 Init Stage(ft): 19.390

Group: BASE Warn Stage(ft): 24.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	19.390
36.00	19.390

Name: RR-US Base Flow(cfs): 0.000 Init Stage(ft): 19.390
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
19.390	0.0050
20.000	0.0080
21.000	5.8300
22.000	12.7000
23.000	20.0000
24.000	22.8200

Name: SUBSTATION Base Flow(cfs): 0.000 Init Stage(ft): 21.300
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)
21.300	0.0027
21.500	0.1211
22.000	0.3018
22.500	0.3596
23.000	0.4124
24.000	0.5190
25.000	3.6000

==========
==== Pipes ==========
==========

Name: Ex. Pipe 1 From Node: RR-US Length(ft): 22.00
Group: BASE To Node: Rail Outfall Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	19.610	19.400	Exit Loss Coef:	0.50
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name: Ex. Pipe 2 From Node: RR-US Length(ft): 22.00
Group: BASE To Node: Rail Outfall Count: 1
Friction Equation: Automatic

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Solution Algorithm:	Automatic
Span(in):	18.00	18.00	Flow:	Both
Rise(in):	18.00	18.00	Entrance Loss Coef:	0.50
Invert(ft):	19.390	19.390	Exit Loss Coef:	0.50
Manning's N:	0.013000	0.013000	Bend Loss Coef:	0.00
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Channels

Name:	OFF-SITE D1	From Node:	D1	Length(ft):	950.00
Group:	BASE	To Node:	RR-US	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Automatic
Invert(ft):	21.100	19.390	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.040000	0.040000	Contraction Coef:	0.100
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.300
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dc
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	50.000	50.000		
LtSdSlp(h/v):	0.33	0.33		
RtSdSlp(h/v):	0.33	0.33		

Name:	OFF-SITE D2	From Node:	NORITAKE	Length(ft):	1600.00
Group:	BASE	To Node:	RR-US	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Trapezoidal	Trapezoidal	Friction Equation:	Automatic
Invert(ft):	23.000	19.390	Solution Algorithm:	Automatic
TClpInitZ(ft):	9999.000	9999.000	Flow:	Both
Manning's N:	0.040000	0.040000	Contraction Coef:	0.100
Top Clip(ft):	0.000	0.000	Expansion Coef:	0.300
Bot Clip(ft):	0.000	0.000	Entrance Loss Coef:	0.000
Main XSec:			Exit Loss Coef:	0.000
AuxElev1(ft):			Outlet Ctrl Spec:	Use dc or tw
Aux XSec1:			Inlet Ctrl Spec:	Use dc
AuxElev2(ft):			Stabilizer Option:	None
Aux XSec2:				
Top Width(ft):				
Depth(ft):				
Bot Width(ft):	20.000	20.000		
LtSdSlp(h/v):	0.33	0.33		
RtSdSlp(h/v):	0.33	0.33		

Drop Structures

Name:	Control	From Node:	SUBSTATION	Length(ft):	32.00
Group:	BASE	To Node:	D1	Count:	1

	UPSTREAM	DOWNSTREAM		
Geometry:	Circular	Circular	Friction Equation:	Automatic
Span(in):	18.00	18.00	Solution Algorithm:	Most Restrictive
Rise(in):	18.00	18.00	Flow:	Both
Invert(ft):	21.200	21.100	Entrance Loss Coef:	0.500
Manning's N:	0.013000	0.013000	Exit Loss Coef:	0.500
Top Clip(in):	0.000	0.000	Outlet Ctrl Spec:	Use dc or tw
Bot Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
			Solution Incs:	10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

*** Weir 1 of 3 for Drop Structure Control ***

TABLE

Count:	1	Bottom Clip(in):	0.000
Type:	Vertical: Mavis	Top Clip(in):	0.000
Flow:	Both	Weir Disc Coef:	3.200
Geometry:	Rectangular	Orifice Disc Coef:	0.600

```
              Span(in): 6.00                      Invert(ft): 21.300
              Rise(in): 18.00                 Control Elev(ft): 21.300

*** Weir 2 of 3 for Drop Structure Control ***
                                                                      TABLE
                 Count: 1                     Bottom Clip(in): 0.000
                  Type: Horizontal               Top Clip(in): 0.000
                  Flow: Both                   Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 36.00                     Invert(ft): 24.500
              Rise(in): 36.00                 Control Elev(ft): 24.500

*** Weir 3 of 3 for Drop Structure Control ***
                                                                      TABLE
                 Count: 3                     Bottom Clip(in): 0.000
                  Type: Vertical: Mavis          Top Clip(in): 0.000
                  Flow: Both                   Weir Disc Coef: 3.200
              Geometry: Rectangular          Orifice Disc Coef: 0.600

              Span(in): 36.00                     Invert(ft): 23.900
              Rise(in): 7.00                  Control Elev(ft): 23.900


================================================================================
==== Hydrology Simulations =====================================================
================================================================================

         Name: 002
     Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\002.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 4.40

Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 010
     Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\010.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 6.50

Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 025
     Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\025.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 8.11

Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 050
     Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\050.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 9.50

Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          5.00

--------------------------------------------------------------------------------------------------------
         Name: 100
     Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\100.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 10.90
```

Time(hrs)	Print Inc(min)
36.000	5.00

==========
==== Routing Simulations ==========
==========

Name: 002 Hydrology Sim: 002
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\002.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 002 Boundary Flows: Amazon 002

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

Name: 010 Hydrology Sim: 010
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\010.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 010 Boundary Flows: Amazon 010

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

Name: 025 Hydrology Sim: 025
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\025.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 025 Boundary Flows: Amazon 025

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

Name: 050 Hydrology Sim: 050
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\050.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 050 Boundary Flows: Amazon 050

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

Name: 100 Hydrology Sim: 100
Filename: Z:\26327\26327.0010\Engineering\Calculations and Reports\Storm Water\ICPR\PRE\100.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 100 Boundary Flows: Amazon 100

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

Boundary Conditions

Name: 002 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	20.400
24.000	19.390
36.000	19.390

Name: 010 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	21.700
24.000	19.390
36.000	19.390

Name: 025 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	22.400
24.000	19.390
36.000	19.390

Name: 050 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	22.900
24.000	19.390
36.000	19.390

Name: 100 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	23.500
24.000	19.390
36.000	19.390

Name: Amazon 025 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
7.000	0.000
10.000	4.700
13.200	47.000
20.250	6.340
30.000	0.500
36.000	0.100

Name: Amazon 010 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
8.500	1.000
13.250	36.800
19.000	6.900
24.250	2.800
36.000	0.000

Name: Amazon 002 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
10.250	1.000
13.250	22.900
21.000	3.000
36.000	0.000

Name: Amazon 050 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
7.000	1.000
13.000	61.920
20.000	7.700
36.000	0.000

Name: Amazon 100 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
6.000	1.000
13.000	69.950
20.000	9.400
28.000	1.000
36.000	0.000

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
002	Noritake	BASE	12.30	22.38	3.301	120324
010	Noritake	BASE	12.27	35.20	5.336	194473
025	Noritake	BASE	12.27	44.94	6.917	252084
050	Noritake	BASE	12.27	53.30	8.289	302096
100	Noritake	BASE	12.27	61.68	9.676	352626
002	WS-100	BASE	12.50	29.30	3.003	248792
010	WS-100	BASE	12.50	48.08	4.993	413589
025	WS-100	BASE	12.50	62.43	6.551	542689
050	WS-100	BASE	12.50	74.75	7.909	655153
100	WS-100	BASE	12.50	87.11	9.284	769027
002	WS-101	BASE	12.24	8.98	3.301	43144
010	WS-101	BASE	12.24	14.07	5.336	69731
025	WS-101	BASE	12.24	17.93	6.917	90389
050	WS-101	BASE	12.24	21.24	8.289	108321
100	WS-101	BASE	12.24	24.57	9.676	126440
002	WS-101A	BASE	12.50	53.64	3.003	455500
010	WS-101A	BASE	12.50	88.02	4.993	757220
025	WS-101A	BASE	12.50	114.30	6.551	993581
050	WS-101A	BASE	12.50	136.86	7.909	1199488
100	WS-101A	BASE	12.50	159.48	9.284	1407973

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
D1	002	21.68	24.00	0.0016	1012692	73.43	19.08
D1	010	22.20	24.00	0.0029	1195078	122.87	22.63
D1	025	22.58	24.00	0.0031	1302440	156.24	24.38
D1	050	23.02	24.00	0.0038	1428568	199.88	27.95
D1	100	23.36	24.00	0.0039	1570356	233.22	29.26
NORITAKE	002	23.23	24.00	0.0007	317513	22.11	3.36
NORITAKE	010	23.36	24.00	0.0009	339823	34.86	5.74
NORITAKE	025	23.44	24.00	0.0009	355140	44.52	7.81
NORITAKE	050	23.52	24.00	0.0011	368782	52.83	9.13
NORITAKE	100	23.60	24.00	0.0016	381917	61.13	10.48
Rail Outfall	002	20.40	24.00	0.0014	31	17.60	0.00
Rail Outfall	010	21.70	24.00	0.0032	2	27.19	0.00
Rail Outfall	025	22.40	24.00	0.0042	2	31.31	0.00
Rail Outfall	050	22.90	24.00	0.0049	2	35.19	0.00
Rail Outfall	100	23.50	24.00	-0.0057	2	37.81	0.00
RR-US	002	21.46	24.00	0.0045	432707	39.46	17.60
RR-US	010	22.16	24.00	0.0050	645237	56.04	27.19
RR-US	025	22.56	24.00	0.0050	773416	66.25	31.31
RR-US	050	23.01	24.00	0.0050	915036	87.69	35.19
RR-US	100	23.35	24.00	0.0050	956680	105.93	37.81
SUBSTATION	002	22.80	25.00	0.0050	17063	8.97	2.46
SUBSTATION	010	23.39	25.00	0.0050	19784	14.06	3.77
SUBSTATION	025	23.83	25.00	0.0050	21831	17.91	4.34
SUBSTATION	050	24.09	25.00	0.0050	35101	21.23	6.60
SUBSTATION	100	24.22	25.00	0.0050	52689	24.54	8.93

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

APPENDIX C

POST–DEVELOPMENT ICPR INPUT AND OUTPUT

26327.0010

==========
==== Basins ==========
==========

Name: Noritake Node: NORITAKE Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 15.00
Area(ac): 9.370 Time Shift(hrs): 0.00
Curve Number: 90.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-100 Node: RR-US Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 41.00
Area(ac): 6.270 Time Shift(hrs): 0.00
Curve Number: 87.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-101 Node: SUBSTATION Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 10.00
Area(ac): 3.600 Time Shift(hrs): 0.00
Curve Number: 90.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-101A Node: D1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 41.00
Area(ac): 23.020 Time Shift(hrs): 0.00
Curve Number: 87.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-200 Node: POND A-1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 15.00
Area(ac): 12.370 Time Shift(hrs): 0.00
Curve Number: 96.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-201 Node: POND A-2 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0
Rainfall File: Scsiii Storm Duration(hrs): 0.00
Rainfall Amount(in): 0.000 Time of Conc(min): 15.00
Area(ac): 6.460 Time Shift(hrs): 0.00
Curve Number: 96.00 Max Allowable Q(cfs): 999999.000
DCIA(%): 0.00

Name: WS-202 Node: POND B1 Status: Onsite
Group: BASE Type: SCS Unit Hydrograph CN

Unit Hydrograph: Uh323 Peaking Factor: 323.0

```
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 15.00
              Area(ac): 3.170                   Time Shift(hrs): 0.00
          Curve Number: 96.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-203                   Node: DITCH TO B1            Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 15.00
              Area(ac): 4.860                   Time Shift(hrs): 0.00
          Curve Number: 90.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-204                   Node: POND B2                Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 15.00
              Area(ac): 2.100                   Time Shift(hrs): 0.00
          Curve Number: 96.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-205                   Node: DITCH TO B3            Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 15.00
              Area(ac): 0.900                   Time Shift(hrs): 0.00
          Curve Number: 90.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-206                   Node: EP-3                   Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 10.00
              Area(ac): 0.240                   Time Shift(hrs): 0.00
          Curve Number: 98.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-207                   Node: EP-4                   Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 10.00
              Area(ac): 0.580                   Time Shift(hrs): 0.00
          Curve Number: 98.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


-------------------------------------------------------------------------------------------------
         Name: WS-208                   Node: EP-5                   Status: Onsite
        Group: BASE                     Type: SCS Unit Hydrograph CN

       Unit Hydrograph: Uh323                    Peaking Factor: 323.0
         Rainfall File: Scsiii              Storm Duration(hrs): 0.00
    Rainfall Amount(in): 0.000                Time of Conc(min): 15.00
              Area(ac): 1.720                   Time Shift(hrs): 0.00
          Curve Number: 96.00               Max Allowable Q(cfs): 999999.000
               DCIA(%): 0.00


=================================================================================
```

==== Nodes ==
==

Name: D1 Base Flow(cfs): 0.000 Init Stage(ft): 21.100
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
21.000	16.5000
22.000	17.0000
23.000	23.0200

Name: DITCH TO B1 Base Flow(cfs): 0.000 Init Stage(ft): 23.000
Group: BASE Warn Stage(ft): 29.000
Type: Stage/Area

Stage(ft)	Area(ac)
23.000	0.0100
24.000	0.0120
25.000	0.0150
26.000	0.0200
27.000	0.1000
28.000	0.1800
29.000	0.2400

Name: DITCH TO B3 Base Flow(cfs): 0.000 Init Stage(ft): 26.000
Group: BASE Warn Stage(ft): 29.000
Type: Stage/Area

Stage(ft)	Area(ac)
26.000	0.0233
27.000	0.0780
28.000	0.1250
29.000	0.2180

Name: EP-1 Base Flow(cfs): 0.000 Init Stage(ft): 16.700
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: EP-2 Base Flow(cfs): 0.000 Init Stage(ft): 17.050
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: EP-3 Base Flow(cfs): 0.000 Init Stage(ft): 18.090
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: EP-4 Base Flow(cfs): 0.000 Init Stage(ft): 9.500
Group: BASE Warn Stage(ft): 28.900
Type: Stage/Area

Stage(ft)	Area(ac)
9.500	0.0100
28.900	0.0100

Name: EP-5 Base Flow(cfs): 0.000 Init Stage(ft): 21.000
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)

Name: NORITAKE Base Flow(cfs): 0.000 Init Stage(ft): 23.000
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
23.000	6.0000
24.000	10.0000

Name: POND A-1 Base Flow(cfs): 0.000 Init Stage(ft): 19.500
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
9.500	3.3000
19.500	3.7000
24.000	4.3400

Name: POND A-2 Base Flow(cfs): 0.000 Init Stage(ft): 20.000
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
20.000	0.3720
24.000	0.7000

Name: POND A-3 Base Flow(cfs): 0.000 Init Stage(ft): 22.000
Group: BASE Warn Stage(ft): 28.000
Type: Stage/Area

Stage(ft)	Area(ac)
22.000	0.0060
28.000	0.2400

Name: POND B-4 Base Flow(cfs): 0.000 Init Stage(ft): 25.000
Group: BASE Warn Stage(ft): 29.000
Type: Stage/Area

Stage(ft)	Area(ac)
25.000	0.0230
29.000	0.9200

Name: POND B1 Base Flow(cfs): 0.000 Init Stage(ft): 19.500
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)
19.500	0.2490
20.000	0.2510
25.000	0.6440

Name: POND B2 Base Flow(cfs): 0.000 Init Stage(ft): 21.500

Group: BASE Warn Stage(ft): 26.000
Type: Stage/Area

Stage(ft)	Area(ac)
21.500	0.0600
26.000	0.2020

Name: POND B3 Base Flow(cfs): 0.000 Init Stage(ft): 22.000
Group: BASE Warn Stage(ft): 27.000
Type: Stage/Area

Stage(ft)	Area(ac)
22.000	0.0700
24.000	0.1540
27.000	0.2900

Name: Rail Outfall Base Flow(cfs): 0.000 Init Stage(ft): 19.390
Group: BASE Warn Stage(ft): 24.000
Type: Time/Stage

Time(hrs)	Stage(ft)
0.00	19.390
36.00	19.390

Name: RR-US Base Flow(cfs): 0.000 Init Stage(ft): 19.390
Group: BASE Warn Stage(ft): 24.000
Type: Stage/Area

Stage(ft)	Area(ac)
19.390	0.0050
20.000	0.0080
21.000	0.5000
22.000	1.5000
23.000	4.0000
24.000	6.2700

Name: SUBSTATION Base Flow(cfs): 0.000 Init Stage(ft): 21.300
Group: BASE Warn Stage(ft): 25.000
Type: Stage/Area

Stage(ft)	Area(ac)
21.300	0.0027
21.500	0.1211
22.000	0.3018
22.500	0.3596
23.000	0.4124
24.000	0.5190
25.000	3.6000

==========

==== Pipes ==========

==========

Name: 18"_B3_B4 From Node: POND B-4 Length(ft): 60.00
Group: BASE To Node: POND B3 Count: 1
Friction Equation: Automatic
Solution Algorithm: Most Restrictive
Flow: Both
Entrance Loss Coef: 0.50
Exit Loss Coef: 0.50
Bend Loss Coef: 0.00
Outlet Ctrl Spec: Use dc or tw
Inlet Ctrl Spec: Use dc
Stabilizer Option: None

	UPSTREAM	DOWNSTREAM
Geometry:	Circular	Circular
Span(in):	18.00	18.00
Rise(in):	18.00	18.00
Invert(ft):	25.000	24.000
Manning's N:	0.013000	0.013000
Top Clip(in):	0.000	0.000
Bot Clip(in):	0.000	0.000

Upstream FHWA Inlet Edge Description:

Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	18"_B3_D	From Node:	DITCH TO B3	Length(ft): 76.00
Group:	BASE	To Node:	POND B3	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00		Exit Loss Coef: 0.50
Invert(ft):	25.000	24.000		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	18"_P-A-2_P-A-3	From Node:	POND A-3	Length(ft): 123.00
Group:	BASE	To Node:	POND A-2	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	18.00	18.00		Entrance Loss Coef: 0.50
Rise(in):	18.00	18.00		Exit Loss Coef: 0.50
Invert(ft):	22.000	20.000		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	24"_B2_B3	From Node:	POND B3	Length(ft): 100.00
Group:	BASE	To Node:	POND B2	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	24.00	24.00		Entrance Loss Coef: 0.50
Rise(in):	24.00	24.00		Exit Loss Coef: 0.50
Invert(ft):	22.000	21.500		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000		Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	36"_B1_B2	From Node:	POND B2	Length(ft): 440.00
Group:	BASE	To Node:	POND B1	Count: 1
				Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM		Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular		Flow: Both
Span(in):	36.00	36.00		Entrance Loss Coef: 0.50
Rise(in):	36.00	36.00		Exit Loss Coef: 0.50
Invert(ft):	21.500	19.500		Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000		Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000		Inlet Ctrl Spec: Use dc

Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	36"_EP-4-EP-5	From Node: EP-5	Length(ft): 424.00
Group:	BASE	To Node: EP-4	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular	Flow: Both
Span(in):	42.00	42.00	Entrance Loss Coef: 0.50
Rise(in):	42.00	42.00	Exit Loss Coef: 0.50
Invert(ft):	21.000	19.000	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	36"_P-A-1_P-A-2	From Node: POND A-2	Length(ft): 74.00
Group:	BASE	To Node: Pond A-1	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular	Flow: Both
Span(in):	36.00	36.00	Entrance Loss Coef: 0.50
Rise(in):	36.00	36.00	Exit Loss Coef: 0.00
Invert(ft):	20.000	18.000	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	48"_EP-2_EP-3	From Node: EP-3	Length(ft): 432.00
Group:	BASE	To Node: EP-2	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular	Flow: Both
Span(in):	48.00	48.00	Entrance Loss Coef: 0.50
Rise(in):	48.00	48.00	Exit Loss Coef: 0.50
Invert(ft):	18.090	17.050	Bend Loss Coef: 0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec: Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec: Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option: None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	48"_EP-3_EP-4	From Node: EP-4	Length(ft): 374.00
Group:	BASE	To Node: EP-3	Count: 1
			Friction Equation: Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm: Most Restrictive
Geometry:	Circular	Circular	Flow: Both

Span(in):	48.00	48.00	Entrance Loss Coef:	0.50
Rise(in):	48.00	48.00	Exit Loss Coef:	0.50
Invert(ft):	19.000	18.090	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	54"_EP-1_EP-2	From Node: EP-2	Length(ft):	145.00
Group:	BASE	To Node: EP-1	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular	Flow:	Both
Span(in):	54.00	54.00	Entrance Loss Coef:	0.50
Rise(in):	54.00	54.00	Exit Loss Coef:	0.50
Invert(ft):	17.050	16.700	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	60"_A-1_EP-1	From Node: EP-1	Length(ft):	85.00
Group:	BASE	To Node: POND A-1	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular	Flow:	Both
Span(in):	60.00	60.00	Entrance Loss Coef:	0.50
Rise(in):	60.00	60.00	Exit Loss Coef:	0.50
Invert(ft):	16.700	16.500	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Name:	Ex. Pipe 1	From Node: RR-US	Length(ft):	22.00
Group:	BASE	To Node: Rail Outfall	Count:	1
			Friction Equation:	Automatic
	UPSTREAM	DOWNSTREAM	Solution Algorithm:	Most Restrictive
Geometry:	Circular	Circular	Flow:	Both
Span(in):	18.00	18.00	Entrance Loss Coef:	0.50
Rise(in):	18.00	18.00	Exit Loss Coef:	0.50
Invert(ft):	19.610	19.400	Bend Loss Coef:	0.00
Manning's N:	0.013000	0.013000	Outlet Ctrl Spec:	Use dc or tw
Top Clip(in):	0.000	0.000	Inlet Ctrl Spec:	Use dc
Bot Clip(in):	0.000	0.000	Stabilizer Option:	None

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

```
        Name: Ex. Pipe 2          From Node: RR-US              Length(ft): 22.00
       Group: BASE                  To Node: Rail Outfall           Count: 1
                                                        Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                        Flow: Both
    Span(in): 18.00          18.00                     Entrance Loss Coef: 0.50
    Rise(in): 18.00          18.00                         Exit Loss Coef: 0.50
   Invert(ft): 19.390        19.390                        Bend Loss Coef: 0.00
 Manning's N: 0.013000       0.013000                   Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


-------------------------------------------------------------------------------------------------
        Name: POND2>OUTFALL       From Node: Pond A-1           Length(ft): 46.00
       Group: BASE                  To Node: RR-US                  Count: 1
                                                        Friction Equation: Automatic
              UPSTREAM       DOWNSTREAM                Solution Algorithm: Most Restrictive
    Geometry: Circular       Circular                        Flow: Both
    Span(in): 36.00          36.00                     Entrance Loss Coef: 0.50
    Rise(in): 36.00          36.00                         Exit Loss Coef: 0.50
   Invert(ft): 20.000        19.500                        Bend Loss Coef: 0.00
 Manning's N: 0.013000       0.013000                   Outlet Ctrl Spec: Use dc or tw
Top Clip(in): 0.000          0.000                       Inlet Ctrl Spec: Use dc
Bot Clip(in): 0.000          0.000                     Stabilizer Option: None


Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall


=================================================================================================
==== Channels ===================================================================================
=================================================================================================

         Name: B1 DITCH            From Node: DITCH TO B1        Length(ft): 43.00
        Group: BASE                  To Node: POND B1                Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 23.000         19.500                          Flow: Both
TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.100
  Manning's N: 0.040000       0.040000                    Expansion Coef: 0.300
 Top Clip(ft): 0.000          0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                         Exit Loss Coef: 0.000
    Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
    Aux XSec1:                                         Stabilizer Option: None
 AuxElev2(ft):
    Aux XSec2:
Top Width(ft):
    Depth(ft):
Bot Width(ft): 23.000         19.500
 LtSdSlp(h/v): 3.00           3.00
 RtSdSlp(h/v): 3.00           3.00


-------------------------------------------------------------------------------------------------
         Name: OFF-SITE D1         From Node: D1                 Length(ft): 950.00
        Group: BASE                  To Node: RR-US                  Count: 1

               UPSTREAM       DOWNSTREAM                Friction Equation: Automatic
     Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
   Invert(ft): 21.100         19.390                          Flow: Both
TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.100
  Manning's N: 0.040000       0.040000                    Expansion Coef: 0.300
 Top Clip(ft): 0.000          0.000                     Entrance Loss Coef: 0.000
 Bot Clip(ft): 0.000          0.000                         Exit Loss Coef: 0.000
    Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
 AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
    Aux XSec1:                                         Stabilizer Option: None
 AuxElev2(ft):
```

```
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 50.000          50.000
  LtSdSlp(h/v): 3.00            3.00
  RtSdSlp(h/v): 3.00            3.00



-------------------------------------------------------------------------------------------------
          Name: OFF-SITE D2          From Node: NORITAKE           Length(ft): 1600.00
         Group: BASE                   To Node: RR-US                Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
      Geometry: Trapezoidal    Trapezoidal               Solution Algorithm: Automatic
    Invert(ft): 23.000         19.390                               Flow: Both
 TClpInitZ(ft): 9999.000       9999.000                  Contraction Coef: 0.100
   Manning's N: 0.040000       0.040000                    Expansion Coef: 0.300
  Top Clip(ft): 0.000          0.000                    Entrance Loss Coef: 0.000
  Bot Clip(ft): 0.000          0.000                        Exit Loss Coef: 0.000
     Main XSec:                                          Outlet Ctrl Spec: Use dc or tw
  AuxElev1(ft):                                           Inlet Ctrl Spec: Use dc
     Aux XSec1:                                        Stabilizer Option: None
  AuxElev2(ft):
     Aux XSec2:
 Top Width(ft):
     Depth(ft):
 Bot Width(ft): 20.000          20.000
  LtSdSlp(h/v): 3.00            3.00
  RtSdSlp(h/v): 3.00            3.00



===============================================================================================
==== Drop Structures ==========================================================================
===============================================================================================

          Name: 42" - RI#1          From Node: POND B1            Length(ft): 130.00
         Group: BASE                   To Node: EP-4                 Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
      Geometry: Circular       Circular                  Solution Algorithm: Most Restrictive
      Span(in): 42.00          42.00                                Flow: Both
      Rise(in): 42.00          42.00                    Entrance Loss Coef: 0.500
    Invert(ft): 9.500          9.500                        Exit Loss Coef: 0.500
   Manning's N: 0.013000       0.013000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000           0.000                       Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000           0.000                         Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall



*** Weir 1 of 1 for Drop Structure 42" - RI#1 ***
                                                                                    TABLE
                  Count: 1                       Bottom Clip(in): 0.000
                   Type: Vertical: Mavis            Top Clip(in): 0.000
                   Flow: Both                    Weir Disc Coef: 3.200
               Geometry: Rectangular           Orifice Disc Coef: 0.600

               Span(in): 240.00                      Invert(ft): 19.500
               Rise(in): 6.00                   Control Elev(ft): 19.500


-------------------------------------------------------------------------------------------------
          Name: Control              From Node: SUBSTATION         Length(ft): 32.00
         Group: BASE                   To Node: D1                   Count: 1

                UPSTREAM       DOWNSTREAM                 Friction Equation: Automatic
      Geometry: Circular       Circular                  Solution Algorithm: Most Restrictive
      Span(in): 18.00          18.00                                Flow: Both
      Rise(in): 18.00          18.00                    Entrance Loss Coef: 0.500
    Invert(ft): 21.200         21.100                       Exit Loss Coef: 0.500
   Manning's N: 0.013000       0.013000                   Outlet Ctrl Spec: Use dc or tw
 Top Clip(in): 0.000           0.000                       Inlet Ctrl Spec: Use dc
 Bot Clip(in): 0.000           0.000                         Solution Incs: 10

Upstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall

Downstream FHWA Inlet Edge Description:
Circular Concrete: Square edge w/ headwall
```

```
*** Weir 1 of 3 for Drop Structure Control ***
                                                                                TABLE
                 Count: 1                       Bottom Clip(in): 0.000
                  Type: Vertical: Mavis            Top Clip(in): 0.000
                  Flow: Both                     Weir Disc Coef: 3.200
              Geometry: Rectangular            Orifice Disc Coef: 0.600

              Span(in): 6.00                         Invert(ft): 21.300
              Rise(in): 18.00                  Control Elev(ft): 21.300

*** Weir 2 of 3 for Drop Structure Control ***
                                                                                TABLE
                 Count: 1                       Bottom Clip(in): 0.000
                  Type: Horizontal                 Top Clip(in): 0.000
                  Flow: Both                     Weir Disc Coef: 3.200
              Geometry: Rectangular            Orifice Disc Coef: 0.600

              Span(in): 36.00                        Invert(ft): 24.500
              Rise(in): 36.00                  Control Elev(ft): 24.500

*** Weir 3 of 3 for Drop Structure Control ***
                                                                                TABLE
                 Count: 3                       Bottom Clip(in): 0.000
                  Type: Vertical: Mavis            Top Clip(in): 0.000
                  Flow: Both                     Weir Disc Coef: 3.200
              Geometry: Rectangular            Orifice Disc Coef: 0.600

              Span(in): 36.00                        Invert(ft): 23.900
              Rise(in): 7.00                   Control Elev(ft): 23.900


================================================================================================
==== Weirs =====================================================================================
================================================================================================

         Name: Weir - A1           From Node: POND A-1
        Group: BASE                  To Node: RR-US
         Flow: Both                    Count: 1
         Type: Vertical: Mavis      Geometry: Trapezoidal

            Bottom Width(ft): 20.00
        Left Side Slope(h/v): 3.00
       Right Side Slope(h/v): 3.00
                  Invert(ft): 23.000
       Control Elevation(ft): 23.000
      Struct Opening Dim(ft): 9999.00
                                        TABLE
             Bottom Clip(ft): 0.000
                Top Clip(ft): 0.000
          Weir Discharge Coef: 3.200
      Orifice Discharge Coef: 0.600



================================================================================================
==== Hydrology Simulations =====================================================================
================================================================================================

         Name: 002
     Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\002.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 4.40

Time(hrs)       Print Inc(min)
--------------- ---------------
72.000          5.00

------------------------------------------------------------------------------------------------------
         Name: 010
     Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\010.R32

      Override Defaults: Yes
    Storm Duration(hrs): 24.00
          Rainfall File: Scsiii
    Rainfall Amount(in): 6.50

Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          5.00

------------------------------------------------------------------------------------------------------
         Name: 025
```

Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\025.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsiii
Rainfall Amount(in): 8.11

Time(hrs)	Print Inc(min)
36.000	5.00

Name: 050
Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\050.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsiii
Rainfall Amount(in): 9.50

Time(hrs)	Print Inc(min)
36.000	5.00

Name: 100
Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\100.R32

Override Defaults: Yes
Storm Duration(hrs): 24.00
Rainfall File: Scsiii
Rainfall Amount(in): 10.90

Time(hrs)	Print Inc(min)
36.000	5.00

==========

==== Routing Simulations ==========

==========

Name: 002 Hydrology Sim: 002
Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\002.I32

Execute: Yes Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 72.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 002 Boundary Flows: Amazon 002

Time(hrs)	Print Inc(min)
72.000	15.000

Group	Run
BASE	Yes

Name: 010 Hydrology Sim: 010
Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\010.I32

Execute: No Restart: No Patch: No
Alternative: No

Max Delta Z(ft): 1.00 Delta Z Factor: 0.00500
Time Step Optimizer: 10.000
Start Time(hrs): 0.000 End Time(hrs): 36.00
Min Calc Time(sec): 0.5000 Max Calc Time(sec): 60.0000
Boundary Stages: 010 Boundary Flows: Amazon 010

Time(hrs)	Print Inc(min)
36.000	15.000

Group	Run
BASE	Yes

```
-------------------------------------------------------------------------------------------------
         Name: 025                 Hydrology Sim: 025
     Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\025.I32

      Execute: No          Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 36.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 60.0000
        Boundary Stages: 025                  Boundary Flows: Amazon 025


Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------
         Name: 050                 Hydrology Sim: 050
     Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\050.I32

      Execute: No          Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 36.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 60.0000
        Boundary Stages: 050                  Boundary Flows: Amazon 050


Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          15.000

Group           Run
--------------- -----
BASE            Yes


-------------------------------------------------------------------------------------------------
         Name: 100                 Hydrology Sim: 100
     Filename: Z:\26327\26327.0006\Engineering\Calculations and Reports\Storm Water\ICPR\POST\100.I32

      Execute: No          Restart: No           Patch: No
  Alternative: No

        Max Delta Z(ft): 1.00                    Delta Z Factor: 0.00500
    Time Step Optimizer: 10.000
        Start Time(hrs): 0.000                    End Time(hrs): 36.00
     Min Calc Time(sec): 0.5000              Max Calc Time(sec): 60.0000
        Boundary Stages: 100                  Boundary Flows: Amazon 100


Time(hrs)       Print Inc(min)
--------------- ---------------
36.000          15.000

Group           Run
--------------- -----
BASE            Yes


=================================================================================================
==== Boundary Conditions ========================================================================
=================================================================================================

      Name: 002                  Node: Rail Outfall          Type: Stage

      Time(hrs)       Stage(ft)
--------------- ---------------
          0.000          19.390
         12.000          20.400
         24.000          19.390
         36.000          19.390
         72.000          19.390
```

Name: 010 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	21.700
24.000	19.390
36.000	19.390

Name: 025 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	22.400
24.000	19.390
36.000	19.390

Name: 050 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	22.900
24.000	19.390
36.000	19.390

Name: 100 Node: Rail Outfall Type: Stage

Time(hrs)	Stage(ft)
0.000	19.390
12.000	23.500
24.000	19.390
36.000	19.390

Name: Amazon 025 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
7.000	0.000
10.000	4.700
13.200	47.000
20.250	6.340
30.000	0.500
36.000	0.100

Name: Amazon 010 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
8.500	1.000
13.250	36.800
19.000	6.900
24.250	2.800
36.000	0.000

Name: Amazon 002 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
10.250	1.000
13.250	22.900
21.000	3.000
36.000	0.000
72.000	0.000

Name: Amazon 050 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
7.000	1.000
13.000	61.920
20.000	7.700
36.000	0.000

Name: Amazon 100 Node: D1 Type: Flow

Time(hrs)	Flow(cfs)
0.000	0.000
6.000	1.000
13.000	69.950
20.000	9.400
28.000	1.000
36.000	0.000

Simulation	Basin	Group	Time Max hrs	Flow Max cfs	Volume in	Volume ft3
002	Noritake	BASE	12.30	20.89	3.301	112294
002	WS-100	BASE	12.50	8.05	3.003	68358
002	WS-101	BASE	12.24	8.98	3.301	43144
002	WS-101A	BASE	12.50	29.56	3.003	250972
002	WS-200	BASE	12.27	30.79	3.938	176845
002	WS-201	BASE	12.27	16.08	3.938	92354
002	WS-202	BASE	12.27	7.89	3.938	45319
002	WS-203	BASE	12.30	10.83	3.301	58244
002	WS-204	BASE	12.27	5.23	3.938	30022
002	WS-205	BASE	12.30	2.01	3.301	10786
002	WS-206	BASE	12.24	0.68	4.166	3629
002	WS-207	BASE	12.24	1.63	4.166	8771
002	WS-208	BASE	12.27	4.28	3.938	24590
010	Noritake	BASE	12.27	32.85	5.336	181495
010	WS-100	BASE	12.50	13.21	4.993	113637
010	WS-101	BASE	12.24	14.07	5.336	69731
010	WS-101A	BASE	12.50	48.50	4.993	417214
010	WS-200	BASE	12.27	46.14	6.028	270675
010	WS-201	BASE	12.27	24.09	6.028	141355
010	WS-202	BASE	12.27	11.82	6.028	69365
010	WS-203	BASE	12.27	17.04	5.336	94137
010	WS-204	BASE	12.27	7.83	6.028	45951
010	WS-205	BASE	12.27	3.16	5.336	17433
010	WS-206	BASE	12.24	1.00	6.264	5457
010	WS-207	BASE	12.24	2.42	6.264	13188
010	WS-208	BASE	12.27	6.42	6.028	37636
025	Noritake	BASE	12.27	41.95	6.917	235262
025	WS-100	BASE	12.50	17.15	6.551	149109
025	WS-101	BASE	12.24	17.93	6.917	90389
025	WS-101A	BASE	12.50	62.98	6.551	547445
025	WS-200	BASE	12.27	57.83	7.634	342782
025	WS-201	BASE	12.27	30.20	7.634	179012
025	WS-202	BASE	12.27	14.82	7.634	87843
025	WS-203	BASE	12.27	21.76	6.917	122025
025	WS-204	BASE	12.27	9.82	7.634	58193
025	WS-205	BASE	12.27	4.03	6.917	22597
025	WS-206	BASE	12.24	1.25	7.874	6859
025	WS-207	BASE	12.24	3.02	7.874	16577
025	WS-208	BASE	12.27	8.04	7.634	47663
050	Noritake	BASE	12.27	49.74	8.289	281936
050	WS-100	BASE	12.50	20.54	7.909	180009
050	WS-101	BASE	12.24	21.24	8.289	108321
050	WS-101A	BASE	12.50	75.41	7.909	660895
050	WS-200	BASE	12.27	67.91	9.022	405094
050	WS-201	BASE	12.27	35.46	9.022	211553
050	WS-202	BASE	12.27	17.40	9.022	103811
050	WS-203	BASE	12.27	25.80	8.289	146234
050	WS-204	BASE	12.27	11.53	9.022	68771
050	WS-205	BASE	12.27	4.78	8.289	27080
050	WS-206	BASE	12.24	1.47	9.263	8070
050	WS-207	BASE	12.24	3.55	9.263	19503
050	WS-208	BASE	12.27	9.44	9.022	56327
100	Noritake	BASE	12.27	57.56	9.676	329094
100	WS-100	BASE	12.50	23.93	9.284	211297
100	WS-101	BASE	12.24	24.57	9.676	126440
100	WS-101A	BASE	12.50	87.87	9.284	775767
100	WS-200	BASE	12.27	78.04	10.420	467886
100	WS-201	BASE	12.27	40.75	10.420	244345
100	WS-202	BASE	12.27	20.00	10.420	119903
100	WS-203	BASE	12.27	29.86	9.676	170694
100	WS-204	BASE	12.27	13.25	10.420	79431
100	WS-205	BASE	12.27	5.53	9.676	31610
100	WS-206	BASE	12.24	1.68	10.663	9290
100	WS-207	BASE	12.24	4.07	10.663	22451
100	WS-208	BASE	12.27	10.85	10.420	65058

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
D1	002	21.65	24.00	0.0003	759317	49.45	15.27
D1	010	22.36	24.00	0.0002	863029	83.35	18.79
D1	025	22.88	24.00	0.0004	1000806	104.96	22.17
D1	050	23.44	24.00	0.0005	1149556	138.51	24.83
D1	100	23.81	24.00	0.0005	1248956	161.69	30.14
DITCH TO B1	002	23.19	29.00	-0.0004	951	10.70	10.69
DITCH TO B1	010	23.25	29.00	0.0003	965	16.88	16.86
DITCH TO B1	025	23.52	29.00	0.0041	1136	21.56	21.54
DITCH TO B1	050	24.24	29.00	-0.0062	1302	25.57	38.99
DITCH TO B1	100	24.91	29.00	-0.0397	1476	29.60	309.27
DITCH TO B3	002	26.00	29.00	-0.0101	1069	1.98	3.39
DITCH TO B3	010	26.00	29.00	-0.0101	1069	3.13	3.39
DITCH TO B3	025	26.09	29.00	-0.0101	1281	3.99	3.90
DITCH TO B3	050	26.21	29.00	-0.0101	1567	4.74	4.59
DITCH TO B3	100	26.33	29.00	-0.0101	1842	5.48	5.27
EP-1	002	21.44	25.00	0.0607	224	21.32	21.80
EP-1	010	22.31	25.00	0.0607	140	27.85	28.12
EP-1	025	22.92	25.00	0.0607	140	31.29	31.49
EP-1	050	23.49	25.00	0.0607	140	32.04	32.99
EP-1	100	23.86	25.00	0.0607	140	34.36	34.89
EP-2	002	21.47	25.00	0.0133	368	21.02	21.32
EP-2	010	22.38	25.00	0.0213	173	27.26	27.85
EP-2	025	22.87	25.00	0.0133	173	30.73	31.29
EP-2	050	23.44	25.00	0.0133	173	32.19	32.04
EP-2	100	23.81	25.00	-0.0156	173	34.44	34.36
EP-3	002	21.47	25.00	0.0034	1181	21.50	21.02
EP-3	010	22.37	25.00	0.0035	320	27.60	27.26
EP-3	025	22.91	25.00	-0.0053	240	30.77	30.73
EP-3	050	23.50	25.00	0.0055	194	32.20	32.19
EP-3	100	24.01	25.00	0.0055	194	34.53	34.44
EP-4	002	21.47	28.90	0.0024	1750	21.45	21.06
EP-4	010	22.38	28.90	0.0022	1238	27.68	26.92
EP-4	025	23.09	28.90	0.0022	683	30.26	29.84
EP-4	050	23.76	28.90	0.0026	652	31.49	31.22
EP-4	100	24.34	28.90	0.0026	577	33.66	33.41
EP-5	002	21.82	25.00	-0.0013	723	4.24	4.21
EP-5	010	22.38	25.00	0.0012	725	6.36	6.26
EP-5	025	23.10	25.00	0.0018	668	7.98	7.40
EP-5	050	23.76	25.00	0.0020	576	9.37	8.76
EP-5	100	24.35	25.00	0.0026	350	10.76	10.18
NORITAKE	002	23.21	24.00	0.0003	317490	20.64	3.03
NORITAKE	010	23.33	24.00	0.0002	339888	32.53	5.14
NORITAKE	025	23.42	24.00	0.0002	355178	41.56	6.87
NORITAKE	050	23.50	24.00	0.0003	370080	49.31	7.49
NORITAKE	100	23.81	24.00	0.0004	427503	57.06	8.00
POND A-1	002	21.46	24.00	0.0016	173478	58.96	4.74
POND A-1	010	22.34	24.00	0.0012	178869	84.05	20.19
POND A-1	025	22.88	24.00	0.0010	182134	108.60	29.06
POND A-1	050	23.44	24.00	0.0010	185601	118.34	33.97
POND A-1	100	23.82	24.00	0.0013	187932	131.84	53.63
POND A-2	002	21.46	24.00	0.0020	21536	15.94	9.39
POND A-2	010	22.34	24.00	0.0015	24664	23.90	19.83
POND A-2	025	22.88	24.00	0.0011	26538	29.93	22.90
POND A-2	050	23.44	24.00	0.0011	28512	34.36	19.92
POND A-2	100	23.82	24.00	0.0020	29849	39.16	21.57
POND A-3	002	22.00	28.00	0.0000	266	0.00	0.00
POND A-3	010	22.34	28.00	0.0001	902	0.00	0.01
POND A-3	025	22.88	28.00	0.0008	1819	0.00	0.03
POND A-3	050	23.44	28.00	0.0016	2737	0.00	0.05
POND A-3	100	23.82	28.00	0.0018	3353	0.00	0.09
POND B-4	002	25.00	29.00	0.0000	1004	0.00	0.00
POND B-4	010	25.00	29.00	0.0000	1004	0.00	0.00
POND B-4	025	25.00	29.00	0.0000	1004	0.00	0.00
POND B-4	050	25.00	29.00	0.0000	1004	0.00	0.00
POND B-4	100	25.00	29.00	0.0000	1004	0.00	0.00
POND B1	002	21.47	25.00	0.0031	17150	23.82	16.99
POND B1	010	22.68	25.00	0.0023	20768	36.63	21.43
POND B1	025	23.50	25.00	0.0023	23946	42.60	22.80
POND B1	050	24.24	25.00	0.0023	26491	55.21	24.41
POND B1	100	24.90	25.00	0.0030	28753	320.37	26.28

Name	Simulation	Max Stage ft	Warning Stage ft	Max Delta Stage ft	Max Surf Area ft2	Max Inflow cfs	Max Outflow cfs
POND B2	002	22.53	26.00	0.0015	4734	6.34	5.84
POND B2	010	22.81	26.00	0.0013	5006	9.64	8.96
POND B2	025	23.56	26.00	0.0015	5931	10.80	8.60
POND B2	050	24.29	26.00	0.0022	6714	9.23	6.74
POND B2	100	24.96	26.00	0.0030	7413	9.86	7.54
POND B3	002	22.59	27.00	0.0010	4277	3.39	1.61
POND B3	010	22.85	27.00	0.0009	4761	3.39	2.53
POND B3	025	23.57	27.00	0.0015	6031	3.90	2.26
POND B3	050	24.30	27.00	0.0022	7395	4.59	2.86
POND B3	100	24.98	27.00	0.0031	8735	5.27	3.26
Rail Outfall	002	20.40	24.00	-0.0001	31	17.60	0.00
Rail Outfall	010	21.70	24.00	0.0001	2	26.22	0.00
Rail Outfall	025	22.40	24.00	0.0001	2	30.34	0.00
Rail Outfall	050	22.90	24.00	-0.0002	2	34.14	0.00
Rail Outfall	100	23.50	24.00	-0.0002	2	36.43	0.00
RR-US	002	21.46	24.00	0.0009	94113	21.53	17.60
RR-US	010	22.34	24.00	0.0003	159924	27.45	26.22
RR-US	025	22.87	24.00	0.0004	221398	30.39	30.34
RR-US	050	23.43	24.00	0.0005	282445	37.17	34.14
RR-US	100	23.81	24.00	0.0005	322463	40.34	36.43
SUBSTATION	002	22.80	25.00	0.0021	17060	8.98	2.46
SUBSTATION	010	23.39	25.00	0.0015	19781	14.06	3.77
SUBSTATION	025	23.83	25.00	0.0014	21825	17.92	4.35
SUBSTATION	050	24.10	25.00	0.0016	35878	21.23	6.62
SUBSTATION	100	24.24	25.00	0.0022	54498	24.54	8.81

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

APPENDIX D

CSS SPREADSHEET

26327.0010

Coastal Stormwater Supplement Site Planning & Design Worksheet

Revised July 2014

Site Data

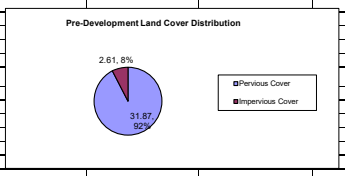
Site Name: NFI BUILDINGS A & B

	data input cells
	calculation cells
	constant values

Step 1: Enter Site Information

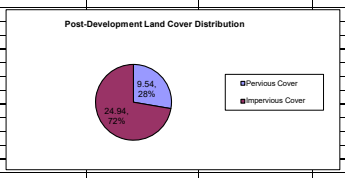
Pre-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	31.87	31.87
Impervious Cover	0.00	0.00	0.00	2.61	2.61
				Total	34.48

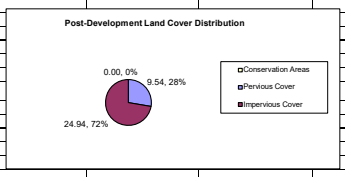


Post-Development Land Cover (acres)

Land Cover Type	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	9.54	9.54
Impervious Cover	0.00	0.00	0.00	24.94	24.94
				Total	34.48



Runoff Reduction Rainfall Event (inches)	1.2
Post-Development Site Imperviousness (%)	72%
Post-Development Site Runoff Coefficient, Rv	0.70
Target Runoff Reduction Volume, RRv (acre-feet)	2.42
Target Runoff Reduction Volume, RRv (cubic feet	105,285

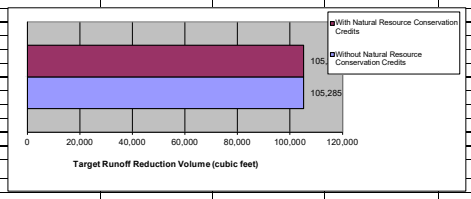


Step 2: Apply Better Site Planning Techniques

Natural Resource Conservation Credits	HSG A Soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Primary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Secondary Conservation Areas (acres)	0.0	0.0	0.0	0.0	0.0
Total (acres)					0.00

Target Runoff Reduction Volume with Natural Resource Conservation Credits, RRv

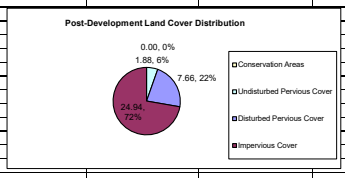
Target Runoff Reduction Volume, RRv (acre-feet)	2.42
Target Runoff Reduction Volume, RRv (cubic feet	105,285



Step 3: Apply Better Site Design Techniques

Reduced Clearing and Grading Credits

	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Total
Undisturbed Pervious Cover (Acres)	0.0	0.0	0.0	1.9	1.88



Revised Post-Development Land Cover (acres)

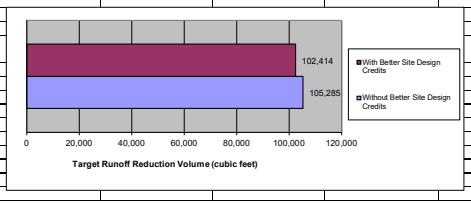
Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	1.88	1.88
Disturbed Pervious Cover	0.00	0.00	0.00	7.66	7.66
Impervious Cover	0.00	0.00	0.00	24.94	24.94
				Total	34.48

Restoration of Disturbed Pervious Surfaces

Soil Restoration (Acres)	0.0
Site Reforestation/Vegetation (Acres)	0.0
Soil Restoration w/ Site Reforestation/Revegetation (Acres)	0.0

Target Runoff Reduction Volume After Application of Better Site Design Credits, RRv

Target Runoff Reduction Volume, RRv (acre-feet)	2.35
Target Runoff Reduction Volume, RRv (cubic feet	102,414



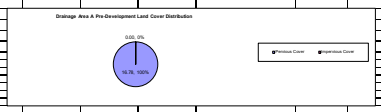
Note: Remainder of Better Site Design Techniques are considered to be "self-crediting."

Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised July 2014

Drainage Area A
Drainage Area Information

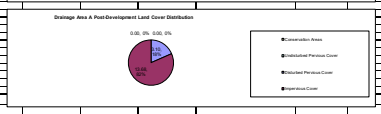
Drainage Area A Pre-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	16.78	16.78
Impervious Cover	0.00	0.00	0.00	0.00	0.00
				Total	16.78



Drainage Area A Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.00	0.00
Disturbed Pervious Cover	0.00	0.00	0.00	3.10	3.10
Impervious Cover	0.00	0.00	0.00	13.68	13.68
				Total	16.78



Low Impact Development Practices

Alternatives to Impervious Surfaces

Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

"Receiving" Low Impact Development Practices

Vegetated Filter Strip, C/D Soils 1	5.33	5.09	21115.7	30% of volume received by the practice	0.0	21115.7	0.0	21115.7	N/A	N/A	6334.7	14781.0	6334.7	14781.0	Stormwater Pond, Wetland, or Wet Swale 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

Treatment Only Practices

Stormwater Pond, Wetland, or Wet Swale 1	11.45	8.59	36170.0	None	14781.0	50951.0	14781.0	50951.0	Volume in Wet Pool and Extended Detention	600000.0	0.0	50951.0	50951.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**16.78**	**13.68**									**6334.7**		**57285.8**		

Practice	Method	Storage Volume	Reduction	Treatment?	Loss Calculation Meth	Downstream List
None	N/A	N/A	0%	N	N/A	No Downstream Practice
Green Roof 1	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 1
Green Roof 2	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 2
Green Roof 3	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 3
Green Roof 4	60% of volume received by the	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or
Green Roof 5	60% of volume received by the	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or
Permeable Pavement System, Underdrained 1	50% of storage volume		50%	Y	Surface Area x Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 1
Permeable Pavement System, Underdrained 2	50% of storage volume		50%	Y	Surface Area x Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 2
Permeable Pavement System, Underdrained 3	50% of storage volume		50%	Y	Surface Area x Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 3
Permeable Pavement System, Underdrained 4	50% of storage volume		50%	Y	Surface Area x Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 4
Permeable Pavement System, Underdrained 5	50% of storage volume		50%	Y	Surface Area x Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 5
Permeable Pavement System, Non-Underdrained 1	100% of storage volume		100%	Y	Surface Area x Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 1
Permeable Pavement System, Non-Underdrained 2	100% of storage volume		100%	Y	Surface Area x Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 2
Permeable Pavement System, Non-Underdrained 3	100% of storage volume		100%	Y	Surface Area x Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 3
Permeable Pavement System, Non-Underdrained 4	100% of storage volume		100%	Y	Surface Area x Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 4
Permeable Pavement System, Non-Underdrained 5	100% of storage volume		100%	Y	Surface Area x Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 5
None	N/A	N/A	0%	N	N/A	Grass Channel, C/D Soils 1
Vegetated Filter Strip, A/B or Amended Soils 1	60% of volume received by the practice	N/A	60%		N/A	Grass Channel, C/D Soils 2
Vegetated Filter Strip, A/B or Amended Soils 2	60% of volume	N/A	60%		N/A	Grass Channel, C/D
Vegetated Filter Strip, A/B or Amended Soils 3	60% of volume	N/A	60%		N/A	Grass Channel, C/D
Vegetated Filter Strip, A/B or Amended Soils 4	60% of volume	N/A	60%		N/A	Grass Channel, C/D
Vegetated Filter Strip, A/B or Amended Soils 5	60% of volume	N/A	60%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 1	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 2	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 3	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 4	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 5	30% of volume	N/A	30%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 1	25% of volume received by the	N/A	25%		N/A	Simple Downspout Disconnection, C/D
Grass Channel, A/B or Amended Soils 2	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 3	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 4	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 5	25% of volume	N/A	25%		N/A	Rain Garden 1
Grass Channel, C/D Soils 1	12.5% of volume	N/A	12.50%		N/A	Rain Garden 2
Grass Channel, C/D Soils 2	12.5% of volume	N/A	12.50%		N/A	Rain Garden 3
Grass Channel, C/D Soils 3	12.5% of volume	N/A	12.50%		N/A	Rain Garden 4
Grass Channel, C/D Soils 4	12.5% of volume	N/A	12.50%		N/A	Rain Garden 5
Grass Channel, C/D Soils 5	12.5% of volume	N/A	12.50%		N/A	Stormwater Planter
Simple Downspout Disconnection, A/B or Amended Soils 1	60% of volume	N/A	60%		N/A	Stormwater Planter
Simple Downspout Disconnection, A/B or Amended Soils 2	60% of volume	N/A	60%		N/A	Stormwater Planter
Simple Downspout Disconnection, A/B or Amended Soils 3	60% of volume	N/A	60%		N/A	Stormwater Planter
Simple Downspout Disconnection, A/B or Amended Soils 4	60% of volume	N/A	60%		N/A	Stormwater Planter
Simple Downspout Disconnection, A/B or Amended Soils 5	60% of volume	N/A	60%		N/A	Dry Well 1
Simple Downspout Disconnection, C/D Soils 1	30% of volume	N/A	30%		N/A	Dry Well 2
Simple Downspout Disconnection, C/D Soils 2	30% of volume	N/A	30%		N/A	Dry Well 3
Simple Downspout Disconnection, C/D Soils 3	30% of volume	N/A	30%		N/A	Dry Well 4
Simple Downspout Disconnection, C/D Soils 4	30% of volume	N/A	30%		N/A	Dry Well 5
Simple Downspout Disconnection, C/D Soils 5	30% of volume	N/A	30%		N/A	Rainwater
Rain Garden 1	100% of storage		100%	Y	Surface Area x (Ponde	Rainwater
Rain Garden 2	100% of storage		100%	Y	Surface Area x (Ponde	Rainwater
Rain Garden 3	100% of storage		100%	Y	Surface Area x (Ponde	Rainwater

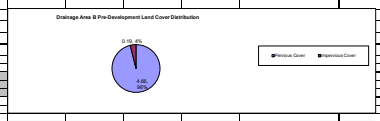
Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised July 2014

Drainage Area B

Drainage Area Information

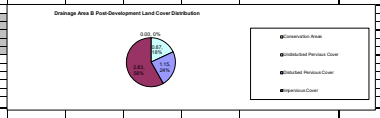
Drainage Area B Pre-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	4.66	4.66
Impervious Cover	0.00	0.00	0.00	0.19	0.19
				Total	4.85



Drainage Area B Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.87	0.87
Disturbed Pervious Cover	0.00	0.00	0.00	1.15	1.15
Impervious Cover	0.00	0.00	0.00	2.83	2.83
				Total	4.85



Low Impact Development Practices

Alternatives to Impervious Surfaces

Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

"Receiving" Low Impact Development Practices

Dry Swale, Non-Underdrained 1	4.85	2.83	12151.1	100% of storage volume	0.0	12151.1	0.0	12151.1	Surface Area x (Ponding Depth + Depth of Planting Bed x Void Ratio)	31948.0	12151.1	0.0	12151.1	0.0	Stormwater Pond, Wetland, or Wet Swale 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

Treatment Only Practices

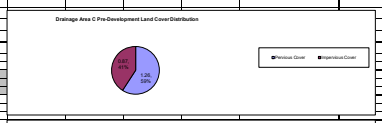
Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	None	0.0	0.0	0.0	0.0	Volume in Wet Pool and Extended Detention	660000.0	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**4.85**	**2.83**									**12151.1**		**12151.1**		

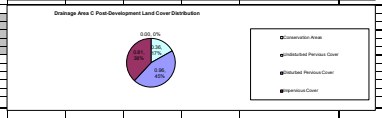
Practice	Method	Storage Volume	Reduction	Treatment?	Storage Calculation Method	Downstream List
None	N/A	N/A		0 N	N/A	No Downstream Practice
Green Roof 1	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 1
Green Roof 2	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 2
Green Roof 3	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 3
Green Roof 4	60% of volume received by the	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or
Green Roof 5	60% of volume received by the	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or
Permeable Pavement System, Underdrained 1	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 1
Permeable Pavement System, Underdrained 2	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 2
Permeable Pavement System, Underdrained 3	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 3
Permeable Pavement System, Underdrained 4	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 4
Permeable Pavement System, Underdrained 5	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 5
Permeable Pavement System, Non-Underdrained 1	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 1
Permeable Pavement System, Non-Underdrained 2	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 2
Permeable Pavement System, Non-Underdrained 3	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 3
Permeable Pavement System, Non-Underdrained 4	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 4
Permeable Pavement System, Non-Underdrained 5	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 5
None	N/A	N/A	0%	N	N/A	Grass Channel, C/D Soils 1
Vegetated Filter Strip, A/B or Amended Soils 1	60% of volume received by the practice	N/A	60%		N/A	Grass Channel, C/D Soils 2
Vegetated Filter Strip, A/B or Amended Soils 2	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 3	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 4	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 5	60% of volume	N/A	60%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 1	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 2	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 3	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 4	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 5	30% of volume	N/A	30%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 1	25% of volume received by the	N/A	25%		N/A	Simple Downspout Disconnection, C/D
Grass Channel, A/B or Amended Soils 2	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 3	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 4	25% of volume	N/A	25%		N/A	Simple Downspout

Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised July 2014

Drainage Area C

Drainage Area Information





Drainage Area C Pre-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	1.26	1.26
Impervious Cover	0.00	0.00	0.00	0.87	0.87
				Total	2.13

Drainage Area C Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	0.36	0.36
Disturbed Pervious Cover	0.00	0.00	0.00	0.96	0.96
Impervious Cover	0.00	0.00	0.00	0.81	0.81
				Total	2.13

Low Impact Development Practices

Alternatives to Impervious Surfaces

Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
"Receiving" Low Impact Development Practices															
Dry Swale, Non-Underdrained 1	2.13	0.81	3639.4	100% of storage volume	0.0	3639.4	0.0	3639.4	Surface Area x (Ponding Depth + Depth of Planting Bed x Void Ratio)	3973.0	3639.4	0.0	3639.4	0.0	Stormwater Pond, Wetland, or Wet Swale 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Treatment Only Practices															
Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	None	0.0	0.0	0.0	0.0	Volume in Wet Pool and Extended Detention	660000.0	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**2.13**	**0.81**									**3639.4**		**3639.4**		

Practice	Method	Storage Volume	Reduction	Treatment?	Storage Calculation Method	Downstream List
None	N/A	N/A	0%	N	N/A	No Downstream Practice
Green Roof 1	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 1
Green Roof 2	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 2
Green Roof 3	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 3
Green Roof 4	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 4
Green Roof 5	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 5
Permeable Pavement System, Underdrained 1	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 1
Permeable Pavement System, Underdrained 2	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 2
Permeable Pavement System, Underdrained 3	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 3
Permeable Pavement System, Underdrained 4	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 4
Permeable Pavement System, Underdrained 5	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 5
Permeable Pavement System, Non-Underdrained 1	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 1
Permeable Pavement System, Non-Underdrained 2	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 2
Permeable Pavement System, Non-Underdrained 3	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 3
Permeable Pavement System, Non-Underdrained 4	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 4
Permeable Pavement System, Non-Underdrained 5	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 5
None	N/A	N/A	0%	N	N/A	Grass Channel, C/D Soils 1
Vegetated Filter Strip, A/B or Amended Soils 1	60% of volume received by the practice	N/A	60%		N/A	Grass Channel, C/D Soils 2
Vegetated Filter Strip, A/B or Amended Soils 2	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 3	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 4	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 5	60% of volume	N/A	60%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 1	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 2	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 3	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 4	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 5	30% of volume	N/A	30%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 1	25% of volume received by the	N/A	25%		N/A	Simple Downspout, Disconnection, C/D
Grass Channel, A/B or Amended Soils 2	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 3	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 4	25% of volume	N/A	25%		N/A	Simple Downspout

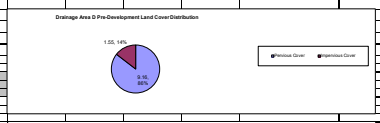
Coastal Stormwater Supplement Site Planning & Design Worksheet
Revised July 2014

Drainage Area D

Drainage Area Information

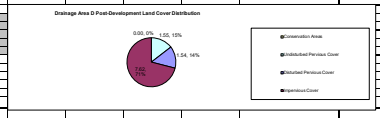
Drainage Area D Pre-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Pervious Cover	0.00	0.00	0.00	9.16	9.16
Impervious Cover	0.00	0.00	0.00	1.55	1.55
				Total	10.71



Drainage Area D Post-Development Land Cover (acres)

Land Cover Type	HSG A soils	HSG B Soils	HSG C Soils	HSG D Soils	Totals
Conservation Areas	0.00	0.00	0.00	0.00	0.00
Undisturbed Pervious Cover	0.00	0.00	0.00	1.55	1.55
Disturbed Pervious Cover	0.00	0.00	0.00	1.54	1.54
Impervious Cover	0.00	0.00	0.00	7.62	7.62
				Total	10.71



Low Impact Development Practices

Alternatives to Impervious Surfaces

Low Impact Development Practice	Size of Contributing Drainage Area (acres)	Impervious Cover in Contributing Drainage Area (acres)	Direct Runoff Reduction Volume Received by Practice (cubic feet)	Description of Runoff Reduction Credit	Runoff Reduction Volume Received from Upstream Practices	Total Runoff Reduction Volume Received by Practice (cubic feet)	Treatment Volume Received from Upstream Practices (cubic feet)	Total Treatment Volume Received by Practice (cubic feet)	Method for Calculating Storage	Storage Volume Provided by Practice (cubic feet)	Adjustment to Runoff Reduction Volume (cubic feet)	Remaining Runoff Reduction Volume (cubic feet)	Adjustment to Treatment Volume (cubic feet)	Remaining Treatment Volume (cubic feet)	Downstream Practice to be Employed
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

"Receiving" Low Impact Development Practices

Dry Swale, Non-Underdrained 1	10.71	7.62	32206.1	100% of storage volume	0.0	32206.1	0.0	32206.1	Surface Area x (Ponding Depth + Depth of Planting Bed x Void Ratio)	46178.0	32206.1	0.0	32206.1	0.0	Stormwater Pond, Wetland, or Wet Swale 1
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	

Treatment Only Practices

Stormwater Pond, Wetland, or Wet Swale 1	0.00	0.00	0.0	None	0.0	0.0	0.0	0.0	Volume in Wet Pool and Extended Detention	660000.0	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
None	0.00	0.00	0.0	N/A	0.0	0.0	0.0	0.0	N/A	N/A	0.0	0.0	0.0	0.0	
Totals	**10.71**	**7.62**									**32206.1**		**32206.1**		

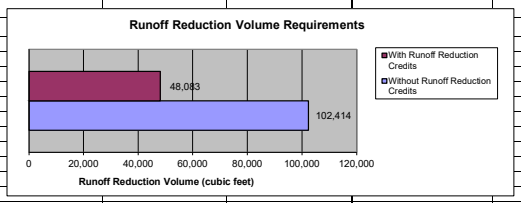
Practice	Method	Storage Volume	Reduction	Treatment?	Storage Calculation Method	Downstream List
None	N/A	N/A	0	N	N/A	No Downstream Practice
Green Roof 1	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 1
Green Roof 2	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 2
Green Roof 3	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 3
Green Roof 4	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 4
Green Roof 5	60% of volume received by the practice	N/A	60%	Y	N/A	Vegetated Filter Strip, A/B or Amended Soils 5
Permeable Pavement System, Underdrained 1	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 1
Permeable Pavement System, Underdrained 2	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 2
Permeable Pavement System, Underdrained 3	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 3
Permeable Pavement System, Underdrained 4	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 4
Permeable Pavement System, Underdrained 5	50% of storage volume		50%	Y	Depth x Void Ratio (0.32)	Vegetated Filter Strip, C/D Soils 5
Permeable Pavement System, Non-Underdrained 1	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 1
Permeable Pavement System, Non-Underdrained 2	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 2
Permeable Pavement System, Non-Underdrained 3	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 3
Permeable Pavement System, Non-Underdrained 4	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 4
Permeable Pavement System, Non-Underdrained 5	100% of storage volume		100%	Y	Depth x Void Ratio (0.32)	Grass Channel, A/B or Amended Soils 5
None	N/A	N/A	0%	N	N/A	Grass Channel, C/D Soils 1
Vegetated Filter Strip, A/B or Amended Soils 1	60% of volume received by the practice	N/A	60%		N/A	Grass Channel, C/D Soils 2
Vegetated Filter Strip, A/B or Amended Soils 2	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 3	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 4	60% of volume	N/A	60%		N/A	Grass Channel,
Vegetated Filter Strip, A/B or Amended Soils 5	60% of volume	N/A	60%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 1	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 2	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 3	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 4	30% of volume	N/A	30%		N/A	Simple Downspout
Vegetated Filter Strip, C/D Soils 5	30% of volume	N/A	30%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 1	25% of volume received by the	N/A	25%		N/A	Simple Downspout Disconnection, C/D
Grass Channel, A/B or Amended Soils 2	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 3	25% of volume	N/A	25%		N/A	Simple Downspout
Grass Channel, A/B or Amended Soils 4	25% of volume	N/A	25%		N/A	Simple Downspout

Coastal Stormwater Supplement Site Planning & Design Worksheet

Revised July 2014

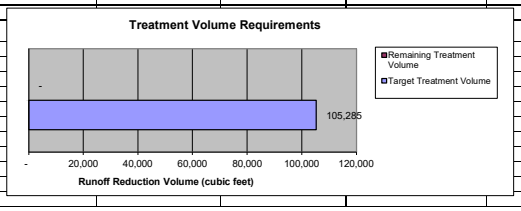
Stormwater Runoff Reduction Summary

Target Runoff Reduction and Treatment Volume, RRv (cubic feet)	105,285
Total Adjustment to Runoff Reduction Volume, RRv (cubic feet)	57,202
Percentage of Target Runoff Reduction Volume Achieved	54%
Runoff Reduction Volume Achieved (in)	0.65
Runoff Reduction Volume Remaining (cubic feet)	48,083



Note: If any of the target runoff reduction volume cannot be reduced on the development site, due to site characteristics or constraints, it should be intercepted and treated in one or more stormwater management practices that: (1) provide for at least an 80 percent reduction in TSS loads; and (2) reduce nitrogen and bacteria loads to the maximum extent practical.

Treatment Volume Achieved (cubic feet)	108,153
Treatment Volume Remaining (cubic feet)	-



THOMAS & HUTTON

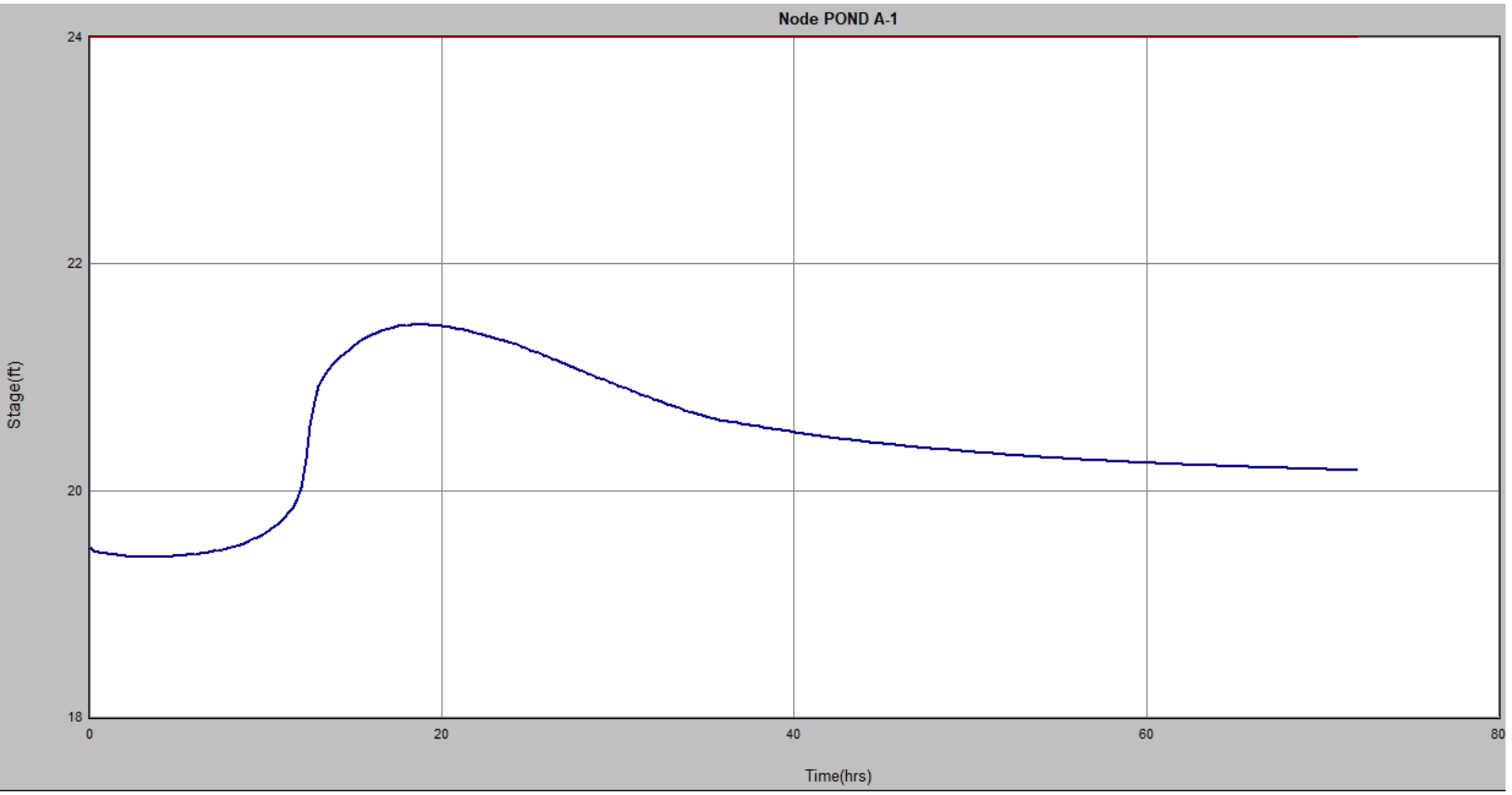
STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

APPENDIX E

AQUATIC RESOURCE PROTECTION CALCULATIONS

26327.0010


Node POND A-1
24
22
20
18
Stage(ft)
0
20
40
60
80
Time(hrs)

THOMAS & HUTTON

STORMWATER MANAGEMENT REPORT

NFI BUILDINGS A & B

EXHIBITS

26327.0010

Z:\26327\0010\CIVIL\DRAINAGE\CALCULATIONS AND REPORTS\STORM WATER\BASINS\PRE-DEVELOPMENT.DWG - Aug 4, 2021 - 3:19 PM

ULTIMATE STORM DRAINAGE
RUNOFF OUTFALL
INV. 19.39

NORITAKE
10.04 AC
CN: 90
Tc: 15 MINUTES

WS-100
22.82 AC
CN: 87
Tc: 41 MINUTES

WS-101A
41.78 AC
CN: 87
Tc: 41 MINUTES

WS-101
SUBSTATION BASIN
3.6 ACRES
CN: 90
Tc: 15 MINUTES

N E S W

PRE-DEVELOPMENT BASINS

BLDGS A & B

CHATHAM COUNTY, GA

PREPARED FOR:

NFI

PREPARED BY:

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

JOB NO: J-26327.0010	DATE: 08/22/21
DRAWN: EMD	SCALE: 1" = 100'
REVIEWED: JOC	SHEET: PRE

J:\PROJECTS\2021\26327.0010\ENGINEERING\CIVIL\DRAINAGE AND REPORTS\STORM WATER\RAINFALL\POST-DEVELOPMENT BASINS.DWG - Aug 6, 2021 - 3:43 PM

ULTIMATE STORM DRAINAGE
RUNOFF OUTFALL
INV. 19.39

WS-100
6.27 AC
CN: 87
Tc: 41 MINUTES

WS-206
0.24 ACRES
CN: 98
Tc: 15 MINUTES

NORITAKE
9.37 AC
CN: 90
Tc: 15 MINUTES

WS-207
0.58 ACRES
CN: 98
Tc: 15 MINUTES

WS-200
12.37 ACRES
CN: 96
Tc: 15 MINUTES

WS-208
1.72 ACRES
CN: 96
Tc: 15 MINUTES

WS-203
4.86 ACRES
CN: 90
Tc: 15 MINUTES

WS-202
3.17 ACRES
CN: 96
Tc: 15 MINUTES

WS-205
0.9 ACRES
CN: 90
Tc: 15 MINUTES

WS-204
2.1 ACRES
CN: 96
Tc: 15 MINUTES

WS-201
6.46 ACRES
CN: 96
Tc: 15 MINUTES

WS-101
SUBSTATION BASIN
3.6 ACRES
CN: 90
Tc: 15 MINUTES

WS-101A
23.02 AC
CN: 87
Tc: 41 MINUTES

N E S W

POST-DEVELOPMENT BASINS

BLDGS A & B

CHATHAM COUNTY, GA

PREPARED FOR:

NFI

PREPARED BY:

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

JOB NO:	J-26327.0010
DRAWN:	EMD
REVIEWED:	JOC
DATE:	08/22/21
SCALE:	1" = 100'
SHEET:	POST

THOMAS & HUTTON

Soils Map

NFI Buildings A & B

08/11/2021

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not Classified

This map was created using geothinQ | www.geothinQ.com | Mapping Smart Land Decisions

THOMAS & HUTTON

Location Map

NFI Buildings A & B

08/11/2021

This map was created using geothinQ | www.geothinQ.com | Mapping Smart Land Decisions

THOMAS & HUTTON

FEMA Flood Map

NFI Buildings A & B

08/11/2021

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Area of Minimal Flood Hazard

This map was created using geothinQ | www.geothinQ.com | Mapping Smart Land Decisions

Z:\26327\26327.0010\ENGINEERING\CALCULATIONS AND REPORTS\STORM WATER\CSS\26327.0010 - CSS EXHIBIT.DWG - Aug 11, 2021 - 12:42 PM

Dixie St

Dorset Rd

Evora St

Falkirk St

Crossgate Rd

Gordon St

STORMWATER DETENTION POND

DA - A
16.78 ACRES

DA - B
4.85 ACRES

DA - C
2.13 ACRES

DA - D
10.71 ACRES

VEGETATED FILTER STRIP
CONTRIBUTING AREA: 5.33 AC.
(5.09 AC. IMPERVIOUS)

DRY SWALE
(NON-UNDERDRAINED)
CONTRIBUTING AREA: 4.85 AC.
(2.83 AC. IMPERVIOUS)

UNDISTURBED PERVIOUS COVER
0.87 AC.

DRY SWALE
(NON-UNDERDRAINED)
CONTRIBUTING AREA: 2.13 AC.
(0.81 AC. IMPERVIOUS)

UNDISTURBED PERVIOUS COVER
0.36 AC.

DRY SWALE
(NON-UNDERDRAINED)
CONTRIBUTING AREA: 10.71 AC.
(7.62 AC. IMPERVIOUS)

UNDISTURBED PERVIOUS COVER
0.65 AC.

Jimmy DeLoach Pkwy

N E S W

CSS EXHIBIT

NFI BLDGS A & B

CHATHAM COUNTY, GA

PREPARED FOR:

NFI

PREPARED BY:

THOMAS & HUTTON
50 Park of Commerce Way
Savannah, GA 31405 • 912.234.5300
www.thomasandhutton.com

JOB NO:	J-26327.0010
DRAWN:	EMD
REVIEWED:	JOC

DATE:	08/11/21
SCALE:	1" = 100'
SHEET:	CSS

Site Plan Review Application submitted by Chad Zittrouer, Kern & Co., LLC., on behalf of CH Realty IV - Sansone, I, LLC., for PIN # 7-0977-01-028 (Hendley Road) for a Specific Development Site Plan to allow a Warehouse / Distribution Center (Legacy Park Building 2) in a P-I-2 (Planned Industrial) Zoning District

Issue/Item: Site Plan Review Application submitted by Chad Zittrouer, Kern & Co., LLC., on behalf of CH Realty IV - Sansone, I, LLC., for PIN # 7-0977-01-028 (Hendley Road) for a Specific Development Site Plan to allow a Warehouse / Distribution Center (Legacy Park Building 2) in a P-I-2 (Planned Industrial) Zoning District

Background: The subject property is currently vacant property. There are no buildings or structures on the subject property.

Facts and Findings: The site plan consist of a 179,800 square foot warehouse / distribution center. The site plan also includes associated parking, utilities, drainage and infrastructure improvements. This project will be served by City of Port Wentworth water and sewer utilities. This application is under review by City Engineers, Thomas & Hutton. This project complies with the 2021-2041 City of Port Wentworth Comprehensive Plan.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, May 9, 2022 at 6:30 PM. **/ UPDATE: THE PLANNING COMMISSION VOTED UNANIMOUSLY TO RECOMMEND TABLING THIS APPLICATION.**

ATTACHMENTS:

- LEGACY PARK BUILDING 2 7-0977-01-028 S-SITE PLAN MAY 2022 - Application (PDF)
- LEGACY PARK BUILDING 2 7-0977-01-028 S-SITE PLAN MAY 2022 - Timeline (DOCX)

220187

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application

Site Plan Application is required for all new construction in a "P" or "MPO" zone as defined in the Zoning Ordinance of the City of Port Wentworth.

Site Plan Type (*Check One*): ☐ General / Concept ☒ Specific Development

Site Plan Address: 0 Hendley Road

PIN #(s): 7-0977-01-028

Zoning: P-I-2 Estimated Cost of Construction: $ 9,180,952

Type of Construction: Tilt-Wall Warehouse/Distribution and associated Infrastructure

Project Name: Legacy Park - Building 2

Applicant's Name: Kern & Co., LLC - Chad Zittrouer

Mailing Address: P O Box 15179 - Savannah, GA 31416

Phone #: 912-354-8400 Email: czittrouer@kernengineering.com

Owner's Name (If Different form Applicant): CH Realty IV - Sansone I, LLC

Mailing Address: 120 S Central Ave - St. Louis, MO 63105

Phone #: (314)-336-2372 Email: jbrown@sansonegroup.com

I hereby acknowledge that the above information is true and correct.

Applicant's Signature — Date: 3.25.22

Owner's Signature (If Different form Applicant) — Date: 3.31.22

Please see page 2 for required submittal checklist

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application Submittal Checklist

Documentation below is required for a complete submittal.

- [x] Signed and Completed Application
- [x] 3 Full size sets of site plan civil drawings or concept plan (depending on type of site plan)
- [ ] 15 half size (11" X 17") sets of site plan civil drawings or concept plan (depending on type of site plan)
- [ ] 2 copies of hydrology reports (if applicable)
- [x] Names, mailing address, and PIN number of all property owners within 250 feet of all property lines
- [x] 1 8 ½" X 11" of site plan civil drawings or concept plan (depending on type of site plan)
- [ ] PDF of entire submittal on a flash drive or download link ONLY (NO CD'S)
- [ ] Other Engineering details or reports may be required once submittal has been received
- [x] Site plan review fee check
    - ○ No Land Disturbance- $206.00 Site Plan Fee + $50.00 Admin Fee = Total $256.00
    - [x] With Land Disturbance - $836.00 Site Plan Fee + $50.00 Admin Fee = Total $886.00

Additional Fee Statement: If engineer review cost to the City exceeds the site plan review fee that is paid at the time of initial application submittal, you may be required to pay additional review cost.

I have read and agree to the above additional fee statement

_____ 3.25.22

Applicant's Signature Date

CITY OF PORT WENTWORTH
(912) 964-4379

REC#: 00349344 4/01/2022 8:29 AM
OPER: ME TERM: 011
REF#: CK 6850

TRAN: 112.0000 BLDG PERMIT
220187 886.00CR
CH REALTY IV - SANSONE I, LLC
7-0977-01-028 BLD 2
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM

ADJACENT PROPERTY OWNERS

PROPERTY	PIN	OWNER	ADDRESS
1	7-0976-02-021	D.B. ASTER III LLC	250 GILBRALTAR ROAD, HORSHAM, PA 19044
2	7-0037-02-002A	PFJ SOUTHEAST LLC	PO BOX 54650, LEXINGTON, KY 40555
3	7-0037-02-002	PFJ SOUTHEAST LLC	PO BOX 54650 LEXINGTON, KY 40555
4	7-0037-01-043	ENMARK STATION INC	PO BOX 728 SAVANNAH, GA. 31402
5	1-0903-02-013	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
6	1-0903-02-003	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
7	1-0903-05-012	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
8	7-0979-01-001	MANER, FREDRICK D.	PO BOX 30032 SAVANNAH, GA. 31410
9	7-0979-01-002	ADAMS & DAISE SANDRA D & DARREL M.	26 DEVON DR WEST ORANGE NJ 07052
10	7-0979-01-003	STEELE, ALEXANDER	602 W. 45TH STREET SAVANNAH, GA. 31405
11	7-0979-01-004	WHITE OAK BAPTIST CHURCH	135 MONTEITH ROAD, SAVANNAH, GA. 31407
12	7-0979-01-005	HICKS, FANNIE MAE	143 MONTIETH ROAD, SAVANNAH, GA. 31407
13	7-0979-01-008	UTTERMOST SAVANNNAH LLC	PO BOX 16134 SAVANNAH, GA. 31416
14	7-0977-01-020	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308

15	7-0977-01-019	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
16	7-0977-01-018	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
17	7-0977-01-017	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
18	7-0977-01-016	THOMAS, LEON	208 MONTIETH ROAD, SAVANNAH, GA. 31407
19	7-0977-01-015	BRYANT, MAE FRANCES	212 MONTIETH ROAD, SAVANNAH, GA. 31407
20	7-0977-01-014	BRYANT & JONES ROBERT L. & COTEA D.	216 MONTIETH ROAD, SAVANNAH, GA. 31407
21	7-0977-01-013	HURST, WILBERT	220 MONTIETH ROAD, SAVANNAH, GA. 31407
22	7-0977-01-012	STEWART, SHUBERT STEWART THELMA & ROBIN, RUTH & MARION	230 MONTIETH ROAD, SAVANNAH, GA. 31407
23	7-0977-01-011	MOUNT MARIA BAPTIST CHURCH	230 MONTIETH ROAD, SAVANNAH, GA. 31407
24	7-0977-01-010	BODY OF CHRIST CHURCH	201 BIRCH DRIVE, RINCON, GA. 31326
25	7-0977-01-008	UTTERMOST SAVANNAH LLC	PO BOX 16134, SAVANNAH, GA. 31416
26	7-0977-01-024	CZURA WALTER M.	PO BOX 6567, HILTON HEAD, SC 29938
27	7-0977-01-025	CZURA WALTER M.	PO BOX 6567, HILTON HEAD, SC 29938

Owner Certification – Legacy Park – Buildings 2 & 3

I, Dave Wilson (CH Realty IV – Sansone I, LLC), hereby certify that that all land clearing, construction, land development and drainage will be done according to the approved stormwater management design plan.

3.4.7 Exhibit 4 - Owner/Client Declaration

1. The owner/client will be responsible to maintain and operate the fire system from the tapping valve up to and including the backflow detector check valve assemble, along with the internal fire system.

2. The owner/client has responsibility to operate and maintain the backflow prevention device at subject location, and to include testing on an annual basis of the device as required by the City of Port Wentworth.

CH Realty IV - Sansone I, LLC

Owner/Client Name (Please Print)

Owner/Client Signature

3.31.22

Date

Project Timeline

Project Number: 220187

Project Name: Legacy Park Building 2 Specific Site Plan

Applicant / Engineer: Chad Zittrouer, Kern & Co., LLC

Owner: CH Realty IV – Sansone, LLC

City Review Engineer: Thomas & Hutton

- 3/28/2022 – Application received; incomplete – missing following: PDF, Hydro, Application signed by owner, 15 copies.
- 3/30/2022 – sent email to Chad for missing information.
- 4/1/2022 – received PDF of submittal
- 4/1/2022 – sent to T&H to start a site plan review
- 4/20/2022 – sent an email to T&H for an update on review. Jennifer Roach responded they should have a letter back to us by April 29th.
- 5/6/2022 – Received 1st comment letter from T&H. Forwarded to applicant.
- 5/9/2022 – Planning Commission voted unanimously to recommend tabling this application.

THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 | 912.234.5300
WWW.THOMASANDHUTTON.COM

May 6, 2022

Mr. Brian Harvey
Director of Development Services
City of Port Wentworth
305 South Coastal Highway
Port Wentworth, GA 31407

Re: Legacy Park - Building #2
Port Wentworth, Georgia
Site Plan Review
J–25412.0030

Dear Brian:

We have received the site plan for the referenced project submittal. The following information was included in the submittal package:

- Water/Wastewater Availability Request Form
- Wastewater Collection System Checklist
- Water Distribution System Checklist
- Fire Protection Design Requirements
- FIRM Panel Maps
- Flow Test
- Hendley Road Relocation Agreement Executed by Port Wentworth
- Site Drawings of Hendley Road Relocation
- Landfill Certification
- Site Drawings of Legacy Park – Building #2
- Site Plan Review Application
- Approved Jurisdictional Determination #SAS-2005-01056
- Department of the Army Permit #SAS-2005-01056
- Wetland Mitigation Credits Receipt
- Zoning Verification Letter
- Water Distribution System Check List

This site plan review was completed based on our interpretation of the latest City of Port Wentworth zoning ordinance and development regulations. Thomas & Hutton's review was performed in an effort to assess if the application package for the proposed improvements is in general conformance with City of Port Wentworth regulations. Our review shall not be interpreted as a detailed technical analysis of the design or for verification of technical sufficiency for elements of design. Under no circumstances shall our review and comments related to the site plans relieve the Applicant's Design Professional of their professional obligations and professional standards of care. As such, the design submitted by the Applicant's Design Professional shall be the sole responsibility of the Applicant's Design Professional. Thomas & Hutton shall not accept any responsibility for any liability due to design and construction, in whole or in part, for any aspect of the design and construction of design documents.

We have reviewed the submittal package and offer the following comments noted below for consideration.

General Comments

1. The site appears to be zoned Planned Industrial Heavy (P-I-2).

2. According to National Wetland Inventory (NWI) data, there are wetlands located on the site. The applicant has provided an Approved Jurisdictional Determination (AJD) as well as a USACE Wetland Impact Permit.

3. The site lies within an Effective FEMA Special Flood Hazard Area Zone X (Unshaded), Area of Minimal Flood Hazard, Zone X (Shaded), Area inundated by the 0.2% annual chance storm event, and Zone AE with a Base Flood Elevation of 12, area inundated by the 1% annual chance storm event, according to FEMA FIRM Panel 13051C0040H, effective August 16, 2018.

4. Please provide an EPD Land Disturbance approval.

5. Please provide an NPDES NOI submittal package per Port Wentworth Comprehensive Design Manual Section 3.3.

Stormwater Comments

Pursuant to our interpretation of the City of Port Wentworth Stormwater Management Ordinance (PWSMO) Section 7-79, this project proposes a new development that will involve the creation of 5,000 square feet or more impervious cover. As such, all stormwater provisions apply to this site.

1. It appears the proposed development may encroach fill material upon an area of special flood hazard Zone AE. In accordance with Section 7-54(1) of the Port Wentworth Drainage and Flood Control Ordinance (PWDFCO), provide demonstration that the cumulative effect of the proposed development will not increase the water surface elevation of the base flood more than one foot at any point within the community, certified by a registered professional engineer. The engineering certification should be supported by technical data that conforms to standard hydraulic engineering principles.

2. Provide all requirements of a stormwater management design plan, including a hydrologic and hydraulic analyses, runoff reduction calculations, a post-construction stormwater management system plan and narrative, certification by the plan preparer, and other required information per Section 7-80(d) and 7-82 of the PWDFCO.

3. Please acknowledge that a stormwater performance bond will be required prior to construction, as listed in Section 7-80(h) of Article III of the PWDFCO.

4. Provide a stormwater management inspection and maintenance agreement plan as prescribed in section 7-80(e) of the PWDFCO.

5. Provide documentation of no adverse upstream or downstream impacts to the existing stormwater system in accordance with Section 3.7.10(7) of the Port Wentworth Comprehensive Design Manual (PWCDM).

6. Provide detail drawings for all stormwater structural practices, specifically a pipe trench and bedding detail, in accordance with Section 7-95(c)(2)(i) of the PWDFCO.

7. Additional stormwater design comments may arise upon submission of the requested requirements.

Water, Fire System, and Sanitary Sewer Design Comments

1. Please provide Georgia EPD water/wastewater permits.

2. Complete the provided Water Distribution System Check List (Exhibit 1 in Section 3.4.3 of the Comprehensive Design Manual.) Some comments below expand on the requested information. The following items from the Check List are missing:

    - Water System analysis and design (include calculations)
    - Waterline easement (if applicable)
    - Pipe separated distances called out at utility crossings
    - Maintenance responsibility for fire line and appurtenances in owner/client agreement (Exhibit 3)
    - Irrigation system information
    - Proposed water/sewer agreement

3. Complete the provided Wastewater Collection System Check List (Section 3.5.3 Exhibit 1 in the Comprehensive Design Manual). Some comments below expand on the requested information. The following items from the Check List are missing:

    - Sanitary Sewer profiles
    - City of Port Wentworth pump station design standards used to prepare details
    - Proposed water/sewer agreement

4. Provide typical profiles of proposed utilities and indicate finished grade and existing grade elevations per Section 3.1 of the latest PWCDM.

5. Provide average daily, peak daily, and peak hourly demands based on EPD's "Minimum Standards for Public Water Systems", revised March, 2021.

6. Provide approval from fire marshal for the fire protection design.

7. Provide hydraulic calculations for the fire main. Provide lead-in locations with isolation valves, fire hydrants, and other appurtenances required by NFPA.

8. Provide hydraulic calculations showing the proposed 6" gravity sewer lateral to the building is appropriate.

9. Provide lengths and slopes of the proposed gravity sewer on the utility plans.

10. Provide supporting calculations showing the existing 12" water main is adequate for the required fire flow.

11. Provide supporting calculations showing the existing force main is adequate for the proposed pump station effluent.

12. Provide flow and total dynamic head (TDH) calculations for the grinder pump station and force main.

13. Provide hydraulic calculations to show flows and pressures for the proposed supply main, domestic supply main, and fire supply main to the building under peak hourly and fire flow demand scenarios. Include head losses through backflow preventers, meters, and other appurtenances.

14. Confirm the 10" backflow preventer on sheet C3-2 is adequately sized to handle the total flow, as calculated in the proved ISO fire flow calculations.

15. Provide grinder pump station design calculations with pump curves, as well as details and specifications in accordance with City of Port Wentworth standards. Refer to section 3.5.3(16) of the PWCDM.

16. Provide an updated fire flow test obtaining a minimum of 10% pressure drop, per NFPA 291, Section 4.4.6, 2022 Edition.

17. Provide pump station plan views and section views in accordance with Section 3.1 of the PWCDM. Plan views are to be drawn to scale, and section views are to show pump height.

18. Show on the utility plan the number of single and double services in accordance with Section 3.1 of the PWCDM.

19. In accordance with Section 3.4.2 of the PWCDM, please provide details of service connections, thrust restraints/blocks, and any other proposed appurtenances.

20. A 3" polyethylene force main is called out to the east of the proposed building in the provided utility plan, but no force main was found. Please explain or revise accordingly.

21. Additional water, fire system, and sanitary sewer design comments may arise upon submission of the requested calculations and materials.

Plan Sheets Comments

1. Please revise plans to include wetlands, proposed impacts to wetlands, riparian buffers, floodplains, stands of trees and/or other vegetation, and other applicable information in accordance with Section 7-82(a) of the PWFDCO.

2. Provide show at least one benchmark on the plan sheets in accordance with Section 3.1 of the PWCDM.

3. Provide existing roadway, including streets of record (recorded but not constructed), names and right-of-way widths in accordance with Section 3.1 of the PWCDM.

4. Confirm that no dry utilities are proposed, including gas, electric, telephone, and TV cable. Refer to Section 3.1 of the PWCDM.

5. Show vertical elevations of areas where major system appurtenances, such as pump station, manholes, etc., are proposed in accordance with Section 3.1 of the PWCDM.

6. Provide a delineation of disturbed areas within the project boundary in accordance with section 7-95(c)(3)(d) of the PWCoO.

7. The plans appear to be missing contours outside of the proposed stormwater ponds. Please provide contours with an interval in accordance with Section 7-95(c)(3)(e) of the PWCoO.

8. Show the location of erosion and sedimentation control practices using coding symbols from the "Manual for Erosion and Sediment Control in Georgia," Chapter 6 in accordance with Section 7-95(c)(3)(j) of the PWCoO.

9. Provide parking calculations to show the requirements of Article IV Sections 4.10 and 4.10.1 of the Port Wentworth Zoning Ordinance are met.

10. Please clarify on the plans where loading dock areas are proposed, if any. If loading dock areas are proposed as part of this project, ensure that the number of loading spaces is in accordance with Article IV Section 4.11 of the Port Wentworth Zoning Ordinance.

11. Provide a landscaping and irrigation plan in accordance with Section 5.2(4)(b) of the Port Wentworth Zoning Ordinance.

12. Provide screening per Sections 5.2(4)(b), 5.2(4)(f)(5), and 5.2(4)(k) of the Port Wentworth Zoning Ordinance.

13. With the provided landscaping charts and notes, please include who will be responsible for the maintenance of the vegetation at the site and what practices will be employed to ensure adequate vegetative cover is preserved in accordance with Section 7-83(d) of the PWDFCO.

14. Please provide an elevation plan of the proposed structure to ensure that the proposed building meets the height requirements in Section 5.2(4)(d) of the Port Wentworth Zoning Ordinance.

15. In accordance with section 5.2(4)(e) of the Zoning Ordinance, no parking or other vehicular surface shall be closer than twenty (20) feet to a building except in the case of an automobile drop-off, loading area, or vehicular entry to the building. Please revise plans accordingly.

Site Lighting Comments

1. Please provide a site Lighting Plan, if applicable.

Paving, Signage, and Parking Comments

1. Provide all applicable details concerning the parking spaces, both handicap accessible and otherwise.

2. Plans do not appear to specify proposed parking lot material. Please provide callouts to specify material and provide associated details.

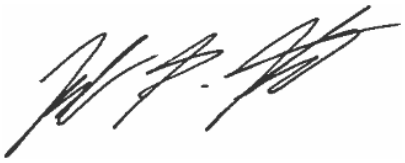
3. Any proposed signage will require a separate permit as outlined in section 19.1-3 of the Port Wentworth Code of Ordinances.

4. A building permit will be required as outlined in Section 7.3, Appendix B of the Port Wentworth Code of Ordinances.

Thank you for your attention to this project. If there are any questions or comments, please feel free to call us at (912) 721-4144.

Sincerely,

THOMAS & HUTTON



Nash Norton

NPN/jar

3.4.4 Exhibit 2 Fire Protection Design Requirements

This exhibit must be submitted for all private development projects that will be served by the City of Port Wentworth public water system.

PROJECT Legacy Park - Building 2 **DATE** 2/15/22

LOCATION Hendley Road

WILL THE PROJECT INCLUDE A SPRINKLER SYSTEM? YES X NO_____

If yes, the system must be designed in accordance with NFPA 13, and the following additional question must be answered:

WILL THE SPRINKLER SYSTEM INCLUDE A BOOSTER PUMP OR THE USE OF CHEMICALS? YES X NO_____

If yes, a reduced pressure zone (RPZ) type backflow preventor must be installed on the water service lateral that will supply the system, in accordance with the City of Port Wentworth specifications and details.

NEEDED FIRE FLOW (NFF):

The Needed Fire Flow (NFF) for a proposed facility must be calculated in accordance with the Insurance Services Office (ISO) "Fire Suppression Rating Schedule", current edition.

The ISO calculation to determine the NFF for a proposed facility considers the construction, occupancy, exposure, and communication of a building or fire division as follows:

Construction Factor (C) :

The portion of the NFF attributed to the construction and area of the proposed building is determined by the following formula:

$C = 18 * F * (A)^{0.5,}$ where

F = Coefficient related to the class of construction:

= 1.5 for Construction Class 1 (Frame)

= 1.0 for Construction Class 2 (Joisted Masonry)

= 0.8 for Construction Class 3 (Non-combustible) and
Construction Class 4 (Masonry Non-combustible)

= 0.6 for Construction Class 5 (Modified Fire Resistive) and
Construction Class 6 (Fire Resistive)

A = Effective Area

Note: Refer to the ISO Fire Suppression Rating Schedule for a detailed description of how to calculate the Construction Factor when the building Construction Class is mixed.

Class of Construction Factor (F): 0.8

Effective Area (A): 179,800 **square feet**

Calculated Construction Factor (C): 6,106 **gallons/minute (gpm)**

A. Occupancy Factor (O):

The portion of the NFF attributed to the occupancy of the proposed building is determined by the following factors:

Occupancy Combustibility Class	Occupancy Factor (O)
C-1 (Non-combustible)	0.75
C-2 (Limited Combustible)	0.85
C-3 (Combustible)	1.00
C-4 (Free Burning)	1.15
C-5 (Rapid Burning)	1.25

Occupancy Factor (O): 1.0

B. Exposures (X) and Communication Factors (P):

The portion of the NFF attributed to exposed and communicating buildings shall be determined in accordance with the ISO Fire Suppression Rating Schedule.

Exposure Factor (X): 0

Communication Factor (P): 0

C. Calculation of Needed Fire Flow (NFF):

The Needed Fire Flow (NFF) for the facility shall be calculated using the following formula:

$NFF = C * O * (X+P)_i$

$(X+P)_i = 1.0 + \bullet \sum_{i=1}^{n} (X_i + P_i)$, maximum 1.75, where n = number of sides of subject building.

6,106 * 0.25 (sprinkled) =

Calculated Needed Fire Flow (NFF): 1,750 **gpm**

3.4.5 Exhibit 3 Available Fire Flow (Aff):

The Available Fire Flow (AFF) must be calculated based on hydrant flow testing and supplemental hydraulic analyses. The AFF will represent the fire flow that is available from the public water system at the existing or proposed hydrant nearest to the proposed facility at a residual pressure of 20 psi.

The following formula, which was developed by the ISO, can be used to adjust data from a hydrant flow test to determine the available fire flow at that location at 20 psi:

$$Q_{20} = Q_t * ((P_s - P_{20})^{0.54})/(P_s - P_t)^{0.54}$$

Q_{20} = Available fire flow at a residual pressure of 20 psi (gpm)
Q_t = Hydrant flow during test (gpm)
P_s = Static pressure measured before hydrant flow test (psi)
P_{20} = 20 psi (desired residual pressure)
P_t = Residual pressure measured during hydrant flow test (psi)

Note: City of Port Wentworth will provide one hydrant flow test at a location selected by the design consultant for no charge, which can be used as the basis for this calculation.

Hydrant Flow Rate During Test (Q_t): 1420 **gpm**

Static Pressure Before Flow Test (P_s): 68 **psi**

Residual Pressure During Flow Test (P_t): 62 **psi**

Calculated Available Fire Flow (AFF): 4365 **gpm**

3.4.6 Hydrant Distribution Summary For Proposed Facility

DISTANCE FROM THE HYDRANT TO THE PROPOSED FACILITY (FEET)	FIRE FLOW CREDIT (GALLONS/MINUTE)
0 TO 300	1,000
301 TO 600	670
601 TO 1,000	250

DISTANCE FROM THE EXISTING AND PROPOSED HYDRANT TO THE PROPOSED FACILITY (FEET)	FIRE FLOW CREDIT (GALLONS/MINUTE)
100	1,000
100	1,000
TOTAL CREDIT (GALLONS/MINUTE):	2,000

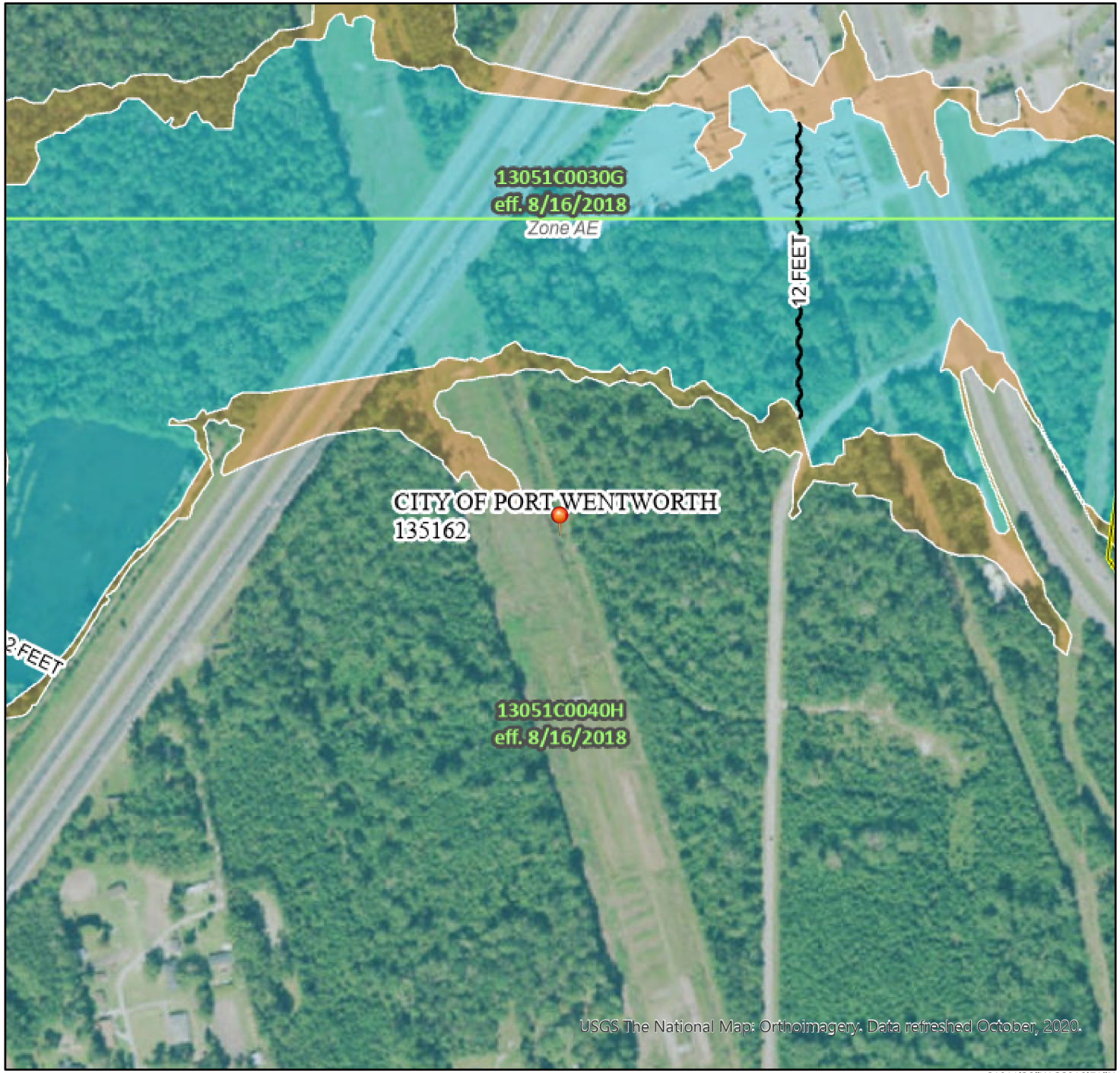
Calculated by: _____

Date: _____

National Flood Hazard Layer FIRMette

FEMA

81°12'7"W 32°11'21"N



81°11'30"W 32°10'51"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/2/2020 at 6:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

81°12'6"W 32°11'10"N

81°11'28"W 32°10'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/2/2020 at 6:30 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist

FIRE HYDRANT FLOW TESTS
KERN & CO., LLC PROJECT NO.: 210071.000

Location	Inspector	Date
6941 GA HWY 21 PORT WENTWORTH	JERRY E. TUCKER	4-22-21

Static	Residual	FLOW	G.P.M.	Size of Main	Time
68	62	58	1420		3:00 PM

DESCRIPTION

NOTE: This Flow Test was conducted with 2.5” Pollard Diffuser.

7 Mall Court (31406) ▪ P.O. Box 15179 ▪ Savannah, Georgia 31416 ▪ Phone: (912) 354-8400
319 S. Walnut Street, Suite A ▪ Statesboro, Georgia 30458 ▪ Phone: (912) 225-3373
Fax: (912) 356-1865 ▪ E-mail: info@kernengineering.com ▪ Web: www.kernengineering.com

Construction and Conveyance Agreement

This agreement (this "Agreement") is made and entered into as of this the 28th day of October, 2021 by and between **CH REALTY IX-SANSONE I SAVANNAH 21-95, L.P.**, a Delaware limited partnership ("Owner"), and the **City of Port Wentworth**, a Georgia Municipal Corporation (the "City").

W I T N E S S E T H

WHEREAS, the City of Port Wentworth, Georgia, is the owner of certain property known as Hendley Road, shown on the records of the City and in the Tax Assessor's office of Chatham County, Georgia, such ownership arising out of the annexation of the surrounding properties into the City of Pt. Wentworth, and more particularly described on Exhibit B hereto, which is specifically incorporated herein; and

Whereas, Owner owns the real property described on Exhibit A hereto (hereinafter, such property is collectively referred to as the "Property"); and

Whereas, the City, under provisions of Georgia law arising out of the annexation of all the surrounding property, owns that certain right of way located in the Property, and more fully described on Exhibit B attached hereto, which is used for ingress and egress purposes (hereinafter, such property is referred to as the "City Property") and requires extensive repair and maintenance to provide for such access by the citizens of Pt. Wentworth, the citizens of the State of Georgia, and all other users; and

Whereas, the City and the Owner are desirous of entering into an agreement whereby the Owner shall convey to the City, under the terms hereof, a new fully completed right of way located on the ____ right of way as described on Exhibit A, such right of way being constructed by Owner consistent with the plans and specifications provided by the Owner to the City, as amended, for a new Hendley Road, such new Hendley Road to be built in conformity with the current requirements of the City for industrial and vehicular traffic; and

WHEREAS, upon completion of the new Hendley Road by the Owner, subject to the terms of this agreement, Owner shall transfer the newly constructed Hendley Road, as described on Exhibit A to the City and receive from the City the title to the old right of way of Hendley Road as described on Exhibit B and shown on various plats of record, free of any lien or encumbrance; and

WHEREAS, by and through its' authorized agent reports, duly acknowledged, and discussions of its' Council, the City has determined that the advantages to the City in swapping the said tracts is authorized pursuant to O.C.G.A § 32-2-3 as the property described on Exhibit B together with the improvements built as per the specifications agreed by the parties hereto. The parties agree that the exchange serves the best interest of the public and the property to be acquired by the City in exchange is appraised as being of equal value to, or of greater value than, the property or interest to be exchanged; and

Whereas, the City, by and through its' Council has determined that such exchange of properties as described herein and shown on Exhibit "C" hereto, subject to the provisions, terms and conditions set forth below, is in the best interests of the citizens of the City, the State of Georgia, and all users of Hendley Road, by the City obtaining equal property and a right of way built to current specifications of the City, and by providing safer and more enhanced traffic flow within the Property where a new right of way will be located for ingress and egress, in the area depicted on Exhibit C attached hereto.

Now, therefore, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows.

1. New ROW. Owner and the City agree that the Owner will cause to be constructed the road (the "Road") described and depicted on Exhibit C attached hereto (the "Work"). The City agrees to cooperate in the issuance of all permits and approvals from the City to Owner to evidence and provide for the commencement of construction on the new right of way to be known as Hendley Road. Owner shall be responsible for obtaining permits from other ~~applicable~~ governmental regulatory authorities, other than City, required to commence the Work. Owner shall cause the Work to be promptly commenced and diligently pursued to completion in a good and workmanlike manner and as quickly as reasonably practicable after commencement. All costs and expenses necessary to complete the Work shall be paid by Owner. Owner and the City each will cooperate with the other as reasonably necessary to obtain the necessary permits and approvals and to permit the Work to be completed. After the Work has been completed and has been accepted by the City as having been completed, the City shall thereupon, take the following acts:
   a. Execute a quitclaim of any and all interest in and to Hendley Road as existing as of the date of this agreement, described on Exhibit B hereto, and as shown on all plats of record to Owner;
   b. Assume and have the responsibility and obligation to repair, maintain, replace and/or improve the Road and improvements in accordance with its municipal responsibilities.
   c. City shall, upon completion of the Work, accept the Road as dedicated to the City pursuant to a dedication deed or similar instrument acceptable to both parties (the "New ROW").
   d. Simultaneously with the Owner's delivery of the New ROW to the City, the City shall execute and deliver to Owner the deed and release in the form attached hereto as Exhibit D. Until the City has delivered the said quitclaim deed and release to Owner, the City shall not be authorized to record the ROW deed for the new Hendley Road.

2. All work performed by Owner for the New ROW shall be at Owner's sole risk and responsibility. Owner shall hold City harmless for any and all claims, causes of action, suits, expenses, or other matters arising out of any injury or damage arising from Owner's work until such time as the City accepts the new ROW. Additionally, Owner shall comply with any and all requirements of the City

pertaining to traffic control and warning of roadwork on the existing Hendley Road during the construction process until City accepts the dedication of the road by delivery of deeds required hereunder.

3. Miscellaneous.

A. Entire Agreement; Amendment; Waivers. This Agreement has been jointly drafted by the parties hereto, constitutes the sole and entire agreement of the parties with respect to the subject matter contained herein, and supersedes all prior and contemporaneous understandings, agreements, representations and warranties, both written and oral, regarding such subject matter. Therefore, the terms of this Agreement prevail over any terms or conditions contained in any other documentation unless the parties otherwise expressly agree in writing. No amendment to or modification of or rescission, termination or discharge of this Agreement is effective unless it is in writing, identified as an amendment to or rescission, termination or discharge of this Agreement and signed by an authorized representative of each party. No waiver by any party of any of the provisions of this Agreement shall be effective unless explicitly set forth in writing and signed by the party so waiving. Except as otherwise set forth in this Agreement, no failure to exercise, or delay in exercising, any rights, remedy, power or privilege arising from this Agreement shall operate or be construed as a waiver thereof, nor shall any single or partial exercise of any right, remedy, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

B. Binding Effect; Time of the Essence; Assignment; Governing Law. This Agreement and all of its terms and provisions shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns. Time is of the essence with respect to the terms and conditions in this Agreement. Neither party shall assign this Agreement without the prior written consent of the other party which will not be unreasonably withheld, conditioned or delayed. This Agreement shall be construed under and enforced in accordance with the laws of the State of Georgia without reference to the conflicts of law principles thereof.

C. Force Majeure. Any delay or failure of a party to perform its obligations under this Agreement will be excused to the extent that the delay or failure was caused directly by an event beyond such party's control, without such party's fault or negligence and that by its nature could not have been foreseen by such party or, if it could have been foreseen, was unavoidable (which events may include natural disasters, embargoes, explosions, riots, wars, acts of terrorism, strikes, labor stoppages or slowdowns or other industrial disturbances, and shortage of adequate power or transportation facilities).

D. Counterpart Execution. This document may be executed in any number of counterparts, each to be an original, but all of which shall constitute one instrument, and it shall be sufficient if any party hereto signs any such counterpart, so long as each of the parties hereto executes at least one such counterpart.

[The remainder of this page is blank. The next page is the signature page.]

In witness whereof, the undersigned have executed this Agreement as of the date first written above.

OWNER:

CH REALTY IX-SANSONE I SAVANNAH 21-95, L.P., a Delaware limited partnership

By: CH Realty IX/I Savannah 21-95 GP, L.L.C., a Delaware limited liability company, its general partner

By: Fund IX Managers, L.L.C., a Texas limited liability company, its manager

By:_____
Name:_____
Title:_____

CITY:

CITY OF PORT WENTWORTH, A GEORGIA MUNICIPAL CORPORATION

By:_____
Name: GARY NORTON
Title: MAYOR

ATTEST:_____
BY: SHANTA SCARBORO
TITLE: CLERK OF COUNCIL

SEAL

SITE DRAWINGS OF

HENDLEY ROAD RELOCATION

FOR

CH REALTY IX-SANSONE I SAVANNAH 21-95 LP
PORT WENTWORTH, GA

KC PROJECT # 210071.000

MARCH 30, 2022

NRCS REVISION DATE:

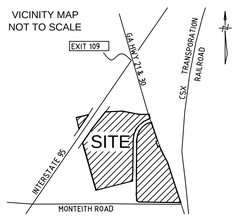
☐ NOT FOR CONSTRUCTION

☐ RELEASED FOR CONSTRUCTION

DATE: _____ BY: _____

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern-Coleman & Co. LLC.

VICINITY MAP:



PROJECT PREPARED BY:

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

INITIAL APPROVAL BY GOVERNING AGENCY DATE:

REVISIONS

REV NO.	DATE	DESCRIPTION	SHEETS
1	2/3/21	SHIFT FORCEMAIN/ADD UTILITY EASEMENT	C7, C8 & C9

PROJECT SITE DATA:

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

INDEX OF DRAWINGS:

	COVER SHEET		
N1	GENERAL NOTES		
M1	SITE PLAN		
C1	STAKING PLAN		
C2	STAKING PLAN		
C3	STAKING PLAN		
C4	PAVING, GRADING & DRAINAGE PLAN		
C5	PAVING, GRADING & DRAINAGE PLAN		
C6	PAVING, GRADING & DRAINAGE PLAN		
C7	UTILITY PLAN		
C8	UTILITY PLAN		
C9	UTILITY PLAN		
DET-1	SITE DETAILS		
DET-2	SITE DETAILS		
PRO-1	ROADWAY PROFILE		
PRO-2	WATER MAIN PROFILE		

SESC NOTES:

1. ALL NEW DISTURBED AREAS WILL BE GRASSED BY SEEDING OR SPRIGGING AS TEMPORARY STABILIZATION. ALL PERMANENT GRASS SHALL BE SOD.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE DUST CONTROL OF ALL DISTURBED AREAS BY THE USE OF WATER AND FAST GROWING, TEMPORARY VEGETATIVE ON ALL STOCKPILED SOILS.
4. CONTRACTOR WILL PROVIDE A CONSTRUCTION SCHEDULE INCLUDING ALL EROSION AND SEDIMENT CONTROL MEASURES.
5. CONTRACTOR SHALL PROVIDE 1.5"–3.5" STONE 6" THICK, 50' MIN. LONG BY 20' MIN. WIDE AT ALL CONSTRUCTION EXITS TO MINIMIZE TRANSPORT OF SOIL FROM SITE BY VEHICLE WHEELS.
6. ALL EXISTING INLETS AND DITCHES SUBJECT TO STORM WATER RUNOFF FROM THE SITE AND ALL NEW INLETS SHALL BE PROVIDED WITH HAY BALES SILT CARRIERS TO MINIMIZE SOIL TRANSPORT OFF SITE BY STORM WATERS.
7. ALL CONSTRUCTION WILL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S, STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS (AVAILABLE FROM THE CITY OF SAVANNAH'S WEBSITE) AND THE SPECIFICATIONS, NOTES AND DETAILS ON THESE DRAWINGS.
8. TESTING – COORDINATE ALL TESTING AS REQUIRED IN THE SPECIFICATIONS. PROVIDE ENGINEER WITH COPY DIRECT FROM TESTING LAB.
9. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.
10. PRIOR TO CONSTRUCTION, ALL BUILDING AREAS, PLUS 10 FEET ON EACH SIDE AND ALL AREAS TO BE PAVED, SHOULD BE STRIPPED OF ALL VEGETATION, TOP SOIL AND ROOT SYSTEMS.
11. SITE DRAINAGE SHALL BE ESTABLISHED TO PREVENT ANY PONDED WATER CONDITIONS WITHIN THE CONSTRUCTION AREA AND TO FACILITATE THE RAPID RUN–OFF OF STORM WATER.
12. ANY STUMP HOLES OR OTHER DEPRESSIONS SHOULD BE CLEARED OF LOOSE MATERIAL AND DEBRIS AND SHOULD THEN BE BACK FILLED WITH APPROVED FULL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557. TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
13. ANY UTILITIES THAT UNDERLIE THE SITE SHOULD, UNLESS NOTED OTHERWISE, BE RELOCATED AND THE TRENCHES BACK FILLED WITH APPROVED SOIL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
14. THE SUBGRADE SHOULD BE PROOF ROLLED WITH A LOADED DUMP TRUCK TO LOCATE UNSTABLE OR SOFT AREAS. THESE AREAS SHOULD THEN BE INVESTIGATED TO DETERMINE THE CAUSE OF THE INSTABILITY. IF DUE TO UNSUITABLE SOIL, SUCH AS HIGHLY ORGANIC SOILS OR SOFT CLAYS, THE AREA SHOULD BE UNDERCUT TO A FIRM SOIL AND REPLACED WITH APPROVED FILL COMPACTED IN SIX INCH LIFTS TO MINIMUM DENSITY OF 95% IN ACCORDANCE WITH ASTM–D–1557. IF THE INSTABILITY IS DUE TO EXCESS MOISTURE IN OTHERWISE SUITABLE SOIL, THE AREA SHOULD BE DRAINED AND COMPACTED TO 95% DENSITY. ANY FILL REQUIRED TO LEVEL OR RAISE THE SITE SHOULD THAN BE PLACED IN 6" THICK LOOSE LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
15. ALL OF THE FILL FOR THIS PROJECT SHOULD CONSIST OF A CLEAN, FREE DRAINING SAND WITH A MAXIMUM OF 15% FINES. THE FILL SHOULD BE FREE OF OBJECTIONABLE ROOTS, CLAY LUMPS AND DEBRIS.
16. ANY FOOTING EXCAVATIONS THAT ARE DIRECTLY ADJACENT TO THE EXISTING FOUNDATIONS SHOULD BE DONE IN SMALL INCREMENTS TO AVOID UNDERMINING THEM AND CAUSING A LOSS OF SUPPORT TO THE EXISTING STRUCTURE. IF NECESSARY, THE EXCAVATIONS SHOULD BE SHEETED AND BRACED OR THE SOIL IN THE AFFECTED AREA SHOULD BE STABILIZED BY GROUTING.
17. THE FOOTING EXCAVATIONS AND ALL OF THE PREPARED SLAB UPGRADE SHOULD BE MAINTAINED IN A DRY AND COMPACTED CONDITION UNTIL THE CONCRETE IS PLACED. AREAS THAT ARE SOFTENED BY WATER OR BY CONSTRUCTION ACTIVITY BEARING. SHOULD BE REWORKED AND RECOMPUTED TO THE REQUIRED DENSITY AND BEARING.
18. MOISTURE CONTENT SHALL BE AT OR BELOW OPTIMUM.
19. ALL CONSTRUCTION WITHIN THE CITY'S RIGHT–OF–WAY WILL REQUIRE AN ENCROACHMENT PERMIT FROM PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THIS PERMIT PRIOR TO CONSTRUCTION.
20. ALL CONSTRUCTION SHALL CONFORM TO GOVERNING AGENCY'S TECHNICAL SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS.
21. THE DETENTION BASINS SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND GRADING TO HELP PREVENT THE LOSS OF SEDIMENT FROM THE SITE. THE CONTRACTOR SHALL CLEAN OUT ANY SEDIMENT DEPOSITED IN THE BASINS DURING THE CONSTRUCTION PERIOD SO THAT THE SPECIFIED WATER DEPTH AT NORMAL POOL IS MAINTAINED; THE CONTRACTOR MAY OVER EXCAVATE THE BASINS TO ACCOMPLISH THIS, IF DESIRED, AT THIS OWN EXPENSE AND WITH THE CONCURRENCE OF THE ENGINEER.
22. SEDIMENTATION BASIN SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK.

WATER – SEWER NOTES:

1. FOR ALL WATER, SANITARY SEWER LINES AND STORM DRAINAGE INSTALLATION, CALL – ONE CALL UTILITIES PROTECTION CENTER BEFORE YOU DIG DIAL 811 OR 1–800–282–7411. WWW.GEORGIA811.COM CALL 3 WORKING DAYS BEFORE YOU DIG.
2. IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL MEASURES AS INDICATED ON THE PLANS THE CONTRACTOR SHALL TAKE WHATEVER ACTIONS AS ARE NECESSARY TO ENSURE THAT ALL SEDIMENTATION IS CONFINED TO THE SITE AND THAT NO OFFSITE EROSION IS CAUSED BY THE WORK EITHER DIRECTLY OR INDIRECTLY.
3. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYSTEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.
4. PIPE, FITTINGS, VALVES AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE UNLOADED AT THE POINT OF DELIVERY, AND STORED WHERE THEY WILL BE PROTECTED AND WILL NOT BE HAZARDOUS TO TRAFFIC. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. THE INTERIOR OF ALL PIPE, FITTINGS AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND OTHER FOREIGN MATTER AT ALL TIMES.
5. ANY DEFECTIVE, DAMAGED OR UNSOUND PIPE SHALL BE REJECTED. ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING. CARE SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE JOINT SPACE. AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY APPROVED MEANS AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE.
6. CLEAN THE INTERIORS OF ALL PIPE BY WASHING OUT ALL DIRT BEFORE LAYING.
7. FLUSH THE NEW PIPE LINES UNTIL WATER RUNS CLEAR AT THE END OF ALL MAINS AND LATERALS. THIS SHOULD BE DONE AFTER THE PRESSURE TEST AND BEFORE DISINFECTION. A MINIMUM TIME OF 2 MINUTES AND UNTIL THE WATERMAIN RUNS CLEAR IS REQUIRED IN ORDER TO PURGE THE LINE OF ANY FOREIGN MATERIALS.
8. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, AR APPROVED EQUAL, WILL BE USED TO FORM A WATER TIGHT SEAL AT BOTH ENDS OF THE LINE BEING LAID.
9. MAINTAIN A MINIMUM OF EIGHTEEN (18") INCH VERTICAL SEPARATION DISTANCE BETWEEN ALL WATER LINE/LATERALS AND ALL STORM DRAIN LINES AND SANITARY SEWER LINES/LATERALS.
10. IF AN IRRIGATION SYSTEM IS PROPOSED FOR SUBJECT DEVELOPMENT, COMPLY WITH THE FOLLOWING REQUIREMENTS BEFORE ANY CONNECTION TO THE CITY WATER SYSTEM:
    (A) SUBMIT PLANS AND SPECIFICATIONS FOR . SUBJECT IRRIGATION SYSTEM.
    (B) INSTALL AN APPROVED BACKFLOW PREVENTOR ON THE IRRIGATION SYSTEM.(C) METER THE IRRIGATION SYSTEM IN ACCORDANCE WITH THE GOVERNING AGENCY'S SPECIFICATIONS.
    (D) RESTRAIN ALL CRITICAL BENDS AND CONNECTIONS.
    (E) PROVIDE ERU CALCULATIONS FOR THE IRRIGATION SYSTEM
11. ALL WATER USED FOR CONSTRUCTION SHALL BE METERED THROUGH AN APPROVED BACKFLOW PREVENTION DEVICE AND FIRE HYDRANT METER OBTAINED FROM THE GOVERNING AGENCY'S WATER OPERATION DEPARTMENT.
12. ALL CONNECTIONS TO EXISTING MANHOLES SHALL BE DONE BY THE CORE DRILL METHOD.
13. THE WATER SERVICE LATERAL SERVING THE FACILITY SHALL BE INSTALLED BY THE DEVELOPER/CONTRACTOR FROM THE WATER MAIN TO THE METERS. THE PUBLIC WORKS DEPARTMENT WILL ONLY MAKE THE WET TAP. THE GOVERNING AGENCY WILL NOT INSTALL THE WATER SERVICE LATERAL.
14. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CERTIFICATIONS OF BACKFLOW DEVICES TO THE ENGINEER.
15. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE GOVERNING AGENCY'S LATEST CONSTRUCTION SPECIFICATION AND DETAILS.
16. LOCATE HIGHPOINT OF WATERMAIN AND INSTALL AIR RELIEF VALVE TO FACILITATE AIR REMOVAL FROM WATERMAIN.
17. AN APPROVED WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ARRIVES ON THE SITE.
18. CONTRACTOR TO VERIFY ALL INVERT ELEVATIONS OF SANITARY SEWER LATERALS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER WITH INVERT DATA TO INSURE THERE ARE NO CONFLICTS.
19. SEE ARCHITECTURAL PLUMBING PLAN FOR EXACT TIE LOCATION & LINE SIZES.
20. ALL WATER METERS AND STRAINERS SHALL BE PURCHASED FROM THE CITY.
21. THE INDIVIDUAL REQUESTING WATER SERVICE SHALL BE RESPONSIBLE FOR EXCAVATION, TAPPING, AND BACKFILLING THE WATER MAIN FROM WHICH THE SERVICE IS REQUIRED.
22. ALL MATERIAL USED FROM TAP TO DISCHARGE PIPE SHALL BE M.J. DUCTILE IRON, RESTRAINED JOINT, INCLUDING BY–PASS.
23. ALL VALVES 4–INCHES OR LARGER SHALL BE INSTALLED IN A MANHOLE, FOR THE TAPPING VALVE ONLY.
24. ALL TAPPING SLEEVES SHALL BE DUCTILE IRON, MJ, AND PRESSURE TESTED AT 150 PSI FOR A MINIMUM OF ONE HOUR WITH A PRESSURE LOSS NO GREATER THAN 1 PSI.
25. THE GOVERNING AGENCY'S WATER DEPARTMENT SHALL INSPECT THE PRESSURE TEST, IF THE CITY DOES NOT INSPECT THE PRESSURE TEST, THE CITY WILL NOT ACCEPT ANY RESPONSIBILITY OF MAINTENANCE FOR THE TAPPING VALVE OR SLEEVE.
26. THE TAPPING GATE VALVE SHALL BE RESILIENT SEAT, EPOXY COATED, M.J. BY FLANGE, DOMESTIC MADE.
27. ALL MATERIAL USED AND WHICH COMES IN CONTACT WITH DRINKING WATER DURING ITS DISTRIBUTION SHALL NOT ADVERSELY AFFECT DRINKING WATER QUALITY OR PUBLIC HEALTH. MATERIALS MUST BE CERTIFIED FOR CONFORMATION WITH AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION STANDARD 61 (ANSI/NSF STANDARD 61).
28. BACKFLOW PREVENTOR, VALVES AND POST INDICATOR VALVES FOR FIRE SPRINKLER SYSTEMS SHALL BE ELECTRICALLY SUPERVISED BY A TAMPER SWITCH INSTALLED IN ACCORDANCE WITH NFPA72.
29. IF THIS IS AN EXISTING FACILITY, THE WATER METER AND BACKFLOW PREVENTOR WILL NEED TO MEET THE CURRENT STANDARDS.
30. FOR FORCE MAIN DISCHARGE MANHOLES (INCLUDING THE TWO (2) MANHOLES DOWNSTREAM OF THE DISCHARGE MANHOLE, FOR A TOTAL OF THREE (3) MANHOLES), DROP MANHOLES AND LIFT STATION WETWELLS: THE PROTECTIVE COATING SHALL BE A POLYMER BASED POLYURETHANE OR A HIGH–BUILD, SOLVENT–FREE EPOXY COATING. FOR SMALL LIFT STATIONS AT THE DISCRETION OF THE CITY, THE NUMBER OF MANHOLES REQUIRING COATING MAY BE REDUCED.
31. FOR LIFT STATION WETWELLS, THE COATING LIMITS SHALL INCLUDE FROM THE BOTTOM OF FILLET, WETWELL WALLS, AND ROOF. COATING SYSTEM SHALL OVERLAP 1' TO 2' WHERE HATCHES SIT ON THE ROOF; BUT SHALL EXCLUDE THE WETWELL FLOOR. FOR MANHOLES, THE COATING LIMITS SHALL INCLUDE FROM THE FLOW LINE IN THE TROUGH OF THE INVERT UP TO THE RING WITH A 1' TO 2' OVERLAY ON THE RING.
32. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR GRAVITY SEWER AND FORCE MAINS AT APPROXIMATELY 30" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO MANHOLE RINGS. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
33. ALL SANITARY SEWER LATERALS SHALL BE PROPERLY MARKED AT THE POINT WHERE LATERALS TERMINATE WITH PVC PIPE PAINTED GREEN. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. LATERALS SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
34. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR WATER MAINS AT APPROXIMATELY 18" TO 24" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO CURB STOPS AND BROUGHT TO TOP OF VALVE. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
35. ALL WATER SERVICES SHALL BE PROPERLY MARKED ABOVE GROUND WITH PVC PIPE PAINTED BLUE. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. SERVICES SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
36. ALL SIGNS SHALL BE 30" HIGH INTENSITY OR DIAMOND GRADE.
37. THREE INCH AND LARGER WATER METER AND STRAINERS SHALL BE PURCHASED FROM THE CITY.

***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 216' OF 4" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 700' OF 6" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE REQUIRES CLEANOUT EVERY 100' & AT TURNS > 45 DEGREES.

SITE NOTES:

1. THE GOVERNING AGENCY RESERVES THE RIGHT TO ACCESS PROPERTY FOR ON SITE INSPECTIONS.
2. PROPOSED DETENTION AND/OR SEDIMENTATION POND SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK OR BUILDING ERECTION.
3. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSTALLED AS DEEMED NECESSARY BY ON SITE INSPECTION.
4. PROPERTY OWNER WILL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR OF CONTROL STRUCTURE & DETENTION POND UPON COMPLETION OF THE CONTRACT.
5. CONTRACTOR WILL NEED TO OBTAIN A RIGHT OF WAY PERMIT PRIOR TO PERFORMING CONSTRUCTION ACTIVITY IN THE CITY'S/COUNTY'S RIGHT OF WAY.
6. NO TREE MULCHING WITHIN OR ON TOP OF THE DETENTION BASIN.
7. ALL DRAINAGE STRUCTURES GREATER THAN 3 FEET SHOULD HAVE STEPS FOR EASY ACCESS.
8. AS–BUILT SHALL CONTAIN ACCURATE INFORMATION INCLUDING DEPTH, LENGTH, SIZE, SLOPE OF PIPES. ALSO REQUIRED ARE SPOT ELEVATIONS ON THE STORMWATER DETENTION FACILITY, PAVEMENTS TO ENSURE THE SITE GRADING PLAN AND THE CAPACITY OF THE DETENTION FACILITY ARE BUILT ACCORDING TO THE ACCEPTED CONSTRUCTION PLANS. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS FOR "AS BUILTS" PROPOSES AND PROVIDE THIS INFORMATION TO THE ENGINEER AT THE COMPLETION OF THE PROJECT. IF THE CONTRACTOR FAILS TO FURNISH THIS INFORMATION, THE ENGINEER WILL OBTAIN THE NECESSARY INFORMATION AND CHARGE THE CONTRACTOR FOR THE SERVICES. THE ENGINEER WILL CHECK INFORMATION PROVIDED BY THE CONTRACTOR FOR ACCURACY. AS BUILT INFORMATION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING: ALL UTILITIES INCLUDING INVERTS, TOP ELEVATIONS, PIPE LENGTHS AND TYPE OF CONSTRUCTION MATERIAL; SPOT ELEVATIONS ON FORCE MAINS AND WATER LINES. THE DISTANCE OF THE CENTERLINE UTILITIES FROM A PERMANENT STRUCTURE. ALL VALVE MANHOLES AND VALVE BOXES SHALL BE LOCATED WITH RESPECT TO A PERMANENT STRUCTURE. GRADES SHALL BE CONFIRMED IN ROADS AND PARKING AREAS AS WELL AS SWALES TO SHOW DIRECTION OF STORMWATER FLOW. THE FINISHED FLOOR ELEVATION SHALL BE SHOWN ON ALL BUILDINGS. IF THE LANDSCAPING IS CHANGED IN ANY WAY AN AS BUILT OF THE LANDSCAPE PLAN IS TO BE SUBMITTED TO THE ENGINEER; AND ANY OTHER REQUIREMENT MADE BY THE GOVERNING AGENCY'S.
9. THE GOVERNING AGENCY MAY RESERVE THE RIGHT TO REQUIRE TELEVISING, PER CITY TELEVISING MANUAL, OF ALL SANITARY SEWER LINES 8" OR LARGER, ALL NEWLY CONSTRUCTED STORMWATER LINES AND STORMWATER LINES WHERE DAMAGE COULD OCCUR DURING CONSTRUCTION.
10. ANY AND ALL UTILITY CROSSINGS FOR WATER MAINS BETWEEN STORM OR SEWER PIPING SHOULD BE ACCOMPLISHED BY USING OF 45° BENDS BOTH DOWN AND UP.
11. ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS TO ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS, AND OBTAINED UTILITY LOCATES AS REQUIRED.
12. CONTRACTOR WILL BE REQUIRED TO ATTEND A PRE–CONSTRUCTION CONFERENCE WITH THE GOVERNMENTAL AGENCY IN CHARGE OF THE PROJECT.
13. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND INSPECTIONS AS REQUIRED FOR APPROVAL OF THE WORK WITH THE GOVERNMENTAL AGENCY WITH JURISDICTION.
14. CONTRACTOR WILL BE RESPONSIBLE FOR COST OF AND COORDINATION WITH LOCAL UTILITY COMPANIES OR AGENCIES FOR RELOCATION OF, OR CONNECTION TO, ALL EXISTING UTILITIES INCLUDING POWER AND TELEPHONE POLES AND WIRES.
15. ALL ELEVATIONS ARE BASED ON MEAN SEA LEVEL DATUM. NAVD 88.
16. A MINIMUM SHOULDER WIDTH OF 4 FEET WITH A MINIMUM TRANSVERSE SLOPE OF 5% WILL BE PROVIDED ADJACENT TO CURBS AND WALKS. ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2%.
17. MAXIMUM EARTH SLOPES WILL BE 3:1. GRADE FROM SHOULDER EDGE TO RIGHT– OF–WAY AT 1% MINIMUM.
18. UNSUITABLE SUBGRADE MATERIAL WILL BE DETECTED BY PROOF ROLLING A MINIMUM OF 2 PASSED WITH A MINIMUM TRUCK WEIGHT OF 40 KIPS AFTER ROADWAY HAS BEEN BROUGHT TO APPROXIMATE SUBGRADE ELEVATION, TO BE OBSERVED BY ENGINEER AND GOVERNMENTAL INSPECTOR.
19. REMOVAL AND REPLACEMENT OF UNSUITABLE SUBGRADE MATERIAL WILL BE PAID FOR ON A CUBIC YARD BASIS IN PLACE MEASUREMENT, AT SUCH AUTHORIZED PRICE PER CUBIC YARD, AS AUTHORIZED BY THE ENGINEER.
20. SUBGRADE WILL BE COMPACTED FOR A DEPTH OF 24" EXTENDING 24" BEYOND PAVEMENT EDGES, TO A MINIMUM OF 100% STANDARD PROCTOR DENSITY AS MEASURED A.A.S.H.O. METHOD T–99.
21. UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKING WILL BE AN ENGINEER APPROVED VEHICULAR TRAFFIC PAINT. (WHITE IN COLOR & 4" WIDE)
22. PROVIDE 1/2" EXPANSION JOINT IN NEW WALKS FOR DEPTH OF CONCRETE, WITH BITUMINOUS SEAL FOR TOP 1 INCH MINIMUM DEPTH AT ABUTMENTS WITH BUILDINGS OR OTHER CONCRETE STRUCTURES.
23. SAW–CUT CONTRACTION JOINTS WILL BE PROVIDED IN ACCORDANCE WITH DETAILS, CUT TO BE 1/4 DEPTH OF CONCRETE MINIMUM.
24. ALL DIMENSIONS ARE TO EXTERIOR FACE OF BUILDING, EDGE OF SURFACE COURSE OR BACK OF CURBING.
25. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.
26. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
27. SEE BUILDING PLANS FOR EXACT BUILDING DIMENSIONS.
28. ALL UTILITIES WILL BE INSTALLED UNDERGROUND UNLESS OTHERWISE NOTED.
29. THE CONTRACTOR IS RESPONSIBLE TO BRING PROPOSED MANHOLE TOPS TO GRADE.
30. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYATEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone (912) 225-3373

STAMP:
GEORGIA
CHRISTOPHER R. ZITTROUER
No. 22265
PROFESSIONAL
3/30/22
ENGINEER
CHRISTOPHER R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
GENERAL NOTES

SCALE: 1"=
PROJECT NO: 210071.000
DATE: 3/30/22
DRAWN BY: WM
CHECKED BY: CRZ

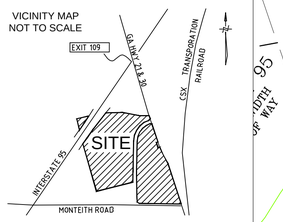
COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permissions of Kern & Co., LLC.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
N1

Wed, 30 Mar 2022, 5:00pm, cstinson
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

Wed, 30 Mar 2022 - 5:00pm cstrouse
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 032085 PROFESSIONAL ENGINEER 3/30/22 CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

120 0 60 120 240 480
(IN FEET)
1 inch = 120 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

DRAWING TITLE:

SITE PLAN

SCALE:	1" = 120'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

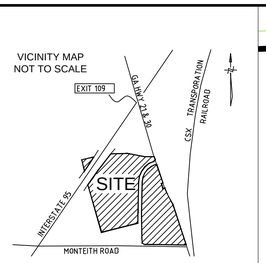
SHEET NO:

M1

COPYRIGHT Kern & Co., LLC. © 2013 The drawing and the reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

35 MPH SPEED LIMIT SIGNAGE TO BE POSTED.

VICINITY MAP
NOT TO SCALE



SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED No. 32085 PROFESSIONAL 3/30/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

STAKING PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

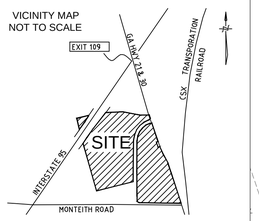
SHEET NO:

C1

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:00pm crittrouer
DRAWING PATH: G:\2021\210071.000 \dwg\ HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



35 MPH SPEED LIMIT SIGNAGE TO BE POSTED.

SPEED LIMIT SIGN
SPEED LIMIT 25

SOLID WHITE LINE

SOLID YELLOW LINE

DRIVEWAY CENTERLINE
STA 14 + 13.78

TYPE "2" ARROW (TYP)

TYPE "1" ARROW (TYP)

24" WHITE STOP BAR

STRIPED MEDIAN YELLOW

SPEED LIMIT SIGN
SPEED LIMIT 35

TERMINUS OF STRIPED MEDIAN
STA 16 + 05.37

REDUCED SPEED AHEAD

DECEL LANE TAPER BEGIN
STA 18 + 21.29

DECEL LANE BEGIN
STA 19 + 13.16

TYPE "1" ARROW (TYP)

TYPE "2" ARROW (TYP)

SOLID WHITE LINE

UTILITY EASEMENT

(STATE ROUTE 30)
(RELOCATION)

Minus Avenue to I-95
F.A.P. R/W FI-041-2(18)
Deed Book 1070, Page 537
Plat Record Book AA, Page 54

Department of Transportation
State of Georgia
Right-of-Way (Proposed)
State Route 21 Improvements

Savannah Electric & Power Company
Easement for R/W (Future Use)
Deed Book 1110, Page 317
Plat Record Book M, Page 85

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA
REGISTERED
No. 032085
PROFESSIONAL
3/30/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

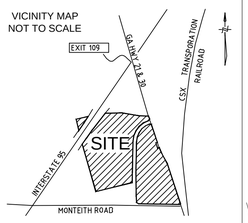
DRAWING TITLE:
STAKING PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C2

COPYRIGHT Kern & Co., LLC. © 2013 The drawing and its reproductions are, for purposes of this item and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:00pm cittmyer
DRAWING PATH: G:\2021\210071.000\dwgs\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



SOLID WHITE LINE
SOLID YELLOW LINE
TYPE "1" ARROW (TYP)
TYPE "2" ARROW (TYP)
12.00'
DRIVEWAY CENTERLINE STA 21+ 62.40
BEGINNING OF MEDIAN SPLIT STA 23 + 29.84
HENDLEY DRIVE 100' R/W
SURVEY CONTROL: 1/2" IRON ROD N 794,893.13 E 956,815.39
Parcel 1
41.160 Acres
35 MPH SPEED LIMIT SIGNAGE TO BE POSTED.
SPEED LIMIT SIGN
SPEED LIMIT 35
UTILITY EASEMENT
TERMINUS OF MEDIAN SPLIT STA 24 + 80.15
SOLID WHITE LINE
SOLID YELLOW LINE
NO TRUCKS BEYOND THIS POINT
DO NOT ENTER
DRIVEWAY CENTERLINE STA 26 + 87.06
DRIVEWAY CENTERLINE STA 27 + 86.19
TYPE "1" ARROW (TYP)
TYPE "2" ARROW (TYP)
24" WHITE STOP BAR
STRIPED MEDIAN YELLOW
TRUCK TURN AROUND
RAISED CONCRETE ISLAND
I.E. = 10.95'
I.E. = 11.04'
I.E. = 10.79'
YIELD SIGN
STOP SIGN
N 794273.79
E 956815.57
24" WHITE STOP BAR
Lot 4
Lot 3
Lot 2
Lot 1
NGS Vertical Control Disk X 395 Y 543 Elev 15.43'
Georgia Power Co Map No. 15 Sheet 12 of 16
Tower No. 52

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL 030085 PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 3/30/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
STAKING PLAN

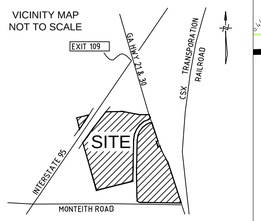
SCALE: 1" = 40'
PROJECT NO: 210071.000
DATE: 3/30/22
DRAWN BY: WM
CHECKED BY: CRZ

SHEET NO:
C3

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:01pm cattrouer
DRAWING PATH: G:\2021\210071.000\dwgs\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

3"X3" CMF

I.E. = 3.93'

I.E. = 5.50'

EXISTING SWALE

36' X 30' Lift Station

5"X5" RWCMF (Broken)

DRAINAGE EASEMENT

DECEL LANE TAPER BEGIN
STA 2 + 01.59

DECEL LANE BEGIN
STA 2 + 73.67

124 LF 24" RCP CULVERT @ 1.5%

STORM MH
TOP 13.00
IE 8.30

100 LF 24" RCP CULVERT @ 0.28%

CFES
IE 10.16

CFES
IE 8.00

DRIVEWAY CENTERLINE
STA 4 + 72.56

2 EA - 10 LF 36" RCP CULVERTS

STORM MH
TOP 13.50
IE 8.95

REDUCED SPEED AHEAD

182 LF 24" RCP CULVERT @ 0.25%

STOP SIGN AHEAD

72 LF 36" RCP CULVERT

CFES
IE 8.20

10 LF 36" RCP CULVERT

STORM MH
TOP 13.50
IE 8.15

62 LF 36" RCP CULVERT

GADOT
HEAVY DUTY PAVEMENT

N 796608.02
E 957346.38

Telephone Cabinets on Concrete Slab with Wooden Retaining Wall

Billboard

Gravel Drive

Approximate Location of Floodplain Boundary

Zone AE

Zone X

Zone X (Shaded)

ROOF INLET
TOP 14.25
IE 13.42
IE 8.51

TERMINUS OF STRIPED MEDIAN
STA 6 + 93.51

120 LF 24" RCP CULVERT @ 0.25%

SURVEY CONTROL:
1/2" IRON ROD
N 956,849.64
E 956,849.64
ELEVATION 15.57'

170 LF 24" RCP CULVERT @ 0.25%

CFES
IE 8.58

DRIVEWAY CENTERLINE
STA 8 + 31.48

STORM MH
TOP 15.50
IE 8.81

SPEED LIMIT SIGN
SPEED LIMIT 25

BEGINNING OF MEDIAN SPLIT
STA 10 + 22.73

130 LF 24" RCP CULVERT @ 0.25%

CFES
IE 9.14

UTILITY EASEMENT

SCE Baptiste, Inc.
Natural Gas Line Easement
(Deed Book 21L, Page 98)

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA
REGISTERED
No. 032085
PROFESSIONAL
3/30/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

PGD PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

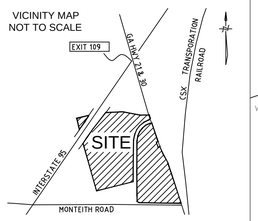
SHEET NO:

C4

COPYRIGHT Kern & Co., LLC. © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:03pm, cattrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5-13-21.dwg

VICINITY MAP
NOT TO SCALE



SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

SPEED LIMIT SIGN
SPEED LIMIT 25

CFES
IE 13.00

DRIVEWAY CENTERLINE
STA 14 + 13.78

136 LF 24" RCP CULVERT @ 0.25%

CFES
IE 13.34

SPEED LIMIT SIGN
SPEED LIMIT 35

TERMINUS OF STRIPED MEDIAN
STA 16 + 05.37

CFES
IE 13.06

REDUCED SPEED AHEAD

264 LF 24" RCP CULVERT @ 0.25%

DECEL LANE TAPER BEGIN
STA 18 + 21.29

DECEL LANE BEGIN
STA 19 + 13.16

STORM MH
TOP 17.50
INV 13.28

UTILITY EASEMENT

(STATE ROUTE 30)
(RELOCATION)

Minus Avenue to I-95
F.A.P. R/W FF-041-2(18)
Deed Book 3970, Page 337
Plat Record Book 44, Page 54

Department of Transportation
State of Georgia
Right of Way Disposition
State Route 21 Improvements

Savannah Electric & Power Company
Easement for ROW Use
(Deed Book 107-P, Page 313
Plat Record Book 'M' Page 95)

Savannah Electric & Power Company
Deed Book 107-P, Page 313
Plat Record Book 'M' Page 95

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
No. 032985
PROFESSIONAL
3/30/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

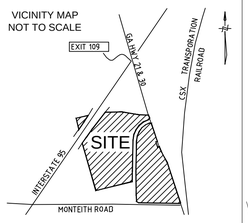
PGD PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C5

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:03pm cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



Parcel 1
41.160 Acres

HENDLEY DRIVE 100' R/W

SURVEY CONTROL:
1/2" IRON ROD
N 794,893.13
E 956,815.39

DRIVEWAY CENTERLINE
STA 21+ 62.40

264 LF 18" RCP CULVERT @ 0.25%

CFES
IE 13.50

BEGINNING OF MEDIAN SPLIT
STA 23 + 29.84

TERMINUS OF MEDIAN SPLIT
STA 24 + 80.15

SPEED LIMIT SIGN
SPEED LIMIT 35

"UTILITY EASEMENT"

I.E. = 10.79'

DO NOT ENTER

CFES
IE 11.37

DRIVEWAY CENTERLINE
STA 26 + 87.06

NO TRUCKS BEYOND THIS POINT

146 LF 24" RCP CULVERT @ 0.25%

DO NOT ENTER

24" WHITE STOP BAR

DRIVEWAY CENTERLINE
STA 27 + 86.19

TRUCK TURN AROUND

CFES
IE 11.00

I.E. = 11.04'

I.E. = 10.95'

YIELD SIGN

STOP SIGN

N 794273.79
E 956815.57

Georgia Power Co
Map 5-15
Sheet 12 of 16

NGS
Vertical
Control Disk
VX395
75.43'

Power
No. 52

Lot 4 | Lot 3 | Lot 2 | Lot 1

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED No. 032085 PROFESSIONAL 3/30/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

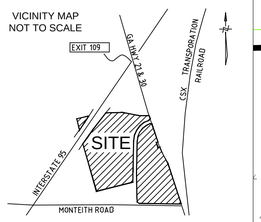
DRAWING TITLE: PGD PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C6

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:03pm, cattrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



CONNECT TO EXT'G 12" WATER MAIN WITH
12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE
36" x 36"
Lift Station

CONNECTION TO EXT'G
SANITARY SEWER

CONNECTION TO EXT'G WATER MAIN.

GADOT
HEAVY DUTY PAVEMENT

2-45° BENDS

FIRE HYDRANT ASSEMBLY

12" WATER MAIN.

DECEL LANE TAPER BEGIN
STA 2 + 01.59

DECEL LANE BEGIN
STA 2 + 73.67

DRIVEWAY CENTERLINE
STA 4 + 72.56
FIRE HYDRANT ASSEMBLY

3" PLUG VALVE

STOP SIGN
AHEAD

REDUCED
SPEED
AHEAD

EXISTING 4" WATER MAIN SHALL BE REMOVED
FROM R/W AFTER NEW 12" WATER MAIN IS INSTALLED

TERMINUS OF STRIPED MEDIAN
STA 6 + 93.51

FIRE HYDRANT ASSEMBLY
12" WATER STUB-OUT
12" X 12" TEE
12" VALVE IN MANHOLE

3" PLUG AND CHECK VALVE

DRIVEWAY CENTERLINE
STA 8 + 31.48

SPEED LIMIT SIGN
SPEED
LIMIT
25

BEGINNING OF MEDIAN RADIUS
STA 10 + 22.73

11.25° BEND

11.25° BEND

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

EXISTING SWALE

DRAINAGE EASEMENT

UTILITY EASEMENT

3" SANITARY FORCEMAIN

SURVEY CONTROL:
1/2" IRON ROD
N 796,272.29
E 956,849.64
ELEVATION 15.57'

Approximate Location of
Floodplain Boundary

Telephone Cabinets
on Concrete Slab
with Wooden Retaining Wall

5'X5'
RWCMF
(Broken)

3"X3"
CMF

Zone AE
Zone X
(Shaded)
Zone X

SITE DATA:

PROJECT AREA: 6.60 AC
AREA OF DISTURBANCE: 6.60 AC
ZONING: P-I-1
P.I.N.: N/A
PROJECT ADDRESS: HENDLEY ROAD
PROJECT CITY: PORT WENTWORTH, GA
DISTRICT NUMBER: ???
LOT NUMBER: ???
OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP
CONTACT: MICHAEL BALCOM
OWNER ADDRESS: 3819 MAPLE AVE
OWNER CITY: DALLAS, TX 75219
TELEPHONE NO.: 214-661-8000
DATE OF SURVEY: 11/2020
GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING
DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR
PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA
REGISTERED
No. 032085
PROFESSIONAL
3/30/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

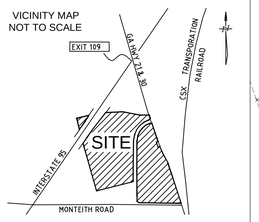
DRAWING TITLE:
UTILITY PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C7

COPYRIGHT Kern & Co., LLC. © 2021 This drawing and its reproduction or use for any purpose other than that authorized by this firm is forbidden. Any unauthorized publication, use or reuse in any way with out the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:03pm cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



11.25° BEND

11.25° BEND

FIRE HYDRANT ASSEMBLY

11.25° BEND

12" WATER MAIN.

SPEED LIMIT SIGN
SPEED LIMIT 25

DRIVEWAY CENTERLINE
STA 14 + 13.78

3" SANITARY FORCEMAIN

SPEED LIMIT SIGN
SPEED LIMIT 35

FIRE HYDRANT ASSEMBLY
TERMINUS OF STRIPED MEDIAN
STA 16 + 05.37

REDUCED SPEED AHEAD

DECEL LANE TAPER BEGIN
STA 18 + 21.29

DECEL LANE BEGIN
STA 19 + 13.16

UTILITY EASEMENT

(STATE ROUTE 30)
(RELOCATION)

Minus Avenue to I-95
F.A.P. N/A FF-041-2(18)
Deed Book 2070, Page 537
Plat Record Book 44, Page 54

Department of Transportation
State of Georgia
Right of Way Project
State Route 21 Improvements

Savannah Electric - E Power Company
Easement (For ROW Line Only)
(Deed Book 101-U, page 213
Plat Record Book W, Page 65)

Deed Book 1111, Page 111
Deed Book 1111, Page 111

5"X5" RWCMF (Broken)

3"X3" CMF (Broken)

RWCMF (Broken)

Tower No. 53

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 32085 ENGINEER CHADWICK R. ZITTROUER 3/30/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

UTILITY PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

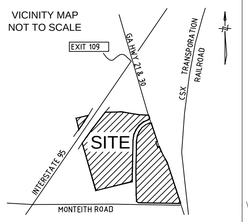
SHEET NO:

C8

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:01pm cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



3" PLUG AND CHECK VALVE

12" WATER STUB-OUT
12" VALVE IN MH

3" SANITARY STUB-OUT

12" WATER STUB-OUT
12" VALVE IN MH

DRIVEWAY CENTERLINE
STA 21+ 62.40

FIRE HYDRANT ASSEMBLY

BEGINNING OF MEDIAN SPLIT
STA 23 + 29.84

HENDLEY DRIVE 100' R/W

Parcel 1
41.160 Acres

SURVEY CONTROL:
1/2" IRON ROD
N 794,893.13
E 956,815.39

3" SANITARY FORCEMAIN

SPEED LIMIT SIGN
SPEED LIMIT 35

"UTILITY EASEMENT"

TERMINUS OF MEDIAN SPLIT
STA 24 + 80.15

DO NOT ENTER

FEATHER CURB
15.75 TC
15.25TG

DRIVEWAY CENTERLINE
STA 26 + 87.06
16.50 TC
16.00 TG

FEATHER CURB
15.50 TC
15.00 TG

FEATHER CURB
16.95 TC
16.45 TG

DO NOT ENTER
15.45 TC
14.95 TG
15.85 TC
15.35 TG

17.40 TC
16.90 TG

24" WHITE STOP BAR

FEATHER CURB
15.25 TC
14.75 TG

DRIVEWAY CENTERLINE
STA 27+ 45.13

17.20 TC
16.70 TG

TRUCK TURN AROUND

NO TRUCKS BEYOND
THIS POINT

EXISTING 4" WATER MAIN SHALL BE REMEOVED
FROM R/W AFTER NEW 12" WATER MAIN IS INSTALLED

12" VALVE IN MH

2-45° BENDS

CONNECT TO EXT'G 4" WATER MAIN
WITH 4" x 4" TAPPING SLEEVE &
12" X 4" REDUCER

YIELD SIGN

STOP SIGN

SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED No. 032085 PROFESSIONAL 3/30/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

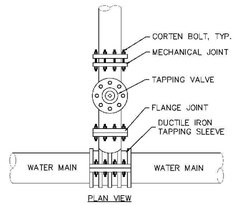
DRAWING TITLE:
UTILITY PLAN

SCALE:	1" = 40'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:
C9

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:03pm cattrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg



PLAN VIEW

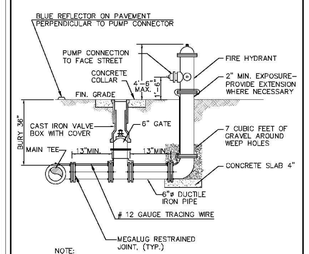
NOTE:
1. THE "TAPPING SLEEVE" AND VALVE MUST BE INSTALLED IN A MANNER SIMILAR TO DETAIL W-14 FOR "THE MANHOLE DETAIL".

STANDARD TAPPING SLEEVE

City of Port Wentworth
TECHNICAL DETAILS
W-5

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



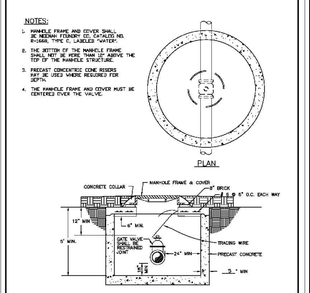
NOTE:
1. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE RESTRAINED.
2. PROTECT BOLTS AND THREADS FROM CONCRETE.

STANDARD FIRE HYDRANT

City of Port Wentworth
TECHNICAL DETAILS
W-9

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

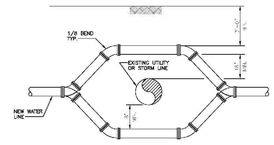


VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS
W-14

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



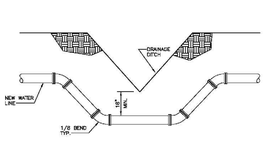
NOTES:
1. WATER LINE SHALL BE INSTALLED ABOVE SANITARY OR STORM LINE IF POSSIBLE.
2. STRAIGHT RUN OF WATER LINE DIRECTLY ABOVE OR BELOW EXISTING UTILITY LINE MUST BE 12" MINIMUM WITH NO JOINT.
3. IF WATER LINE IS INSTALLED BELOW SANITARY LINE WATER LINE SHALL BE DUCTILE IRON PIPE.
4. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

STANDARD UTILITY CROSSING

City of Port Wentworth
TECHNICAL DETAILS
W-6

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



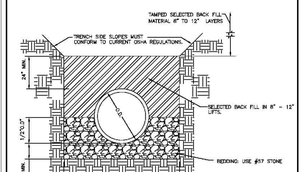
NOTES:
1. WATER LINE SHALL BE DUCTILE IRON BELOW STORM DRAINAGE DITCH.
2. STRAIGHT RUN OF WATER LINE DIRECTLY BELOW NEW OR EXISTING DRAINAGE DITCH MUST BE 12" MINIMUM WITH NO JOINT.
3. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

UTILITY CROSSING DRAINAGE DITCH

City of Port Wentworth
TECHNICAL DETAILS
W-7

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

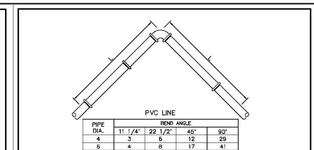


PIPE BEDDING

City of Port Wentworth
TECHNICAL DETAILS
W-8

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



PVC LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	3	6	12	29
6	4	8	17	41
8	5	11	22	53
10	6	13	28	64
12	7	15	31	75

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	2	4	8	20
6	3	6	12	28
8	4	7	15	36
10	4	9	18	43
12	5	10	21	51
16	6	13	27	65
20	8	16	33	79
24	9	19	38	92

MINIMUM RESTRAINED LENGTH (L)

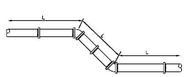
NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

STANDARD HORIZONTAL BEND RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS
W-27

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



PVC LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	3	5	10	22
6	7	15	30	74
8	9	19	40	98
10	11	23	48	115
12	13	27	56	136

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE			
	11 1/4°	22 1/2°	45°	90°
4	3	6	12	28
6	4	8	17	40
8	4	10	22	52
10	5	12	26	62
12	6	15	30	73
16	7	19	39	94
20	11	23	47	114
24	13	28	55	132

MINIMUM RESTRAINED LENGTH (L)

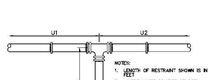
NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

STANDARD VERTICAL BEND RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS
W-28

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. U1 AND U2 = UNDISTURBED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. USE THE SMALLER OF U1 OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE U1 IS LESS THAN 5', RESTRAIN TEE AS A 90° HORIZONTAL BEND.

Size-M.J.-U1*-U2*-L	C	B	A	L
4x4	43	29	*	*
6x4	38	17	*	*
6x6	64	49	20	*
8x4	34	6	*	*
8x6	61	42	10	*
8x8	87	72	48	12
10x4	29	*	*	*
10x6	56	34	*	*
10x8	84	65	35	*
10x10	106	91	67	31
12x4	24	*	*	*
12x6	54	29	*	*
12x8	80	60	33	*
12x10	106	110	87	5
12x12	126	132	87	51

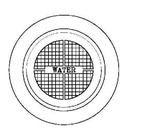
MINIMUM RESTRAINED LENGTH (L)
* RESTRAIN AT TEE ONLY

STANDARD TEE RESTRAINT (PVC LINE)

City of Port Wentworth
TECHNICAL DETAILS
W-29

PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



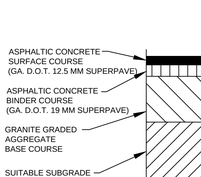
NOTE:
MANHOLE RING & COVER SHALL BE HEAVY DUTY RATED (CLASS 'D' U. S. FOUNDRY CO. USE 150-085). TOTAL WEIGHT (RING TYPE "A" LID TO HAVE MACHINED SURFACE AND CONCEALED PICK HOLES) 300 LBS. (OTHER HEAVY-DUTY COVER ACCEPTABLE AS LONG AS RING SHALL INCLUDE A RESILIENT GASKET, RESTING SNUGLY ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS
W-34

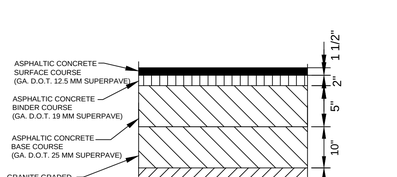
PREPARED BY STEVENSON & PALMER ENGINEERING, INC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



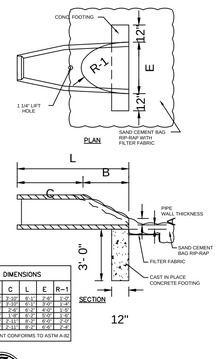
NOTES:
1. BITUMINOUS PRIME AND TACK COATS WILL BE APPLIED AS LISTED BELOW,
   A. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLON PER SQUARE YARD TO THE SURFACE OF ALL GRANITE BASE COURSES.
   B. TACK COAT SHALL BE APPLIED AT AT RATE OF 0.05 GALLONS PER SQUARE YARD TO THE SURFACE OF THE BINDER COURSE BEFORE PLACEMENT OF SURFACE COURSE.
2. REFER TO PAVING PLAN FOR LOCATION OF STANDARD AND HEAVY DUTY PAVEMENTS.

P-11 HEAVY-DUTY PAVEMENT SECTION



NOTES:
1. BITUMINOUS PRIME AND TACK COATS WILL BE APPLIED AS LISTED BELOW,
   A. PRIME COAT SHALL BE APPLIED AT A RATE OF 0.25 GALLON PER SQUARE YARD TO THE SURFACE OF ALL GRANITE BASE COURSES.
   B. TACK COAT SHALL BE APPLIED AT AT RATE OF 0.05 GALLONS PER SQUARE YARD TO THE SURFACE OF THE BINDER COURSE BEFORE PLACEMENT OF SURFACE COURSE.
2. REFER TO PAVING PLAN FOR LOCATION OF STANDARD AND HEAVY DUTY PAVEMENTS.

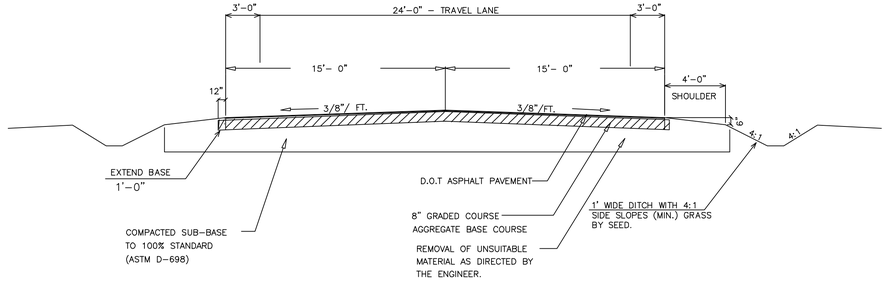
P-68 GDOT PAVEMENT SECTION



FLARE DIMENSIONS						
PIPE DIA.	A	B	C	L	E	R=L
12"	6"	2'-3"	1'-0"	8'-0"	2'-0"	1'-3"
15"	6"	2'-6"	1'-0"	8'-0"	2'-0"	1'-6"
18"	10"	3'-0"	2'-0"	8'-0"	3'-0"	1'-9"
24"	10"	4'-0"	2'-0"	8'-0"	3'-0"	2'-6"
30"	10"	5'-0"	2'-0"	8'-0"	3'-0"	3'-3"
36"	10"	6'-3"	2'-11"	8'-0"	3'-0"	3'-9"
42"	10"	6'-3"	2'-11"	8'-0"	4'-0"	4'-3"

REINFORCEMENT CONFORMS TO ASTM A-82

D-16 FLARED END SECTION DETAIL



P-14B TYPICAL CROWNED ROAD SECTION WITH DITCH

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED 25085 PROFESSIONAL 2/30/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
SITE DETAILS

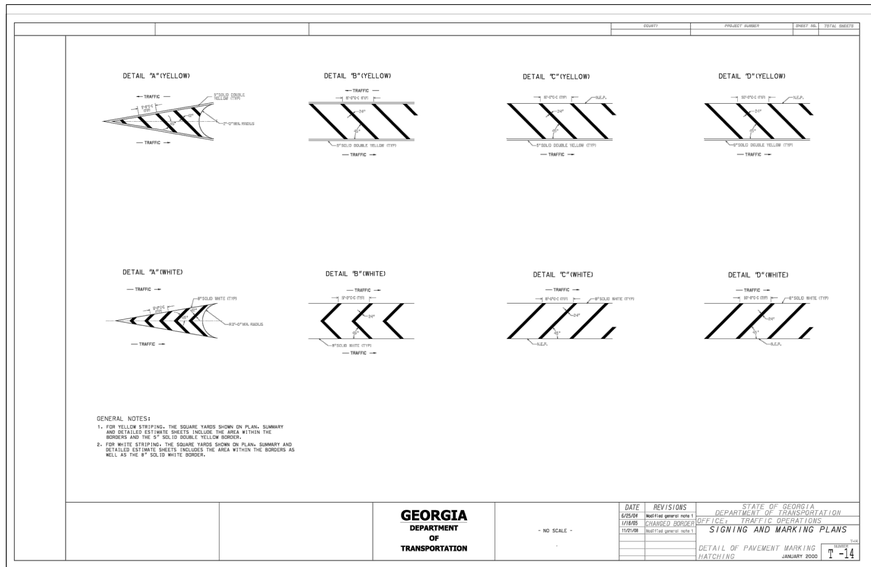
SCALE: 1"=
PROJECT NO: 210071.000
DATE: 3/30/22
DRAWN BY: WM
CHECKED BY: CRZ

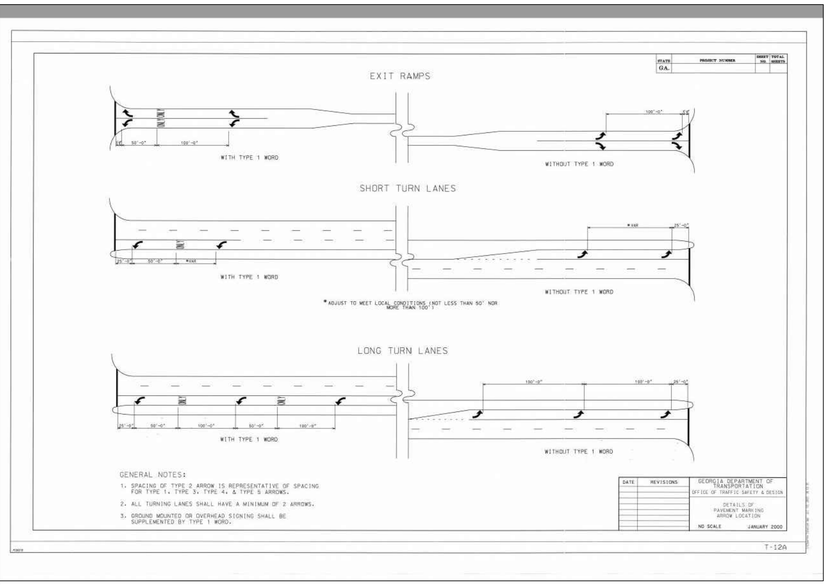
☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

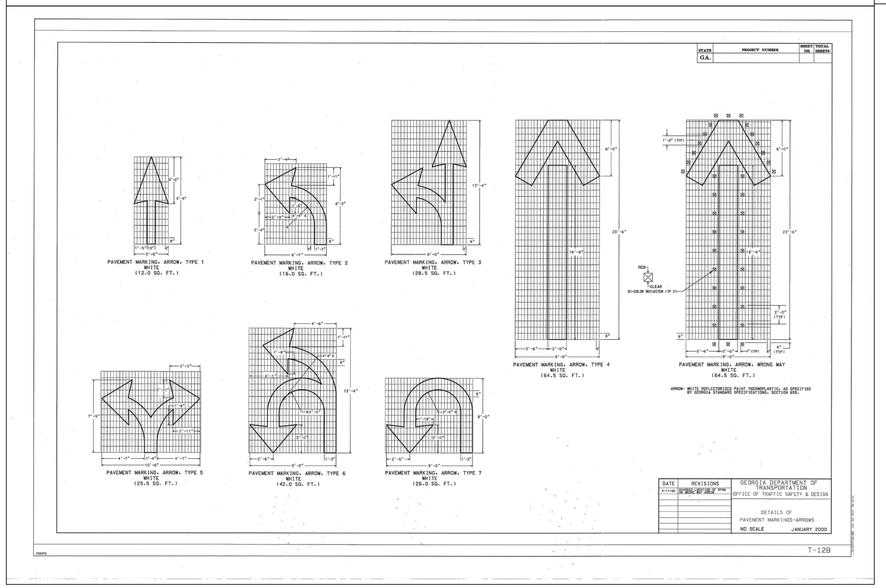
SHEET NO:
DET-1

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:01pm - crittmann
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg







Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

SITE DETAILS

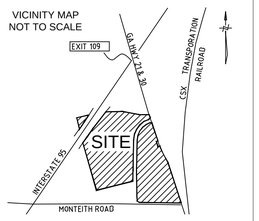
SCALE:	1" =
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

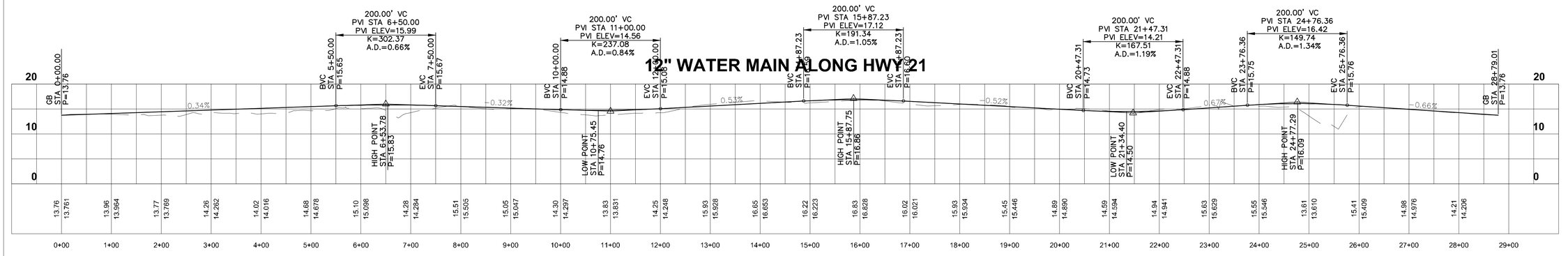
COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
DET-2

Wed, 30 May 2022 - 5:01pm - cattrouse
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.2.dwg





SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA REGISTERED 30085 PROFESSIONAL 3/30/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

ROAD PROFILE

SCALE:	1" = 100'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

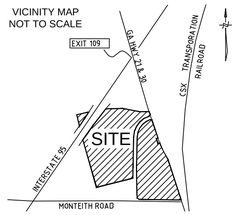
SHEET NO:

PRO-1

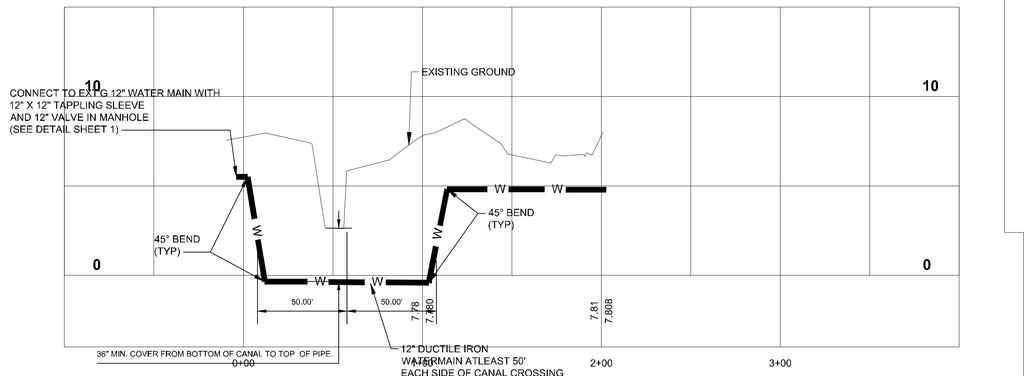
COPYRIGHT Kern & Co., LLC © 2013 The drawing and its reproductions are, the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:01pm cattrouer
DRAWING PATH: G:\2021\210071.000\dwgs\HENDLEY ROAD RELOCATION_5.13.21.dwg

VICINITY MAP
NOT TO SCALE



12" WATER MAIN ALONG HWY 21



SITE DATA:

PROJECT AREA: 6.60 AC

AREA OF DISTURBANCE: 6.60 AC

ZONING: P-I-1

P.I.N.: N/A

PROJECT ADDRESS: HENDLEY ROAD

PROJECT CITY: PORT WENTWORTH, GA

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX-SANSONE I SAVANNAH 21-95, LP

CONTACT: MICHAEL BALCOM

OWNER ADDRESS: 3819 MAPLE AVE

OWNER CITY: DALLAS, TX 75219

TELEPHONE NO.: 214-661-8000

DATE OF SURVEY: 11/2020

GOVERNING AGENCY: CITY OF PORT WENTWORTH

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA REGISTERED PROFESSIONAL 030722 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF HENDLEY ROAD RELOCATION FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

ROAD PROFILE

SCALE:	1" = 100'
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

PRO-1

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:01pm cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

EROSION AND SEDIMENTATION CONTROL ACTIVITIES SCHEDULE

TENTAIVE VS. SPECIFIC BEGIN/END DATES	APRIL 2021	MAY 2021	JUNE 2021	JULY 2021	AUGUST 2021	SEPTEMBER 2021
IMPLEMENTATION OF SILT FENCE, SEDIMENT STORAGE & CONSTRUCTION EXIT						
CLEARING, GRUBBING & INSTALL TREE PROTECTION FENCING						
EXCAVATION AND ROUGH GRADING						
CONSTR. OF TEMPORARY & PERMANENT SEDIMEN-TATION CONTROL & TEMP. GRASSING						
FINISHED GRADING						
PAVING, CONSTRUCTION UTILITIES, ETC.						
REMOVAL OF TEMPORARY SEDIMENTATION CONTROL STRUCTURES						
FINAL STABILIZATION & FINAL GRASSING						
MAINTENANCE OF BMP'S						

NOTE: NO CLEARING AND/OR GRUBBINGACTIVITIES WILL COMMENCE PRIOR TO THE INITIAL PERIMETER & SEDIMENT STORAGE BMP'S ARE IMPLEMENTED UNLESS THOSE ACTIVITIES ARE STRICTLY TO INSTALL SAID BMP'S.

Ds1

SITE PREPARATION
1. GRADE TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
2. INSTALL NEEDED EROSION CONTROL MEASURES AS REQUIRED SUCH AS DIKES, DIVERSIONS, BERMS TERRACES AND SEDIMENT BARRIERS.
3. LOOSEN COMPACT SOIL TO AMINIMUM DEPTH OF 3 INCHES.

MULCHING MATERIALS
1. DRY STRAW OR HAY SHALL BE APPLIED AT A DEPTH OF 2 TO 4 INCHES PROVIDING COMPLETE SOIL COVERAGE.
2. WOOD WASTER SHALL BE APPLEIED AT A DEPTHH OF 2 TO 3 INCHES. ORGANIC MATERIAL FROM THE CLEARING STAGE SHOULD REMAIN ON SITE, BECHIPED AND APPLIED AS MULCH.
3. POLYEHYLENE FILM SHALL BE SECURED OVER BANKS OR STOCKPILED SOIL MATERIAL FOR TEMPORARY PROTECTION.

APPLYING MULCH
1. DRY STRAW OR HAY MULCH AND WOOD CHIPS BE APPLIED UNIFORMLY BYHAND OR BY MECHANICAL EQUIPMENT
2. IF THE AREA WILL EVENTUALLY BE COVERED WITH PERENNIAL VEGETATION, 20–30 POUNDS OF NITROGEN PER ACRE IN ADDITION TO THE NORMAL AMOUNT SHALL BE APPLIED TO OFFSET THE UPTAKE OF NITROGEN CAUSED BY THE DECOMPOSITION OF THE ORGANIC MULCHES..

Ds2

Table 6.4.1: Temporary Cover or Companion Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR TEMPORARY COVER OR COMPANION CROPS

Species	Broadcast Rates: Rate per Acre	Broadcast Rates: Pure live seed (PLS) per 1000 sqft	Resource Area	Planting Dates by Resource Area	Remarks
BARLEY *Hordeum vulgare*					
alone	3 bu. (144 lbs)	3.3 lbs	M-L	August - November	14,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (24 lbs)	0.6 lb	P	August - December	Use on productive soils.
			C	September - December	
LESPEDEZA, ANNUAL *Lespedeza striata*					
alone	40 lbs	0.9 lb	M-L	February - April	200,000 seed per pound. May volunteer
in mixture	10 lbs	0.2 lb	P	February - April	for several years. Use inoculant EL
			C	January - March	
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - June	1,500,000 seed per pound. May last for
in mixture	2 lbs	0.05 lb	P	March - June	several years. Mix with Sericea
			C	February - June	lespedeza.
MILLET, BROWNTOP *Panicum fasciculatum*					
alone	40 lbs	0.9 lb	M-L	April - June	137,000 seed per pound. Quick dense
in mixture	10 lbs	0.2 lb	P	April - July	cover. Will provide excessive competion
			C	April - July	in mixtures if seeded at high rate.
MILLET, PEARL *Pennisetum glaucum*					
alone	50 lbs	1.1 lbs	M-L	March - July	88,000 seed per pound. Quick dense
			P	April - August	cover. May reach 5 feet in height. Not
			C	April - August	recommended for mixtures.
OATS *Avena sativa*					
alone	4 bu. (128 lbs)	2.9 lbs	M-L	September - November	13,000 seed per pound. Use on
in mixture	1 bu. (32 lbs)	0.7 lb	P	September - November	productive soils. Not as a winter hardy
			C	September - November	as rye or barley.
RYE *Secale cereale*					
alone	3 bu. (168 lbs)	3.9 lbs	M-L	July - November	18,000 seed per pound. Quick cover.
in mixture	1/2 bu. (28 lbs)	0.6 lb	P	August - December	Drought tolerant and winter hardy.
			C	January - February September - December	
RYEGRASS, ANNUAL *Lolium temulentum*					
alone	40 lbs	0.9 lb	M-L	January - April August - December	227,000 seed per pound. Dense cover.
			P	January - April August - December	Very competitive and is not to be
			C	January - March August - December	used in mixtures.
SUDANGRASS *Sorghum sudanese*					
alone	40 lbs	1.4 lbs	M-L	April - August	55,000 seed per pound. Good on
			P	April - August	droughty sites. Not recommended for
			C	March - July	mixtures.
TRITICALE *x Triticosecale*					
alone	3 bu. (144 lbs)	3.3 lbs	C	January, September–October, December	Use on lower part of Southern Coastal
in mixture	1/2 bu. (24 lbs)	0.6 lb			Plain and in Atlantic Coastal Flatwoods
					only.
WHEAT *Triticum aestivum*					
alone	3 bu. (180 lbs)	4.1 lbs	M-L	September - December	15,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (30 lbs)	0.7 lb	P	October - December	
			C	January, October-December	

Temporary cover crops are very competitive and will crowd out perennials if needed too heavily
Reduce seeding rates by 50 % when drilled.
ML represents the Mountain, Blue Ridge, and ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents Southern Coastal Plain, Sand Hills, Black Lands, and Atlantic Coast Flatwoods MLRAs

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

Table 6.6.2: Permanent Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR PERMANENT COVER

Species	Broadcast Rates: Rate per Acre[2]	Broadcast Rates: Pure live seed (PLS) per 1000 sqft	Resource Area[3]	Planting Dates by Resource Area	Remarks
BAHIA, PENSACOLA *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	P	March - June	166,000 seed per pound. Low growing. Sod forming. Slow to establish. Plant with a companion crop. Will spread
with other perennials	30 lbs	0.7 lb	C	February - May	
BAHIA, WILMINGTON *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	M-L	March - May	
with other perennials	30 lbs	0.7 lb	P	February - May	Same
BERMUDA, COMMON *Cynodon dactylon*					
hulled seed			P	April - May	1,787,000 seed per pound. Quick cover. Low growing and sod forming. Full sun. Good for athletic fields.
alone	10 lbs	0.2 lb	C	April - May	
with other perennials	6 lbs	0.7 lb			
BERMUDA, COMMON *Cynodon dactylon*					
Unhulled seed					
with tem porary cover	10 lbs	0.2 lb	P	January - May October - December	Plant with winter annuals
with other perennials	6 lbs	0.1 lb	C	January November - December	Plant with Tall Fescue
BERMUDA SPRINGS *Cynodon dactylon*					
Coastal, Common, Midland, or Tift 44	40 sq ft	0.9 sq ft or sod plugs 3' x 3'	M-L	April - June	A cubic foot contains approximately 650 springs. A bushel contains 1.25 cubic feet or approximately 800 springs.
			P	April - June	
Coastal, Common, of Tift 44			C	March - May	Same as above
Tift 79			C	April - May	Southern Coastal Plain only
CENTIPEDE *Eremochloa Ophiuroides*					
	Block sod only		P	January - May November - December	Drought tolerant. Full sun or partial shade. Effective adjacent to concrete and in concentrated flow areas. Irrigation is needed until fully established. Do not plant near pastures. Winterhardy as far as north Athens and Atlanta.
			C	January - May November - December	
CROWNVETECH *Coronilla varia*					
with winter annuals or cool season grasses	15 lbs	0.3 lb	M-L P	September - October September - October	330, seed per pound. Dense growth. Drought tolerant and fire resistant. Attractive rose, pink and white blossoms spring to late fall. Mix with 30 pounds of Tall fescue or 15 pounds of rye. Inoculate see with M inoculant. Use from North Atlanta and Northward.
FESCUE, TALL *Festuca arundinacea*					
alone	50 lbs	1.1 lb	M-L	March - April August - October	227,000 seed per pound. Use alone only on better sites. Mix with perennial lespedeza or Crownvetch. Apply topdressing in spring following fall plantings. Not for heavy use areas or athletic fields.
with other perennials	30 lbs	0.7 lb	P	August - October	
KUDZU *Pueraria rhomboidgrassa*					
Plants or crowns	3' - 7' apart		ALL	January - March	Rapid and vigorous growth. Excellent in gully erosion control. Will climb. Good livestock forage.
LESPEDEZA SERICEA *Lespedeza cuneata*					
			M-L	April - May	
scarified	60 lbs	1.4 lb	P	March - May	350,000 seed per pound. Widely adapted. Low maintenance. Mix with Weeping lovegrass, Common bermuda, bahia, or tall fescue. Takes 2 to 3 years to become fully established. Excellent on roadbanks. Inoculate seed with EL inoculant.
			C	February - May	
unscarified	75 lbs	1.7 lb	M-L	January - February	
			P	January - February	
			C	January - February	Mix with Tall fesue or winter annuals.
seed - bearing hay	3 tons	138 lbs	M-L	January - February	Cut when seed mixture is mature, but before, it shatters. Add Tall fescue or winter annuals.
			P	January	
			C	January	
LESPEDEZA *Anthyllis vulgata lespedeza virgata DC* or *Appalow* *Lespedeza cuneata (Dumont) G. Don)*					300,000 seed per pound. Height of growth is 18 to 24 inches. Advantageous in urban areas. Spreading type growth. New growth has bronze coloration. Mix with weeping lovegrass, common bermuda, bahia, tall fescue or winter annuals. Do not mix with Sericea lespedeza. Slow to develop sod stands. Inoculate seed with EL inoculant.
			M-L	March - May	
scarified	60 lbs	1.4 lb	P	March - May	
			C	February - May	
unscarified	75 lbs	1.7 lb	M-L	January - February	
			P	January - February	
			C		
LESPEDEZA, SHRUB *Lespedeza bicolor* *Lespedeza thunbergii*					
			M-L	January - March	
			P	January - March	
plants	3' x 3'		C	January - February	Provide weed control and cover.
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - May	1,500,000 seed per pound. Quick cover. Drought tolerant. Grows well with Sericea lespedeza on roadbanks.
			P	March - May	
with other perennials	2 lbs	0.05 lb	C	March - May	
MAIDENCANE *Panicum hemitomon*					
sprigs	2' x 3' spacing	ALL		February - April	For very wet sites. May clog channels. Dig sprigs from local sources. Use along river banks and shorelines.
PANICGRASS, ATLANTIC COASTAL *Panicum amarum var amarulum*					
			P	March - April	Grows well on coastal sand dunes; borrow areas, and gravel pits. Provides winter cover for wildlife. Mix with Sericea lespedeza except on sand dunes.
	20 lbs	0.5 lb	C	March - April	
REED CANARY GRASS *Phalaris arundinacea*					
alone	50 lbs	1.1 lb	M-L	August - October	
with other perennials	30 lbs	0.7 lb	P	August - October	Grows similar to Tall fescue.
SUNFLOWER, "AZTEC" MAXIMILLIAN *Helianthus maximiliani*					
			M-L	April - May	227,000 seed per pound. Mix with Weeping lovegrass or other low-growing grasses or legumes.
	10 lbs	0.2 lb	P	April - May	
			C	April - May	

1 Reduce seeding rates by 50% when drilled.
2 PLS is an abbreviation for Pure Live Seed. Refer to Section V.E. of these specifications.
3 M-L represents to Mountain, Blue Ridge, and Ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents the Southern Coastal Plain, Sand Hills, Black Lands, and Atlantic Coast Flatwoods MLRAs. See Figure 6.4.1

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

TABLE 6.6.1. FERTILIZER REQUIREMENTS

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. Cool season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 1/2/
	Second	6-12-12	1000 lbs./ac.	
	Maintenance	10-10-10	400 lbs./ac.	30
2. Cool season grasses and legumes	First	06-12-12	1500 lbs./ac.	0-50 lbs./ac. 1/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	
3. Ground covers	First	10-10-10	1000 lbs./ac. 3/	
	Second	10-10-10	1000 lbs./ac. 3/	
	Maintenance	10-10-10	1000 lbs./ac.	
4. Pine seedlings	First	20-10-5	one 21-gram pellet per seedling placed in the closing hole	
5. Shrub Lespedeza	First	0-10-10	700 lbs./ac.	
	Maintenance	0-10-10	700 lbs./ac.	
6. Temporary cover crops seeded alone	First	10-10-10	500 lbs./ac.	30 lbs./ac. 5/
7. Warm season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 2/6/
	Second	6-12-12	800 lbs./ac.	50-100 lbs./ac. 2/
	Maintenance	10-10-10	400 lbs./ac.	30 lbs./ac.
8. Warm season grasses and legumes	First	6-12-12	1500 lbs./ac.	50 lbs./ac./6/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	

1/ Apply in spring following seeding.
2/ Apply in split applications when high rates are used.
3/ Apply in 3 split applications.
4/ Apply when plants are pruned.
5/ Apply to grass species only.
6/ Apply when plants grow to a height of 2 to 4 inches.

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE CONSTRUCTION PROJECTS

OGEECHEE RIVER
Project Name: OLD AUGUSTA COMMERCE CENTER
Address: OLD AUGUSTA PARKWAY
City/County: EFFINGHAM COUNTY, GEORGIA
Date on Plans: 3/03/2021
NAME AND EMAIL: BECKNELL INDUSTRIIAL
JOEL REPISCAK
jrepiscak@becknellindustrial.com

TO BE SHOWN ON ES&PC PLAN

PAGE #	Y/N		
	Y	1.	The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1of the year in which the land-disturbing activity was permitted.(The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
	Y	2.	Level II certification number issued by the Commission, signature and seal of the certified design professional.(Signature, seal and Level II number must be on each sheet pertaining to ES&PC plan or the Plan will not be reviewed)
	N/A	3.	Limit of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office. If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.*(A copy of the written approval by EPD must be attached to the plan for the plan to be reviewed.)
SESC 6	Y	4.	The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
SESC2	Y	5.	Provide the name, address and phone number of primary permittee.
SESC2	Y	6.	Note total and disturbed acreage of the project or phase under construction.
SESC2	Y	7.	Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
COVER	Y	8.	Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
SESC6	Y	9.	Description of the nature of construction activity.
SESC2	Y	10.	Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
SESC6	Y	11.	Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
SESC5	Y	12.	Design professional's certification statement and signature that the site was visited prior to development of the ES&PC plan as stated on part iv page 23 of the permit.
SESC5	Y	13.	Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on part iv pg 22 of the permit.*
SESC5	Y	14.	Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*
SESC6	Y	15.	Clearly note the statement that 'Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25 feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
	N/A	16.	Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
SESC5	Y	17.	Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*
SESC5	Y	18.	Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."*
SESC6	Y	19.	Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."
SESC6	Y	20.	Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
SESC6	Y	21.	Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
SESC6	N/A	22.	Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.*
SESC6	N/A	23.	If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 21 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*
SESC5	Y	24.	BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drumat the construction site is prohibited.*
SESC5	Y	25.	Provide BMPs for the remediation of all petroleum spills and leaks.
SESC6	Y	26.	Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.*
SESC6	Y	27.	Description of practices to provide cover for building materials and building products on site.
SESC4	Y	28.	Description of the practices that will be used to reduce the pollutants in storm water discharges.*
SESC5	Y	29.	Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).

PAGE #	Y/N		
SESC5	Y	30.	Provide complete requirements of inspections and record keeping by the primary permittee.*
SESC5	Y	31.	Provide complete requirements of sampling frequency and reportinof sampling results.*
SESC6	Y	32.	Provide complete details for retention of records as per Part IV.F. of the permit.*
SESC1,2,3	Y	33.	Description of analytical methods to be used to collect and analyze the samples from each location.*
SESC4	Y	34.	Appendix B rationale for NTU values at all outfall sampling points where applicable.*
		35.	Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.*
SESC2	Y	36.	A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the plan may combine all of the BMPs into a single phase.*
		37.	Graphic scale and north arrow.
		38.	Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch = 100ft or larger scale	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

	N/A	39.	Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.
ALL	Y	40.	Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 edition*
ALL	Y	41.	Delineation of the applicable 25-foot or 50-foot undisturbed bufers adjacent to state waters and any additional bufers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.
POST	Y	42.	Delineation of on-site wetlands and all state waters located on and within 200 feet of the
HYDRO	Y		project site.
PRE&POST	Y	43.	Delineation and acreage of contributing drainage basins on the project site.
		44.	Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.*
SESC1,2,3	Y	45.	An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
SESC1,2,3	Y	46.	Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate
ALL	Y		discharges without erosion.Identify/Delineate all storm water discharge points.
SESC4	Y	47.	Soil series for the project site and their delineation.
		48.	The limits of disturbance for each phase of construction.
		49.	Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofited detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual must be included for structural BMPs and all calculations used by the design professional to obtain the required sediment storage when using equivalent controls. When discharging from sediment basins and impoundments, permittees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this decision must be included in the plan.
SESC1,2,3	Y		
SESC7	Y	50.	Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.
SESC7	Y	51.	Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
		52.	Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

*If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

Effective January 1, 2021

SEDIMENT STORAGE CALCULATIONS:

DISTURBED AREA = -- AC

REQUIRED STORAGE:
67 CY/AC x -- AC = -- CY
-- CY x 27CF/CY = -- CF OF REQUIRED STORAGE

PROVIDED STORAGE :
(ELEV A – ELEV B)(-- SF AT ELEV A + -- SF AT ELEV B) / 2 = -- CF OF PROVIDED STORAGE

CHAD ZITTROUER
MARK D. CRAPPS

GSWCC CERTIFICATION # 8150
GSWCC CERTIFICATION # 2888

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITTLE:
EROSION NOTES

SCALE: 1"=
PROJECT NO: 210071.000
DATE: 3/30/22
DRAWN BY: WM
CHECKED BY: CRZ

SHEET NO:
SESC-4

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:07pm - cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

Hazardous Wastes:

All hazardous waste materials will be disposed of in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. The job site superintendent, who will also be responsible for seeing that these practices are followed, will instruct site personnel in these practices. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the ESPCP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this ESPCP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials or hazardous waste will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. It shall be the responsibility of the job site superintendent to properly train all personnel in the use of the SPCC plan.

Sanitary Wastes:

A minimum of one portable sanitary unit will be provided for every ten (10) workers on the site. All sanitary waste will be collected from the portable units a minimum of one time per week by a licensed portable facility provider in complete compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharge is negligible. Additional containment BMP's must be implemented, such as gravel bags or specially designed plastic skid containers around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on the Intermediate Erosion Control Plan Sheet by the contractor once the locations have been determined.
Sanitary Sewer will be provided by Municipal Authority/Septic System at the completion of this project.

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

Waste Materials:

All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of once per week or more often if necessary and trash will be hauled as required by local regulations. No construction waste will be buried onsite.

All personnel will be instructed on proper procedures for waste disposal. A notice stating these practices will be posted at the jobsite and the contractor will be responsible for seeing that these procedures are followed.
ALL DISCHARGES FROM THIS SITE SHALL BE COMPOSED ENTIRELY OF STORM WATER WITH THE FOLLOWING EXCEPTIONS:

ACCEPTABLE NON–STORM WATER DISCHARGES

Storm water discharge from a construction site or construction activities that is mixed with a storm water discharge from an industrial source or activity other than construction where:

a. the industrial source or activity other than construction is located on the same site as the construction activity and is an integral part of the construction activity;

b. the storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of NPDES Permit No. GAR100001; and

c. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring are covered by a different NPDES general permit or individual permit authorizing such discharges and the discharges are in compliance with a different NPDES permit.

d. discharges from fire fighting activities; fire hydrant flushing; potable water sources including water line flushing; irrigation drainage; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials or pollutants.

Spill Cleanup and Control Practices:

– Local, State and manufacturer's recommended methods for spill cleanup will be clearly posted and procedures will be made available to site personnel.
– Material and equipment necessary for spill cleanup will be kept in the material storage areas. Typical materials and equipment includes, but is not limited to brooms, dustpans, mops, rags, gloves, goggles, cat litter, sand, sawdust and properly Labeled plastic and metal waste containers.
– Spill prevention practices and procedures will be reviewed after a spill and adjusted as necessary to prevent future spills.
– All spills will be cleaned up immediately upon discovery. All spills will be reported as required by local, State and Federal regulations.
– FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITH IN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE EPD WILL BE CONTACTED WITHIN 24 HOURS.
– FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.

The contractor shall notify the licensed professional who prepared this plan if more than 1320 gallons of petroleum is stored onsite (this includes capacities of equipment) or if any one piece of equipment has a capacity greater than 660 gallons. The Contractor will need a Spill Prevention Containment and Countermeasures Plan prepared by that licensed professional.

Product Specific Practices:

Petroleum Based Products – Containers for products such as fuels, lubricants and tars will be inspected daily for leaks and spills. This includes on–site vehicle and machinery daily inspections and regular preventative maintenance of such equipment. Equipment maintenance areas will be located away from state water, natural drains and storm water inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/minmize site contamination. Discharge of oils, fuels and lubricants is prohibited. Proper disposal methods will include collection in a suitable container and disposal as required by local and State regulations.

Paints/Finishes/Solvents – All products will be stored in tightly sealed original containers when not in use. Excess product will not be discharged to the storm water collection system. Excess product, materials used with these products and product containers will be disposed of according to manufacturer's specifications and recommendations.

Concrete Truck Washing – NO concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water onsite.

Fertilizer/Herbicieds – These products will be applied at rates that do not exceed the manufacturer's specifications or above the guidelines set forth in the crop establishment or in the GSWCC Manual for Erosion and Sediment Control in Georgia. Any storage of these materials will be under roof in sealed containers.

Building Materials – No building or construction materials will be buried or disposed of onsite. All such material will be disposed of in proper waste disposal procedures.

INSPECTIONS:

Permittee Requirements.

(1). Each day when any type of construction activity has taken place at a primary permitee's site, certified personnel provided by the primary permittee shall inspect:(a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment and (b) all locations at the primary the site for the evidence of off–site sediment tracking. These inspections must be conducted until a Notice of Termination has been submitted.
(2). Measure rainfall once every 24 hours except and non–working Saturday, non–working Sunday and non–working Federal holiday until a Notice of Termination is submitted. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.
(3). Certified personnel (provided by the primary permittee) shall inspect the following at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or any non–working Saturday, non–working Sunday or any non–working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day , whichever occurs first): (a) disturbed areas of the primary permittee's construction site; (b) areas used by the primary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.a.(4). These inspections must be conducted until a Notice of Termination is submitted.
(4). Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is received by EPD) the areas of the site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible , they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s).
(5). Based on the results of each inspection,the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical but in no case later than seven (7) calendar days following each inspection.
(6). A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5)..of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by end of the second business day and/ or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify an incident, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part V.G.2. of this permit.

5. Maintenance
The Plan shall include a description of procedures to ensure the timely maintenance of vegetation, erosion and sediment control measures and other protective measures identified in the site plan.

6. Sampling Requirements
This permit requires the monitoring of nephelometric turbidity in receiving waters or outfalls in accordance with this permit. This section is applicable to primary permittees with a total planned disturbance equal to or greater than one (1) acre and tertiary permittees with a total planned disturbance equal to or greater that five (5) acres. This section is not applicable to secondary permittees. The following procedures constitute EPD's guidelines for sampling turbidity.

a. Sampling Requirements shall include the following:
(1). A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is equal to or more detailed that a 1:24000 map showing the location of the site or the common development: (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map, and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the storm water is discharged and (b) the receiving water and/or outfall sampling locations. When the permittee has chosen to use a USGS topographic map and the receiving water(s) must be hand–drawn on the USGS topographic map from where the storm water(s) enter the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;
(2). The analytical method used to collect and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each sampling location;
(3). When the permittee has determined that some or all outfalls will be sampled, a rationale must be included on the Plan for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm water fisheries); and
(4). Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the permittee of the information necessary and the timeline for submittal.

b. Sample Type. All sampling shall be collected by "grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by by 40 CFR Part 136 (unless other test procedures have been approved); the guidance document titles "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001" and guidance documents that may be prepared by the EPD.
(1). Sample containers should be labeled prior to collecting samples.
(2). Samples should be well mixed before transferring to a secondary container.
(3). Large mouth, clean and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.
(4). Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. If automatic sampling is utilized, and the automatic sampler is not activated during the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed using a direct reading, properly calibrated turbidimeter. Samples are not required to be cooled.
(5). Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

c. Sampling Points
(1). For construction activities the primary permittee with a total planned disturbance equal to or greater than one (1) acre and tertiary permittee with a total planned disturbance equal to or greater than five (5) acres must sample all receiving waters , or all outfalls, or a combination of receiving water and outfalls. Samples taken for the purpose of compliance with this permit shall be representative of the monitored activity and representative of the water quality of the receiving waters and/or the storm water outfalls using the following minimum guidelines:
(a) The upstream sample for each receiving water(s) must be taken immediately upstream of the confluence of the first storm water discharge from the permitted activity (i.e., the discharge farthest upstream at the site) but downstream of any other storm water discharges not associated with the permitted activity. Where appropriate, several upstream samples from across the receiving waters may need to be taken and the arithmetic average of the turbidity of these samples used for the upstream turbidity value.
(b). The downstream sample for each receiving water(s) must be taken downstream of the confluence of the last storm water discharge from the permitted activity (i.e.,the discharge furthest downstream at the site) but upstream of any other storm water discharge not associated with permitted activity. Where appropriate, several downstream samples from across the receiving waters may need to be taken and arithmetic average of the turbidity of these samples used for the downstream turbidity value.
(c) Ideally the samples should be taken from horizontal and vertical center of the receiving waters or the storm water outfall channels.
(d) Care should be taken to avoid stirring the bottom sediments in the receiving waters or in the outfall storm water channel.
(e) The sampling container should be held so that the opening faces upstream.
(f) The samples should be kept free from floating debris.
(g) Permittees do not have to sample sheet flow that flows onto undisturbed natural areas or areas stabilized by the project. For purposes of this section , stabilized shall mean, for unpaved areas and areas not covered by permanent structures and areas located outside the waste disposal limits of a landfill cell that has been certified by EPD for waste disposal, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscape areas), or equivalent permanent stabilization measures as defined in the Manual (excluding a crop of annual vegetation and seeding of target crop perennials appropriate for the region).
(h) All sampling pursuant to this permit must be done in such a way (including generally accepted sampling methods, locations, timing, and frequency)as to accurately reflect whether storm water runoff from the construction site is in compliance with the standard set forth in Parts III.D.3. or III.D.4., whichever is applicable.

d. Sampling Frequency.
(1) The primary permittee must sample in accordance with Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beginning of any storm water discharge to a monitored receiving water and.or from a monitored outfall within forty–five (45) minutes or as soon as possible..
(2) However, where manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittees control, the permittee shall take samples as soon as possible, but in no case more than twelve (12) hours after beginning of the storm water discharge.
(3) Sampling by the permittee shall occur for the following qualifying events:
(a) For each area of the site that discharges to a receiving water or from an outfall, the first rain event reaches or exceeds 0.5 inch with a storm water discharge that allows for sampling during normal business hours as defined in this permit after all clearing and grubbing operations have been completed, but prior to completion of mass grading operations, in the drainage area of the location selected as the sampling location.
(b) In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a storm water discharge that occurs during normal business hours as defined in the permit either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the sampling location, whichever comes first;
(c) At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed , installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours until the selected turbidity standard is attained, or until post–storm event inspections determine that BMPs ar properly designed, installed and maintained;
(d) Where sampling pursuant to (a), (b) or (c) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a.(6)., or the tertiary permittee, in accordance with Part IV.D.4.c.(6)., must include a written justification in inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (a), (b) or (c) above; and
(e) Existing construction activities , i.e., those that are occurring on or before the effective date of this permit, that must met the sampling required by (a) above shall sample in accordance with (b). Those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as required by (c) above.
*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for sampling at any time of the day or week
(7) Non–storm water discharges. Except for flows from fire fighting activities, sources of non–storm water listed in Part III.A.2. of this permit that are combined with stormwater discharge associated with construction activity must be identified in the Plan. The Plan shall identify and ensure the implementation of appropriate pollution prevention measures for non–storm water components of the discharge.

A. Reporting

1. The applicable permittees are required to submit the sampling results to the EPD at the address shown in Part II.C. by the fifteenth day of the month following the report period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G.2. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.
2. All sampling reports shall include the following information:
a. The rainfall amount, date, exact place and time of sampling or measurements;
b. The name(s) of the certified personnel who performed the sampling and measurements;
c. The date(s) analyses were performed;
d. The time(s) analyses were initiated;
e. The name(s) of the certified personnel who performed the analyses;
f. References and written procedures, when available, for the analytical techniques or methods used;
g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results;
h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU," and
i. Certification statement that sampling as conducted as per the Plan.
3. All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit. The applicable permittees shall retain a copy of the proof of submittal at the construction site or the proof of the submittal shall be readily available at a designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI. If an electronic submittal is provided by EPD then the written correspondence may be submitted electronically; if required, a paper copy must also be submitted by return receipt certified mail or similar service.

F. Retention of Records

1. The primary permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted in accordance with Part VI:
a. A copy of all Notices of Intent submitted to EPD;
b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit;
c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5. of this permit;
d. A copy of all sampling information, results, and reports required by this permit;
e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this permit.
f. A copy of all violation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and
g. Daily rainfall information collected in accordance with Part IV.D.4.a.(2). of this permit.
2. Copies of all Notices of Intent, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) or other reports requested by the EPD, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the date that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the primary permittee's primary place of business once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at anytime upon written notification to the permittee.

STORMWATER SAMPLING
SAMPLE ANALYSIS

Storm water samples are to be analyzed in accordance with methodology and test procedures established by 40 CFR Part 136 and the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001."

Storm water is to be sampled for nephelometric turbidity units (NTU) at the outfall location. A discharge of storm water runoff from disturbed areas where best management practices have not been properly designed, installed, and maintained shall constitute a separate violation for each day on which such condition results in the turbidity of the discharge exceeding 25, the value that was selected from Appendix B in Permit No. GAR100001. The NTU is based upon the disturbed acreage of ?? acres for the project site, the surface water drainage area of ?? square miles, and receiving water which supports warm water fisheries.

An "Erosion & Sedimentation Inspection and Maintenance Report" sheet is attached.
Should inspection reveal any deficiencies, a copy of the report shall be sent to:

ATTN: Client Name
Address
Address
Phone Number

ATTN: Kern & Co.
7 Mall Court
Savannah, GA 31406
912–354–8400

Governing Agency: Georgia Environmental Protection Division
Coastal District – Brunswick Office
One Conservation Way
Brunswick, GA 31520
1–800–241–4113

The design professional who prepared the ES&PC plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation.

DESIGN PROFESSIONAL 7–DAY VISIT CERTIFICATION

DATE OF INSPECTION: _____

I Certify the site was in compliance with the ES&PC Plan on the date of inspection.

_____
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION #

Inspection revealed the following discrepancies from the ES&PC Plan.

_____
_____
_____

These deficiencies must be addressed within two days and a re–inspection scheduled.
Work shall not proceed on the site until design Professional Certification is obtained.

ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

EROSION NOTES

SCALE:	1"=
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-5

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:02pm cattrouer
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

SECONDARY PERMITTEES

NOTE: THIS MASTER LIST TO BE COMPLETE AND SIGNED. KEPT IN THE ON SITE CONSTRUCTION TRAILER

SECONDARY PERMITTEE'S SIGN WHEN RECEIVING PLANS. ALL SECONDARY PERMITTEES MUST SUBMIT SECONDARY NOI AT LEAST 14 DAYS PRIOR TO BEGINNING CONSTRUCTION ACTIVITY.

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

TO BE SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN

STORAGE CALCULATIONS

1. REQUIRED STORMWATER STORAGE = _____ CY
   (AS DETERMINED BY LOCAL ORDINANCE)
2. REQUIRED SEDIMENT STORAGE = _____ CY
   (67 CY/AC * _____ AC DISTURBED AREA)
3. TOTAL REQUIRED STORAGE = _____ + _____ = _____ CY
4. AVAILABLE STORAGE = _____ CY
5. IS THE AVAILABLE STORAGE (4)GREATER THAN THE TOTAL REQUIRED STORAGE (3)?
6. IF "NO" , THE SEDIMENT STORAGE CAPACITY OF THE POND MUST BE INCREASED.
   CHOOSE THE METHOD TO BE USED:
   _____RAISE THE INVERT OF THE OUTLET STRUCTURE _____ INCHES.
   _____UNDERCUT THE POND _____ FEET
   _____OTHER _____
7. CLEAN-OUT ELEVATION = _____ FEET
   (ELEVATION CORRESPONDING TO 22 CY/AC * _____ AC DISTURBED AREA)
8. IS THE LENGTH-WIDTH RATIO 2:1 OR GREATER?
   _____ YES _____ NO
9. IF "NO", THE LENGTH OF FLOW MUST BE INCREASED. CHOOSE THE METHOD TO BE USED:
   _____ BAFFLES (TYPE OF BAFFLE: _____)
   _____ OTHER _____

NOTE THE CMP DIAMETER AND HEIGHT IF A HALF-ROUND CMP RETROFIT IS TO BE USED.

DIAMETER = _____ INCHES HEIGHT = _____ FEET

EROSION AND SEDIMENT NARRATIVE NOTES

1. DESCRIPTION:
2. SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION: FOR INFORMATION REGARDING THE SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION PLEASE REFERENCE THE PAVING, GRADING, AND DRAINAGE PLAN, AND THE SOIL EROSION PLAN OF THE CONSTRUCTION DRAWINGS. THE ENTIRE SITE IS COMPOSED OF SOIL TYPE
3. VEGETATION: THE EXISTING SITE IS CURRENTLY _____.
4. EROSION CONTROL PROGRAM: VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER GRADING IS COMPLETED. LAND WILL BE SCHEDULED TO LIMIT EXPOSURE OF BARE SOILS TO EROSION ELEMENTS. STORM WATER MANAGEMENT STRUCTURES WILL BE EMPLOYED TO PREVENT EROSION IN AREAS OF CONCENTRATED WATER FLOWS. EROSION AT THE EXITS OF ALL STORM WATER STRUCTURES WILL BE PREVENTED BY THE INSTILLATION OF STORM DRAIN OUTLET PROTECTION DEVICES. STORM DRAIN OUTLET PROTECTION DEVICES.
5. SEDIMENT CONTROL PROGRAM: SEDIMENT CONTROL WILL BE ACCOMPLISHED BY THE INSTALLATION OF SILT FENCE. A CONSTRUCTION EXIT BE INSTALLED TO PREVENT THE TRANSPORT OF SEDIMENT FROM THE SITE BY VEHICULAR TRAFFIC.
6. STANDARDS AND SPECIFICATIONS: ALL DESIGNS WILL CONFORM TO AND ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE PUBLICATION ENTITLED, "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA".
7. SAFETY PROTECTION: CONSTRUCTION ACTIVITIES WILL BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES AND REGULATIONS.
8. MAINTENANCE PROGRAM: SEDIMENT AND EROSION CONTROL MEASURES WILL BE INSPECTED DAILY. ANY DAMAGES OBSERVED WILL BE REPAIRED BY THE END OF THAT DAY. CLEANOUT OF SEDIMENT CONTROL STRUCTURES WILL BE ACCOMPLISHED IN ACCORDANCE WITH THE SPECIFICATIONS AND SEDIMENT DISPOSAL ACCOMPLISHED BY SPREADING ON THE SITE. BARRIERS WILL REMAIN IN PLACE UNTIL SEDIMENT CONTRIBUTING AREAS ARE STABILIZED. THE SEDIMENT FENCES, AND THE BARRIERS WILL THEN BE REMOVED AND THE AREAS OCCUPIED BY THESE DEVICES WILL THEN BE VEGETATED. GUIDELINES FOR THE MAINTENANCE OF ESTABLISHED VEGETATION WILL BE PROVIDED TO THE OWNER WHEN ALL DISTURBED AREAS ARE STABILIZED.
9. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
10. MAINTENANCE OF ALL SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES, WHETHER TEMPORARY OR PERMANENT, SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE OWNER.
11. "I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."
12. THERE ARE NO STATE WATERS ON OR WITHIN 200' OF THIS SITE. NO WRESTED VEGETATION – NO BUFFER REQUIRED.
13. ALL NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AAS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION WITHOUT FIRST ACQUIREING THE NECESSARY VARIANCES AND PERMITS.
14. THE POINT OF CONTACT FOR CIVIL SITE WORK FOR THIS PROJECT IS:
    KERN & CO., LLC
    P.O. BOX 15179
    SAVANNAH, GA 31416
    912.354.8400
15. DEVELOPER/OWNER/PRIMARY PERMITTEE:
    NAME:
    ADDRESS:
    ADDRESS:
    PHONE #:
16. TWENTY-FOUR HOUR CONTACT RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL: SHERRY KERN, KERN & CO., LLC 912-547-8402
17. DRAINAGE FLOWS THROUGH ? AND THEN INTO ?
18. RUNOFF COEFFICIENT
    PRE DEVELOPED: ?
    POST DEVELOPED: ?
19. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.
20. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD OF GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
21. ALL GRASSING SHALL BE IN ACCORDANCE WITH THE GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 1983 EDITION
22. CONTRACTOR SHOULD BE RESPONSIBLE FOR NOTIFYING THE ENGINEER SEVEN DAYS PRIOR TO CONSTRUCTION. IF CONTRACTOR FAILS TO NOTIFY ENGINEER A $1,000.00 FINE SHOULD BE ACCESSED.
23. HYDRAULIC SEEDING SHALL INCLUDE THE SEED, FERTILIZER, & WOOD CELLULOSE OR WOOD PULP FIBER MULCH WITH WATER. APPLY IN A SLURRY UNIFORMLY OVER THE AREA AT A RATE OF 500 LBS/ACRE.
24. THE OPERATOR WILL ENSURE THAT ALL MEASURES AND FACILITIES FOR CONTROL OF EROSION AND SEDIMENTATION DURING SITE PREPARATION, OPERATION, AND/OR RECLAMATION ACTIVITIES SHALL ADHERE TO THE FOLLOWING:
25. ALL EROSION AND SEDIMENTATION CONTROL MEASURES OR FACILITIES, WHETHER TEMPORARY OR PERMANENT, SHALL BE CONTINUOUSLY MAINTAINED BY THE OPERATOR, SO AS TO BE EFFECTIVE.
26. SEDIMENT IN SURFACE RUNOFF WATER SHALL BE TRAPPED BY USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, SEDIMENT BARRIERS OR SIMILAR STRUCTURES.
27. PERMANENT VEGETATION SHALL BE INSTALLED AS SOON AS POSSIBLE. TEMPORARY VEGETATION AND/OR MULCH SHALL BE EMPLOYED WHERE NECESSARY TO PROTECT EXPOSED CRITICAL AREAS UNTIL PERMANENT VEGETATION OR STABILIZATION IS ATTAINED.
28. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED WHEREVER FEASIBLE TO PROVIDE FOR NATURAL BUFFER AREAS.
29. DIVERSIONS, DIKES, AND BERMS SHALL BE EMPLOYED TO RETAIN, DIRECT AND CONTROL SURFACE WATER RUNOFF FROM AFFECTED AREAS INTO SEDIMENT CONTROL STRUCTURES.
30. ALL SURFACE WATER DISCHARGES SHALL BE CONTROLLED AND RELEASED AT A NON-EROSIVE VELOCITY ONTO STABILIZED AREAS OR INTO STABILIZED CHANNELS.

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

APPENDIX B

Nephelometric Turbidity Unit (NTU) Tables

Cold Water (Trout Stream)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	25	50	75	150	300	500	500	500
10.01–25	25	25	50	75	150	200	500	500
25.01–50	25	25	25	50	75	100	300	500
50.01–100	20	25	25	35	59	75	150	300
100.01+	20	20	25	25	25	50	60	100

Warm Water (Supporting Warm Water Fisheries)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	75	150	200	400	750	750	750	750
10.01–25	50	100	100	200	300	500	750	750
25.01–50	50	50	100	100	200	300	750	750
50.01–100	50	50	50	100	100	150	300	600
100.01+	50	50	50	50	50	100	200	100

To use these tables, select the size (arces) of the facility or common development. Then, select the surface water drainage area (square miles). The NTU matrix value arrived at from the above tables is the one to use.

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSION NOTES

SCALE:	1"=
PROJECT NO:	210071.000
DATE:	3/30/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:
SESC-6

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 30 Mar 2022 - 5:02pm - cstrouse
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

GEORGIA

UNIFORM CODING SYSTEM

FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM			A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT		Co	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION		Cr	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL			A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNDRAIN STRUCTURE		Dn1	A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE		Gr	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainageways.
Re	RETAINING WALL			A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING		Rt	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER			A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN		Sd3	A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SKIMMER			A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
Spb	SEEP BERM			Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.

STRUCTURAL PRACTICES

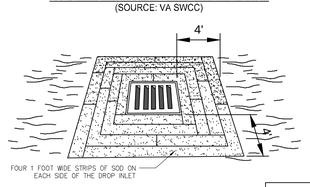
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING		Sr	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		Su	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN		Tc	A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Tp	TOPSOILING		Tp	The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION		Tr	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL			Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf	Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS		Fl-Co	Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)		Sb	The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKIFIERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

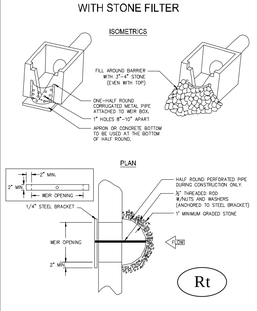
INLET SEDIMENT TRAP

SOD STRIPS PROTECT INLET AREA FROM EROSION
(SOURCE: VA SWCC)



Sd2-F

PERFORATED HALF-ROUND PIPE WITH STONE FILTER

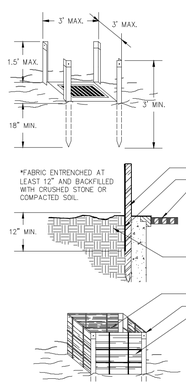


Rt

GaSWCC (Amended – 2013)

FABRIC AND SUPPORTING FRAME FOR INLET PROTECTION

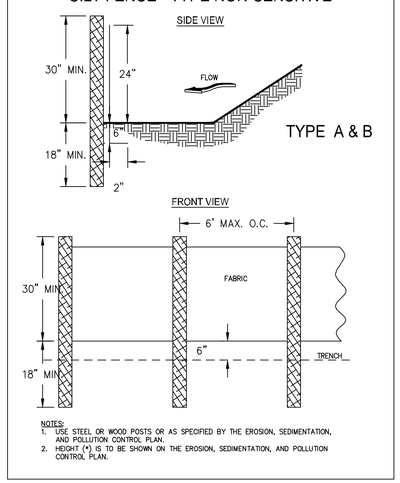
STEEL FRAME AND SILT FENCE INSTALLATION



NOTES:
1. DESIGN IS FOR SLOPES NO GREATER THAN 5% (NOT DESIGNED FOR CONCENTRATED FLOWS).
2. THE STEEL POSTS SUPPORTING THE SILT FENCE MATERIAL SHOULD BE SPACED EVENLY AROUND THE PERIMETER OF THE INLET (MAXIMUM OF 3' APART).
3. THE STEEL POSTS SHOULD BE SECURELY DRIVEN AT LEAST 18" DEEP.
4. THE FABRIC SHOULD BE ENTRENCHED AT LEAST 12" AND THEN BACKFILLED WITH CRUSHED STONE OR COMPACTED SOIL.

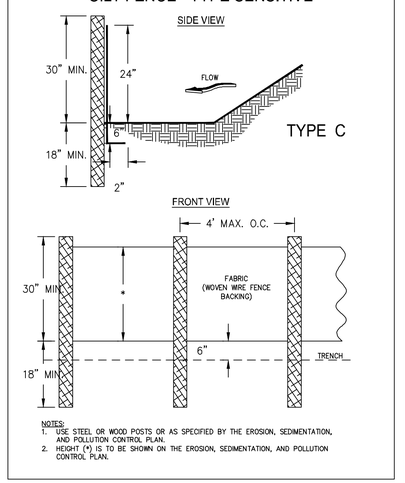
Sd2-F

SILT FENCE - TYPE NON-SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

SILT FENCE - TYPE SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

A PERMANENT VEGETATION USING SODS ON HIGHLY ERODIBLE OR CRITICALLY ERODED LANDS.

- BRING SOIL SURFACE TO FINAL GRADE. CLEAR SURFACE OF TRASH, WOODY DEBRIS, STONES AND CLODS LARGER THAN 1". APPLY SOD TO SOIL SURFACES ONLY AND NOT FROZEN SURFACES OR GRAVEL TYPE SOILS.
- TOPSOIL PROPERLY APPLIED WILL HELP GUARANTEE A STAND. DO NOT USE TOPSOIL RECENTLY TREATED WITH HERBICIDES OR SOIL STERILANTS.
- MIX FERTILIZER INTO SOIL SURFACE. FERTILIZE BASED ON SOIL TESTS OR TABLE 1.

Ds4

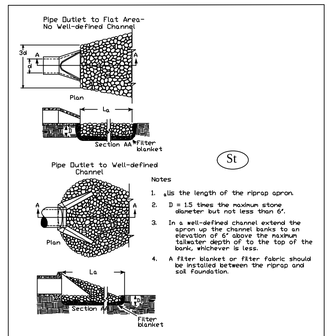
Fertilizer Requirements for soil Surface Application

Fertilizer Type	Fertilizer Type (lbs./acre)	Fertilizer Type (lbs./sq.ft.)	Season
10-10-10	1000	.025	Fall

- AGRICULTURAL LIME SHOULD BE APPLIED BASED ON SOIL TESTS OR AT A RATE OF 1 TO 2 TONS PER ACRE.
- LAY SOD WITH TIGHT JOINTS AND IN STRAIGHT LINES. DON'T OVERLAP JOINTS. STAGGER JOINTS AND DO NOT STRETCH SOD.
- ON SLOPES STEEPER THAN 3:1, SOD SHOULD BE ANCHORED WITH PINS OR OTHER APPROVED METHODS.
- INSTALLED SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE GOOD CONTACT BETWEEN SOD AND SOIL.
- IRRIGATE SOD AND SOIL TO A DEPTH OF 4" IMMEDIATELY AFTER INSTALLATION.
- SOD SHOULD NOT BE CUT OR SPREAD IN EXTREMELY WET OR DRY WEATHER.
- IRRIGATION SHOULD BE USED TO SUPPLEMENT RAINFALL FOR A MINIMUM OF 2-3 WEEKS.

SOD PLANTING REQUIREMENTS

GRASS	VARIETIES	RESOURCE AREA	GROWING SEASON
BERMUDAGRASS	COMMON TIFWAY TIFREEN TIFLAWN	M-L,P,C P,C P,C P,C	WARM WEATHER
BAHIAGRASS	PENSACOLA	P,C	WARM WEATHER
CENTIPEDE	---	P,C	WARM WEATHER
ST. AUGUSTINE	COMMON BITTERBLUE RALEIGH	C	WARM WEATHER
ZOYSIA	EMERALD MYER	P,C	WARM WEATHER

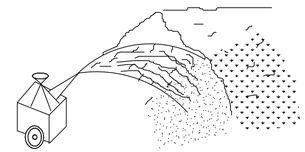


St

Notes
1. La is the length of the riprap apron.
2. D = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the banks, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 6-24.3 – Riprap Outlet Protection (Modified From Va SWCC)

ESTABLISHING TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDINGS ON DISTURBED OR DENUDED AREAS.



ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

* SITE PREPARATION
  - –GRADING AND SHAPING
  - –SEEDBED PREPARATION
  - –APPLY LIME AND FERTILIZER
  - –PLANT SEEDING, SELECT SPECIES BY SEASON AND REGION
  - –APPLY MULCHING MATERIAL IF NEEDED
  - –IRRIGATE IF NEEDED BUT NOT AT RATE TO CAUSE EROSION

*PLANTING DATES DEPEND ON SPECIES AND REGION (MOUNTAIN, PIEDMONT OR COASTAL)

Ds2 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

SEEDING RATES FOR TEMPORARY SEEDINGS

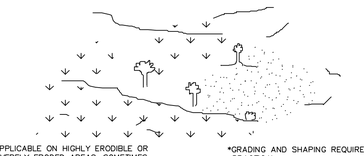
SPECIES	RATE PER 1,0000 SQ. FT.	RATE PER ACRESñ	PLANTING DATESô MTS-L'STONE	PIEDMONT	COASTAL
RYEGRASS	0.9 POUNDS	40-50 LBS.	8/1-12/1	8/15-1/1	8/15-3/1
ANNUAL LESPEDEZA	0.9 POUNDS	40 LBS.	3/1-4/1	3/1-4/1	2/1-3/1
WEEPING LOVEGRASS	0.1 POUNDS	4-6 LBS.	3/15-8/1	3/1-8/15	2/15-8/15

* ALL SEEDING NUMBERS ARE ALONE FOR MIXTURE NUMBER SEE MANUAL FOR EROSION AND SEDIMENT TABLE 6-24.1 PAGES 6-134 – 6-136.

ñ UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.
ô SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

Ds3 ESTABLISHING A PERMANENT VEGETATIVE COVER AS A DISTURBED AREA.

- –TO STABILIZE THE SOIL
- –TO REDUCE DAMAGE FROM SEDIMENT AND RUNOFF TO DOWNSTREAM AREAS
- –TO IMPROVE WILDLIFE HABITAT AND VISUAL RESOURCES



*APPLICABLE ON HIGHLY ERODIBLE OR SEVERELY ERODED AREAS, SOMETIMES CALLED "CRITICAL AREAS"

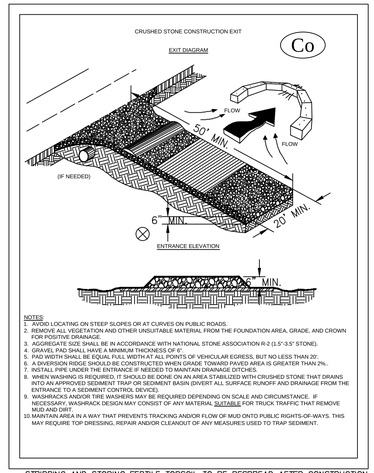
INCLUDING:
- –CUT OR FILL SLOPES
- –EARTH SPILLWAYS
- –BORROW AREAS
- –CHANNEL BANKS
- –BERMS
- –ROADSIDES
- –SPOILS AREAS
- –GULLIED LANDS

*GRADING AND SHAPING REQUIRED WHERE FEASIBLE PRACTICAL
*SEEDED PREPARATION
- –NOT REQUIRED IF USING HYDRAULIC SEEDING AND FERTILIZING
- –WHEN REQUIRED:

SLOPE	SEEDBED
3:1 OR FLATTER	≥ 4" DEEP
2:1 TO 3:1	1" TO 4" DEEP
2:1 OR STEEPER	DEPRESSION EVERY 6'-8" WITH HAND TOOL

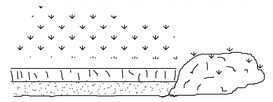
*HAVE SOIL ANALYZED FOR LIME AND FERTILIZER RATE
*MULCH ALL SLOPES STEEPER THAN 3% AND IN BOTTOM OF SPILLWAYS AND ON ROAD BANKS
*ANCHOR MULCH IMMEDIATELY

DISTURBED AREA STABILIZATION (With Permanent Vegetation)



NOTES
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION N-2 (1.5"-3.5" STONE).
4. LENGTH SHALL BE NOT LESS THAN 50' EXCEPT FOR SINGLE RESIDENCE LOT.
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

STRIPPING AND STORING FERTILE TOPSOIL TO BE RESPREAD AFTER CONSTRUCTION.

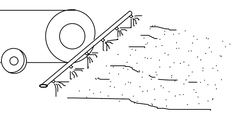


*RECOMMENDED FOR SIDE 2:1 OR FLATTER SLOPES
*TOPSOIL SHOULD BE TESTED TO JUSTIFY STRIPPING
- –pH 5.0 TO 7.5
- –SOLUABLE SALTS ≤ 500 ppm

*STOCKPILE SHOULD NOT OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE
*RECOMMEND RESPREADING 5" DEEP

Tp TOPSOILING

CONTROLLING DUST AT THE SITE



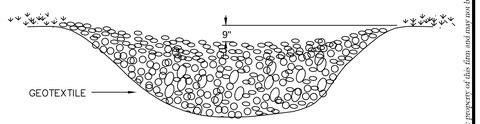
*TEMPORARY METHODS:
- –MULCHES
- –TEMPORARY VEGETATIVE COVER
- –SPRAY ON ADHESIVES
- –TELLAGE
- –IRRIGATION
- –BARRIERS
- –CALCIUM CHLORIDE

*PERMANENT METHODS
- –PERMANENT VEGETATION
- –TOPSOILING
- –STONE COVER

*CHEMICAL CONTROL

ADHESIVE	WATER DILUTION	TYPE OF NOZZLE	APPLICATION RATE (GAL/AC)
ANIONIC ASPHALT EMULSION	7:1	SPRAY	1,200
LATEX EMULSION	12 1/2:1	FINE SPRAY	235
RESIN-IN-WATER EMULSION	4:1	FINE SPRAY	300

Du DUST CONTROL ON DISTURBED AREAS



Cd-S STONE CHECK DAM

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
HENDLEY ROAD RELOCATION
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

EROSION & SEDEMENTATION DETAILS

SCALE: 1"=
PROJECT NO: 210071.000
DATE: 3/30/22
DRAWN BY: WM
CHECKED BY: CRZ

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-7

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and the representations on this drawing may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 30 Mar 2022 - 5:03pm - cstinson
DRAWING PATH: G:\2021\210071.000\dwg\HENDLEY ROAD RELOCATION_5.13.21.dwg

LANDFILL CERTIFICATION

City of Port Wentworth
7224 GA Hwy 21
Port Wentworth, GA 31407

RE: **LEGACY PARK – BUILDINGS 2 & 3**

City Engineering,

This is to certify that according to the public records of the City of Port Wentworth and/or Chatham County and to all subsurface investigations as we have deemed necessary, none of the sewers, services or any other utilities associated with this project are constructed on or serving structures constructed or proposed to be constructed on solid waste landfills.

Name **Chadwick R. Zittrouer, P.E.** Georgia P.E. No. 32285

Signature

Date January 20, 2022

SEAL

3.5.3 Exhibit 1 - Wastewater Collection System Check List

Typical Wastewater System Plan shall include:	Check Off
1) Layout and legend	X
2) Exhibit 2 completed (load data)	X
3) For effluents with process water, comply with the City's Pretreatment Ordinance.	
4) Show sewer easement (if applicable)	
5) Manholes numbered and placed at 350' (max.) spacing	X
6) Manholes placed at line directional changes	X
7) Manhole frame and invert elevations shown	X
8) Invert elevations shown for all pipe inside manholes	X
9) Minimum gradient of 0.4% used for 8" pipes	X
10) Maximum height of 2' between invert of pipes and invert of discharge manholes	X
11) Minimum angle of 90 degrees for influent lines	X
12) All sanitary sewers profiled	N/A
13) Oil/grease traps and details provided for service station and food service preparers	N/A
14) Grading, paving, drainage, erosion control plans attached	X
15) Attach certification that water and/or sewer lines are not in nor Do they serve structures built upon solid waste landfills	X
16) For pump station design:	
a. Attach design calculations with pump curves	X
b. City of Port Wentworth pump station design standards used to prepare drawings, details and specifications	N/A
17) City of Port Wentworth sewer specifications and details used	X
18) Proposed water/sewer agreement attached	
19) Georgia Registered Professional Engineer stamp and signature	X

3.4.3 Exhibit 1 - Water Distribution System Check List

Typical Water System Plan shall include:	Check Off
1) Layout and legend	X
2) Water System analysis and design (include calculations)	X
3) Show waterline easement (if applicable)	X
4) Pipe separated distances called out at utility crossings	X
5) Isolation Valves	X
6) Valves 8" and larger placed in manholes	X
7) Meters sized and located on plans	X
8) All service connections shown	X
9) Existing and proposed fire hydrants shown	X
10) Fire Flow Demand (Exhibit 2)	
▪ Calculate water need based upon ISO Guidelines	X
▪ Show maintenance responsibility for fire line and appurtenances in owner/client agreement (Exhibit 3)	
▪ Show Backflow Detector Check Assembly	X
▪ If no fire system is proposed, please indicate on the plans	
11) Irrigation System	
▪ Calculate water need based upon system design	
▪ Show size and location of backflow preventor and	
▪ water meter	
▪ If no irrigation system is proposed, please indicate	
▪ on the plans	
12) Attach certification that water lines are not in nor do they serve structures built upon solid waste landfills	X
13) City of Port Wentworth specifications and details used	X
14) Proposed water/sewer agreement attached	
15) Georgia Registered Professional Engineer stamp & signature	X

Appendix A Water/Wastewater Availability

WATER/WASTEWATER AVAILABILITY REQUEST FORM

Date: 3/31/21

A. Owner/Developer CH Realty IV - Sansone I, LLC Phone# 314-336-2372

Address 120 S Central Ave - St. Louis, MO 63105

Contact Person John Brown Phone # 314-504-3111

Address 120 S Central Ave - St. Louis, MO 63105

Engineer Kern & Co., LLC - Chad Zittrouer Phone # 912-354-8400

Development Name Legacy Park - Building 2

B. Development Location 0 Hendley Road

Township, Map & Parcel # (Attach Plat) _____

C. Type of Development (Circle appropriate choice)

Residential Multi-Family Commercial Industrial X Institutional

Number of lots/single family units _____ Building Square Footage _____

Number of multi/family units _____

Type of Business(es) Warehouse/Distribution

Rezoning Required: Yes **No** **Subdivision Required:** Yes **No**

D. ~~Maximum number of employees in 24 hour period _____~~

~~If restaurant, seating capacity _____~~

~~If car wash, number of bays _____~~

~~If Laundromat, number of washers _____ If church, number of seats _____~~

E. **SITE PLANS AND WATER/WASTEWATER USE CALCULATIONS ARE NEEDED FOR FEE QUOTES**

177,300 SF - Warehouse @ 3 GPD / 1,000 SF = 531.9 GPD

2,500 SF Office - 15 GPD / 200 SF = 187.5 GPD

Total = 719.4 GPD

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SAVANNAH DISTRICT
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3604

December 18, 2020

RLC#: 19-107
Approved JD
Expires: 12/18/2025
RLC PM: Troy Smith
Corps PM: Ross Sullivan

Regulatory Division
SAS-2005-01056

Greenland Developers, LLC
ATTN: Mr. Wilson Burns
Post Office Box 1628
Springfield, Georgia 31329

Dear Mr. Burns:

I refer to a letter dated August 27, 2020, submitted on your behalf by Resource & Land Consultants, requesting an approved Jurisdictional Determination (JD) for your site located at the intersection of Hendley Road and Monteith Road in Port Wentworth, Chatham County, Georgia (Latitude 32.18399, Longitude -81.1949). This project has been assigned number SAS-2005-01056 and it is important that you refer to this number in all communication concerning this matter. Note that a preliminary JD was issued by this office for this site on July 8, 2020.

We have completed an approved JD for the site. Any wetlands on-site were delineated in accordance with criteria contained in the 1987 "Corps of Engineers Wetland Delineation Manual," as amended by the most recent regional supplements to the manual. I have enclosed an "Approved JD Form," which details whether the wetlands present on the site are subject to the jurisdiction of the U.S. Army Corps of Engineers and how the Corps determined jurisdiction.

The approved JD review area is depicted within the bold red polygon labeled as the "AJD Project Area" on the attached exhibit entitled "Figure No. 8 Approximate Aquatic Resources Sketch", dated August 27, 2020. The wetlands (A and C) depicted with yellow crosshatching and labeled as "Non-Adjacent Wetland" on the above referenced exhibit are not waters of the United States and are therefore not within the jurisdiction of Section 404 of the Clean Water Act. The placement of dredged or fill material into non-jurisdictional waters would not require prior Department of the Army authorization pursuant to Section 404.

This approved JD will remain valid for a period of 5-years unless new information warrants revision prior to that date. You may request an administrative appeal for any approved JD under the Corps regulations at 33 Code of Federal Regulations (CFR) Part 331. Enclosed you will find a Notification of Administrative Appeal Options and Process and Request for Appeal form.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This

delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

If you intend to sell property that is part of a project that requires Department of the Army Authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report required by Housing and Urban Development Regulation must state whether, or not a permit for the development has been applied for, issued or denied by the Corps (Part 320.3(h) of Title 33 of the CFR).

This communication does not convey any property rights, either in real estate or material, or any exclusive privileges. It does not authorize any injury to property, invasion of rights, or any infringement of federal, state or local laws, or regulations. It does not obviate your requirement to obtain state or local assent required by law for the development of this property. If the information you have submitted, and on which the Corps has based its determination is later found to be in error, this decision may be revoked.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

If you have any questions, please contact Mr. Ross Sullivan, Project Manager, Coastal Branch, via telephone at 912-652-5618 or email at roscoe.l.sullivan@usace.army.mil.

Sincerely,

RUTLIN.WILLIAM.M.1390465064

Digitally signed by RUTLIN.WILLIAM.M.1390465064
Date: 2020.12.18 12:26:44 -05'00'

William M. Rutlin
Chief, Coastal Branch

Copy Furnished: Mr. Troy Smith, Resource and Land Consultants.

Enclosure

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: Greenland Developers, LLC ATTN: Mr. Wilson Burns	File Number: SAS-2005-01056	Date: December 18, 2020
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 C.F.R. § Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. The division engineer must receive this form within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Ross Sullivan U.S. Army Corps of Engineers, Savannah District 100 W. Oglethorpe Avenue, Savannah, Georgia 31401 Phone: 912-652-5618 Email: roscoe.l.sullivan@usace.army.mil	If you only have questions regarding the appeal process you may also contact: Mr. Philip Shannin Administrative Appeal Review Officer CESAS-PDS-O 60 Forsyth Street Southwest, Floor M9 Atlanta, Georgia 30303-8803 Phone: (404) 562-5136; Fax: (404) 562-5138 Email: Philip.a.shannin@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 12/18/2020
ORM Number: SAS-2005-01056
Associated JDs: SAS-2005-01056 (PJD issued on 7/8/2020
Review Area Location[1]: State/Territory: Georgia City: Port Wentworth County/Parish/Borough: Chatham
Center Coordinates of Review Area: Latitude 32.18399 Longitude -81.1949

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- ☐ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters):[3]				
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

[1] Map(s)/figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Wetland A	3.20	acre(s)	(b)(1) Non-adjacent wetland.	Wetland A is not adjacent to any (a)(1)-(a)(3) waters as defined by the NWPR. This wetland does not abut any (a)(1)-(a)(3) waters, is not inundated by any (a)(1)-(a)(3) waters, is physically separated from all (a)(1)-(a)(3) waters and does not have a directed hydrologic surface connection to any (a)(1)-(a)(3) waters in a typical year.
Wetland C	1.98	acre(s)	(b)(1) Non-adjacent wetland.	Wetland C is not adjacent to any (a)(1)-(a)(3) waters as defined by the NWPR. This wetland does not abut any (a)(1)-(a)(3) waters, is not inundated by any (a)(1)-(a)(3) waters, is physically separated from all (a)(1)-(a)(3) waters and does not have a directed hydrologic surface connection to any (a)(1)-(a)(3) waters in a typical year. Wetland C was likely contiguous to Wetland B prior to the construction of Hendley Road. However, there is not a direct hydrologic surface connection through or over Hendley Road.

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

☒ Information submitted by, or on behalf of, the applicant/consultant: Approved JD Request dated 8/27/2020

This information is sufficient for purposes of this AJD.
Rationale: N/A

☐ Data sheets prepared by the Corps: Title(s) and/or date(s).
☒ Photographs: Aerial: 1999 and 2018 aerial imagery
☒ Corps site visit(s) conducted on: 9/24/2020
☒ Previous Jurisdictional Determinations (AJDs or PJDs): SAS-2005-01056 (PJD issued 7/8/2020)
☒ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B*.
☒ USDA NRCS Soil Survey: Figure 3
☒ USFWS NWI maps: Figure 4
☒ USGS topographic maps: Figure 2

Other data sources used to aid in this determination:

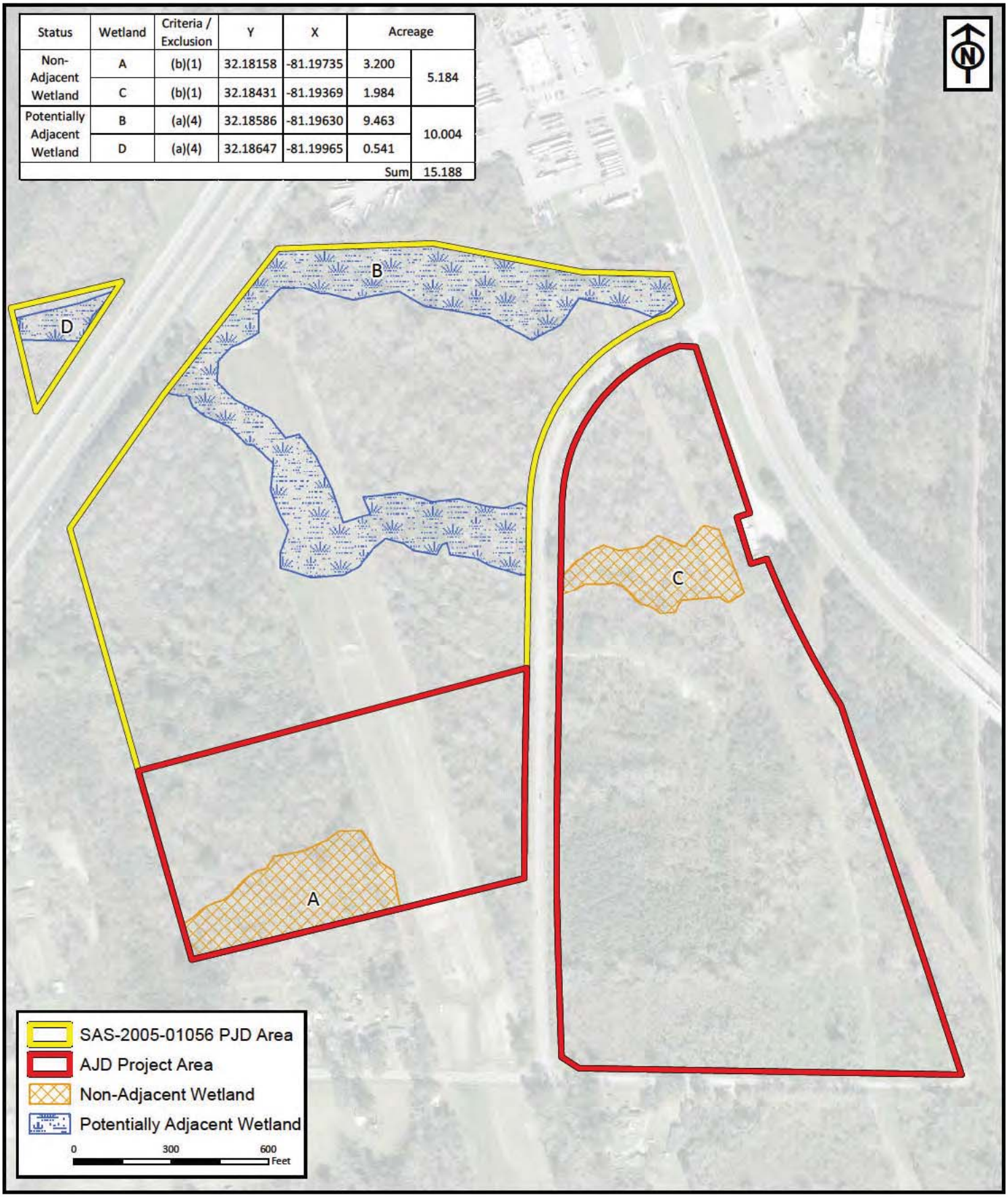
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	Figure 6 LiDAR Map
USACE Sources	N/A.
State/Local/Tribal Sources	N/A.
Other Sources	N/A.

B. Typical year assessment(s): Resource & Land Consultants conducted a site visit on 8/6/2020. Using the Antecedent Precipitation Tool Version 1.0, which used rainfall data from the Savannah International Airport weather station, we have determined that normal rainfall conditions were present for the nearest weather station on the date of the site visit as published data was within 30% of the 30 year average.

C. Additional comments to support AJD: N/A

Status	Wetland	Criteria / Exclusion	Y	X	Acreage	
Non-Adjacent Wetland	A	(b)(1)	32.18158	-81.19735	3.200	5.184
	C	(b)(1)	32.18431	-81.19369	1.984	
Potentially Adjacent Wetland	B	(a)(4)	32.18586	-81.19630	9.463	10.004
	D	(a)(4)	32.18647	-81.19965	0.541	
					Sum	15.188



RLC Project No.:	19-107.2
Figure No.:	8
Prepared By:	TS
Sketch Date:	8/27/2020
Map Scale :	1 inch = 400 feet

Hester Farm Place

Chatham County, Georgia

Approximate Aquatic Resources Sketch

Prepared For: Greenland Developers

RLC
RESOURCE + LAND CONSULTANTS
41 Park of Commerce Way, Ste 303
Savannah, Georgia 31405
912.443.5895 www.rlandc.com

Y:\2019 Projects\19-107 Hendley Road Greenland Tracts\graphics\AJD8_Sketch.mxd

Source(s) 2018 Areial Photo, Kern & Co Survey Data

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE: CH Realty IX-Sansone I Savannah 21-95, L.P.; Attn: Mr. Blake Roell

PERMIT NUMBER: SAS-2005-01056

ISSUING OFFICE:

Savannah District
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401

NOTE: The term "you" and its derivatives used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the U.S. Army Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

PROJECT DESCRIPTION: To permanently discharge fill material into 4.52 acres of wetlands for the construction of an industrial warehouse facility with associated infrastructure to include an internal road network, truck court, passenger car parking, utility construction and stormwater management facilities.

PROJECT LOCATION: The project site is located south of the Interstate 95 and Augusta Road intersection, north of Monteith Road and bisected by Hendley Road in the city of Port Wentworth, Chatham County, Georgia (Latitude 32.1839, Longitude -81.1963).

1. PERMIT CONDITIONS:

a. General Conditions.

(1) The time limit for completing the work authorized by this Individual Permit ends on September 30, 2026. If you find that you need more time to complete the authorized activity, you must submit a request for your permit extension at least one month prior to the above date.

(2) You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

(3) If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

(4) If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

(5) If a conditioned Water Quality Certification has been issued for your project, you must comply with conditions specified in the certification as Special Conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

(6) You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

(7) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S. Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States because of any such removal or alteration.

b. Special Conditions

(1) All dredged or borrowed material used as fill in waters of the United States shall be from clean, uncontaminated sources and free from cultural resources. For the purposes these special permit conditions, the term waters of the United States includes all jurisdictional streams, wetlands, open waters, ditches, swales and other conveyance located on the project site.

(2) Unless specifically authorized by this permit, no construction, discharge of fill material, excavation, mechanized land clearing, tree or other vegetation removal, stockpiling of fill material or other work/activity shall occur in waters of the United States.

(3) Prior to any land disturbing activity on the project site, the permittee shall clearly mark all waters of the United States that are authorized to be impacted (impact-

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

waters). Acceptable forms of marking include high visibility orange construction fencing or flagging at eye level, at intervals of 25 feet or less along the entire jurisdictional boundary. Pin flags or other ground level marking is not acceptable. In addition, the permittee shall clearly mark waters of the United States that are not to be impacted (no-impact-waters), if they are located within 50 feet of any construction activities. The boundaries of impact-waters and no-impact-waters shall be marked differently, to ensure that these areas are clearly identifiable to equipment operators. All no-impact-waters marking shall be maintained until the entire project has been completed.

(4) Unless specifically authorized by this permit, borrow pits or sites for stockpiling fill dirt are prohibited within 200 feet of streambanks or within 50 feet of wetlands and open waters to minimize the potential for introduction of sediment into waters of the United States.

(5) Construction debris, uncured concrete, demolition debris, or other waste materials shall not be discharged into streams, wetlands, or other open waters; or placed at sites near such areas, where migration into waters of the United States could be anticipated.

(6) Equipment staging areas and equipment maintenance areas are prohibited within 200 feet of streambanks or within 50 feet of wetlands and other open waters to minimize the potential for wash water, petroleum products, or other contaminants from construction equipment entering waters of the United States.

(7) The permittee shall ensure that all features of the project's master drainage plan, such as drainage ditches, road-side ditches, swales and other storm-water conveyances, are designed and constructed to avoid: drainage of wetlands; diversion of storm-water away from wetlands; and other hydrologic alterations of natural drainage patterns that would adversely impact wetlands. The permittee shall be responsible for any inadvertent and/or unforeseen hydrologic impacts to waters of the United States resulting from alteration of natural drainage patterns. The permittee shall also ensure that secondary road ditches and/or small after-project drainage ditches do not inadvertently impact wetlands or waters of the United States.

(8) The permittee shall minimize bank erosion and sedimentation in construction areas by utilizing Best Management Practices for stream corridors, installing and maintaining significant erosion and sediment control measures, and providing daily reviews of construction and stream protection methods. Check dams and riprap placed in streams and wetlands as erosion control measures are considered a fill and not authorized under this permit unless they were specifically authorized by this permit.

(9) All work conducted under this permit shall be located, outlined, designed, constructed and operated in accordance with the requirements of the Georgia Erosion and Sedimentation Control Act of 1975 (Georgia ESCA), as amended. Utilization of plans and specifications contained in the "Manual for Erosion and Sediment Control,

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

(Latest Edition)," published by the Georgia Soil and Water Conservation Commission, will aid in achieving compliance with the Georgia ESCA.

(10) The permittee shall install and maintain erosion and sediment control measures in upland areas of the project site, in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 to minimize the introduction of sediment into and the erosion of streams, wetlands and other waters of the United States. This permit does not authorize installation of check-dams, weirs, riprap, bulkheads or other erosion control measures in streams, wetlands or other waters of the United States. The permittee shall obtain U.S. Army Corps of Engineers authorization prior to installing any erosion control measures in waters of the United States.

(11) The permittee shall install and maintain erosion and sediment control measures in fill material that is authorized to be discharged in streams, wetlands and other waters of the United States, in accordance with the Georgia Erosion and Sedimentation Control Act of 1975; and permanently stabilize fill areas at the earliest practicable date.

(12) Once the project site is sufficiently stabilized through re-vegetation, the permittee shall remove all silt fencing and other non-biodegradable erosion control measures from stream banks, riparian areas, wetlands and upland areas immediate adjacent to other waters of the United States.

(13) The permittee shall obtain and comply with all applicable Federal, state and local authorizations required for the authorized activity. A stream buffer variance may be required from the Georgia Department of Natural Resources, Environmental Protection Division (Georgia EPD), as defined in the Georgia Erosion and Sedimentation Control Act of 1975. Information concerning variances can be obtained from Georgia EPD on their website at www.gaepd.org, or by calling (404) 463-1463.

(14) If you or your contractors discover any federally listed threatened or endangered species and/or their habitat while accomplishing the activities authorized by this permit, you must immediately STOP work and notify the U.S. Army Corps of Engineers within 24 hours. The U.S. Army Corps of Engineers will contact the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service to determine if the species and/or habitat warrant further consultation.

(15) Prior to the commencement of any permitted construction activity in designated floodplains and/or floodways on the project site, the permittee shall ensure that the activity complies with the applicable rules, requirements and regulations of the regulatory programs administered by the Federal Emergency Management Agency and/or the Georgia Floodplain Management Office; including revision of the National Flood Insurance Program map, if required.

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

(16) This permit does not authorize the interference with any existing or proposed Federal Project and the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein, which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

(17) A copy of this permit, including the approved drawings and plans; special conditions; and any amendments shall be maintained at the work site whenever work is being performed. The permittee(s) shall assure that all contractors, subcontractors, and other personnel performing the permitted work are fully aware of the permit's terms and conditions.

(18) The permittee shall notify the issuing office, in writing (electronic facsimile is acceptable), at least 10 days in advance of their intent to commence work in waters of the United States for the permitted activity. The permittee shall also notify this office, in writing, 30 days after this project is completed using the enclosed Certification of Compliance Form.

(19) All work will be performed in accordance with the following attached exhibit which is incorporated in and made part of the permit: “Wetland Impact Exhibit” sheets EX-1 and EX-2 dated November 25, 2020

(20) Prior to the commencement of any permitted work in aquatic resources for this activity, the permittee shall purchase 25.76 wetland mitigation credits from AA Shaw Mitigation Bank and submit documentation of this credit purchase to the U.S. Army Corps of Engineers. The credit purchase documentation must reference the Corps file number assigned to the permitted project. If all or a portion of the required credits are not available from the AA Shaw Mitigation Bank, the permittee shall obtain written approval from the Corps prior to purchasing credits from an alternate mitigation bank.

(21) Wetland and/or Stream Avoidance/Minimization Areas: The Permittee shall avoid the remaining 5.48 acres of on-site potentially jurisdictional wetland, as detailed on the attached exhibit described in special condition (19). These natural wetland areas were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, agricultural activities, or other construction work whatsoever. The U.S. Army Corps of Engineers reserves the right to deny review of any requests for future impacts to these natural wetland and/or stream areas.

2. FURTHER INFORMATION:

a. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344).

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

b. Limits of this Authorization.

(1) This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

(2) This permit does not grant any property rights or exclusive privileges.

(3) This permit does not authorize any injury to the property or rights of others.

(4) This permit does not authorize interference with any existing or proposed federal projects.

c. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

(1) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

(2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

(3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

(4) Design or construction deficiencies associated with the permitted work.

(5) Damage claims associated with any future modification, suspension, or revocation of this permit.

d. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

e. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require reevaluation include, but are not limited to, the following:

(1) You fail to comply with the terms and conditions of this permit.

(2) The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

(3) Significant new information surfaces which this office did not consider in reaching the original public interest decision. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

procedures contained in 33 Code of Federal Regulations (C.F.R.) § 325.7, or enforcement procedures such as those contained in 33 C.F.R. § 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order, which requires you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate.

(4) You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. § 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

f. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the U.S. Army Corps of Engineers will normally consider a request for an extension of time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

DocuSigned by:
D58BC76BB11E423...

(PERMITTEE)

9/14/2021
(DATE)

This permit becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below.

Issued for and in behalf of:
Joseph R. Geary, PhD, PE
Colonel, U.S. Army
Commanding

September 28, 2021
(DATE)

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE) (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To request the transfer of this permit and the associated liabilities with compliance with its terms and conditions, the permittee and transferee must sign and date below.

_____
(PERMITTEE-Printed Name)

_____ _____
(PERMITTEE-Signature) (DATE)

_____
(TRANSFERREE-Printed Name)

_____ _____
(TRANSFERREE-Signature) (DATE)

By signature below, the U.S. Army Corps of Engineers hereby validates the transfer of the permit from the permittee named above to the transferee named above.

_____ _____
Issued for and in behalf of: (DATE)
Joseph R. Geary, PhD, PE
Colonel, U.S. Army
Commanding

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

Regulatory Division

CERTIFICATION OF COMPLIANCE
WITH
DEPARTMENT OF THE ARMY

PERMIT FILE NUMBER: SAS-2005-01056

PERMITTEE ADDRESS: CH Realty IX-Sansone I Savannah 21-95, L.P., Attn: Mr. Blake Roell, 120 South Central Avenue, Suite 500, St. Louis, Missouri 63105

LOCATION OF WORK: located south of the Interstate 95 and Augusta Road intersection, north of Monteith Road and bisected by Hendley Road in the city of Port Wentworth, Chatham County, Georgia (Latitude 32.1839, Longitude -81.1963)

PROJECT DESCRIPTION: The project will permanently discharge fill material into 4.52 acres of wetland to construct a warehouse facility and associated infrastructure.

ACRES OF WATERS OF THE UNITED STATES IMPACTED: 4.52 acres of wetland

DATE WORK IN WATERS OF THE UNITED STATES COMPLETED: _____

COMPENSATORY MITIGATION REQUIRED: 25.76 wetland credits from the AA Shaw mitigation bank.

DATE MITIGATION PURCHASED (include bank name): _____

Within 30 days of completion of the activity authorized by this permit, sign this certification and return it to the following address:

Commander
U.S. Army Engineer District, Savannah
Attention: Coastal Branch, Regulatory Division
100 West Oglethorpe Avenue
Savannah, Georgia 31401

Please note that your permitted activity is subject to compliance inspection by an U.S. Army Corps of Engineers' representative. If you fail to comply with the permit conditions, it may be subject to suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit as well as any required mitigation (if applicable) has been completed in accordance with the terms and conditions of the said permit.

_____ _____
Signature of Permittee Date

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: CH Realty IX-Sansone I Savannah 21-95, L.P.		File Number: SAS-2005-01056	Date: September 28, 2021
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice .

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appeal able. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

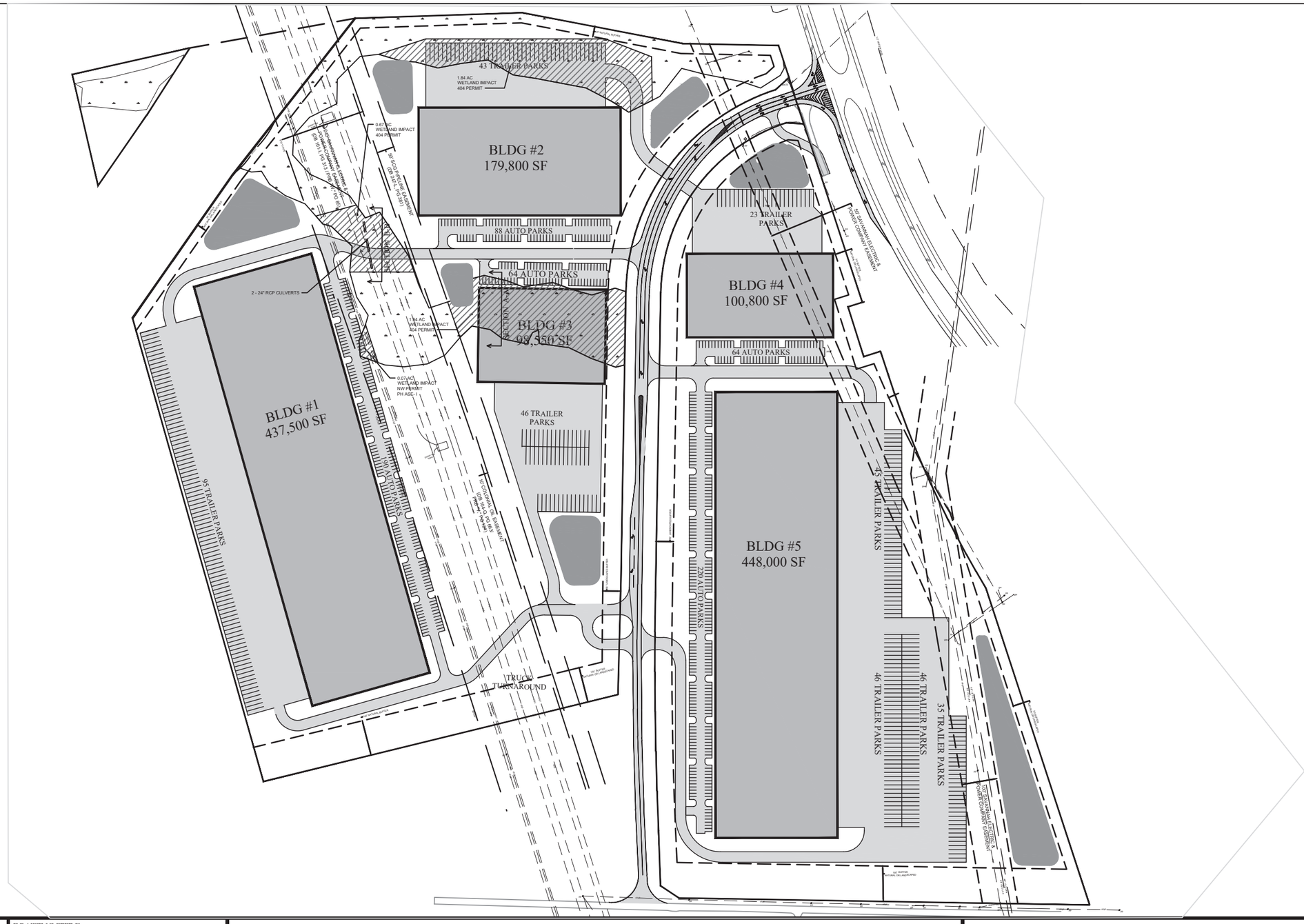
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Ross Sullivan U.S. Army Corps of Engineers, Savannah District 100 W. Oglethorpe Avenue, Savannah, Georgia 31401 Phone: (912) 652-5618 Email: roscoe.l.sullivan@usace.army.mil	Mr. Philip Shannin Administrative Appeal Review Officer CESAS-PDS-O 60 Forsyth Street Southwest, Floor M9 Atlanta, Georgia 30303-8803 Phone: (404) 562-5136; Fax: (404) 562-5138 Email: Philip.a.shannin@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507



SCALE:	1"=300'
PROJECT NO:	150110.000
DATE:	11/25/20
DRAWN BY:	CRZ
CHECKED BY:	CRZ
SHEET NO:	EX-1

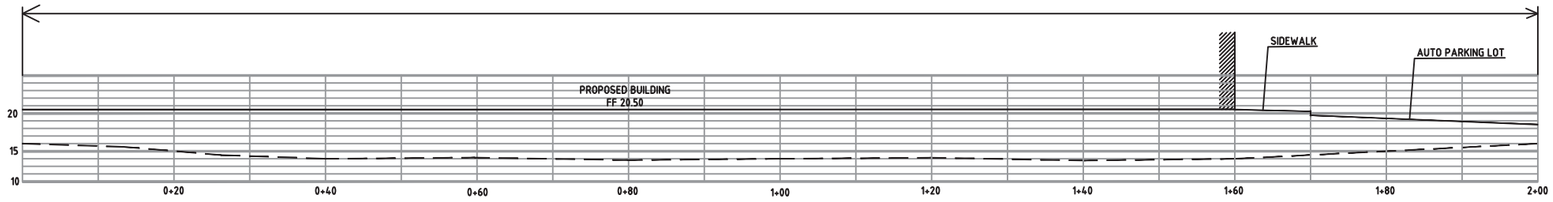
DRAWING TITLE:

WETLAND
IMPACT
EXHIBIT

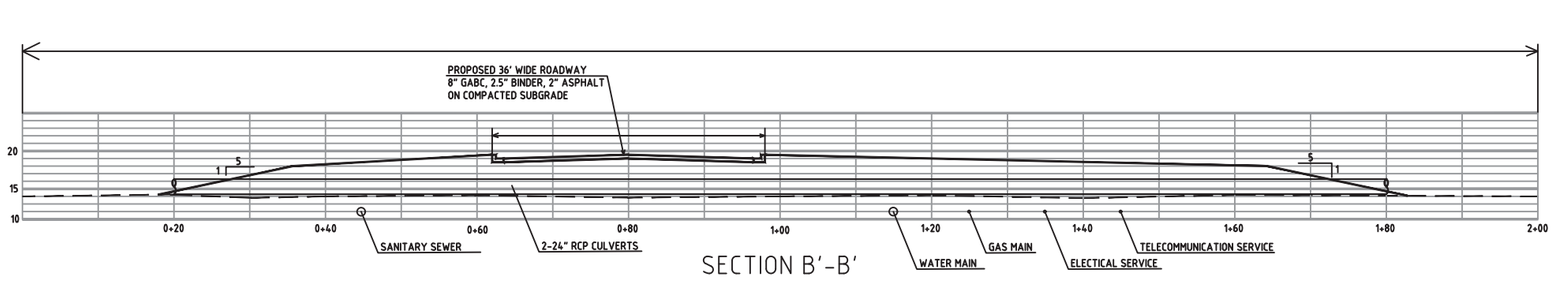
MONTIETH INDUSTRIAL DEVELOPMENT
AT GA HWY 21 / HENDLEY ROAD
PORT WENTWORTH, GA

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) • P.O. Box 15179 • Savannah, Georgia 31416
Phone: (912) 354-8400 Fax: (912) 356-1865 Email: info@kernengineering.com

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507



SECTION A'-A'



SECTION B'-B'

SCALE:	1"=20'
PROJECT NO:	150110.000
DATE:	11/25/20
DRAWN BY:	CRZ
CHECKED BY:	CRZ
SHEET NO:	EX-2

DRAWING TITLE:

WETLAND IMPACT EXHIBIT

MONTIETH INDUSTRIAL DEVELOPMENT AT GA HWY 21 / HENDLEY ROAD PORT WENTWORTH, GA

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) • P.O. Box 15179 • Savannah, Georgia 31416
Phone: (912) 354-8400 Fax: (912) 356-1865 Email: info@kernengineering.com

October 01, 2021

U.S. Army Corps of Engineers
Regulatory Division, Coastal Branch
Attn: Mr. Brian Moore
100 W. Oglethorpe Ave.
Savannah, GA 31401

RE: Credit Sale Statement
AA Shaw Wetland Mitigation Bank (Reg. No.: SAS-2011-00031)

Dear Mr. Moore:

As the authorized agent for AA Shaw, LLC, owner of the AA Shaw Wetland Mitigation Bank, Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) hereby submits this notification of a credit sale to the U.S. Army Corps of Engineers (USACE).

In accordance with the Savannah District's instructions for reporting credit sales, we are providing the following to document a mitigation bank credit sale:

Date of Sale:	October 01, 2021
Dept. of Army File Number:	SAS-2005-01056
Permittee:	CH Realty IX-Sansone I Savannah 21-95, LP
County:	Chatham
Watershed:	03060109
Type of Credits:	Wetland
Number of Credits Sold:	25.76
Project Service Area of Bank:	Primary
Impact Meets Sales Restrictions on Bank:	Yes

Please note, as a condition of the issued Section 404 wetland impact permit for the above referenced project, the AA Shaw Wetland Mitigation Bank was approved for use in satisfying wetland mitigation obligations for this project. Also please find attached hereto an updated credit ledger for the AA Shaw Wetland Mitigation Bank and as always please contact me should you have any questions.

Sincerely,

Hodges, Harbin, Newberry & Tribble, Inc. (HHNT)

Brandon F. Smith, PWS
Sr. Environmental Consultant
Bank Point of Contact

AA Shaw Wetland Mitigation Bank
Credit Sale Ledger

								Wetlands & Stream			
Type	**Jurisdiction**	**Date**	**Credits**	**Permits**	**Credit Classification**	**Impact HUC**	**Impact Quantity**	**TW**	**BoR**	**MP**	**Comment**
Wdr	Federal	9/9/2020	2.72	SAS-2005-01229	Wetlands	03060109		1,279.09	561.11	561.11	Chesterfield, LLC - GA Int. Trade Ctr.
Wdr	Federal	10/5/2020	0.64	SAS-2003-20390	Wetlands	03060109		1,279.73	560.47	560.47	Savannah Indurstrial Development, LLC
Wdr	Federal	10/15/2020	10.00	SAS-2003-20390	Wetlands	03060109		1,289.73	550.47	550.47	Savannah Indurstrial Development, LLC
Wdr	Federal	12/14/2020	14.40	SAS-1991-00500	Wetlands	03060109		1,304.13	536.07	536.07	GDOT - Eff. Pkwy. Squirrel Run Covenant
Wdr	Federal	12/14/2020	153.52	SAS-2011-00953	Wetlands	03060109		1,457.65	382.55	382.55	GDOT - Effingham Parkway
Wdr	Federal	12/31/2020	0.30	SAS-2016-01128	Wetlands	03060109		1,457.95	382.25	382.25	Savannah Mobility Contractors - I95/I16 Imp.
Wdr	Federal	1/22/2021	80.72	SAS-2015-00634	Wetlands	03060109		1,538.67	301.53	301.53	Savannah / Hilton Head Int. Airport - SE Drainage
Wdr	Federal	2/17/2021	1.20	SAS-2018-00099	Wetlands	03060108		1,539.87	300.33	300.33	GDOT - PI# 0013925
Wdr	Federal	6/16/2021	1.80	SAS-2009-00984	Wetlands	03060109		1,541.67	298.53	298.53	Yevoc, LLC
Wdr	State	7/7/2021	3.10	BV-025-21-05	Wetlands	03060109		1,544.77	295.43	295.43	GDOT - PI #0006328
Wdr	Federal	7/21/2021	17.52	SAS-2020-00736	Wetlands	03060109		1,562.29	277.91	277.91	Effingham Co. BOC - Old Augusta/Goshen Conn.
Wdr	Federal	8/16/2021	1.68	SAS-2020-00872	Wetlands	03060106		1,563.97	276.23	276.23	Georgia Power Company
Wdr	Federal	9/9/2021	4.00	SAS-2021-00047	Wetlands	03060109		1,567.97	272.23	272.23	Mungo Homes - Webb Tract
Wdr	Federal	9/21/2021	2.96	SAS-2020-00527	Wetlands	03060109		1,570.93	269.27	269.27	OACC Land Venture, LLC
Wdr	Federal	10/1/2021	25.76	SAS-2005-01056	Wetlands	03060109		1,596.69	243.51	243.51	CH Realty IX-Sansone I Savannah 21-95, LP

TW = Total Withdrawal of Credits; BoR = Balance of Released Credits; MP = Maximum Potential Credits Remaining

AA Shaw, LLC – RECEIPT

Date	Invoice #
10/01/2021	2013162

Bill To:
Mr. John Joseph Brown CH Realty IX-Sansone I Savannah 21-95, LP 120 S. Central Ave., Suite 500 St. Louis, MO 63105

Payable To:
AA Shaw, LLC c/o: Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) Attn: Mr. Brandon Smith 17 Park of Commerce Blvd., Suite 110 Savannah, GA 31405

Reg. Branch No.	**Terms**	**Buyer's Project Name**
SAS-2005-01056	Net 30 days	Montieth Industrial Dev.

Line Item	**Description**	**Quantity**	**Unit Price**	**Amount**
01	Wetland Mitigation Credits	25.76	$55,500.00	$1,429,680.00
			TOTAL Balance	$1,429,680.00
			Amount Received Via Wire Transfer #211001012706 on 10/01/2021	$1,429,680.00
Thank you for your business			**Total Currently Due**	$0.00 – PAID IN FULL

Requested invoice was for compensatory mitigation for wetland impacts associated with the Montieth Industrial Development located in Chatham County, GA. Request for invoice was made by Resource + Land Consultants, Mr. Troy Smith.

CITY OF PORT WENTWORTH

7224 Highway 21 | Port Wentworth, Georgia 31407
Phone (912) 964-4379 | Fax (912) 966-7429
www.cityofportwentworth.com

ELECTED OFFICIALS

MAYOR
Gary Norton

COUNCIL MEMBERS
Thomas Barbee, At-Large
Lynwood Griner, District 3
Donald Hodges, District 1
Glenn Jones, District 4
Linda Smith, At-Large
Mark Stephens, District 2

INTERIM CITY MANAGER
Phil Jones

28 October, 2020

RE: Zoning Verification for PIN(s): 7097701027, 7097701028, 7097702002

To Whom It May Concern,

According to City records, the property located in the vicinity of Hendley Drive, Monteith Road, and GA Highway 21, Port Wentworth, Georgia 31407 and identified as PIN(s): 7097701027, 7097701028, and 7097702002 is currently zoned P-I-2 (Planned Industrial). To the best of my knowledge, there are no outstanding or pending planning, zoning, or building related issues associated with the subject property, and the conceptual plan submitted for review with the rezoning application has been approved by the Port Wentworth City Council.

Sincerely,

J. Brian Harvey, CBO, CFM
Director of Development Services
City of Port Wentworth, Georgia

SITE DRAWINGS OF

LEGACY PARK - BUILDING #2

FOR

CH REALTY IX - SANSONE I, LLC

PORT WENTWORTH, GA

KC PROJECT #:210071.000

FEBRUARY 2022

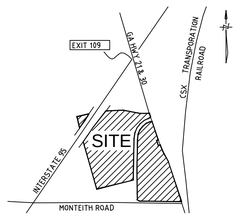
NOT FOR CONSTRUCTION

RELEASED FOR CONSTRUCTION

DATE: _____ BY: _____

NRCS REVISION DATE:

VICINITY MAP:



VICINITY MAP

PROJECT PREPARED BY:

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

INITIAL APPROVAL BY GOVERNING AGENCY DATE:

REVISIONS

REV NO.	DATE	DESCRIPTION	SHEETS

PROJECT SITE DATA:

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

INDEX OF DRAWINGS:

	COVER SHEET		
N1	GENERAL NOTES		
EX1	EXISTING CONDITIONS		
SESC -1	INITIAL EROSION PLAN		
SESC-2	INTERMEDIATE EROSION PLAN		
SESC-3	FINAL EROSION PLAN		
C1	STAKING PLAN		
C2	PAVING, GRADING & DRAINAGE PLAN		
C3	UTILITY PLAN		
SESC-4	EROSION NOTES		
SESC-5	EROSION NOTES		
SESC-6	EROSION NOTES		
SESC-7	SOIL EROSION & SEDIMENTATION CONTROL DETAILS		
DET-1	SITE DETAILS		

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern-Coleman & Co., LLC.

SESC NOTES

SESC NOTES:

1. ALL NEW DISTURBED AREAS WILL BE GRASSED BY SEEDING OR SPRIGGING AS TEMPORARY STABILIZATION. ALL PERMANENT GRASS SHALL BE SOD.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE DUST CONTROL OF ALL DISTURBED AREAS BY THE USE OF WATER AND FAST GROWING, TEMPORARY VEGETATIVE ON ALL STOCKPILED SOILS.
4. CONTRACTOR WILL PROVIDE A CONSTRUCTION SCHEDULE INCLUDING ALL EROSION AND SEDIMENT CONTROL MEASURES.
5. CONTRACTOR SHALL PROVIDE 1.5"–3.5" STONE 6" THICK, 50' MIN. LONG BY 20' MIN. WIDE AT ALL CONSTRUCTION EXITS TO MINIMIZE TRANSPORT OF SOIL FROM SITE BY VEHICLE WHEELS.
6. ALL EXISTING INLETS AND DITCHES SUBJECT TO STORM WATER RUNOFF FROM THE SITE AND ALL NEW INLETS SHALL BE PROVIDED WITH HAY BALES SILT CARRIERS TO MINIMIZE SOIL TRANSPORT OFF SITE BY STORM WATERS.
7. ALL CONSTRUCTION WILL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S, STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS (AVAILABLE FROM THE CITY OF SAVANNAH'S WEBSITE) AND THE SPECIFICATIONS, NOTES AND DETAILS ON THESE DRAWINGS.
8. TESTING – COORDINATE ALL TESTING AS REQUIRED IN THE SPECIFICATIONS. PROVIDE ENGINEER WITH COPY DIRECT FROM TESTING LAB.
9. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.
10. PRIOR TO CONSTRUCTION, ALL BUILDING AREAS, PLUS 10 FEET ON EACH SIDE AND ALL AREAS TO BE PAVED, SHOULD BE STRIPPED OF ALL VEGETATION, TOP SOIL AND ROOT SYSTEMS.
11. SITE DRAINAGE SHALL BE ESTABLISHED TO PREVENT ANY PONDED WATER CONDITIONS WITHIN THE CONSTRUCTION AREA AND TO FACILITATE THE RAPID RUN–OFF OF STORM WATER.
12. ANY STUMP HOLES OR OTHER DEPRESSIONS SHOULD BE CLEARED OF LOOSE MATERIAL AND DEBRIS AND SHOULD THEN BE BACK FILLED WITH APPROVED FULL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557. TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
13. ANY UTILITIES THAT UNDERLIE THE SITE SHOULD, UNLESS NOTED OTHERWISE, BE RELOCATED AND THE TRENCHES BACK FILLED WITH APPROVED SOIL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
14. THE SUBGRADE SHOULD BE PROOF ROLLED WITH A LOADED DUMP TRUCK TO LOCATE UNSTABLE OR SOFT AREAS. THESE AREAS SHOULD THEN BE INVESTIGATED TO DETERMINE THE CAUSE OF THE INSTABILITY. IF DUE TO UNSUITABLE SOIL, SUCH AS HIGHLY ORGANIC SOILS OR SOFT CLAYS, THE AREA SHOULD BE UNDERCUT TO A FIRM SOIL AND REPLACED WITH APPROVED FILL COMPACTED IN SIX INCH LIFTS TO MINIMUM DENSITY OF 95% IN ACCORDANCE WITH ASTM–D–1557. IF THE INSTABILITY IS DUE TO EXCESS MOISTURE IN OTHERWISE SUITABLE SOIL, THE AREA SHOULD BE DRAINED AND COMPACTED TO 95% DENSITY. ANY FILL REQUIRED TO LEVEL OR RAISE THE SITE SHOULD THAN BE PLACED IN 6" THICK LOOSE LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
15. ALL OF THE FILL FOR THIS PROJECT SHOULD CONSIST OF A CLEAN, FREE DRAINING SAND WITH A MAXIMUM OF 15% FINES. THE FILL SHOULD BE FREE OF OBJECTIONABLE ROOTS, CLAY LUMPS AND DEBRIS.
16. ANY FOOTING EXCAVATIONS THAT ARE DIRECTLY ADJACENT TO THE EXISTING FOUNDATIONS SHOULD BE DONE IN SMALL INCREMENTS TO AVOID UNDERMINING THEM AND CAUSING A LOSS OF SUPPORT TO THE EXISTING STRUCTURE. IF NECESSARY, THE EXCAVATIONS SHOULD BE SHEETED AND BRACED OR THE SOIL IN THE AFFECTED AREA SHOULD BE STABILIZED BY GROUTING.
17. THE FOOTING EXCAVATIONS AND ALL OF THE PREPARED SLAB UPGRADE SHOULD BE MAINTAINED IN A DRY AND COMPACTED CONDITION UNTIL THE CONCRETE IS PLACED. AREAS THAT ARE SOFTENED BY WATER OR BY CONSTRUCTION ACTIVITY BEARING, SHOULD BE REWORKED AND RECOMPUTED TO THE REQUIRED DENSITY AND BEARING.
18. MOISTURE CONTENT SHALL BE AT OR BELOW OPTIMUM.
19. ALL CONSTRUCTION WITHIN THE CITY'S RIGHT–OF–WAY WILL REQUIRE AN ENCROACHMENT PERMIT FROM PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THIS PERMIT PRIOR TO CONSTRUCTION.
20. ALL CONSTRUCTION SHALL CONFORM TO GOVERNING AGENCY'S TECHNICAL SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS.
21. THE DETENTION BASINS SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND GRADING TO HELP PREVENT THE LOSS OF SEDIMENT FROM THE SITE. THE CONTRACTOR SHALL CLEAN OUT ANY SEDIMENT DEPOSITED IN THE BASINS DURING THE CONSTRUCTION PERIOD SO THAT THE SPECIFIED WATER DEPTH AT NORMAL POOL IS MAINTAINED; THE CONTRACTOR MAY OVER EXCAVATE THE BASINS TO ACCOMPLISH THIS, IF DESIRED, AT THIS OWN EXPENSE AND WITH THE CONCURRENCE OF THE ENGINEER.
22. SEDIMENTATION BASIN SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK.

WATER & SEWER

WATER – SEWER NOTES:

1. FOR ALL WATER, SANITARY SEWER LINES AND STORM DRAINAGE INSTALLATION, CALL – ONE CALL UTILITIES PROTECTION CENTER BEFORE YOU DIG DIAL 811 OR 1–800–282–7411. WWW.GEORGIA811.COM CALL 3 WORKING DAYS BEFORE YOU DIG.
2. IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL MEASURES AS INDICATED ON THE PLANS THE CONTRACTOR SHALL TAKE WHATEVER ACTIONS AS ARE NECESSARY TO ENSURE THAT ALL SEDIMENTATION IS CONFINED TO THE SITE AND THAT NO OFFSITE EROSION IS CAUSED BY THE WORK EITHER DIRECTLY OR INDIRECTLY.
3. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYSTEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.
4. PIPE, FITTINGS, VALVES AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE UNLOADED AT THE POINT OF DELIVERY, AND STORED WHERE THEY WILL BE PROTECTED AND WILL NOT BE HAZARDOUS TO TRAFFIC. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. THE INTERIOR OF ALL PIPE, FITTINGS AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND OTHER FOREIGN MATTER AT ALL TIMES.
5. ANY DEFECTIVE, DAMAGED OR UNSOUND PIPE SHALL BE REJECTED. ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING. CARE SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE JOINT SPACE. AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY APPROVED MEANS AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE.
6. CLEAN THE INTERIORS OF ALL PIPE BY WASHING OUT ALL DIRT BEFORE LAYING.
7. FLUSH THE NEW PIPE LINES UNTIL WATER RUNS CLEAR AT THE END OF ALL MAINS AND LATERALS. THIS SHOULD BE DONE AFTER THE PRESSURE TEST AND BEFORE DISINFECTION. A MINIMUM TIME OF 2 MINUTES AND UNTIL THE WATERMAIN RUNS CLEAR IS REQUIRED IN ORDER TO PURGE THE LINE OF ANY FOREIGN MATERIALS.
8. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, AR APPROVED EQUAL, WILL BE USED TO FORM A WATER TIGHT SEAL AT BOTH ENDS OF THE LINE BEING LAID.
9. MAINTAIN A MINIMUM OF EIGHTEEN (18") INCH VERTICAL SEPARATION DISTANCE BETWEEN ALL WATER LINE/LATERALS AND ALL STORM DRAIN LINES AND SANITARY SEWER LINES/LATERALS.
10. IF AN IRRIGATION SYSTEM IS PROPOSED FOR SUBJECT DEVELOPMENT, COMPLY WITH THE FOLLOWING REQUIREMENTS BEFORE ANY CONNECTION TO THE CITY WATER SYSTEM:
    (A) SUBMIT PLANS AND SPECIFICATIONS FOR SUBJECT IRRIGATION SYSTEM.
    (B) INSTALL AN APPROVED BACKFLOW PREVENTOR ON THE IRRIGATION SYSTEM.(C) METER THE IRRIGATION SYSTEM IN ACCORDANCE WITH THE GOVERNING AGENCY'S SPECIFICATIONS.
    (D) RESTRAIN ALL CRITICAL BENDS AND CONNECTIONS.
    (E) PROVIDE ERU CALCULATIONS FOR THE IRRIGATION SYSTEM
11. ALL WATER USED FOR CONSTRUCTION SHALL BE METERED THROUGH AN APPROVED BACKFLOW PREVENTION DEVICE AND FIRE HYDRANT METER OBTAINED FROM THE GOVERNING AGENCY'S WATER OPERATION DEPARTMENT.
12. ALL CONNECTIONS TO EXISTING MANHOLES SHALL BE DONE BY THE CORE DRILL METHOD.
13. THE WATER SERVICE LATERAL SERVING THE FACILITY SHALL BE INSTALLED BY THE DEVELOPER/CONTRACTOR FROM THE WATER MAIN TO THE METERS. THE PUBLIC WORKS DEPARTMENT WILL ONLY MAKE THE WET TAP. THE GOVERNING AGENCY WILL NOT INSTALL THE WATER SERVICE LATERAL.
14. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CERTIFICATIONS OF BACKFLOW DEVICES TO THE ENGINEER.
15. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE GOVERNING AGENCY'S LATEST CONSTRUCTION SPECIFICATION AND DETAILS.
16. LOCATE HIGHPOINT OF WATERMAIN AND INSTALL AIR RELIEF VALVE TO FACILITATE AIR REMOVAL FROM WATERMAIN.
17. AN APPROVED WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ARRIVES ON THE SITE.
18. CONTRACTOR TO VERIFY ALL INVERT ELEVATIONS OF SANITARY SEWER LATERALS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER WITH INVERT DATA TO INSURE THERE ARE NO CONFLICTS.
19. SEE ARCHITECTURAL PLUMBING PLAN FOR EXACT TIE LOCATION & LINE SIZES.
20. ALL WATER METERS AND STRAINERS SHALL BE PURCHASED FROM THE CITY.
21. THE INDIVIDUAL REQUESTING WATER SERVICE SHALL BE RESPONSIBLE FOR EXCAVATION, TAPPING, AND BACKFILLING THE WATER MAIN FROM WHICH THE SERVICE IS REQUIRED.
22. ALL MATERIAL USED FROM TAP TO DISCHARGE PIPE SHALL BE M.J. DUCTILE IRON, RESTRAINED JOINT, INCLUDING BY–PASS.
23. ALL VALVES 4–INCHES OR LARGER SHALL BE INSTALLED IN A MANHOLE, FOR THE TAPPING VALVE ONLY.
24. ALL TAPPING SLEEVES SHALL BE DUCTILE IRON, MJ, AND PRESSURE TESTED AT 150 PSI FOR A MINIMUM OF ONE HOUR WITH A PRESSURE LOSS NO GREATER THAN 1 PSI.
25. THE GOVERNING AGENCY'S WATER DEPARTMENT SHALL INSPECT THE PRESSURE TEST, IF THE CITY DOES NOT INSPECT THE PRESSURE TEST, THE CITY WILL NOT ACCEPT ANY RESPONSIBILITY OF MAINTENANCE FOR THE TAPPING VALVE OR SLEEVE.
26. THE TAPPING GATE VALVE SHALL BE RESILIENT SEAT, EPOXY COATED, M.J. BY FLANGE, DOMESTIC MADE.
27. ALL MATERIAL USED AND WHICH COMES IN CONTACT WITH DRINKING WATER DURING ITS DISTRIBUTION SHALL NOT ADVERSELY AFFECT DRINKING WATER QUALITY OR PUBLIC HEALTH. MATERIALS MUST BE CERTIFIED FOR CONFORMATION WITH AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION STANDARD 61 (ANSI/NSF STANDARD 61).
28. BACKFLOW PREVENTOR, VALVES AND POST INDICATOR VALVES FOR FIRE SPRINKLER SYSTEMS SHALL BE ELECTRICALLY SUPERVISED BY A TAMPER SWITCH INSTALLED IN ACCORDANCE WITH NFPA72.
29. IF THIS IS AN EXISTING FACILITY, THE WATER METER AND BACKFLOW PREVENTOR WILL NEED TO MEET THE CURRENT STANDARDS.
30. FOR FORCE MAIN DISCHARGE MANHOLES (INCLUDING THE TWO (2) MANHOLES DOWNSTREAM OF THE DISCHARGE MANHOLE, FOR A TOTAL OF THREE (3) MANHOLES), DROP MANHOLES AND LIFT STATION WETWELLS: THE PROTECTIVE COATING SHALL BE A POLYMER BASED POLYURETHANE OR A HIGH–BUILD, SOLVENT–FREE EPOXY COATING. FOR SMALL LIFT STATIONS AT THE DISCRETION OF THE CITY, THE NUMBER OF MANHOLES REQUIRING COATING MAY BE REDUCED.
31. FOR LIFT STATION WETWELLS, THE COATING LIMITS SHALL INCLUDE FROM THE BOTTOM OF FILLET, WETWELL WALLS, AND ROOF. COATING SYSTEM SHALL OVERLAP 1' TO 2' WHERE HATCHES SIT ON THE ROOF; BUT SHALL EXCLUDE THE WETWELL FLOOR. FOR MANHOLES, THE COATING LIMITS SHALL INCLUDE FROM THE FLOW LINE IN THE TROUGH OF THE INVERT UP TO THE RING WITH A 1' TO 2' OVERLAY ON THE RING.
32. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR GRAVITY SEWER AND FORCE MAINS AT APPROXIMATELY 30" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO MANHOLE RINGS. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
33. ALL SANITARY SEWER LATERALS SHALL BE PROPERLY MARKED AT THE POINT WHERE LATERALS TERMINATE WITH PVC PIPE PAINTED GREEN. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. LATERALS SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
34. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR WATER MAINS AT APPROXIMATELY 18" TO 24" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO CURB STOPS AND BROUGHT TO TOP OF VALVE. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
35. ALL WATER SERVICES SHALL BE PROPERLY MARKED ABOVE GROUND WITH PVC PIPE PAINTED BLUE. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. SERVICES SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
36. ALL SIGNS SHALL BE 30" HIGH INTENSITY OR DIAMOND GRADE.
37. THREE INCH AND LARGER WATER METER AND STRAINERS SHALL BE PURCHASED FROM THE CITY.

***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 216' OF 4" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 700' OF 6" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE REQUIRES CLEANOUT EVERY 100' & AT TURNS > 45 DEGREES.

SITE NOTES

SITE NOTES:

1. THE GOVERNING AGENCY RESERVES THE RIGHT TO ACCESS PROPERTY FOR ON SITE INSPECTIONS.
2. PROPOSED DETENTION AND/OR SEDIMENTATION POND SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK OR BUILDING ERECTION.
3. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSTALLED AS DEEMED NECESSARY BY ON SITE INSPECTION.
4. PROPERTY OWNER WILL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR OF CONTROL STRUCTURE & DETENTION POND UPON COMPLETION OF THE CONTRACT.
5. CONTRACTOR WILL NEED TO OBTAIN A RIGHT OF WAY PERMIT PRIOR TO PERFORMING CONSTRUCTION ACTIVITY IN THE CITY'S/COUNTY'S RIGHT OF WAY.
6. NO TREE MULCHING WITHIN OR ON TOP OF THE DETENTION BASIN.
7. ALL DRAINAGE STRUCTURES GREATER THAN 3 FEET SHOULD HAVE STEPS FOR EASY ACCESS.
8. AS–BUILT SHALL CONTAIN ACCURATE INFORMATION INCLUDING DEPTH, LENGTH, SIZE, SLOPE OF PIPES. ALSO REQUIRED ARE SPOT ELEVATIONS ON THE STORMWATER DETENTION FACILITY, PAVEMENTS TO ENSURE THE SITE GRADING PLAN AND THE CAPACITY OF THE DETENTION FACILITY ARE BUILT ACCORDING TO THE ACCEPTED CONSTRUCTION PLANS. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS FOR "AS BUILTS" PROPOSES AND PROVIDE THIS INFORMATION TO THE ENGINEER AT THE COMPLETION OF THE PROJECT. IF THE CONTRACTOR FAILS TO FURNISH THIS INFORMATION, THE ENGINEER WILL OBTAIN THE NECESSARY INFORMATION AND CHARGE THE CONTRACTOR FOR THE SERVICES. THE ENGINEER WILL CHECK INFORMATION PROVIDED BY THE CONTRACTOR FOR ACCURACY. AS BUILT INFORMATION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING: ALL UTILITIES INCLUDING INVERTS, TOP ELEVATIONS, PIPE LENGTHS AND TYPE OF CONSTRUCTION MATERIAL; SPOT ELEVATIONS ON FORCE MAINS AND WATER LINES. THE DISTANCE OF THE CENTERLINE UTILITIES FROM A PERMANENT STRUCTURE. ALL VALVE MANHOLES AND VALVE BOXES SHALL BE LOCATED WITH RESPECT TO A PERMANENT STRUCTURE. GRADES SHALL BE CONFIRMED IN ROADS AND PARKING AREAS AS WELL AS SWALES TO SHOW DIRECTION OF STORMWATER FLOW. THE FINISHED FLOOR ELEVATION SHALL BE SHOWN ON ALL BUILDINGS. IF THE LANDSCAPING IS CHANGED IN ANY WAY AN AS BUILT OF THE LANDSCAPE PLAN IS TO BE SUBMITTED TO THE ENGINEER; AND ANY OTHER REQUIREMENT MADE BY THE GOVERNING AGENCY'S.
9. THE GOVERNING AGENCY MAY RESERVE THE RIGHT TO REQUIRE TELEVISING, PER CITY TELEVISING MANUAL, OF ALL SANITARY SEWER LINES 8" OR LARGER, ALL NEWLY CONSTRUCTED STORMWATER LINES AND STORMWATER LINES WHERE DAMAGE COULD OCCUR DURING CONSTRUCTION.
10. ANY AND ALL UTILITY CROSSINGS FOR WATER MAINS BETWEEN STORM OR SEWER PIPING SHOULD BE ACCOMPLISHED BY USING OF 45° BENDS BOTH DOWN AND UP.
11. ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS TO ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS, AND OBTAINED UTILITY LOCATES AS REQUIRED.
12. CONTRACTOR WILL BE REQUIRED TO ATTEND A PRE–CONSTRUCTION CONFERENCE WITH THE GOVERNMENTAL AGENCY IN CHARGE OF THE PROJECT.
13. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND INSPECTIONS AS REQUIRED FOR APPROVAL OF THE WORK WITH THE GOVERNMENTAL AGENCY WITH JURISDICTION.
14. CONTRACTOR WILL BE RESPONSIBLE FOR COST OF AND COORDINATION WITH LOCAL UTILITY COMPANIES OR AGENCIES FOR RELOCATION OF, OR CONNECTION TO, ALL EXISTING UTILITIES INCLUDING POWER AND TELEPHONE POLES AND WIRES.
15. ALL ELEVATIONS ARE BASED ON MEAN SEA LEVEL DATUM. NAVD 88.
16. A MINIMUM SHOULDER WIDTH OF 4 FEET WITH A MINIMUM TRANSVERSE SLOPE OF 5% WILL BE PROVIDED ADJACENT TO CURBS AND WALKS. ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2%.
17. MAXIMUM EARTH SLOPES WILL BE 3:1. GRADE FROM SHOULDER EDGE TO RIGHT– OF–WAY AT 1% MINIMUM.
18. UNSUITABLE SUBGRADE MATERIAL WILL BE DETECTED BY PROOF ROLLING A MINIMUM OF 2 PASSED WITH A MINIMUM TRUCK WEIGHT OF 40 KIPS AFTER ROADWAY HAS BEEN BROUGHT TO APPROXIMATE SUBGRADE ELEVATION, TO BE OBSERVED BY ENGINEER AND GOVERNMENTAL INSPECTOR.
19. REMOVAL AND REPLACEMENT OF UNSUITABLE SUBGRADE MATERIAL WILL BE PAID FOR ON A CUBIC YARD BASIS IN PLACE MEASUREMENT, AT SUCH AUTHORIZED PRICE PER CUBIC YARD, AS AUTHORIZED BY THE ENGINEER.
20. SUBGRADE WILL BE COMPACTED FOR A DEPTH OF 24" EXTENDING 24" BEYOND PAVEMENT EDGES, TO A MINIMUM OF 100% STANDARD PROCTOR DENSITY AS MEASURED A.A.S.H.O. METHOD T–99.
21. UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKING WILL BE AN ENGINEER APPROVED VEHICULAR TRAFFIC PAINT. (WHITE IN COLOR & 4" WIDE)
22. PROVIDE 1/2" EXPANSION JOINT IN NEW WALKS FOR DEPTH OF CONCRETE, WITH BITUMINOUS SEAL FOR TOP 1 INCH MINIMUM DEPTH AT ABUTMENTS WITH BUILDINGS OR OTHER CONCRETE STRUCTURES.
23. SAW–CUT CONTRACTION JOINTS WILL BE PROVIDED IN ACCORDANCE WITH DETAILS, CUT TO BE 1/4 DEPTH OF CONCRETE MINIMUM.
24. ALL DIMENSIONS ARE TO EXTERIOR FACE OF BUILDING, EDGE OF SURFACE COURSE OR BACK OF CURBING.
25. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.
26. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
27. SEE BUILDING PLANS FOR EXACT BUILDING DIMENSIONS.
28. ALL UTILITIES WILL BE INSTALLED UNDERGROUND UNLESS OTHERWISE NOTED.
29. THE CONTRACTOR IS RESPONSIBLE TO BRING PROPOSED MANHOLE TOPS TO GRADE.
30. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYATEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.

ADA NOTES

ADA NOTES:

1. ACCESSIBLE ROUTE - EXTERIOR:
   MINIMUM CLEAR WIDTH IS 3'. IF ACCESSIBLE ROUTE HAS LESS THAN 5' CLEAR WIDTH, THEN PASSING SPACES AT LEAST 5'X5' SHALL BE LOCATED EVERY 200' OR LESS (INTERSECTING SIDEWALKS SHOULD MEET THIS REQUIREMENT). LONGITUDINAL (RUNNING) SLOPE MAY NOT EXCEED 5% UNLESS RAMP IS INSTALLED (RAMPS MAY NOT EXCEED 8.33%). CROSS SLOPE MAY NOT EXCEED 2%. GAPS IN ROUTE MAY NOT EXCEED 1/2" IN WIDTH.
2. FINISHED SURFACE HEIGHT DIFFERENCE REQUIREMENTS:
   A. 0 TO 1/4" : NO REQUIREMENTS
   B. 1/4" TO 1/2" : BEVEL WITH 1:2 SLOPE
   C. LARGER THAN 1/2" : CONFORM TO REQUIREMENTS FOR RAMP
3. RAMPS:
   - MAX RAMP SLOPE 8.33% (1:12)
   - RAMPS STEEPER THAN 8.33% ARE NOT ACCEPTABLE
   - MAX RISE FOR ANY RAMP RUN IS 30" (AT 8.33% SLOPE, MAXIMUM RUN OF
   - RAMP IS 30') MAX CROSS SLOPE OF RAMP 2% (1:50)

A. LANDINGS:
   - RAMPS SHALL HAVE LEVEL LANDINGS AT BOTTOM AND TOP OF EACH RAMP.
   - LANDINGS SHALL BE AT LEAST AS WIDE AS RAMP LEADING TO IT.
   - LANDING LENGTH SHALL BE MINIMUM 5' CLEAR
   - IF RAMPS CHANGE DIRECTION AT LANDING, MINIMUM LANDING SIZE SHALL BE 5'X5'.
   - ALL LANDINGS ARE TO BE NO MORE THAN 2% SLOPE IN ANY DIRECTION.

B. HANDRAILS:
   - HANDRAILS REQUIRED ON BOTH SIDES (MIN. 36" CLEAR BETWEEN HANDRAILS) WHEN RAMP RISE IS GREATER THAN 6".
   - PROVIDE MINIMUM 12" LONG HANDRAIL EXTENSIONS AT TOP AND BOTTOM LANDINGS.
   - PROVIDE MINIMUM 2" HIGH EDGE PROTECTION OR RAIL WITH LESS THAN 4" CLEAR TO RAMP IF RAMP HAS DROP-OFFS.
   - ROUTES BETWEEN BUILDINGS WITH ONLY DWELLING UNITS DO NOT HAVE TO HAVE HANDRAILS.
   - STAIRS NOT ALLOWED AS PART OF ACCESSIBLE ROUTE BUT IF ADJACENT TO ROUTE OR PART OF TENANT SPACE MUST MEET REQUIREMENTS FOR STAIR RAILS.

4. CURB RAMPS:
   - MAX SLOPE OF CURB RAMP 8.33%
   - MAX SLOPE OF SIDE FLARES 10%
   - MAX SLOPE OF ADJOINING GUTTERS, ROAD SURFACE, OR ACCESSIBLE ROUTE 5%.
   - MIN WIDTH 36" (NOT INCLUDING SIDE FLARES).
   - DETECTABLE WARNING IS REQUIRED ON CURB RAMPS IN PUBLIC RIGHT OF WAYS, AND SHALL BE 24" MINIMUM IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE. DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB LINE IS 6" TO 8" FROM THE CURB LINE.

5. PAVEMENT MARKINGS:
   - AS REQUIRED BY LOCAL JURISDICTIONAL AUTHORITY (RECOMMENDED CROSSWALK MARKING TO DESIGNATE ACCESSIBLE PEDESTRIAN ROUTE)

6. PARKING SPACES:
   - MINIMUM 8' WIDE ACCESSIBLE PARKING SPACE.
   - MINIMUM 5' WIDE ACCESS AISLE AT STANDARD SPACES
   - MINIMUM 8' WIDE ACCESS AISLE AT VAN ACCESSIBLE SPACES
   - MAXIMUM 2% (1:50) SLOPE IN ANY DIRECTION

7. SIGNAGE:
   ACCESSIBLE PARKING SPACES SHALL BE DESIGNATED AS RESERVED BY A SIGN SHOWING THE SYMBOL OF ACCESSIBILITY. VAN ACCESSIBLE SPACES SHALL HAVE AN ADDITIONAL SIGN "VAN ACCESSIBLE" MOUNTED BELOW THE SYMBOL. SUCH SIGNS SHALL BE LOCATED SO THEY CANNOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE (60" ABOVE GRADE UNLESS OTHER HEIGHT REQUIRED BY LOCAL JURISDICTION).

8. ACCESSIBLE ROUTES:
   MUST COMPLY WITH ADA. THE FAIR HOUSING ACT AND ICC/ANSI A117.1-2003

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED PROFESSIONAL 025285 ENGINEER 2/22/22 CHRISTOPHER R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
GENERAL NOTES

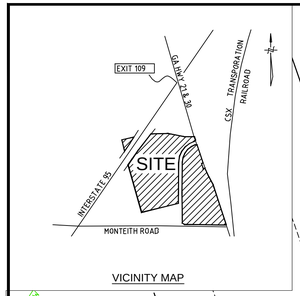
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
N1

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:08am - cstinson
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED 3295 PROFESSIONAL ENGINEER CHADWICK R. ZITTROWER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #2 FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

EXISTING CONDITIONS

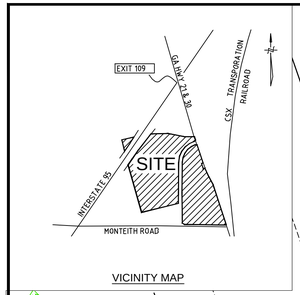
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

EX1

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:18am cittrower
DRAWING PATH: G:\2021\210071.000\ dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002

5"X5" RWCMF (Disturbed)

3"X3" CMF

S38°45'59"W 216.24'

N88°08'25"E 480.11'

S79°06'06"E

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

S79°49'32"W 572.30'

(Survey Tie Line)

3025 LF SINGLE ROW SILT FENCE

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH 12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30' Lift Station

I.E. = 3.93'

457.19'

S88°50'09"E 275.72'

18" CMP

I.E. = 5.59'

3"X3" CMF

12" WATER MAIN.

CFES
IE 8.61

124 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

100 LF 24" RCP CULVERT @ 0.25%

CONCRETE HEADWALL
IE 8.00

Base Flood Elevation 12

2 EA - 10 LF 36" RCP CULVERT

STORM MH
TOP 13.50
IE 8.03

FIRE HYDRANT ASSEMBLY

182 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 15.50
IE 8.81

STORM MH
TOP 14.25
IE 9.51

120 LF 24" RCP CULVERT @ 0.25%

FIRE HYDRANT ASSEMBLY

LATITUDE: 32.1853928
LONGITUDE: -81.1953545

12" WATER STUB-OUT

3" PLUG AND CHECK VALVE

130 LF 24" RCP CULVERT @ 0.25%

LATITUDE: 32.1850677
LONGITUDE: -81.1951721

3025 LF SINGLE ROW SILT FENCE

Tower No. 57

Billboard
DB 3760, PG 241

SCG Pipeline Inc.
Natural Gas Pipeline Easement
(not shown)
(Deed Book 401, Page 381)

Zone X
Zone X (Shaded)
Zone AE

Cc
Pj
Oj
Co

0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5733

STAMP:

GEORGIA REGISTERED No. 32295 PROFESSIONAL ENGINEER CHADWICK R. ZITTROWER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INITIAL EROSION PLAN

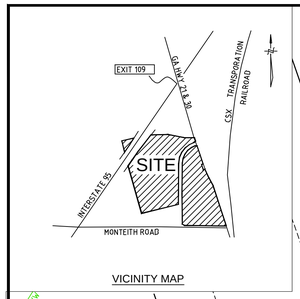
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-1

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 09 Mar 2022 - 9:09am cuttrower
DRAWING PATH: G:\2021\210071.000\dwgs\Sansone - Buildings 2&3.dwg



VICINITY MAP

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70031 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70031 02002

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

Survey Tie Line

S38°45'59"W 176.24'

N88°08'25"E 480.11'

S79°06'06"E 457.19'

S88°50'09"E 275.72'

S79°49'32"W 522.30'

N85°20'29"E 891.56'

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH 12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30' Lift Station

I.E. = 3.93'

I.E. = 5.52'

3025 LF SINGLE ROW SILT FENCE

3025 LF SINGLE ROW SILT FENCE

112 LF 24" RCP @ 0.25%

112 LF 30" RCP @ 0.25%

92 LF 30" RCP @ 0.25%

148 LF 36" RCP @ 0.25%

190 LF 36" RCP @ 0.25%

GRATE INLET
TOP:11.25
INV:10.52

GRATE INLET
TOP:11.25
INV:10.24

GRATE INLET
TOP:11.25
INV:9.96

CURB INLET
TOP:11.75
INV:9.73

CURB INLET
TOP:11.50
INV:9.36

CFES
INV:8.88

12' X 14' RIP RAP APRON
(OUTLET PROTECTION)

12" WATER MAIN.

CFES
IE 8.61

124 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

12' X 14' RIP RAP APRON
(OUTLET PROTECTION)

100 LF 24" RCP CULVERT @

CFES
INV:8.60

CONCRETE HEADWALL
IE 8.00

2 EA - 10 LF 36" RCP CULVERT @ 0.25%

STORM MH
TOP 13.50
IE 8.50

FIRE HYDRANT ASSEMBLY

182 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 15.50
IE 8.51

STORM MH
TOP 15.50
IE 8.81

120 LF 24" RCP CULVERT @ 0.25%

130 LF 36" RCP @ 0.25%

STORM MANHOLE
TOP:15.00
INV:9.32

FIRE HYDRANT ASSEMBLY

92 LF 30" RCP @ 0.25%

LATITUDE: 32.1853928
LONGITUDE: -81.1553926

CURB INLET
TOP:15.50
INV:9.65

12" WATER STUB-OUT

CURB INLET
TOP:15.00
INV:9.88

3" PLUG AND CHAIN

130 LF 24" RCP CULVERT @ 0.25%

120 LF 24" RCP @ 0.25%

128 LF 24" RCP @ 0.25%

ROOF INLET
TOP:15.00
INV:10.15

ROOF INLET
TOP:15.00
INV:10.50

LATITUDE: 32.1850877
LONGITUDE: -81.1551721

Cc Pj Oj Co

Tower No. 57

Billboard
IDB 3760, PG 241

Zone X (Shaded)

Zone AE

Zone X

WPC

WPC(5)

FES

FIRE

ENDS

0+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOT FOR CONSTRUCTION

RELEASED FOR CONSTRUCTION

DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
CHADWICK R. ZITTROUER
No. 32295
PROFESSIONAL
ENGINEER
2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

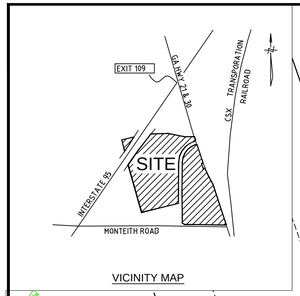
DRAWING TITLE:

INITIAL EROSION PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	SESC-2

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:58am cittrouer
DRAWING PATH: G:\2021\210071.000\.dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #2
179,800 SF
FF 17.00

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH 12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30' Lift Station

12' X 14' RIP RAP APRON (OUTLET PROTECTION)

12' X 14' RIP RAP APRON (OUTLET PROTECTION)

12" WATER MAIN.

12" WATER STUB-OUT

3" PLUG AND CURB BOX VALVE

FIRE HYDRANT ASSEMBLY

2-45° BENDS

CFES
IE 8.61

124 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

100 LF 24" RCP CULVERT @

CONCRETE HEADWALL
IE 8.80

2 EA - 10 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.50
IE 8.81

182 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 14.00
IE 8.51

120 LF 24" RCP CULVERT @ 0.25%

130 LF 24" RCP CULVERT @ 0.25%

FES

WP RISER

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

50' Ingress, Egress, Utility Easement
Per Easement Document
(Deed Book 241, Page 391)

Billboard
(DB 3760, PG 241)

Tower No. 57

Zone X (Shaded)

Zone AE

Zone X

S38°45'59"W 216.24'

N88°08'25"E 480.11'

S79°06'06"E 457.19'

S88°50'09"E 275.72'

S79°49'32"W 522.30'

N30°07'09"E

(Survey Tie Line)

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnet Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 032295 ENGINEER 01/22/23 CHARMECK R. ZOTTEWER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #2 FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

FINAL EROSION PLAN

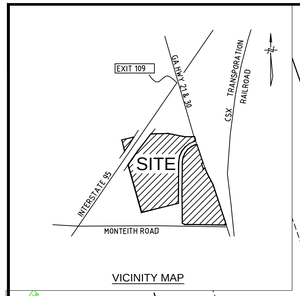
SCALE: 1" = 50'
PROJECT NO: 210071.000
DATE: 2/22/22
DRAWN BY: WM
CHECKED BY: CRZ

SHEET NO:

SESC-3

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are, for purposes of this item and may not be, reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:38am crittmorr
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70037 02002

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

(Survey Tie Line)

N88°08'25"E 480.11'

S79°06'06"E 457.19'

S88°50'09"E 275.72'

S38°45'59"W 216.24'

S79°49'32"W 522.30'

N30°07'09"E 501.65'

BLDG #2
179,800 SF
FF 17.00

Natural Gas Pipeline Easement
(Easement 1) Easement
(Deed Book 241, Page 391)

Billboard
(DB 3760, PG 241)

Tower
No. 57

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH
12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30'
Lift Station

I.E. = 3.93'

I.E. = 5.50'

2-45° BENDS

FIRE HYDRANT ASSEMBLY

12" WATER MAIN.

CFES
IE 8.61

124 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

100 LF 24" RCP CULVERT @

CONCRETE FLUME
IE 8.82

2 EA - 10 LINEAR R.C.P. CULVERT

STORM MH
TOP 13.50
IE 8.07

FIRE HYDRANT ASSEMBLY

182 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 15.50
IE 8.81

STORM MH
TOP 14.25
IE 8.51

120 LF 24" RCP CULVERT @ 0.25%

FIRE HYDRANT ASSEMBLY

12" WATER STUB-OUT

3" PLUG AND CHECK VALVE

130 LF 24" RCP CULVERT @ 0.25%

FES
IE 8.27

Zone X
Shaded

Zone AE

Zone X

WPC

WPC(5)

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
No. 27035
PROFESSIONAL
2/22/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #2 FOR CH REALTY IX - SANSONE I

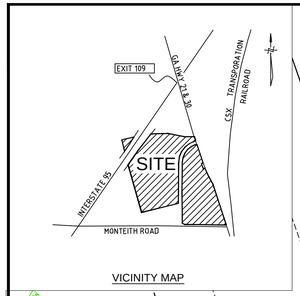
DRAWING TITLE:

STAKING PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C1

COPYRIGHT Kern & Co., LLC. © 2013 The drawing and its reproductions are, for purposes of this item and may not be, reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:38am cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70031 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 70031 02002

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

(Survey Tie Line)

S38°45'59"W
174.24'

N88°08'25"E
480.11'

S79°06'06"E
457.19'

S88°50'09"E
275.72'

S79°49'32"W
572.30'

N30°02'09"E
501.55'

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH
12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30'
Lift Station

I.E. = 3.93'

I.E. = 5.5'

CFES
INV:8.88

CFES
IE 8.61

CFES
INV:8.80

FES
IE 8.27'

12" WATER MAIN.

FIRE HYDRANT ASSEMBLY

2.45° BENDS

5"X5"
RWCMF
(Disturbed)

5"X5"
RWCMF

3"X3"
CMF

18" CMP

UP

OHU

RAMP

Tower
No. 57

Billboard
(DB 3760, PG 241)

Natural Gas Utility Easement
(Not Shown)
(DB 3424, PG 391)

Zone X
Zone X Shaded
Zone AE

WPC
WPC(5)

BLDG #2
179,800 SF
FF 17.00

12.00 TC
11.50 TG

GRATE INLET
TOP:11.25
INV:10.52

GRATE INLET
TOP:11.25
INV:10.24

GRATE INLET
TOP:11.25
INV:9.96

CURB INLET
TOP:11.75
INV:9.73

CURB INLET
TOP:11.50
INV:9.36

112 LF 24" RCP @ 0.25%

92 LF 30" RCP @ 0.25%

148 LF 36" RCP @ 0.25%

190 LF 36" RCP @ 0.25%

13.00 TP

16.90 TP

120 LF 24" RCP CULVERT @ 0.25%

16.75 TC
16.25 TG

16.25 TC
15.75 TG

15.50 TC
15.00 TG

16.00 TC
15.50 TG

178 LF 36" RCP @ 0.25%

92 LF 30" RCP @ 0.25%

120 LF 30" RCP @ 0.25%

120 LF 24" RCP @ 0.25%

STORM MANHOLE
TOP:15.00
INV:9.32

CURB INLET
TOP:15.50
INV:9.65

CURB INLET
TOP:15.00
INV:9.88

ROOF INLET
TOP:15.00
INV:10.15

ROOF INLET
TOP:15.00
INV:10.50

12" WATER STUB-OUT

3" PLUG AND CHECK VALVE

130 LF 24" RCP CULVERT @ 0.25%

100 LF 24" RCP CULVERT @ 0.25%

124 LF 24" RCP CULVERT @ 0.25%

182 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

STORM MH
TOP 13.50
IE 8.81

STORM MH
TOP 13.50
IE 8.51

2 EA - 10 LF 24" RCP CULVERT @ 0.25%

CONCRETE FLUME
IE 8.80

Back

FES

UP 5755

UP 5756

0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00
10+00
11+00
12+00

20.00 TC
16.00 TG

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
PROFESSIONAL
No. 032295
PROFESSIONAL ENGINEER
2/22/22
CHADWICK R. ZITTEUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

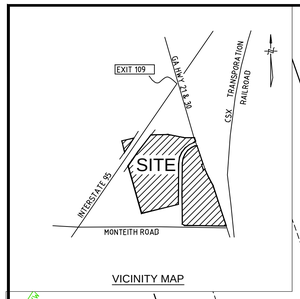
PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
PGD
PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C2

COPYRIGHT Kern & Co., LLC. © 2013 The drawing and its reproductions are, for purposes of this item and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:38am cittleuer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

INTERSTATE 95
VARIABLE WIDTH
RIGHT OF WAY

Lot 1
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 10031 02002A

Lot 3
N/F PFJ Southeast LLC
Deed Book 941, Page 678
PIN: 10031 02002

50' Canal R/W
Little Hearst Branch Exception #19
(AKA Little Hurst Branch)

(Survey Tie Line)

N88°08'25"E 480.11'

S79°06'06"E 457.19'

S88°50'09"E 275.72'

S79°49'32"W 522.30'

S38°45'59"W 216.24'

N35°07'07"E 201.52'

BLDG #2
179,800 SF
FF 17.00

CONNECTION TO EXT'G SANITARY SEWER

CONNECT TO EXT'G 12" WATER MAIN WITH 12" X 12" TAPPLING SLEEVE AND 12" VALVE IN MANHOLE

30' X 30' Lift Station

I.E. = 3.93'

I.E. = 5.55'

12' X 14' RIP RAP APRON (OUTLET PROTECTION)

12" WATER MAIN.

2-45° BENDS

FIRE HYDRANT ASSEMBLY

CFES
IE 8.61

124 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.00
IE 8.30

100 LF 24" RCP CULVERT @

12' X 14' RIP RAP APRON (OUTLET PROTECTION)

3" POLYETHYLENE FORCE MAIN

CONCRETE HEADWALL
IE 8.00

2" POLYETHYLENE WATER LATERAL

I.E. = 8.27'

2 EA - 10 LF 24" RCP CULVERT @ 0.25%

STORM MH
TOP 13.50
IE 8.00

FIRE HYDRANT ASSEMBLY

FIRE HYDRANT ASSEMBLY

STORM MH
TOP 13.50
IE 8.00

C.O.
IE: 4.50

6" SDR 26 PVC LATERAL

120 LF 24" RCP CULVERT @ 0.25%

8" C-900 PVC FIRE LINE

C.O.
IE: 5.00

C.O.
IE: 6.00

6" SDR 26 PVC LATERAL

C.O.
IE: 7.00

10" C-900 PVC FIRE MAIN

GRINDER LIFT STATION
TOP: 15.00
IE IN: 4.00
BOTTOM: 1.00

2" DCVA

2" WATER METER

2" VALVE IN A BOX

10" RPZ BACKFLOW PREVENTOR

CONNECT TO EXISTING 3" FORCE MAIN STUBOUT

CONNECT TO EXISTING 12" WATER STUBOUT WITH 12" X 10" REDUCER

12" WATER STUBOUT

3" PLUG AND CHECK VALVE

130 LF 24" RCP CULVERT @ 0.25%

C.O.
IE: 8.00

C.O.
IE: 9.00

6" SDR 26 PVC LATERAL

C.O.
IE: 10.00

8" C-900 PVC FIRE LINE

FIRE HYDRANT ASSEMBLY

1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00 11+00 12+00

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
CHALDWICK R. ZITTROUER
No. 035285
PROFESSIONAL
ENGINEER
2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #2 FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

UTILITY PLAN

SCALE: 1" = 50'
PROJECT NO: 210071.000
DATE: 2/22/22
DRAWN BY: WM
CHECKED BY: CRZ
SHEET NO: C3

COPYRIGHT Kern & Co., LLC © 2017 This drawing and its reproductions are, the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:58am cittrouer
DRAWING PATH: G:\2021\210071.000\.dwg\Sansone - Buildings 2&3.dwg

EROSION AND SEDIMENTATION CONTROL ACTIVITIES SCHEDULE

TENTAIVE VS. SPECIFIC BEGIN/END DATES	APRIL 2021	MAY 2021	JUNE 2021	JULY 2021	AUGUST 2021	SEPTEMBER 2021
IMPLEMENTATION OF SILT FENCE, SEDIMENT STORAGE & CONSTRUCTION EXIT						
CLEARING, GRUBBING & INSTALL TREE PROTECTION FENCING						
EXCAVATION AND ROUGH GRADING						
CONSTR. OF TEMPORARY & PERMANENT SEDIMEN-TATION CONTROL & TEMP. GRASSING						
FINISHED GRADING						
PAVING, CONSTRUCTION UTILITIES, ETC.						
REMOVAL OF TEMPORARY SEDIMENTATION CONTROL STRUCTURES						
FINAL STABILIZATION & FINAL GRASSING						
MAINTENANCE OF BMP'S						

NOTE: NO CLEARING AND/OR GRUBBINGACTIVITIES WILL COMMENCE PRIOR TO THE INITIAL PERIMETER & SEDIMENT STORAGE BMP'S ARE IMPLEMENTED UNLESS THOSE ACTIVITIES ARE STRICTLY TO INSTALL SAID BMP'S.

Ds1

SITE PREPARATION
1. GRADE TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
2. INSTALL NEEDED EROSION CONTROL MEASURES AS REQUIRED SUCH AS DIKES, DIVERSIONS, BERMS TERRACES AND SEDIMENT BARRIERS.
3. LOOSEN COMPACT SOIL TO AMINIMUM DEPTH OF 3 INCHES.

MULCHING MATERIALS
1. DRY STRAW OR HAY SHALL BE APPLIED AT A DEPTH OF 2 TO 4 INCHES PROVIDING COMPLETE SOIL COVERAGE.
2. WOOD WASTER SHALL BE APPLEIED AT A DEPTHH OF 2 TO 3 INCHES. ORGANIC MATERIAL FROM THE CLEARING STAGE SHOULD REMAIN ON SITE, BECHIPED AND APPLIED AS MULCH.
3. POLYEHYLENE FILM SHALL BE SECURED OVER BANKS OR STOCKPILED SOIL MATERIAL FOR TEMPORARY PROTECTION.

APPLYING MULCH
1. DRY STRAW OR HAY MULCH AND WOOD CHIPS BE APPLIED UNIFORMLY BYHAND OR BY MECHANICAL EQUIPMENT
2. IF THE AREA WILL EVENTUALLY BE COVERED WITH PERENNIAL VEGETATION, 20–30 POUNDS OF NITROGEN PER ACRE IN ADDITION TO THE NORMAL AMOUNT SHALL BE APPLIED TO OFFSET THE UPTAKE OF NITROGEN CAUSED BY THE DECOMPOSITION OF THE ORGANIC MULCHES..

Ds2

Table 6-4.1. Temporary Cover or Companion Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR TEMPORARY COVER OR COMPANION CROPS

Species	Broadcast Rates: Rate per Acre	Broadcast Rates: Pure Live Seed (PLS) per 1000 sqft	Resource Area	Planting Dates by Resource Area	Remarks
BARLEY *Hordeum vulgare*					
alone	3 bu. (144 lbs)	3.3 lbs	M-L	August - November	14,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (24 lbs)	0.6 lb	P	August - December	Use on productive soils.
			C	September - December	
LESPEDEZA, ANNUAL *Lespedeza striata*					
alone	40 lbs	0.9 lb	M-L	February - April	200,000 seed per pound. May volunteer
in mixture	10 lbs	0.2 lb	P	February - April	for several years. Use inoculant EL.
			C	January - March	
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - June	1,500,000 seed per pound. May last for
in mixture	2 lbs	0.05 lb	P	March - June	several years. Mix with Sericea
			C	February - June	lespedeza.
MILLET, BROWNTOP *Panicum fasciculatum*					
alone	40 lbs	0.9 lb	M-L	April - June	137,000 seed per pound. Quick dense
in mixture	10 lbs	0.2 lb	P	April - July	cover. Will provide excessive competion
			C	April - July	in mixtures if seeded at high rate.
MILLET, PEARL *Pennisetum glaucum*					
alone	50 lbs	1.1 lbs	M-L	March - July	88,000 seed per pound. Quick dense
			P	April - August	cover. May reach 5feet in height. Not
			C	April - August	recommended for mixtures.
OATS *Avena sativa*					
alone	4 bu. (128 lbs)	2.9 lbs	M-L	September - November	13,000 seed per pound. Use on
in mixture	1 bu. (32 lbs)	0.7 lb	P	September - November	productive soils. Not as a winter hardy
			C	September - November	as rye or barley.
RYE *Secale cereale*					
alone	3 bu. (168 lbs)	3.9 lbs	M-L	July - November	18,000 seed per pound. Quick cover.
in mixture	1/2 bu. (28 lbs)	0.6 lb	P	August - December	Drought tolerant and winter hardy.
			C	January - February September - December	
RYEGRASS, ANNUAL *Lolium temulentum*					
alone	40 lbs	0.9 lb	M-L	January - April August - December	227,000 seed per pound. Dense cover.
			P	January - April August - December	Very competitive and is not to be
			C	January - March August - December	used in mixtures.
SUDANGRASS *Sorghum sudanese*					
alone	60 lbs	1.4 lbs	M-L	April - August	55,000 seed per pound. Good on
			P	April - August	droughty sites. Not recommended for
			C	March - July	mixtures.
TRITICALE *X-Triticosecale*					
alone	3 bu. (144 lbs)	3.3 lbs	C	January, September-October, December	Use on lower part of Southern Coastal
in mixture	1/2 bu. (24 lbs)	0.6 lb			Plain and in Atlantic Coastal Flatwoods
					only.
WHEAT *Triticum aestivum*					
alone	3 bu. (180 lbs)	4.1 lbs	M-L	September - December	15,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (30 lbs)	0.7 lb	P	October - December	
			C	January, October-December	

Temporary cover crops are very competitive and will crowd out perennials if needed too heavily
1Reduce seeding rates by 50 % when drilled.
M-L represents the Mountains, Blue Ridge, and ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents Southern Coastal Plain, Sand Hills, Black Lands, and Atlantic Coast Flatwoods MLRAs

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

Table 6-5.2- Permanent Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR PERMANENT COVER

Species	Broadcast Rates: Rate per Acre[1]	Broadcast Rates: Pure Live Seed (PLS) per 1000 sqft	Resource Area[2]	Planting Dates by Resource Area	Remarks
BAHIA, PENSACOLA *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	P	March - June	166,000 seed per pound. Low growing. Sod forming. Slow to establish. Plant with a companion crop. Will spread
with other perennials	30 lbs	0.7 lb	C	February - May	
BAHIA, WILMINGTON *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	M-L	March - May	
with other perennials	30 lbs	0.7 lb	P	February - May	Same
BERMUDA, COMMON *Cynodon dactylon*					
hulled seed			P	April - May	1,787,000 seed per pound. Quick cover. Low growing and sod forming. Full sun. Good for athletic fields.
alone	10 lbs	0.2 lb	C	April - May	
with other perennials	6 lbs	0.7 lb			
BERMUDA, COMMON *Cynodon dactylon*					
Unhulled seed					
with tem porary cover	10 lbs	0.2 lb	P	January - May October - December	Plant with winter annuals
with other perennials	6 lbs	0.1 lb	C	January November - December	Plant with Tall Fescue
BERMUDA SPRINGS *Cynodon dactylon*					
Coastal, Common, Midland, or Tift 44	40 cu ft or sod plugs 3' x 3'	0.9 cu ft	M-L	April - June	A cubic foot contains approximately 650 springs. A bushel contains 1.25 cubic feet or approximately 800 springs.
			P	April - June	
Coastal, Common, of Tift 44			C	March - May	Same as above
Tift 79			C	April - May	Southern Coastal Plain only
CENTIPEDE *Eremochloa Ophiuroides*					
	Block sod only		P	January - May November - December	Drought tolerant. Full sun or partial shade. Effective adjacent to concrete and in concentrated flow areas; irrigation is needed until fully established. Do not plant near pastures. Winterhardy as far as north Athens and Atlanta.
			C	January - May November - December	
CROWNVETECH *Coronilla varia*					
with winter annuals or cool season grasses	15 lbs	0.3 lb	M-L P	September - October September - October	330, seed per pound. Dense growth. Drought tolerant and fire resistant. Attractive rose, pink and white blossoms spring to late fall. Mix with 30 pound of Tall Fescue or 15 pounds of rye. Inoculate see with M inoculant. Use from North Atlanta and Northward.
FESCUE, TALL *Festuca aroundinacea*					
alone	50 lbs	1.1 lb	M-L	March - April August - October	227,000 seed per pound. Use alone only on better sites. Mix with perennial lespedeza or Crownvetch. Apply topdressing in spring following fall plantings. Not for heavy use areas or athletic fields.
with other perennials	30 lbs	0.7 lb	P	August - October	
KUDZU *Pueraria rhomberginea*					
Plants or crowns	3' - 7' apart		ALL	January - March	Rapid and vigorous growth. Excellent in gully erosion control. Will climb. Good livestock forage.
LESPEDEZA SERICEA *Lespedeza cuneata*					
scarified	60 lbs	1.4 lb	M-L P C	April - May March - May February - May	350,000 seed per pound. Widely adapted. Low maintenance. Mix with Weeping lovegrass, Common bermuda, bahia, or tall f escue. Takes 2 to 3 years to become fully established. Excellent on roadbanks. Inoculate seed with EL inoculant.
unscarified	75 lbs	1.7 lb	M-L P C	January - February January - February January - February	Mix with Tall fesue or winter annuals.
seed - bearing hay	3 tons	1338 lbs	M-L P C	January - February January January	Cut when seed mixture is mature, but before, it shatters. Add Tall fescue or winter annuals.
LESPEDEZA *Anthyllis vulgata Lespedeza virgata DC* or *Appalow* *Lespedeza cuneata (Dumont) G. Don)*					300,000 seed per pound. Height of growth is 18 to 24 inches. Advantageous in urban areas. Spreading type growth. New growth has bronze coloration. Mix with weeping lovegrass, common bermuda, bahia, tall fescue or winter annuals. Do not mix with Sericea lespedeza. Slow to develop sod stands. Inoculate seed with EL inoculant.
scarified	60 lbs	1.4 lb	M-L P C	March - May March - May February - May	
unscarified	75 lbs	1.7 lb	M-L P C	January - February January - February	
LESPEDEZA, SHRUB *Lespedeza bicolor* *Lespedeza thunbergii*					
plants	3' x 3'		M-L P C	January - March January - March January - February	Provide wildlife food and cover.
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - May	1,500,000 seed per pound. Quick cover. Drought
with other perennials	2 lbs	0.05 lb	P C	March - May March - May	tolerant. Grows well with Sericea lespedeza on roadbanks.
MAIDENCANE *Panicum hemitomon*					
sprigs	3' x 3' spacing	ALL		February - April	For very wet sites. May clog channels. Dig sprigs from local sources. Use along river banks and shorelines.
PANICGRASS, ATLANTIC COASTAL *Panicum amarum var amarulum*					
	20 lbs	0.5 lb	P C	March - April March - April	Grows well on coastal sand dunes, borrow areas, and gravel pits. Provides winter cover for wildlife. Mix with Sericea lespedeza except on sand dunes.
REED CANARY GRASS *Phalaris arundinacea*					
alone	50 lbs	1.1 lb	M-L	August - October	
with other perennials	30 lbs	0.7 lb	P	August - October	Grows similar to Tall fescue.
SUNFLOWER, "AZTEC" MAXIMILLIAN *Helianthus maximiliani*					
	10 lbs	0.2 lb	M-L P C	April - May April - May April - May	227,000 seed per pound. Mix with Weeping lovegrass or other low-growing grasses or legumes.

1 Reduce seeding rates by 50% when drilled.
2 PLS is an abbreviation for Pure Live Seed. Refer to Section V.E. of these specifications.
3 M-L represents to Mountain; Blue Ridge; and Ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents the Southern Coastal Plain; Sand Hills; Black Lands; and Atlantic Coast Flatwoods MLRAs. See Figure 6-4.1

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

TABLE 6-5.1. FERTILIZER REQUIREMENTS

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. Cool season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 1/3/
	Second	6-12-12	1000 lbs./ac.	
	Maintenance	10-10-10	400 lbs./ac.	30
2. Cool season grasses and legumes	First	06-12-12	1500 lbs./ac.	0-50 lbs./ac. 1/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	
3. Ground covers	First	10-10-10	1300 lbs./ac. 3/	
	Second	10-10-10	1000 lbs./ac. 3/	
	Maintenance	10-10-10	1100 lbs./ac.	
4. Pine seedlings	First	20-10-5	one 21-gram pellet per seedling placed in the closing hole	
5. Shrub Lespedeza	First	0-10-10	700 lbs./ac.	
	Maintenance	0-10-10	700 lbs./ac.	
6. Temporary cover crops seeded alone	First	10-10-10	900 lbs./ac.	30 lbs./ac. 5/
7. Warm season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 2/6/
	Second	6-12-12	800 lbs./ac.	50-100 lbs./ac. 2/
	Maintenance	10-10-10	400 lbs./ac.	30 lbs./ac.
8. Warm season grasses and legumes	First	6-12-12	1500 lbs./ac.	50 lbs./ac./6/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	

1/ Apply in spring following seeding.
2/ Apply in split applications when high rates are used.
3/ Apply in 3 split applications.
4/ Apply when plants are pruned.
5/ Apply to grass species only.
6/ Apply when plants grow to a height of 2 to 4 inches.

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE CONSTRUCTION PROJECTS

OGEECHEE RIVER
Project Name: OLD AUGUSTA COMMERCE CENTER
Address: OLD AUGUSTA PARKWAY
City/County: EFFINGHAM COUNTY, GEORGIA
Date on Plans: 3/03/2021
NAME AND EMAIL: BECKNELL INDUSTRIAL
JOEL REPISCAK
jrepiscak@becknellindustrial.com

TO BE SHOWN ON ES&PC PLAN

PAGE #	Y/N		
	Y	1.	The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1of the year in which the land-disturbing activity was permitted.(The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
	Y	2.	Level II certification number issued by the Commission, signature and seal of the certified design professional.(Signature, seal and Level II number must be on each sheet pertaining to ES&PC plan or the Plan will not be reviewed)
	N/A	3.	Limit of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office. If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.*(A copy of the written approval by EPD must be attached to the plan for the plan to be reviewed.)
SESC 6	Y	4.	The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
SESC2	Y	5.	Provide the name, address and phone number of primary permittee.
SESC2	Y	6.	Note total and disturbed acreage of the project or phase under construction.
SESC2	Y	7.	Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
COVER	Y	8.	Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
SESC6	Y	9.	Description of the nature of construction activity.
SESC2	Y	10.	Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
SESC6	Y	11.	Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
SESC5	Y	12.	Design professional's certification statement and signature that the site was visited prior to development of the ES&PC plan as stated on part iv page 23 of the permit.
SESC5	Y	13.	Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on part iv pg 22 of the permit.*
SESC5	Y	14.	Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*
SESC6	Y	15.	Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25 feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
	N/A	16.	Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
SESC5	Y	17.	Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*
SESC5	Y	18.	Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."*
SESC6	Y	19.	Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."
SESC6	Y	20.	Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
SESC6	Y	21.	Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
SESC6	N/A	22.	Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.*
SESC6	N/A	23.	If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 21 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*
SESC5	Y	24.	BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drumat the construction site is prohibited.*
SESC5	Y	25.	Provide BMPs for the remediation of all petroleum spills and leaks.
SESC6	Y	26.	Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.*
SESC6	Y	27.	Description of practices to provide cover for building materials and building products on site.
SESC4	Y	28.	Description of the practices that will be used to reduce the pollutants in storm water discharges.*
SESC5	Y	29.	Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).

SEDIMENT STORAGE CALCULATIONS:

DISTURBED AREA = 17.12 AC

REQUIRED STORAGE:
67 CY/AC x 17.12 AC = 1147 CY
1147 CY x 27CF/CY = 30,969 CF OF REQUIRED STORAGE

PROVIDED STORAGE :
(ELEV 17 – ELEV 13)(2334 SF AT ELEV 17 + 119366 SF AT ELEV 13) / 2 = 167,957 CF OF PROVIDED STORAGE

CHAD ZITTROUER
MARK D. CRAPPS

GSWCC CERTIFICATION # 8150
GSWCC CERTIFICATION # 2888

PAGE #	Y/N		
SESC5	Y	30.	Provide complete requirements of inspections and record keeping by the primary permittee.*
SESC5	Y	31.	Provide complete requirements of sampling frequency and reportinof sampling results.*
SESC5	Y	32.	Provide complete details for retention of records as per Part IV.F. of the permit.*
SESC6	Y	33.	Description of analytical methods to be used to collect and analyze the samples from each location.*
SESC1,2,3	Y	34.	Appendix B rationale for NTU values at all outfall sampling points where applicable.*
SESC4	Y	35.	Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.*
SESC2	Y	36.	A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the plan may combine all of the BMPs into a single phase.*
SESC2	Y	37.	Graphic scale and north arrow.
	N/A	38.	Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch = 100ft or larger scale	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

	N/A	39.	Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.
ALL	Y	40.	Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 edition*
ALL	Y	41.	Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to state waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.
POST	Y	42.	Delineation of on-site wetlands and all state waters located on and within 200 feet of the project site.
HYDRO	Y	43.	Delineation and acreage of contributing drainage basins on the project site.
PRE&POST	Y	44.	Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.*
SESC1,2,3	Y	45.	An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
SESC1,2,3	Y	46.	Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate discharges without erosion.Identify/Delineate all storm water discharge points.
ALL	Y	47.	Soil series for the project site and their delineation.
SESC4	Y	48.	The limits of disturbance for each phase of construction.
SESC1,2,3	Y	49.	Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual must be included for structural BMPs and all calculations used by the design professional to obtain the required sediment storage when using equivalent controls. When discharging from sediment basins and impoundments, permitees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this decision must be included in the plan.
SESC7	Y	50.	Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.
SESC7	Y	51.	Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
		52.	Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

*If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

Effective January 1, 2021

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 32795 2/22/22 CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSION NOTES

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-4

COPYRIGHT Kern & Co., LLC © 2021 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 09 Mar 2022 - 9:21am - rzittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

Hazardous Wastes:

All hazardous waste materials will be disposed of in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. The job site superintendent, who will also be responsible for seeing that these practices are followed, will instruct site personnel in these practices. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the ESPCP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this ESPCP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials or hazardous waste will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. It shall be the responsibility of the job site superintendent to properly train all personnel in the use of the SPCC plan.

Sanitary Wastes:

A minimum of one portable sanitary unit will be provided for every ten (10) workers on the site. All sanitary waste will be collected from the portable units a minimum of one time per week by a licensed portable facility provider in complete compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharge is negligible. Additional containment BMP's must be implemented, such as gravel bags or specially designed plastic skid containers around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on the Intermediate Erosion Control Plan Sheet by the contractor once the locations have been determined.
Sanitary Sewer will be provided by Municipal Authority/Septic System at the completion of this project.

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

Waste Materials:

All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of once per week or more often if necessary and trash will be hauled as required by local regulations. No construction waste will be buried onsite.

All personnel will be instructed on proper procedures for waste disposal. A notice stating these practices will be posted at the jobsite and the contractor will be responsible for seeing that these procedures are followed.
ALL DISCHARGES FROM THIS SITE SHALL BE COMPOSED ENTIRELY OF STORM WATER WITH THE FOLLOWING EXCEPTIONS:

ACCEPTABLE NON–STORM WATER DISCHARGES

Storm water discharge from a construction site or construction activities that is mixed with a storm water discharge from an industrial source or activity other than construction where:

a. the industrial source or activity other than construction is located on the same site as the construction activity and is an integral part of the construction activity;

b. the storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of NPDES Permit No. GAR100001; and

c. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring are covered by a different NPDES general permit or individual permit authorizing such discharges and the discharges are in compliance with a different NPDES permit.

d. discharges from fire fighting activities; fire hydrant flushing; potable water sources including water line flushing; irrigation drainage; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials or pollutants.

Spill Cleanup and Control Practices:

– Local, State and manufacturer's recommended methods for spill cleanup will be clearly posted and procedures will be made available to site personnel.
– Material and equipment necessary for spill cleanup will be kept in the material storage areas. Typical materials and equipment includes, but is not limited to brooms, dustpans, mops, rags, gloves, goggles, cat litter, sand, sawdust and properly Labeled plastic and metal waste containers.
– Spill prevention practices and procedures will be reviewed after a spill and adjusted as necessary to prevent future spills.
– All spills will be cleaned up immediately upon discovery. All spills will be reported as required by local, State and Federal regulations.
– FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITH IN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE EPD WILL BE CONTACTED WITHIN 24 HOURS.
– FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.

The contractor shall notify the licensed professional who prepared this plan if more than 1320 gallons of petroleum is stored onsite (this includes capacities of equipment) or if any one piece of equipment has a capacity greater than 660 gallons. The Contractor will need a Spill Prevention Containment and Countermeasures Plan prepared by that licensed professional.

Product Specific Practices:

Petroleum Based Products – Containers for products such as fuels, lubricants and tars will be inspected daily for leaks and spills. This includes on–site vehicle and machinery daily inspections and regular preventative maintenance of such equipment. Equipment maintenance areas will be located away from state water, natural drains and storm water inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/minmize site contamination. Discharge of oils, fuels and lubricants is prohibited. Proper disposal methods will include collection in a suitable container and disposed as required by local and State regulations.

Paints/Finishes/Solvents – All products will be stored in tightly sealed original containers when not in use. Excess product will not be discharged to the storm water collection system. Excess product, materials used with these products and product containers will be disposed of according to manufacturer's specifications and recommendations.

Concrete Truck Washing – NO concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water onsite.

Fertilizer/Herbicieds – These products will be applied at rates that do not exceed the manufacturer's specifications or above the guidelines set forth in the crop establishment or in the GSWCC Manual for Erosion and Sediment Control in Georgia. Any storage of these materials will be under roof in sealed containers.

Building Materials – No building or construction materials will be buried or disposed of onsite. All such material will be disposed of in proper waste disposal procedures.

INSPECTIONS:

Permittee Requirements.

(1). Each day when any type of construction activity has taken place at a primary permitee's site, certified personnel provided by the primary permittee shall inspect:(a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment and (b) all locations at the primary the site for the evidence of off–site sediment tracking. These inspections must be conducted until a Notice of Termination has been submitted.
(2). Measure rainfall once every 24 hours except and non–working Saturday, non–working Sunday and non–working Federal holiday until a Notice of Termination is submitted. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.
(3). Certified personnel (provided by the primary permittee) shall inspect the following at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or any non–working Saturday, non–working Sunday or any non–working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day , whichever occurs first): (a) disturbed areas of the primary permittee's construction site; (b) areas used by the primary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.a.(4). These inspections must be conducted until a Notice of Termination is submitted.
(4). Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is received by EPD) the areas of the site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible , they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s).
(5). Based on the results of each inspection,the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical but in no case later than seven (7) calendar days following each inspection.
(6). A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5)..of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by end of the second business day and/ or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify an incident, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part V.G.2. of this permit.

5. Maintenance
The Plan shall include a description of procedures to ensure the timely maintenance of vegetation, erosion and sediment control measures and other protective measures identified in the site plan.

6. Sampling Requirements
This permit requires the monitoring of nephelometric turbidity in receiving waters or outfalls in accordance with this permit. This section is applicable to primary permittees with a total planned disturbance equal to or greater than one (1) acre and tertiary permittees with a total planned disturbance equal to or greater that five (5) acres. This section is not applicable to secondary permittees. The following procedures constitute EPD's guidelines for sampling turbidity.

a. Sampling Requirements shall include the following:
(1). A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is equal to or more detailed that a 1:24000 map showing the location of the site or the common development: (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map, and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the storm water is discharged and (b) the receiving water and/or outfall sampling locations. When the permittee has chosen to use a USGS topographic map and the receiving water(s) must be hand–drawn on the USGS topographic map from where the storm water(s) enter the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;
(2). The analytical method used to collect and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each sampling location;
(3). When the permittee has determined that some or all outfalls will be sampled, a rationale must be included on the Plan for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm water fisheries); and
(4). Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the permittee of the information necessary and the timeline for submittal.

b. Sample Type. All sampling shall be collected by "grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by by 40 CFR Part 136 (unless other test procedures have been approved); the guidance document titles "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001" and guidance documents that may be prepared by the EPD.
(1). Sample containers should be labeled prior to collecting samples.
(2). Samples should be well mixed before transferring to a secondary container.
(3). Large mouth, clean and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.
(4). Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. If automatic sampling is utilized, and the automatic sampler is not activated during the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed using a direct reading, properly calibrated turbidimeter. Samples are not required to be cooled.
(5). Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

c. Sampling Points
(1). For construction activities the primary permittee with a total planned disturbance equal to or greater than one (1) acre and tertiary permittee with a total planned disturbance equal to or greater than five (5) acres must sample all receiving waters , or all outfalls, or a combination of receiving water and outfalls. Samples taken for the purpose of compliance with this permit shall be representative of the monitored activity and representative of the water quality of the receiving waters and/or the storm water outfalls using the following minimum guidelines:
(a) The upstream sample for each receiving water(s) must be taken immediately upstream of the confluence of the first storm water discharge from the permitted activity (i.e., the discharge farthest upstream at the site) but downstream of any other storm water discharges not associated with the permitted activity. Where appropriate, several upstream samples from across the receiving waters may need to be taken and the arithmetic average of the turbidity of these samples used for the upstream turbidity value.
(b). The downstream sample for each receiving water(s) must be taken downstream of the confluence of the last storm water discharge from the permitted activity (i.e.,the discharge furthest downstream at the site) but upstream of any other storm water discharge not associated with permitted activity. Where appropriate, several downstream samples from across the receiving waters may need to be taken and arithmetic average of the turbidity of these samples used for the downstream turbidity value.
(c) Ideally the samples should be taken from horizontal and vertical center of the receiving waters or the storm water outfall channels.
(d) Care should be taken to avoid stirring the bottom sediments in the receiving waters or in the outfall storm water channel.
(e) The sampling container should be held so that the opening faces upstream.
(f) The samples should be kept free from floating debris.
(g) Permittees do not have to sample sheet flow that flows onto undisturbed natural areas or areas stabilized by the project. For purposes of this section , stabilized shall mean, for unpaved areas and areas not covered by permanent structures and areas located outside the waste disposal limits of a landfill cell that has been certified by EPD for waste disposal, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscape areas), or equivalent permanent stabilization measures as defined in the Manual (excluding a crop of annual vegetation and seeding of target crop perennials appropriate for the region).
(h) All sampling pursuant to this permit must be done in such a way (including generally accepted sampling methods, locations, timing, and frequency)as to accurately reflect whether storm water runoff from the construction site is in compliance with the standard set forth in Parts III.D.3. or III.D.4., whichever is applicable.

d. Sampling Frequency.
(1) The primary permittee must sample in accordance with Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beginning of any storm water discharge to a monitored receiving water and.or from a monitored outfall within forty–five (45) minutes or as soon as possible..
(2) However, where manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittees control, the permittee shall take samples as soon as possible, but in no case more than twelve (12) hours after beginning of the storm water discharge.
(3) Sampling by the permittee shall occur for the following qualifying events:
(a) For each area of the site that discharges to a receiving water or from an outfall, the first rain event reaches or exceeds 0.5 inch with a storm water discharge that allows for sampling during normal business hours as defined in this permit after all clearing and grubbing operations have been completed, but prior to completion of mass grading operations, in the drainage area of the location selected as the sampling location.
(b) In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a storm water discharge that occurs during normal business hours as defined in the permit either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the sampling location, whichever comes first;
(c) At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed , installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours until the selected turbidity standard is attained, or until post–storm event inspections determine that BMPs ar properly designed, installed and maintained;
(d) Where sampling pursuant to (a), (b) or (c) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a.(6)., or the tertiary permittee, in accordance with Part IV.D.4.c.(6)., must include a written justification in inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (a), (b) or (c) above; and
(e) Existing construction activities , i.e., those that are occurring on or before the effective date of this permit, that must met the sampling required by (a) above shall sample in accordance with (b). Those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as required by (c) above.
*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for sampling at any time of the day or week
(7) Non–storm water discharges. Except for flows from fire fighting activities, sources of non–storm water listed in Part III.A.2. of this permit that are combined with stormwater discharge associated with construction activity must be identified in the Plan. The Plan shall identify and ensure the implementation of appropriate pollution prevention measures for non–storm water components of the discharge.

A. Reporting

1. The applicable permittees are required to submit the sampling results to the EPD at the address shown in Part II.C. by the fifteenth day of the month following the report period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G.2. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.
2. All sampling reports shall include the following information:
a. The rainfall amount, date, exact place and time of sampling or measurements;
b. The name(s) of the certified personnel who performed the sampling and measurements;
c. The date(s) analyses were performed;
d. The time(s) analyses were initiated;
e. The name(s) of the certified personnel who performed the analyses;
f. References and written procedures, when available, for the analytical techniques or methods used;
g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results;
h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU," and
i. Certification statement that sampling as conducted as per the Plan.
3. All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit. The applicable permittees shall retain a copy of the proof of submittal at the construction site or the proof of the submittal shall be readily available at a designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI. If an electronic submittal is provided by EPD then the written correspondence may be submitted electronically; if required, a paper copy must also be submitted by return receipt certified mail or similar service.

F. Retention of Records

1. The primary permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted in accordance with Part VI:
a. A copy of all Notices of Intent submitted to EPD;
b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit;
c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5. of this permit;
d. A copy of all sampling information, results, and reports required by this permit;
e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this permit.
f. A copy of all violation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and
g. Daily rainfall information collected in accordance with Part IV.D.4.a.(2). of this permit.
2. Copies of all Notices of Intent, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) or other reports requested by the EPD, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the date that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the primary permittee's primary place of business once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at anytime upon written notification to the permittee.

STORMWATER SAMPLING
SAMPLE ANALYSIS

Storm water samples are to be analyzed in accordance with methodology and test procedures established by 40 CFR Part 136 and the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001."

Storm water is to be sampled for nephelometric turbidity units (NTU) at the outfall location. A discharge of storm water runoff from disturbed areas where best management practices have not been properly designed, installed, and maintained shall constitute a separate violation for each day on which such condition results in the turbidity of the discharge exceeding 25, the value that was selected from Appendix B in Permit No. GAR100001. The NTU is based upon the disturbed acreage of 17.12 acres for the project site, the surface water drainage area of 1 square miles, and receiving water which supports warm water fisheries.

An "Erosion & Sedimentation Inspection and Maintenance Report" sheet is attached.
Should inspection reveal any deficiencies, a copy of the report shall be sent to:

ATTN: CH REALTY IX–SANSOME I, LLC
3819 MAPLE AVENUE
DALLAS, TX 75219
PHONE

ATTN: Kern & Co.
7 Mall Court
Savannah, GA 31406
912–354–8400

Governing Agency: Georgia Environmental Protection Division
Coastal District – Brunswick Office
One Conservation Way
Brunswick, GA 31520
1–800–241–4113

The design professional who prepared the ES&PC plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation.

DESIGN PROFESSIONAL 7–DAY VISIT CERTIFICATION

DATE OF INSPECTION: _____

I Certify the site was in compliance with the ES&PC Plan on the date of inspection.

_____
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION #

Inspection revealed the following discrepancies from the ES&PC Plan.

_____
_____
_____

These deficiencies must be addressed within two days and a re–inspection scheduled.
Work shall not proceed on the site until design Professional Certification is obtained.

ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED PROFESSIONAL No. 002285 ENGINEER 2/22/22 CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSOON NOTES

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-5

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:21am czittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

SECONDARY PERMITTEES

NOTE: THIS MASTER LIST TO BE COMPLETE AND SIGNED. KEPT IN THE ON SITE CONSTRUCTION TRAILER

SECONDARY PERMITTEE'S SIGN WHEN RECEIVING PLANS. ALL SECONDARY PERMITTEES MUST SUBMIT SECONDARY NOI AT LEAST 14 DAYS PRIOR TO BEGINNING CONSTRUCTION ACTIVITY.

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

APPENDIX B

Nephelometric Turbidity Unit (NTU) Tables

Cold Water (Trout Stream)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	25	50	75	150	300	500	500	500
10.01–25	25	25	50	75	150	200	500	500
25.01–50	25	25	25	50	75	100	300	500
50.01–100	20	25	25	35	59	75	150	300
100.01+	20	20	25	25	25	50	60	100

Warm Water (Supporting Warm Water Fisheries)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	75	150	200	400	750	750	750	750
10.01–25	50	100	100	200	300	500	750	750
25.01–50	50	50	100	100	200	300	750	750
50.01–100	50	50	50	100	100	150	300	600
100.01+	50	50	50	50	50	100	200	100

To use these tables, select the size (arces) of the facility or common development. Then, select the surface water drainage area (square miles). The NTU matrix value arrived at from the above tables is the one to use.

Wed, 09 Mar 2022 - 9:21am - cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

EROSION AND SEDIMENT NARRATIVE NOTES

1. DESCRIPTION: 1 WAREHOUSE, TRAILOR PARKING, EMPLOYEE PARKING, WATER & SEWER SYSTEM, STORM DRAINAGE, AND REQUIRED SOIL EROSION CONTROL.
2. SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION: FOR INFORMATION REGARDING THE SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION PLEASE REFERENCE THE PAVING, GRADING, AND DRAINAGE PLAN, AND THE SOIL EROSION PLAN OF THE CONSTRUCTION DRAWINGS. THE ENTIRE SITE IS COMPOSED OF SOIL TYPE Cc(Cape Fear), Oj(Ocilla Complex), Pj(Pelham Loamy Sand)
3. VEGETATION: THE EXISTING SITE IS CURRENTLY WOODED.
4. EROSION CONTROL PROGRAM: VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER GRADING IS COMPLETED. LAND WILL BE SCHEDULED TO LIMIT EXPOSURE OF BARE SOILS TO EROSION ELEMENTS. STORM WATER MANAGEMENT STRUCTURES WILL BE EMPLOYED TO PREVENT EROSION IN AREAS OF CONCENTRATED WATER FLOWS. EROSION AT THE EXITS OF ALL STORM WATER STRUCTURES WILL BE PREVENTED BY THE INSTILLATION OF STORM DRAIN OUTLET PROTECTION DEVICES. STORM DRAIN OUTLET PROTECTION DEVICES.
5. SEDIMENT CONTROL PROGRAM: SEDIMENT CONTROL WILL BE ACCOMPLISHED BY THE INSTALLATION OF SILT FENCE. A CONSTRUCTION EXIT BE INSTALLED TO PREVENT THE TRANSPORT OF SEDIMENT FROM THE SITE BY VEHICULAR TRAFFIC.
6. STANDARDS AND SPECIFICATIONS: ALL DESIGNS WILL CONFORM TO AND ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE PUBLICATION ENTITLED, "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA".
7. SAFETY PROTECTION: CONSTRUCTION ACTIVITIES WILL BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES AND REGULATIONS.
8. MAINTENANCE PROGRAM: SEDIMENT AND EROSION CONTROL MEASURES WILL BE INSPECTED DAILY. ANY DAMAGES OBSERVED WILL BE REPAIRED BY THE END OF THAT DAY. CLEANOUT OF SEDIMENT CONTROL STRUCTURES WILL BE ACCOMPLISHED IN ACCORDANCE WITH THE SPECIFICATIONS AND SEDIMENT DISPOSAL ACCOMPLISHED BY SPREADING ON THE SITE. BARRIERS WILL REMAIN IN PLACE UNTIL SEDIMENT CONTRIBUTING AREAS ARE STABILIZED. THE SEDIMENT FENCES, AND THE BARRIERS WILL THEN BE REMOVED AND THE AREAS OCCUPIED BY THESE DEVICES WILL THEN BE VEGETATED. GUIDELINES FOR THE MAINTENANCE OF ESTABLISHED VEGETATION WILL BE PROVIDED TO THE OWNER WHEN ALL DISTURBED AREAS ARE STABILIZED.
9. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
10. MAINTENANCE OF ALL SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES, WHETHER TEMPORARY OR PERMANENT, SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE OWNER.
11. "I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."
12. THERE ARE NO STATE WATERS ON OR WITHIN 200' OF THIS SITE. NO WRESTED VEGETATION – NO BUFFER REQUIRED.
13. ALL NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AAS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION WITHOUT FIRST ACQUIREING THE NECESSARY VARIANCES AND PERMITS.
14. THE POINT OF CONTACT FOR CIVIL SITE WORK FOR THIS PROJECT IS:
    KERN & CO., LLC
    P.O. BOX 15179
    SAVANNAH, GA 31416
    912.354.8400
15. DEVELOPER/OWNER/PRIMARY PERMITTEE:
    CH REALTY IX-SAMSONE 1
    3819 MAPLE AVENUE
    DALLAS, TX 75219
    PHONE #:
16. TWENTY-FOUR HOUR CONTACT RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL: SHERRY KERN, KERN & CO., LLC 912-547-8402
17. DRAINAGE FLOWS THROUGH LITTLE HEARST BRANCH AND THEN INTO SAVANNAH RIVER.
18. RUNOFF COEFFICIENT
    PRE DEVELOPED: ?
    POST DEVELOPED: ?
19. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.
20. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD OF GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
21. ALL GRASSING SHALL BE IN ACCORDANCE WITH THE GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 1983 EDITION
22. CONTRACTOR SHOULD BE RESPONSIBLE FOR NOTIFYING THE ENGINEER SEVEN DAYS PRIOR TO CONSTRUCTION. IF CONTRACTOR FAILS TO NOTIFY ENGINEER A $1,000.00 FINE SHOULD BE ACCESSED.
23. HYDRAULIC SEEDING SHALL INCLUDE THE SEED, FERTILIZER, & WOOD CELLULOSE OR WOOD PULP FIBER MULCH WITH WATER. APPLY IN A SLURRY UNIFORMLY OVER THE AREA AT A RATE OF 500 LBS/ACRE.
24. THE OPERATOR WILL ENSURE THAT ALL MEASURES AND FACILITIES FOR CONTROL OF EROSION AND SEDIMENTATION DURING SITE PREPARATION, OPERATION, AND/OR RECLAMATION ACTIVITIES SHALL ADHERE TO THE FOLLOWING:
25. ALL EROSION AND SEDIMENTATION CONTROL MEASURES OR FACILITIES, WHETHER TEMPORARY OR PERMANENT, SHALL BE CONTINUOUSLY MAINTAINED BY THE OPERATOR, SO AS TO BE EFFECTIVE.
26. SEDIMENT IN SURFACE RUNOFF WATER SHALL BE TRAPPED BY USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, SEDIMENT BARRIERS OR SIMILAR STRUCTURES.
27. PERMANENT VEGETATION SHALL BE INSTALLED AS SOON AS POSSIBLE. TEMPORARY VEGETATION AND/OR MULCH SHALL BE EMPLOYED WHERE NECESSARY TO PROTECT EXPOSED CRITICAL AREAS UNTIL PERMANENT VEGETATION OR STABILIZATION IS ATTAINED.
28. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED WHEREVER FEASIBLE TO PROVIDE FOR NATURAL BUFFER AREAS.
29. DIVERSIONS, DIKES, AND BERMS SHALL BE EMPLOYED TO RETAIN, DIRECT AND CONTROL SURFACE WATER RUNOFF FROM AFFECTED AREAS INTO SEDIMENT CONTROL STRUCTURES.
30. ALL SURFACE WATER DISCHARGES SHALL BE CONTROLLED AND RELEASED AT A NON-EROSIVE VELOCITY ONTO STABILIZED AREAS OR INTO STABILIZED CHANNELS.

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED No. 032085 PROFESSIONAL 2/22/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #2
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSION NOTES

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:
SESC-6

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

GEORGIA

UNIFORM CODING SYSTEM

FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM			A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT		Co	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION		Cr	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL			A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNDRAIN STRUCTURE		Dn1	A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE		Gr	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainageways.
Re	RETAINING WALL			A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING		Rt	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER			A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN			A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SKIMMER			A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
Spb	SEEP BERM			Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.

STRUCTURAL PRACTICES

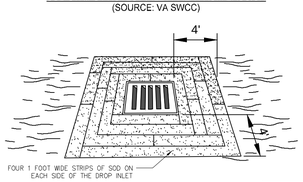
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING		Sr	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		Su	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN		Tc	A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Tp	TOPSOILING		Tp	The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION		Tr	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL			Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf	Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS		Fl-Co	Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)		Sb	The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKIFIERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

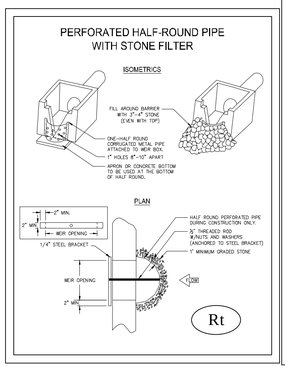
INLET SEDIMENT TRAP

SOD STRIPS PROTECT INLET AREA FROM EROSION
(SOURCE: VA SWCC)



Sd2-F

PERFORATED HALF-ROUND PIPE WITH STONE FILTER

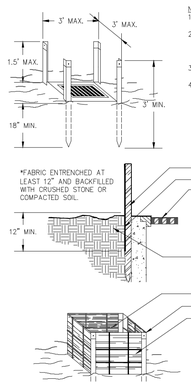


Rt

GaSWCC (Amended – 2013)

FABRIC AND SUPPORTING FRAME FOR INLET PROTECTION

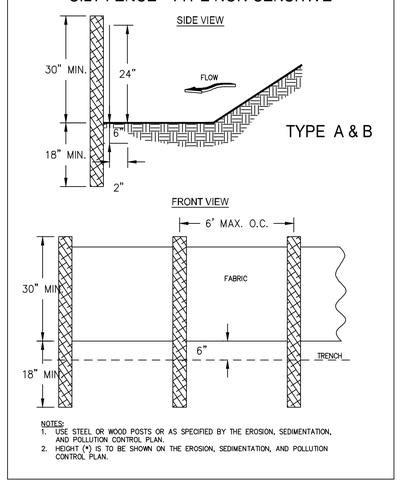
STEEL FRAME AND SILT FENCE INSTALLATION



NOTES:
1. DESIGN IS FOR SLOPES NO GREATER THAN 5% (NOT DESIGNED FOR CONCENTRATED FLOWS).
2. THE STEEL POSTS SUPPORTING THE SILT FENCE MATERIAL SHOULD BE SPACED EVENLY AROUND THE PERIMETER OF THE INLET (MAXIMUM OF 3' APART).
3. THE STEEL POSTS SHOULD BE SECURELY DRIVEN AT LEAST 18" DEEP.
4. THE FABRIC SHOULD BE ENTRENCHED AT LEAST 12" AND THEN BACKFILLED WITH CRUSHED STONE OR COMPACTED SOIL.

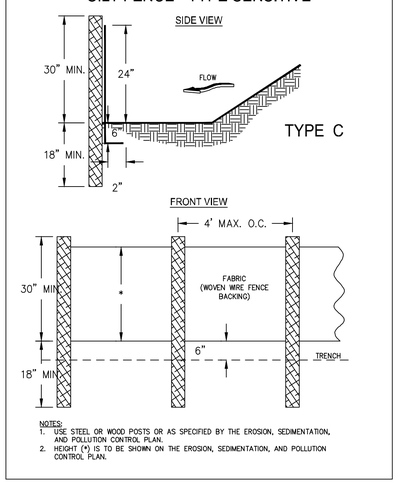
Sd2-F

SILT FENCE - TYPE NON-SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

SILT FENCE - TYPE SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

A PERMANENT VEGETATION USING SODS ON HIGHLY ERODIBLE OR CRITICALLY ERODED LANDS.

- BRING SOIL SURFACE TO FINAL GRADE. CLEAR SURFACE OF TRASH, WOODY DEBRIS, STONES AND CLODS LARGER THAN 1". APPLY SOD TO SOIL SURFACES ONLY AND NOT FROZEN SURFACES OR GRAVEL TYPE SOILS.
- TOPSOIL PROPERLY APPLIED WILL HELP GUARANTEE A STAND. DO NOT USE TOPSOIL RECENTLY TREATED WITH HERBICIDES OR SOIL STERILANTS.
- MIX FERTILIZER INTO SOIL SURFACE. FERTILIZE BASED ON SOIL TESTS OR TABLE 1.

Ds4

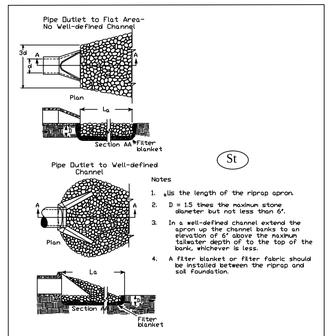
Fertilizer Requirements for soil Surface Application

Fertilizer Type	Fertilizer Type (lbs./acre)	Fertilizer Type (lbs./sq.ft.)	Season
10-10-10	1000	.025	Fall

- AGRICULTURAL LIME SHOULD BE APPLIED BASED ON SOIL TESTS OR AT A RATE OF 1 TO 2 TONS PER ACRE.
- LAY SOD WITH TIGHT JOINTS AND IN STRAIGHT LINES. DON'T OVERLAP JOINTS. STAGGER JOINTS AND DO NOT STRETCH SOD.
- ON SLOPES STEEPER THAN 3:1, SOD SHOULD BE ANCHORED WITH PINS OR OTHER APPROVED METHODS.
- INSTALLED SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE GOOD CONTACT BETWEEN SOD AND SOIL.
- IRRIGATE SOD AND SOIL TO A DEPTH OF 4" IMMEDIATELY AFTER INSTALLATION.
- SOD SHOULD NOT BE CUT OR SPREAD IN EXTREMELY WET OR DRY WEATHER.
- IRRIGATION SHOULD BE USED TO SUPPLEMENT RAINFALL FOR A MINIMUM OF 2-3 WEEKS.

SOD PLANTING REQUIREMENTS

GRASS	VARIETIES	RESOURCE AREA	GROWING SEASON
BERMUDAGRASS	COMMON TIFWAY TIFREEN TIFLAWN	M–L,P,C P,C P,C P,C	WARM WEATHER
BAHIAGRASS	PENSACOLA	P,C	WARM WEATHER
CENTIPEDE	–––	P,C	WARM WEATHER
ST. AUGUSTINE	COMMON BITTERBLUE RALEIGH	C	WARM WEATHER
ZOYSIA	EMERALD MYER	P,C	WARM WEATHER

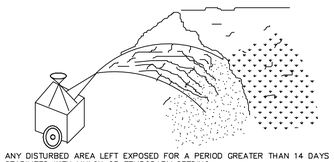


St

Notes
1. La is the length of the riprap apron.
2. D = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the banks, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 6-24.3 – Riprap Outlet Protection (Modified From Va SWCC)

ESTABLISHING TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDINGS ON DISTURBED OR DENUDED AREAS.



ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

- SITE PREPARATION
  - –GRADING AND SHAPING
  - –SEEDBED PREPARATION
  - –APPLY LIME AND FERTILIZER
  - –PLANT SEEDING, SELECT SPECIES BY SEASON AND REGION
  - –APPLY MULCHING MATERIAL IF NEEDED
  - –IRRIGATE IF NEEDED BUT NOT AT RATE TO CAUSE EROSION

*PLANTING DATES DEPEND ON SPECIES AND REGION (MOUNTAIN, PIEDMONT OR COASTAL)

Ds2 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

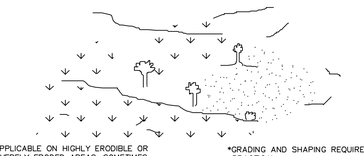
SEEDING RATES FOR TEMPORARY SEEDINGS

SPECIES	RATE PER 1,0000 SQ. FT.	RATE PER ACRESñ	PLANTING DATESô MTS–L'STONE	PIEDMONT	COASTAL
RYEGRASS	0.9 POUNDS	40–50 LBS.	8/1–12/1	8/15–1/1	8/15–3/1
ANNUAL LESPEDEZA	0.9 POUNDS	40 LBS.	3/1–4/1	3/1–4/1	2/1–3/1
WEEPING LOVEGRASS	0.1 POUNDS	4–6 LBS.	3/15–8/1	3/1–8/15	2/15–8/15

* ALL SEEDING NUMBERS ARE ALONE FOR MIXTURE NUMBER SEE MANUAL FOR EROSION AND SEDIMENT TABLE 6–24.1 PAGES 6–134 – 6–136.

ñ UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.
ô SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

Ds3 ESTABLISHING A PERMANENT VEGETATIVE COVER AS A DISTURBED AREA.
- –TO STABILIZE THE SOIL
- –TO REDUCE DAMAGE FROM SEDIMENT AND RUNOFF TO DOWNSTREAM AREAS
- –TO IMPROVE WILDLIFE HABITAT AND VISUAL RESOURCES



*APPLICABLE ON HIGHLY ERODIBLE OR SEVERELY ERODED AREAS, SOMETIMES CALLED "CRITICAL AREAS"

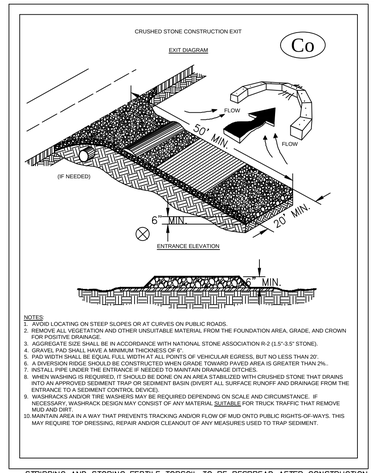
INCLUDING:
- –CUT OR FILL SLOPES
- –EARTH SPILLWAYS
- –BORROW AREAS
- –CHANNEL BANKS
- –BERMS
- –ROADSIDES
- –SPOILS AREAS
- –GULLIED LANDS

*GRADING AND SHAPING REQUIRED WHERE FEASIBLE PRACTICAL
*SEEDED PREPARATION
–NOT REQUIRED IF USING HYDRAULIC SEEDING AND FERTILIZING
–WHEN REQUIRED:

SLOPE	SEEDBED
3:1 OR FLATTER	≥ 4" DEEP
2:1 TO 3:1	1" TO 4" DEEP
2:1 OR STEEPER	DEPRESSION EVERY 6"–8" WITH HAND TOOL

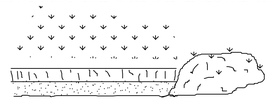
*HAVE SOIL ANALYZED FOR LIME AND FERTILIZER RATE
*MULCH ALL SLOPES STEEPER THAN 3% AND IN BOTTOM OF SPILLWAYS AND ON ROAD BANKS
*ANCHOR MULCH IMMEDIATELY

DISTURBED AREA STABILIZATION (With Permanent Vegetation)



NOTES
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION N-2 (1.5"-3.5" STONE).
4. LENGTH SHALL BE NOT LESS THAN 50' EXCEPT FOR A SINGLE RESIDENCE LOT.
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

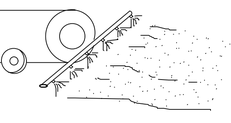
STRIPPING AND STORING FERTILE TOPSOIL TO BE RESPREAD AFTER CONSTRUCTION.



*RECOMMENDED FOR SIDE 2:1 OR FLATTER SLOPES
*TOPSOIL SHOULD BE TESTED TO JUSTIFY STRIPPING
–pH 5.0 TO 7.5
–SOLUABLE SALTS ≤ 500 ppm
*STOCKPILE SHOULD NOT OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE
*RECOMMEND RESPREADING 5" DEEP

Tp TOPSOILING

CONTROLLING DUST AT THE SITE



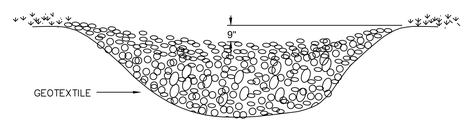
*TEMPORARY METHODS:
–MULCHES
–TEMPORARY VEGETATIVE COVER
–SPRAY ON ADHESIVES
–TELLAGE
–IRRIGATION
–BARRIERS
–CALCIUM CHLORIDE

*PERMANENT METHODS
–PERMANENT VEGETATION
–TOPSOILING
–STONE COVER

*CHEMICAL CONTROL

ADHESIVE	WATER DILUTION	TYPE OF NOZZLE	APPLICATION RATE (GAL/AC)
ANIONIC ASPHALT EMULSION	7:1	SPRAY	1,200
LATEX EMULSION	12 1/2:1	FINE SPRAY	235
RESIN–IN–WATER EMULSION	4:1	FINE SPRAY	300

Du DUST CONTROL ON DISTURBED AREAS



Cd-S STONE CHECK DAM

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK FOR CH REALTY IX - SANSONE I

DRAWING TITLE: EROSION & SEDEMENTATION DETAILS

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO: SESC-7

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and the representations on this drawing may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

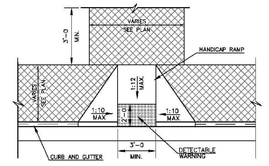
Wed, 02 Mar 2022 - 9:22am cstinsser
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

DETECTABLE WARNINGS ON WALKING SURFACE OF HANDICAP RAMP

DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN (23mm), A HEIGHT OF NOMINAL 0.2 IN (5mm) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN (60mm) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE.

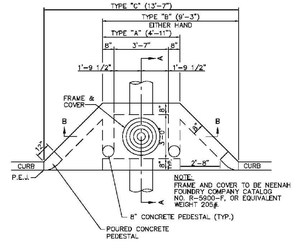
SURFACES SHALL MEET THE ADA ACCESSIBILITY GUIDELINES SECTION 4.29.2.



HANDICAP RAMP TYPE "A"

City of Port Wentworth
TECHNICAL DETAILS
P-4

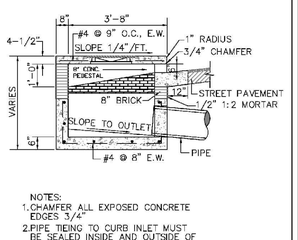
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



PLAN OF CURB INLET

City of Port Wentworth
TECHNICAL DETAILS
SD-1

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



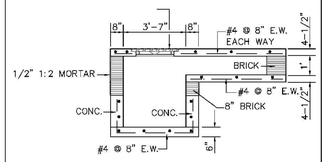
NOTES:
1. CHAMFER ALL EXPOSED CONCRETE EDGES 3/4"
2. PIPE TIEING TO CURB INLET MUST BE SEALED INSIDE AND OUTSIDE OF STRUCTURE WITH BRICK AND MORTAR

CURB INLET SECTION A – A

City of Port Wentworth
TECHNICAL DETAILS
SD-3

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

NOTE:
C.I. MANHOLE FRAME AND COVER EQUIVALENT TO NEENAH R-5900-F. FRAME AND COVER TO BE MACHINE FITTED PRIOR TO LEAVING SHOP. WEIGHT – 205 LBS.

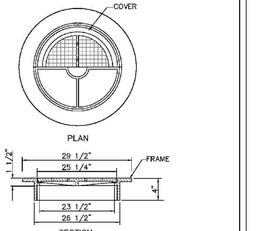


NOTES:
1. MATCH TOP OF PIPE ELEVATIONS WHEN DIFFERENT SIZE PIPES ARE CONSTRUCTED IN CURB INLET.
2. TYPE "B" INLET SHOWN

CURB INLET SECTION B – B

City of Port Wentworth
TECHNICAL DETAILS
SD-4

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

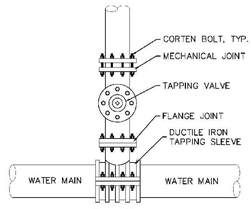


NOTES:
1. FRAME AND COVER TO BE NEENAH FOUNDRY COMPANY CATALOG NO. R-5900-F OR EQUIVALENT WEIGHT 205#.
2. COVER MUST HAVE FOUNDRY STAMP SHOWING THE UTILITY (DRAINAGE).

INLET FRAME & COVER

City of Port Wentworth
TECHNICAL DETAILS
SD-5

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



PLAN VIEW

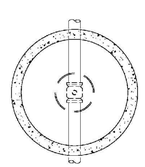
NOTE:
1. TAPPING SLEEVE AND VALVE MUST BE INSTALLED IN A MANHOLE, SEE DWG W-7 FOR THE MANHOLE DETAIL.

STANDARD TAPPING SLEEVE

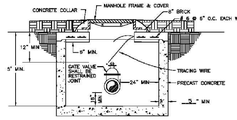
City of Port Wentworth
TECHNICAL DETAILS
W-5

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

NOTES:
1. MANHOLE FRAME AND COVER SHALL BE NEENAH FOUNDRY CO., CATALOG NO. R-1466, TYPE C, LABELED "WATER".
2. THE BOTTOM OF THE MANHOLE FRAME SHALL NOT BE MORE THAN 12" ABOVE THE TOP OF THE MANHOLE STRUCTURE.
3. PRECAST CONCENTRIC CONE RISERS MAY BE USED WHERE REQUIRED FOR DEPTH.
4. THE MANHOLE FRAME AND COVER MUST BE CENTERED OVER THE VALVE.



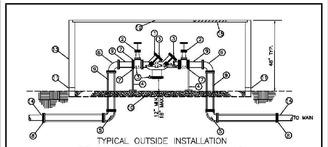
PLAN



VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS
W-14

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



TYPICAL OUTSIDE INSTALLATION
(2", 2 1/2", 3", 4", 6", 8", & 10" SIZES)

MATERIALS

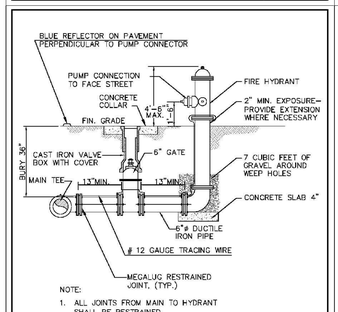
ITEM	QUAN	DESCRIPTION
1	1	REDUCED PRESSURE ZONE DEVICE
2	2	O.S. & Y. RESILIENT GATE VALVES
3	4	TEST COCKS
4	2	3" ISO- 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
5	2	ISO 49 CIP 90° BENDS
6	4	FLANGED 45° CIP 90° BENDS
7	6	FLANGED COUPLING ADAPTER SHALL BE USED FOR 3")
8	1	COPPER STRAINER SCREEN
9		DUCTILE IRON PIPE CIP TO FIT
10	1	4" REX DRAIN, IN BOTTOM OF 37" CIP CONCRETE SLAB
11	2	DRAIN PORTS SIZE ACCORDING TO PIPE SIZE
12		3/16 ALUMINUM TREAD PLATE / WITCH COVER W/ SUPPORTS AS NEEDED
13		BOX-CONCRETE BLOCK, POURED CONCRETE OR PREFABRICATED BOX PER CITY SPECS
14		D.I. OR PVC PIPE
15	2	2" X 2" MIN. HATCH

NOTES:
1. FOR FINAL APPROVAL ASSEMBLY MUST BE CENTERED IN ENCLOSURE OF INSTALLABLE UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED IMMEDIATELY DOWNSTREAM OF METER.
2. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR ANY USE OTHER THAN BACKFLOW DEVICE TESTING.

REDUCED PRESSURE DETECTOR FOR FIRE SYSTEM

City of Port Wentworth
TECHNICAL DETAILS
W-24

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

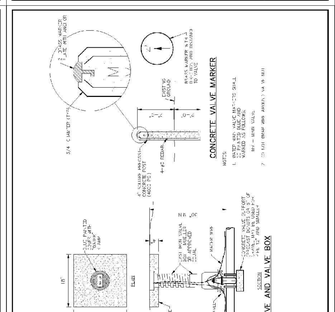


NOTE:
1. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE RESTRAINED.
2. PROTECT BOLTS AND THREADS FROM CONCRETE.

STANDARD FIRE HYDRANT

City of Port Wentworth
TECHNICAL DETAILS
W-9

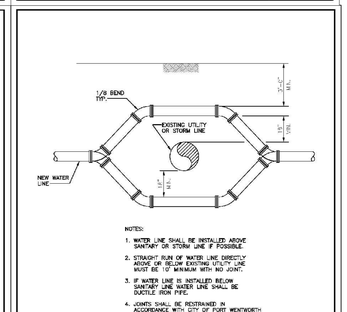
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



WATER VALVE 4" OR 6"

City of Port Wentworth
TECHNICAL DETAILS
W-36

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

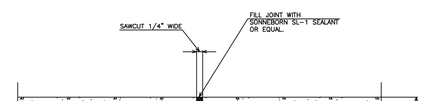


NOTES:
1. WATER LINE SHALL BE INSTALLED ABOVE SANITARY OR STORM LINE IF POSSIBLE.
2. STRAIGHT RUN OF WATER LINE DIRECTLY ABOVE OR BELOW EXISTING UTILITY LINE MUST BE 10' MINIMUM WITH NO JOINT.
3. IF WATER LINE IS INSTALLED BELOW SANITARY LINE WATER LINE SHALL BE DUCTILE IRON PIPE.
4. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

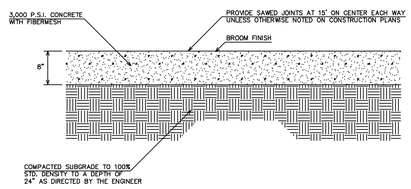
STANDARD UTILITY CROSSING

City of Port Wentworth
TECHNICAL DETAILS
W-6

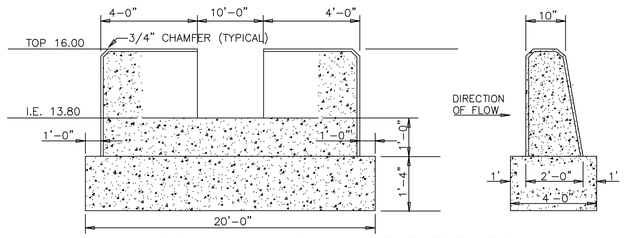
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



JOINT SEALER DETAIL



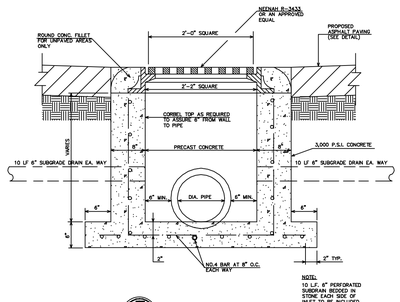
P-19 CONCRETE PAVEMENT



FRONT ELEVATION END ELEVATION

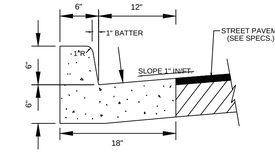
NOTE:

D-26 RETANGULAR WEIR



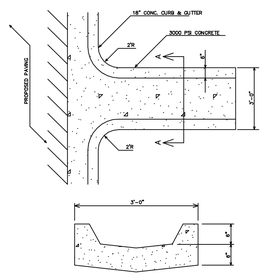
NOTE:
10 L.F. 6" PERFORATED SUBDRAIN BEDDED IN STONE EACH SIDE OF INLET TO BE INCLUDED IN COST OF INLET.

D-5 GRATE INLET



NORMAL GUTTER

P-3 18" CURB AND GUTTER



SECTION A–A

D-21 CONCRETE FLUME

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK FOR CH REALTY IX - SANSONE I

DRAWING TITLE: SITE DETAILS

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO: DET-1

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

COPYRIGHT Kern & Co., LLC © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:22am cstrouser
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

City Council
7224 GA Highway 21
Port Wentworth, GA 31407

SUBMITTED

Meeting: 05/26/22 07:00 PM
Department: Development Services
Category: Planning/Zoning Item
Prepared By: Melanie Ellis
Department Head: Brian Harvey

AGENDA ITEM (ID # 2668)

DOC ID: 2668

Site Plan Review Application submitted by Chad Zittrouer, Kern & Co., LLC., on behalf of CH Realty IV - Sansone, I, LLC., for PIN # 7-0977-01-027 (Hendley Road) for a Specific Development Site Plan to allow a Warehouse / Distribution Center (Legacy Park Building 3) in a P-I-2 (Planned Industrial) Zoning District

Issue/Item: Site Plan Review Application submitted by Chad Zittrouer, Kern & Co., LLC., on behalf of CH Realty IV - Sansone, I, LLC., for PIN # 7-0977-01-027 (Hendley Road) for a Specific Development Site Plan to allow a Warehouse / Distribution Center (Legacy Park Building 3) in a P-I-2 (Planned Industrial) Zoning District

Background: The subject property is currently vacant property. There are no buildings or structures on the subject property.

Facts and Findings: The site plan consist of a 735,000 square foot warehouse / distribution center. The site plan also includes associated parking, utilities, drainage and infrastructure improvements. This project will be served by City of Port Wentworth water and sewer utilities. This application is under review by City Engineers, Thomas & Hutton. This project complies with the 2021-2041 City of Port Wentworth Comprehensive Plan.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, May 9, 2022 at 6:30 PM. **/ UPDATE: THE PLANNING COMMISSION VOTED UNANIMOUSLY TO RECOMMEND TABLING THIS ITEM UNTIL THE CONCERNS OF THE ROAD CLOSURE WAS AGREED UPON.**

ATTACHMENTS:

- LEGACY PARK BUILDING 3 7-0977-01-027 S-SITE PLAN MAY 2022 - Application (PDF)
- LEGACY PARK BUILDING 3 7-0977-01-027 S-SITE PLAN MAY 2022 - Timeline (DOCX)

220188

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application

Site Plan Application is required for all new construction in a "P" or "MPO" zone as defined in the Zoning Ordinance of the City of Port Wentworth.

Site Plan Type (*Check One*): ☐ General / Concept ☒ Specific Development

Site Plan Address: 0 Hendley Road

PIN #(s): 7-0977-01-027

Zoning: P-I-2 Estimated Cost of Construction: $ 33,606,884

Type of Construction: Tilt-Wall Warehouse/Distribution and associated Infrastructure

Project Name: Legacy Park - Building 3

Applicant's Name: Kern & Co., LLC - Chad Zittrouer

Mailing Address: P O Box 15179 - Savannah, GA 31416

Phone #: 912-354-8400 Email: czittrouer@kernengineering.com

Owner's Name (If Different form Applicant): CH Realty IV - Sansone I, LLC

Mailing Address: 120 S Central Ave - St. Louis, MO 63105

Phone #: (314)-336-2372 Email: jbrown@sansonegroup.com

I hereby acknowledge that the above information is true and correct.

Applicant's Signature — Date: 3.25.22

Owner's Signature (If Different form Applicant) — Date: 3.31.22

Please see page 2 for required submittal checklist

City of Port Wentworth
▪7224 Highway 21 ▪ Port Wentworth ▪ Georgia ▪ 31407 ▪ 912-999-2084

Site Plan Review Application Submittal Checklist

Documentation below is required for a complete submittal.

- ☐ Signed and Completed Application
- ☐ 3 Full size sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☐ 15 half size (11" X 17") sets of site plan civil drawings or concept plan (depending on type of site plan)
- ☐ 2 copies of hydrology reports (if applicable)
- ☐ Names, mailing address, and PIN number of all property owners within 250 feet of all property lines
- ☐ 1 8 ½" X 11" of site plan civil drawings or concept plan (depending on type of site plan)
- ☐ PDF of entire submittal on a flash drive or download link ONLY (NO CD'S)
- ☐ Other Engineering details or reports may be required once submittal has been received
- ☐ Site plan review fee check
    - No Land Disturbance- $206.00 Site Plan Fee + $50.00 Admin Fee = Total $256.00
    - With Land Disturbance - $836.00 Site Plan Fee + $50.00 Admin Fee = Total $886.00

Additional Fee Statement: If engineer review cost to the City exceeds the site plan review fee that is paid at the time of initial application submittal, you may be required to pay additional review cost.

I have read and agree to the above additional fee statement

Applicant's Signature

3.25.22
Date

Updated 10/19/2021

CITY OF PORT WENTWORTH
(912) 964-4379

REC#: 00349346 4/01/2022 8:29 AM
OPER: ME TERM: 011
REF#: CK 6851

TRAN: 112.0000 BLDG PERMIT
220188 886.00CR
CH REALTY IV - SANSONE I, LLC
7-0977-01-027
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM

ADJACENT PROPERTY OWNERS

PROPERTY	PIN	OWNER	ADDRESS
1	7-0976-02-021	D.B. ASTER III LLC	250 GILBRALTAR ROAD, HORSHAM, PA 19044
2	7-0037-02-002A	PFJ SOUTHEAST LLC	PO BOX 54650, LEXINGTON, KY 40555
3	7-0037-02-002	PFJ SOUTHEAST LLC	PO BOX 54650 LEXINGTON, KY 40555
4	7-0037-01-043	ENMARK STATION INC	PO BOX 728 SAVANNAH, GA. 31402
5	1-0903-02-013	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
6	1-0903-02-003	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
7	1-0903-05-012	GEORGIA PORTS AUTHORITY	PO BOX 2406 SAVANNAH, GA. 31402
8	7-0979-01-001	MANER, FREDRICK D.	PO BOX 30032 SAVANNAH, GA. 31410
9	7-0979-01-002	ADAMS & DAISE SANDRA D & DARREL M.	26 DEVON DR WEST ORANGE NJ 07052
10	7-0979-01-003	STEELE, ALEXANDER	602 W. 45TH STREET SAVANNAH, GA. 31405
11	7-0979-01-004	WHITE OAK BAPTIST CHURCH	135 MONTEITH ROAD, SAVANNAH, GA. 31407
12	7-0979-01-005	HICKS, FANNIE MAE	143 MONTIETH ROAD, SAVANNAH, GA. 31407
13	7-0979-01-008	UTTERMOST SAVANNNAH LLC	PO BOX 16134 SAVANNAH, GA. 31416
14	7-0977-01-020	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308

15	7-0977-01-019	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
16	7-0977-01-018	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
17	7-0977-01-017	GEORGIA POWER COMPANY	241 RALPH MCGILL BLVD NE, ATLANTA, GA 30308
18	7-0977-01-016	THOMAS, LEON	208 MONTIETH ROAD, SAVANNAH, GA. 31407
19	7-0977-01-015	BRYANT, MAE FRANCES	212 MONTIETH ROAD, SAVANNAH, GA. 31407
20	7-0977-01-014	BRYANT & JONES ROBERT L. & COTEA D.	216 MONTIETH ROAD, SAVANNAH, GA. 31407
21	7-0977-01-013	HURST, WILBERT	220 MONTIETH ROAD, SAVANNAH, GA. 31407
22	7-0977-01-012	STEWART, SHUBERT STEWART THELMA & ROBIN, RUTH & MARION	230 MONTIETH ROAD, SAVANNAH, GA. 31407
23	7-0977-01-011	MOUNT MARIA BAPTIST CHURCH	230 MONTIETH ROAD, SAVANNAH, GA. 31407
24	7-0977-01-010	BODY OF CHRIST CHURCH	201 BIRCH DRIVE, RINCON, GA. 31326
25	7-0977-01-008	UTTERMOST SAVANNAH LLC	PO BOX 16134, SAVANNAH, GA. 31416
26	7-0977-01-024	CZURA WALTER M.	PO BOX 6567, HILTON HEAD, SC 29938
27	7-0977-01-025	CZURA WALTER M.	PO BOX 6567, HILTON HEAD, SC 29938

Owner Certification – Legacy Park – Buildings 2 & 3

I, DAVE WILLIAMS (CH Realty IV – Sansone I, LLC), hereby certify that that all land clearing, construction, land development and drainage will be done according to the approved stormwater management design plan.

3.4.7 Exhibit 4 - Owner/Client Declaration

1. The owner/client will be responsible to maintain and operate the fire system from the tapping valve up to and including the backflow detector check valve assemble, along with the internal fire system.

2. The owner/client has responsibility to operate and maintain the backflow prevention device at subject location, and to include testing on an annual basis of the device as required by the City of Port Wentworth.

CH Realty IV - Sansone I, LLC

Owner/Client Name (Please Print)

Owner/Client Signature

3.31.22

Date

Project Timeline

Project Number: 220188

Project Name: Legacy Park Building 3 Specific Site Plan

Applicant / Engineer: Chad Zittrouer, Kern & Co., LLC

Owner: CH Realty IV – Sansone, LLC

City Review Engineer:

- 3/28/2022 – Application received; incomplete – missing following: PDF, Hydro, Application signed by owner, 15 copies.
- 3/30/2022 – sent email to Chad for missing information.
- 4/1/2022 – received PDF of submittal
- 4/1/2022 – sent to T&H to start a site plan review
- 4/20/2022 – sent an email to T&H for an update on review. Jennifer Roach responded they should have a letter back to us by April 29th.
- 5/6/2022 – Received 1st comment letter from T&H. Forwarded to applicant.
- 5/9/2022 – Planning Commission voted unanimously to recommend tabling this application.
-

THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 | 912.234.5300
WWW.THOMASANDHUTTON.COM

May 6, 2022

Mr. Brian Harvey
Director of Development Services
City of Port Wentworth
305 South Coastal Highway
Port Wentworth, GA 31407

Re: Legacy Park - Building #3
Port Wentworth, Georgia
Site Plan Review
J–25412.0031

Dear Brian:

We have received the site plan for the referenced project submittal. The following information was included in the submittal package:

- Water/Wastewater Availability Request Form
- Wastewater Collection System Checklist
- Water Distribution System Checklist
- Fire Protection Design Requirements
- FIRM Panel Maps
- Flow Test
- Hendley Road Relocation Agreement Executed by Port Wentworth
- Site Drawings of Hendley Road Relocation
- Landfill Certification
- Site Drawings of Legacy Park – Building #3
- Site Plan Review Application
- Approved Jurisdictional Determination #SAS-2005-01056
- Department of the Army Permit #SAS-2005-01056
- Wetland Mitigation Credits Receipt
- Zoning Verification Letter
- Water Distribution System Check List

This site plan review was completed based on our interpretation of the latest City of Port Wentworth zoning ordinance and development regulations. Thomas & Hutton's review was performed in an effort to assess if the application package for the proposed improvements is in general conformance with City of Port Wentworth regulations. Our review shall not be interpreted as a detailed technical analysis of the design or for verification of technical sufficiency for elements of design. Under no circumstances shall our review and comments related to the site plans relieve the Applicant's Design Professional of their professional obligations and professional standards of care. As such, the design submitted by the Applicant's Design Professional shall be the sole responsibility of the Applicant's Design Professional. Thomas & Hutton shall not accept any responsibility for any liability due to design and construction, in whole or in part, for any aspect of the design and construction of design documents.

We have reviewed the submittal package and offer the following comments noted below for consideration.

General Comments

1. The site appears to be zoned Planned Industrial Heavy (P-I-2).

2. According to National Wetland Inventory (NWI) data, there are wetlands located on site. The applicant has provided an Approved Jurisdictional Determination (AJD) as well as a USACE Wetland Impact Permit.

3. The site lies within an Effective FEMA Special Flood Hazard Area Zone X (Unshaded), Area of Minimal Flood Hazard, Zone X (Shaded), Area inundated by the 0.2% annual chance storm event, and Zone AE with a Base Flood Elevation of 12, area inundated by the 1% annual chance storm event, according to FEMA FIRM Panel 13051C0040H, effective August 16, 2018.

4. Please provide an EPD Land Disturbance approval.

5. Please provide an NPDES NOI submittal package per Port Wentworth Comprehensive Design Manual Section 3.3.

6. It appears the proposed development encroaches upon a 50' power line easement owned by Georgia Power Company. Please provide Georgia Power Company encroachment approval.

Stormwater Comments

Pursuant to our interpretation of the City of Port Wentworth Stormwater Management Ordinance (PWSMO) Section 7-79, this project proposes a new development that will involve the creation of 5,000 square feet or more impervious cover. As such, all stormwater provisions apply to this site.

1. It appears the proposed development may encroach fill material upon an area of special flood hazard Zone AE. In accordance with Section 7-54(1) of the Port Wentworth Drainage and Flood Control Ordinance (PWDFCO), provide a demonstration that the cumulative effect of the proposed development will not increase the water surface elevation of the base flood more than one foot at any point within the community, certified by a registered professional engineer. The engineering certification should be supported by technical data that conforms to standard hydraulic engineering principles.

2. Provide all requirements of a stormwater management design plan, including a hydrologic and hydraulic analyses, runoff reduction calculations, a post-construction stormwater management system plan and narrative, certification by the plan preparer, and other required information per Section 7-80(d) and 7-82 of the PWDFCO.

3. Please acknowledge that a stormwater performance bond will be required prior to construction, as listed in Section 7-80(h) of Article III of the PWDFCO.

4. Provide a stormwater management inspection and maintenance agreement plan as prescribed in section 7-80(e) of the PWDFCO.

5. Provide a statement of no adverse upstream or downstream impacts to the existing stormwater system in accordance with Section 3.7.10(7) of the Port Wentworth Comprehensive Design Manual (PWCDM).

6. Provide detail drawings for all stormwater structural practices, specifically a pipe trench and bedding detail, in accordance with Section 7-95(c)(2)(i) of the PWDFCO.

7. Additional stormwater design comments may arise upon submission of the requested requirements.

Water, Fire System, and sanitary Sewer Design Comments

1. Please provide Georgia EPD water/wastewater permits.

2. Complete the provided Water Distribution System Check List (Exhibit 1 in Section 3.4.3 of the Comprehensive Design Manual.) Some comments below expand on the requested information. The following items from the Check List are missing:

    - Water System analysis and design (include calculations)
    - Waterline easement (if applicable)
    - Pipe separated distances called out at utility crossings
    - Maintenance responsibility for fire line and appurtenances in owner/client agreement (Exhibit 3)
    - Irrigation system information
    - Proposed water/sewer agreement

3. Complete the provided Wastewater Collection System Check List (Section 3.5.3 Exhibit 1 in the Comprehensive Design Manual). Some comments below expand on the requested information. The following items from the Check List are missing:

    - Sanitary Sewer profiles
    - City of Port Wentworth pump station design standards used to prepare details
    - Proposed water/sewer agreement

4. Provide typical profiles of proposed utilities and indicate finished grade and existing grade elevations per Section 3.1 of the latest PWCDM.

5. Provide average daily, peak daily, and peak hourly demands based on EPD's "Minimum Standards for Public Water Systems", revised March, 2021.

6. Provide approval from the fire marshal for the fire protection design.

7. Provide hydraulic calculations for the fire main. Provide lead-in locations with isolation valves, fire hydrants, and other appurtenances required by NFPA.

8. Provide hydraulic calculations showing the proposed 6" gravity sewer lateral to the building is appropriate.

9. Provide lengths and slopes of the proposed gravity sewer on the utility plans.

10. Provide supporting calculations showing the existing 12" water main is adequate for the proposed pump station effluent.

11. Provide supporting calculations to prove the existing force main is adequate for the proposed pump station effluent.

12. Provide flow and total dynamic head (TDH) calculations for the grinder pump station and force main.

13. Provide hydraulic calculations to show flows and pressures for the proposed supply main, domestic supply main, and fire supply main to the building under peak hourly and fire flow demand scenarios. Include head losses through backflow preventers, meters, and other appurtenances.

14. Confirm the 10" backflow preventer on sheet C3-2 is adequately sized to handle the total flow, as calculated in the proved ISO fire flow calculations.

15. Provide grinder pump station design calculations with pump curves, as well as details and specifications in accordance with City of Port Wentworth standards. Refer to section 3.5.3(16) of the PWCDM.

16. Provide an updated fire flow test obtaining a minimum of 10% pressure drop, per NFPA 291, Section 4.4.6, 2022 Edition.

17. Provide pump station plan views and section views in accordance with Section 3.1 of the PWCDM. Plan views are to be drawn to scale, and section views are to show pump height.

18. Show on the utility plan the number of single and double services in accordance with Section 3.1 of the PWCDM.

19. In accordance with Section 3.4.2 of the PWCDM, please provide details of service connections, thrust restraints/blocks, and any other proposed appurtenances.

20. Additional water, fire system, and sanitary sewer design comments may arise upon submission of the requested calculations and materials.

Plan Sheets Comments

1. Please revise plans to include wetlands, proposed impacts to wetlands, riparian buffers, floodplains, stands of trees and/or other vegetation, and other applicable information in accordance with Section 7-82(a) of the PWFDCO.

2. Provide existing roadway, including streets of record (recorded but not constructed), names and right-of-way widths in accordance with Section 3.1 of the PWCDM.

3. Confirm that no dry utilities are proposed, including gas, electric, telephone, and TV cable. Refer to Section 3.1 of the PWCDM.

4. Show vertical elevations of areas where major system appurtenances, such as pump stations, manholes, etc., are proposed in accordance with Section 3.1 of the PWCDM.

5. Provide a delineation of disturbed areas within the project boundary in accordance with section 7-95(c)(3)(d) of the PWCoO.

6. The plans appear to be missing contours outside of the proposed stormwater ponds. Please provide contours with an interval in accordance with Section 7-95(c)(3)(e) of the PWCoO.

7. Show the location of erosion and sedimentation control practices using coding symbols from the "Manual for Erosion and Sediment Control in Georgia," Chapter 6 in accordance with Section 7-95(c)(3)(j) of the PWCoO.

8. Provide parking calculations to show the requirements of Article IV Sections 4.10 and 4.10.1 of the Port Wentworth Zoning Ordinance are met.

9. Please clarify on the plans where loading dock areas are proposed, if any. If loading dock areas are proposed as part of this project, ensure that the number of loading spaces is in accordance with Article IV Section 4.11 of the Port Wentworth Zoning Ordinance.

10. Provide a landscaping and irrigation plan in accordance with Section 5.2(4)(b) of the Port Wentworth Zoning Ordinance.

11. Provide screening per Sections 5.2(4)(b), 5.2(4)(f)(5), and 5.2(4)(k) of the Port Wentworth Zoning Ordinance.

12. With the provided landscaping charts and notes, please include who will be responsible for the maintenance of the vegetation at the site and what practices will be employed to ensure adequate vegetative cover is preserved in accordance with Section 7-83(d) of the PWDFCO.

13. Please provide an elevation plan of the proposed structure to ensure that the proposed building meets the height requirements in Section 5.2(4)(d) of the Port Wentworth Zoning Ordinance.

14. In accordance with section 5.2(4)(e) of the Zoning Ordinance, no parking or other vehicular surface shall be closer than twenty (20) feet to a building except in the case of an automobile drop-off, loading area, or vehicular entry to the building. Please revise plans accordingly.

Site Lighting Comments

1. Please provide a site Lighting Plan, if applicable.

Paving, Signage, and Parking Comments

1. Provide all applicable details concerning the parking spaces, both handicap accessible and otherwise.

2. Plans do not appear to specify proposed parking lot material. Please provide callouts to specify material and provide associated details.

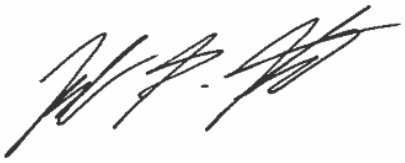
3. Any proposed signage will require a separate permit as outlined in section 19.1-3 of the Port Wentworth Code of Ordinances.

4. A building permit will be required as outlined in Section 7.3, Appendix B of the Port Wentworth Code of Ordinances.

Thank you for your attention to this project. If there are any questions or comments, please feel free to call us at (912) 721-4144.

Sincerely,

THOMAS & HUTTON



Nash Norton

NPN/jar

3.4.4 Exhibit 2 Fire Protection Design Requirements

This exhibit must be submitted for all private development projects that will be served by the City of Port Wentworth public water system.

PROJECT Legacy Park - Building 3 **DATE** 2/15/22

LOCATION Hendley Road

WILL THE PROJECT INCLUDE A SPRINKLER SYSTEM? YES X NO_____

If yes, the system must be designed in accordance with NFPA 13, and the following additional question must be answered:

WILL THE SPRINKLER SYSTEM INCLUDE A BOOSTER PUMP OR THE USE OF CHEMICALS? YES X NO_____

If yes, a reduced pressure zone (RPZ) type backflow preventor must be installed on the water service lateral that will supply the system, in accordance with the City of Port Wentworth specifications and details.

NEEDED FIRE FLOW (NFF):

The Needed Fire Flow (NFF) for a proposed facility must be calculated in accordance with the Insurance Services Office (ISO) "Fire Suppression Rating Schedule", current edition.

The ISO calculation to determine the NFF for a proposed facility considers the construction, occupancy, exposure, and communication of a building or fire division as follows:

Construction Factor (C) :

The portion of the NFF attributed to the construction and area of the proposed building is determined by the following formula:

$C = 18 * F * (A)^{0.5,}$ where

F = Coefficient related to the class of construction:

= 1.5 for Construction Class 1 (Frame)

= 1.0 for Construction Class 2 (Joisted Masonry)

= 0.8 for Construction Class 3 (Non-combustible) and
Construction Class 4 (Masonry Non-combustible)

= 0.6 for Construction Class 5 (Modified Fire Resistive) and
Construction Class 6 (Fire Resistive)

A = Effective Area

Note: Refer to the ISO Fire Suppression Rating Schedule for a detailed description of how to calculate the Construction Factor when the building Construction Class is mixed.

Class of Construction Factor (F): 0.8

Effective Area (A): 735,000 **square feet**

Calculated Construction Factor (C): 12,345 **gallons/minute (gpm)**

A. Occupancy Factor (O):

The portion of the NFF attributed to the occupancy of the proposed building is determined by the following factors:

Occupancy Combustibility Class	Occupancy Factor (O)
C-1 (Non-combustible)	0.75
C-2 (Limited Combustible)	0.85
C-3 (Combustible)	1.00
C-4 (Free Burning)	1.15
C-5 (Rapid Burning)	1.25

Occupancy Factor (O): 1.0

B. Exposures (X) and Communication Factors (P):

The portion of the NFF attributed to exposed and communicating buildings shall be determined in accordance with the ISO Fire Suppression Rating Schedule.

Exposure Factor (X): 0

Communication Factor (P): 0

C. Calculation of Needed Fire Flow (NFF):

The Needed Fire Flow (NFF) for the facility shall be calculated using the following formula:

$NFF = C * O * (X+P)_i$

$(X+P)_i = 1.0 + \bullet^{n}_{i=1}(X_i + P_i)$, maximum 1.75, where n = number of sides of subject building.

12,345 * 0.25 (sprinkled) =

Calculated Needed Fire Flow (NFF): 3,086 **gpm**

3.4.5 Exhibit 3 Available Fire Flow (Aff):

The Available Fire Flow (AFF) must be calculated based on hydrant flow testing and supplemental hydraulic analyses. The AFF will represent the fire flow that is available from the public water system at the existing or proposed hydrant nearest to the proposed facility at a residual pressure of 20 psi.

The following formula, which was developed by the ISO, can be used to adjust data from a hydrant flow test to determine the available fire flow at that location at 20 psi:

$$Q_{20} = Q_t * ((P_s - P_{20})^{0.54})/(P_s - P_t)^{0.54}$$

Q_{20} = Available fire flow at a residual pressure of 20 psi (gpm)
Q_t = Hydrant flow during test (gpm)
P_s = Static pressure measured before hydrant flow test (psi)
P_{20} = 20 psi (desired residual pressure)
P_t = Residual pressure measured during hydrant flow test (psi)

Note: City of Port Wentworth will provide one hydrant flow test at a location selected by the design consultant for no charge, which can be used as the basis for this calculation.

Hydrant Flow Rate During Test (Q_t): 1420 **gpm**

Static Pressure Before Flow Test (P_s): 68 **psi**

Residual Pressure During Flow Test (P_t): 62 **psi**

Calculated Available Fire Flow (AFF): 4365 **gpm**

3.4.6 Hydrant Distribution Summary For Proposed Facility

DISTANCE FROM THE HYDRANT TO THE PROPOSED FACILITY (FEET)	FIRE FLOW CREDIT (GALLONS/MINUTE)
0 TO 300	1,000
301 TO 600	670
601 TO 1,000	250

DISTANCE FROM THE EXISTING AND PROPOSED HYDRANT TO THE PROPOSED FACILITY (FEET)	FIRE FLOW CREDIT (GALLONS/MINUTE)
100	1,000
100	1,000
100	1,000
100	1,000
TOTAL CREDIT (GALLONS/MINUTE):	4,000

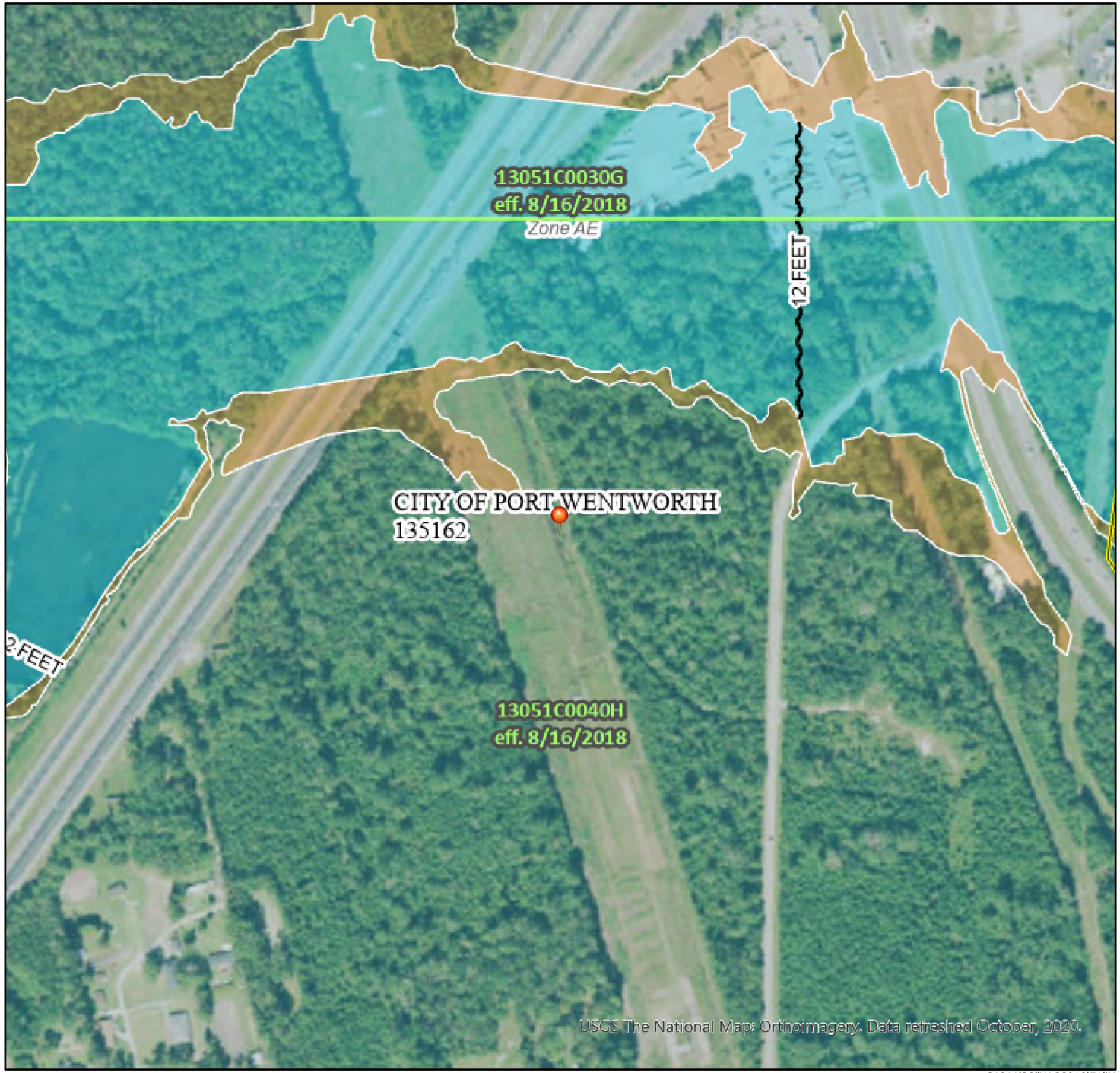
Calculated by: _____

Date: _____

National Flood Hazard Layer FIRMette

FEMA

81°12'7"W 32°11'21"N



81°11'30"W 32°10'51"N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/2/2020 at 6:31 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

81°12'6"W 32°11'10"N

81°11'28"W 32°10'39"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/2/2020 at 6:30 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist

FIRE HYDRANT FLOW TESTS
KERN & CO., LLC PROJECT NO.: 210071.000

Location	Inspector	Date
6941 GA HWY 21 PORT WENTWORTH	JERRY E. TUCKER	4-22-21

Static	Residual	FLOW	G.P.M.	Size of Main	Time
68	62	58	1420		3:00 PM

DESCRIPTION

NOTE: This Flow Test was conducted with 2.5” Pollard Diffuser.

7 Mall Court (31406) ▪ P.O. Box 15179 ▪ Savannah, Georgia 31416 ▪ Phone: (912) 354-8400
319 S. Walnut Street, Suite A ▪ Statesboro, Georgia 30458 ▪ Phone: (912) 225-3373
Fax: (912) 356-1865 ▪ E-mail: info@kernengineering.com ▪ Web: www.kernengineering.com

LANDFILL CERTIFICATION

City of Port Wentworth
7224 GA Hwy 21
Port Wentworth, GA 31407

RE: **LEGACY PARK – BUILDINGS 2 & 3**

City Engineering,

This is to certify that according to the public records of the City of Port Wentworth and/or Chatham County and to all subsurface investigations as we have deemed necessary, none of the sewers, services or any other utilities associated with this project are constructed on or serving structures constructed or proposed to be constructed on solid waste landfills.

Name **Chadwick R. Zittrouer, P.E.** Georgia P.E. No. 32285

Signature

Date January 20, 2022

SEAL

3.5.3 Exhibit 1 - Wastewater Collection System Check List

Typical Wastewater System Plan shall include:	Check Off
1) Layout and legend	X
2) Exhibit 2 completed (load data)	X
3) For effluents with process water, comply with the City's Pretreatment Ordinance.	
4) Show sewer easement (if applicable)	
5) Manholes numbered and placed at 350' (max.) spacing	X
6) Manholes placed at line directional changes	X
7) Manhole frame and invert elevations shown	X
8) Invert elevations shown for all pipe inside manholes	X
9) Minimum gradient of 0.4% used for 8" pipes	X
10) Maximum height of 2' between invert of pipes and invert of discharge manholes	X
11) Minimum angle of 90 degrees for influent lines	X
12) All sanitary sewers profiled	N/A
13) Oil/grease traps and details provided for service station and food service preparers	N/A
14) Grading, paving, drainage, erosion control plans attached	X
15) Attach certification that water and/or sewer lines are not in nor Do they serve structures built upon solid waste landfills	X
16) For pump station design:	
a. Attach design calculations with pump curves	X
b. City of Port Wentworth pump station design standards used to prepare drawings, details and specifications	N/A
17) City of Port Wentworth sewer specifications and details used	X
18) Proposed water/sewer agreement attached	
19) Georgia Registered Professional Engineer stamp and signature	X

3.4.3 Exhibit 1 - Water Distribution System Check List

Typical Water System Plan shall include:	Check Off
1) Layout and legend	X
2) Water System analysis and design (include calculations)	X
3) Show waterline easement (if applicable)	X
4) Pipe separated distances called out at utility crossings	X
5) Isolation Valves	X
6) Valves 8" and larger placed in manholes	X
7) Meters sized and located on plans	X
8) All service connections shown	X
9) Existing and proposed fire hydrants shown	X
10) Fire Flow Demand (Exhibit 2)	
▪ Calculate water need based upon ISO Guidelines	X
▪ Show maintenance responsibility for fire line and appurtenances in owner/client agreement (Exhibit 3)	
▪ Show Backflow Detector Check Assembly	X
▪ If no fire system is proposed, please indicate on the plans	
11) Irrigation System	
▪ Calculate water need based upon system design	
▪ Show size and location of backflow preventor and	
▪ water meter	
▪ If no irrigation system is proposed, please indicate	
▪ on the plans	
12) Attach certification that water lines are not in nor do they serve structures built upon solid waste landfills	X
13) City of Port Wentworth specifications and details used	X
14) Proposed water/sewer agreement attached	
15) Georgia Registered Professional Engineer stamp & signature	X

Appendix A Water/Wastewater Availability

WATER/WASTEWATER AVAILABILITY REQUEST FORM

Date: 3/31/21

A. Owner/Developer CH Realty IV - Sansone I, LLC Phone# 314-336-2372

Address 120 S Central Ave - St. Louis, MO 63105

Contact Person John Brown Phone # 314-504-3111

Address 120 S Central Ave - St. Louis, MO 63105

Engineer Kern & Co., LLC - Chad Zittrouer Phone # 912-354-8400

Development Name Legacy Park - Building 3

B. Development Location 0 Hendley Road

Township, Map & Parcel # (Attach Plat) _____

C. Type of Development (Circle appropriate choice)

Residential Multi-Family Commercial Industrial X Institutional

Number of lots/single family units _____ Building Square Footage _____

Number of multi/family units _____

Type of Business(es) Warehouse/Distribution

Rezoning Required: Yes **No** **Subdivision Required:** Yes **No**

D. ~~Maximum number of employees in 24 hour period _____~~

~~If restaurant, seating capacity _____~~

~~If car wash, number of bays _____~~

~~If Laundromat, number of washers _____ If church, number of seats _____~~

E. **SITE PLANS AND WATER/WASTEWATER USE CALCULATIONS ARE NEEDED FOR FEE QUOTES**

732,500 SF - Warehouse @ 3 GPD / 1,000 SF = 2197.5 GPD

2,500 SF Office - 15 GPD / 200 SF = 187.5 GPD

Total = 2,385 GPD

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SAVANNAH DISTRICT
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3604

December 18, 2020

RLC#: 19-107
Approved JD
Expires: 12/18/2025
RLC PM: Troy Smith
Corps PM: Ross Sullivan

Regulatory Division
SAS-2005-01056

Greenland Developers, LLC
ATTN: Mr. Wilson Burns
Post Office Box 1628
Springfield, Georgia 31329

Dear Mr. Burns:

I refer to a letter dated August 27, 2020, submitted on your behalf by Resource & Land Consultants, requesting an approved Jurisdictional Determination (JD) for your site located at the intersection of Hendley Road and Monteith Road in Port Wentworth, Chatham County, Georgia (Latitude 32.18399, Longitude -81.1949). This project has been assigned number SAS-2005-01056 and it is important that you refer to this number in all communication concerning this matter. Note that a preliminary JD was issued by this office for this site on July 8, 2020.

We have completed an approved JD for the site. Any wetlands on-site were delineated in accordance with criteria contained in the 1987 "Corps of Engineers Wetland Delineation Manual," as amended by the most recent regional supplements to the manual. I have enclosed an "Approved JD Form," which details whether the wetlands present on the site are subject to the jurisdiction of the U.S. Army Corps of Engineers and how the Corps determined jurisdiction.

The approved JD review area is depicted within the bold red polygon labeled as the "AJD Project Area" on the attached exhibit entitled "Figure No. 8 Approximate Aquatic Resources Sketch", dated August 27, 2020. The wetlands (A and C) depicted with yellow crosshatching and labeled as "Non-Adjacent Wetland" on the above referenced exhibit are not waters of the United States and are therefore not within the jurisdiction of Section 404 of the Clean Water Act. The placement of dredged or fill material into non-jurisdictional waters would not require prior Department of the Army authorization pursuant to Section 404.

This approved JD will remain valid for a period of 5-years unless new information warrants revision prior to that date. You may request an administrative appeal for any approved JD under the Corps regulations at 33 Code of Federal Regulations (CFR) Part 331. Enclosed you will find a Notification of Administrative Appeal Options and Process and Request for Appeal form.

The delineation included herein has been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the particular site identified in this request. This

delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

If you intend to sell property that is part of a project that requires Department of the Army Authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report required by Housing and Urban Development Regulation must state whether, or not a permit for the development has been applied for, issued or denied by the Corps (Part 320.3(h) of Title 33 of the CFR).

This communication does not convey any property rights, either in real estate or material, or any exclusive privileges. It does not authorize any injury to property, invasion of rights, or any infringement of federal, state or local laws, or regulations. It does not obviate your requirement to obtain state or local assent required by law for the development of this property. If the information you have submitted, and on which the Corps has based its determination is later found to be in error, this decision may be revoked.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

If you have any questions, please contact Mr. Ross Sullivan, Project Manager, Coastal Branch, via telephone at 912-652-5618 or email at roscoe.l.sullivan@usace.army.mil.

Sincerely,

RUTLIN.WILLIAM.M.1390465064

Digitally signed by RUTLIN.WILLIAM.M.1390465064
Date: 2020.12.18 12:26:44 -05'00'

William M. Rutlin
Chief, Coastal Branch

Copy Furnished: Mr. Troy Smith, Resource and Land Consultants.

Enclosure

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: Greenland Developers, LLC ATTN: Mr. Wilson Burns	File Number: SAS-2005-01056	Date: December 18, 2020
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 C.F.R. § Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. The division engineer must receive this form within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: Mr. Ross Sullivan U.S. Army Corps of Engineers, Savannah District 100 W. Oglethorpe Avenue, Savannah, Georgia 31401 Phone: 912-652-5618 Email: roscoe.l.sullivan@usace.army.mil	If you only have questions regarding the appeal process you may also contact: Mr. Philip Shannin Administrative Appeal Review Officer CESAS-PDS-O 60 Forsyth Street Southwest, Floor M9 Atlanta, Georgia 30303-8803 Phone: (404) 562-5136; Fax: (404) 562-5138 Email: Philip.a.shannin@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

U.S. ARMY CORPS OF ENGINEERS
REGULATORY PROGRAM
APPROVED JURISDICTIONAL DETERMINATION FORM (INTERIM)
NAVIGABLE WATERS PROTECTION RULE

I. ADMINISTRATIVE INFORMATION

Completion Date of Approved Jurisdictional Determination (AJD): 12/18/2020
ORM Number: SAS-2005-01056
Associated JDs: SAS-2005-01056 (PJD issued on 7/8/2020
Review Area Location[1]: State/Territory: Georgia City: Port Wentworth County/Parish/Borough: Chatham
Center Coordinates of Review Area: Latitude 32.18399 Longitude -81.1949

II. FINDINGS

A. Summary: Check all that apply. At least one box from the following list MUST be selected. Complete the corresponding sections/tables and summarize data sources.

- ☐ The review area is comprised entirely of dry land (i.e., there are no waters or water features, including wetlands, of any kind in the entire review area). Rationale: N/A or describe rationale.
- ☐ There are "navigable waters of the United States" within Rivers and Harbors Act jurisdiction within the review area (complete table in Section II.B).
- ☐ There are "waters of the United States" within Clean Water Act jurisdiction within the review area (complete appropriate tables in Section II.C).
- ☒ There are waters or water features excluded from Clean Water Act jurisdiction within the review area (complete table in Section II.D).

B. Rivers and Harbors Act of 1899 Section 10 (§ 10)[2]

§ 10 Name	§ 10 Size		§ 10 Criteria	Rationale for § 10 Determination
N/A.	N/A.	N/A	N/A.	N/A.

C. Clean Water Act Section 404

Territorial Seas and Traditional Navigable Waters ((a)(1) waters):[3]				
(a)(1) Name	(a)(1) Size		(a)(1) Criteria	Rationale for (a)(1) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Tributaries ((a)(2) waters):				
(a)(2) Name	(a)(2) Size		(a)(2) Criteria	Rationale for (a)(2) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Lakes and ponds, and impoundments of jurisdictional waters ((a)(3) waters):				
(a)(3) Name	(a)(3) Size		(a)(3) Criteria	Rationale for (a)(3) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

Adjacent wetlands ((a)(4) waters):				
(a)(4) Name	(a)(4) Size		(a)(4) Criteria	Rationale for (a)(4) Determination
N/A.	N/A.	N/A.	N/A.	N/A.

[1] Map(s)/figure(s) are attached to the AJD provided to the requestor.
[2] If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Rivers and Harbors Act Section 10 navigable waters list, do NOT use this document to make the determination. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Rivers and Harbors Act Section 10 navigability determination.
[3] A stand-alone TNW determination is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established. A stand-alone TNW determination should be completed following applicable guidance and should NOT be documented on the AJD Form.

D. Excluded Waters or Features

Excluded waters ((b)(1) – (b)(12)):[4]				
Exclusion Name	Exclusion Size		Exclusion[5]	Rationale for Exclusion Determination
Wetland A	3.20	acre(s)	(b)(1) Non-adjacent wetland.	Wetland A is not adjacent to any (a)(1)-(a)(3) waters as defined by the NWPR. This wetland does not abut any (a)(1)-(a)(3) waters, is not inundated by any (a)(1)-(a)(3) waters, is physically separated from all (a)(1)-(a)(3) waters and does not have a directed hydrologic surface connection to any (a)(1)-(a)(3) waters in a typical year.
Wetland C	1.98	acre(s)	(b)(1) Non-adjacent wetland.	Wetland C is not adjacent to any (a)(1)-(a)(3) waters as defined by the NWPR. This wetland does not abut any (a)(1)-(a)(3) waters, is not inundated by any (a)(1)-(a)(3) waters, is physically separated from all (a)(1)-(a)(3) waters and does not have a directed hydrologic surface connection to any (a)(1)-(a)(3) waters in a typical year. Wetland C was likely contiguous to Wetland B prior to the construction of Hendley Road. However, there is not a direct hydrologic surface connection through or over Hendley Road.

III. SUPPORTING INFORMATION

A. Select/enter all resources that were used to aid in this determination and attach data/maps to this document and/or references/citations in the administrative record, as appropriate.

☒ Information submitted by, or on behalf of, the applicant/consultant: Approved JD Request dated 8/27/2020

This information is sufficient for purposes of this AJD.
Rationale: N/A

☐ Data sheets prepared by the Corps: Title(s) and/or date(s).
☒ Photographs: Aerial: 1999 and 2018 aerial imagery
☒ Corps site visit(s) conducted on: 9/24/2020
☒ Previous Jurisdictional Determinations (AJDs or PJDs): SAS-2005-01056 (PJD issued 7/8/2020)
☒ Antecedent Precipitation Tool: *provide detailed discussion in Section III.B*.
☒ USDA NRCS Soil Survey: Figure 3
☒ USFWS NWI maps: Figure 4
☒ USGS topographic maps: Figure 2

Other data sources used to aid in this determination:

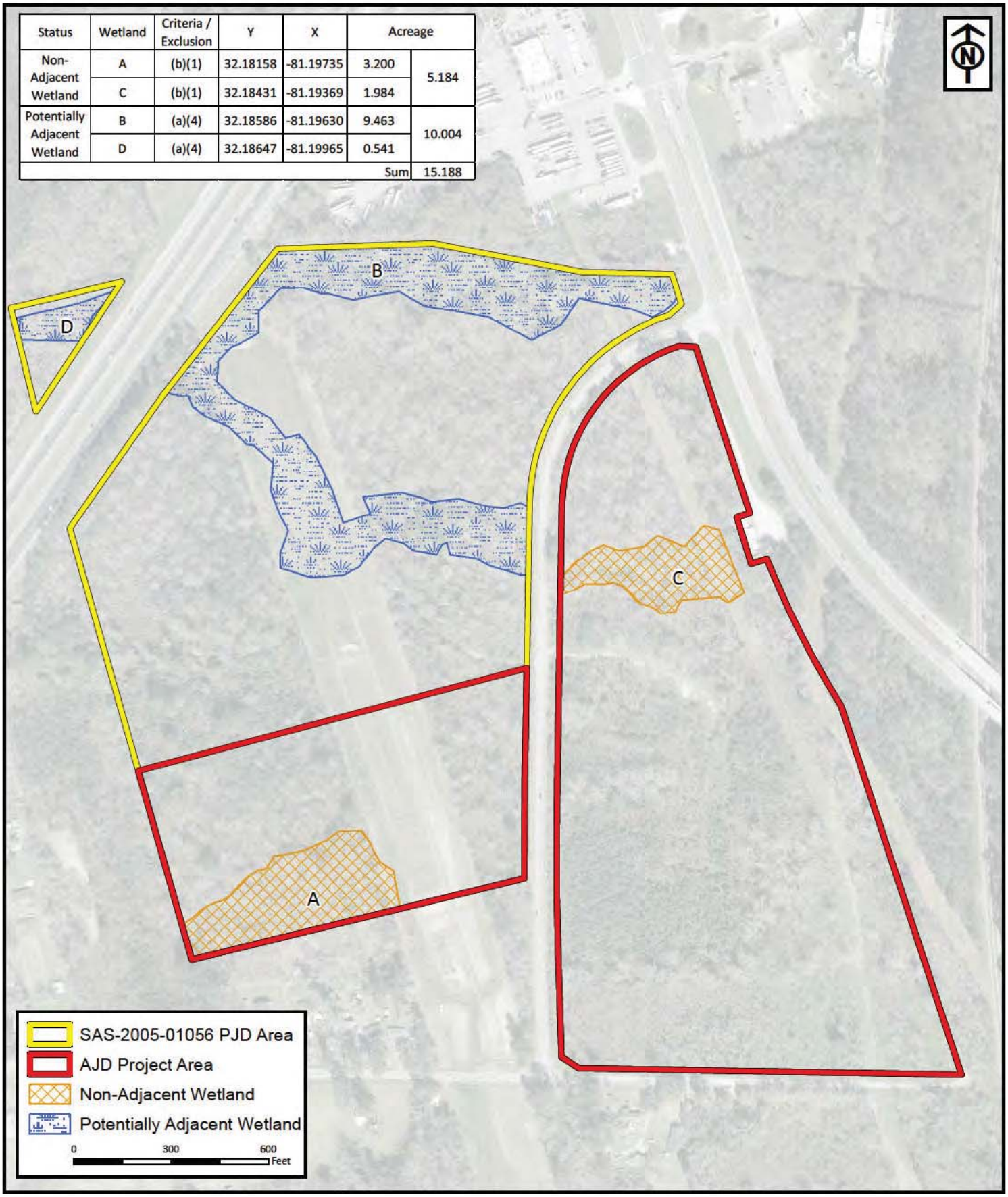
[4] Some excluded waters, such as (b)(2) and (b)(4), may not be specifically identified on the AJD form unless a requestor specifically asks a Corps district to do so. Corps districts may, in case-by-case instances, choose to identify some or all of these waters within the review area.
[5] Because of the broad nature of the (b)(1) exclusion and in an effort to collect data on specific types of waters that would be covered by the (b)(1) exclusion, four sub-categories of (b)(1) exclusions were administratively created for the purposes of the AJD Form. These four sub-categories are not new exclusions, but are simply administrative distinctions and remain (b)(1) exclusions as defined by the NWPR.

Data Source (select)	Name and/or date and other relevant information
USGS Sources	N/A.
USDA Sources	N/A.
NOAA Sources	Figure 6 LiDAR Map
USACE Sources	N/A.
State/Local/Tribal Sources	N/A.
Other Sources	N/A.

B. Typical year assessment(s): Resource & Land Consultants conducted a site visit on 8/6/2020. Using the Antecedent Precipitation Tool Version 1.0, which used rainfall data from the Savannah International Airport weather station, we have determined that normal rainfall conditions were present for the nearest weather station on the date of the site visit as published data was within 30% of the 30 year average.

C. Additional comments to support AJD: N/A

Status	Wetland	Criteria / Exclusion	Y	X	Acreage	
Non-Adjacent Wetland	A	(b)(1)	32.18158	-81.19735	3.200	5.184
	C	(b)(1)	32.18431	-81.19369	1.984	
Potentially Adjacent Wetland	B	(a)(4)	32.18586	-81.19630	9.463	10.004
	D	(a)(4)	32.18647	-81.19965	0.541	
					Sum	15.188



RLC Project No.:	19-107.2
Figure No.:	8
Prepared By:	TS
Sketch Date:	8/27/2020
Map Scale :	1 inch = 400 feet

Hester Farm Place

Chatham County, Georgia

Approximate Aquatic Resources Sketch

Prepared For: Greenland Developers

RLC
RESOURCE + LAND CONSULTANTS
41 Park of Commerce Way, Ste 303
Savannah, Georgia 31405
912.443.5895 www.rlandc.com

Y:\2019 Projects\19-107 Hendley Road Greenland Tracts\graphics\AJD8_Sketch.mxd

Source(s) 2018 Areial Photo, Kern & Co Survey Data

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

DEPARTMENT OF THE ARMY PERMIT

PERMITTEE: CH Realty IX-Sansone I Savannah 21-95, L.P.; Attn: Mr. Blake Roell

PERMIT NUMBER: SAS-2005-01056

ISSUING OFFICE:

Savannah District
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401

NOTE: The term "you" and its derivatives used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate District or Division office of the U.S. Army Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

PROJECT DESCRIPTION: To permanently discharge fill material into 4.52 acres of wetlands for the construction of an industrial warehouse facility with associated infrastructure to include an internal road network, truck court, passenger car parking, utility construction and stormwater management facilities.

PROJECT LOCATION: The project site is located south of the Interstate 95 and Augusta Road intersection, north of Monteith Road and bisected by Hendley Road in the city of Port Wentworth, Chatham County, Georgia (Latitude 32.1839, Longitude -81.1963).

1. PERMIT CONDITIONS:

a. General Conditions.

(1) The time limit for completing the work authorized by this Individual Permit ends on September 30, 2026. If you find that you need more time to complete the authorized activity, you must submit a request for your permit extension at least one month prior to the above date.

(2) You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

(3) If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

(4) If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

(5) If a conditioned Water Quality Certification has been issued for your project, you must comply with conditions specified in the certification as Special Conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

(6) You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

(7) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S. Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States because of any such removal or alteration.

b. Special Conditions

(1) All dredged or borrowed material used as fill in waters of the United States shall be from clean, uncontaminated sources and free from cultural resources. For the purposes these special permit conditions, the term waters of the United States includes all jurisdictional streams, wetlands, open waters, ditches, swales and other conveyance located on the project site.

(2) Unless specifically authorized by this permit, no construction, discharge of fill material, excavation, mechanized land clearing, tree or other vegetation removal, stockpiling of fill material or other work/activity shall occur in waters of the United States.

(3) Prior to any land disturbing activity on the project site, the permittee shall clearly mark all waters of the United States that are authorized to be impacted (impact-

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

waters). Acceptable forms of marking include high visibility orange construction fencing or flagging at eye level, at intervals of 25 feet or less along the entire jurisdictional boundary. Pin flags or other ground level marking is not acceptable. In addition, the permittee shall clearly mark waters of the United States that are not to be impacted (no-impact-waters), if they are located within 50 feet of any construction activities. The boundaries of impact-waters and no-impact-waters shall be marked differently, to ensure that these areas are clearly identifiable to equipment operators. All no-impact-waters marking shall be maintained until the entire project has been completed.

(4) Unless specifically authorized by this permit, borrow pits or sites for stockpiling fill dirt are prohibited within 200 feet of streambanks or within 50 feet of wetlands and open waters to minimize the potential for introduction of sediment into waters of the United States.

(5) Construction debris, uncured concrete, demolition debris, or other waste materials shall not be discharged into streams, wetlands, or other open waters; or placed at sites near such areas, where migration into waters of the United States could be anticipated.

(6) Equipment staging areas and equipment maintenance areas are prohibited within 200 feet of streambanks or within 50 feet of wetlands and other open waters to minimize the potential for wash water, petroleum products, or other contaminants from construction equipment entering waters of the United States.

(7) The permittee shall ensure that all features of the project's master drainage plan, such as drainage ditches, road-side ditches, swales and other storm-water conveyances, are designed and constructed to avoid: drainage of wetlands; diversion of storm-water away from wetlands; and other hydrologic alterations of natural drainage patterns that would adversely impact wetlands. The permittee shall be responsible for any inadvertent and/or unforeseen hydrologic impacts to waters of the United States resulting from alteration of natural drainage patterns. The permittee shall also ensure that secondary road ditches and/or small after-project drainage ditches do not inadvertently impact wetlands or waters of the United States.

(8) The permittee shall minimize bank erosion and sedimentation in construction areas by utilizing Best Management Practices for stream corridors, installing and maintaining significant erosion and sediment control measures, and providing daily reviews of construction and stream protection methods. Check dams and riprap placed in streams and wetlands as erosion control measures are considered a fill and not authorized under this permit unless they were specifically authorized by this permit.

(9) All work conducted under this permit shall be located, outlined, designed, constructed and operated in accordance with the requirements of the Georgia Erosion and Sedimentation Control Act of 1975 (Georgia ESCA), as amended. Utilization of plans and specifications contained in the "Manual for Erosion and Sediment Control,

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

(Latest Edition)," published by the Georgia Soil and Water Conservation Commission, will aid in achieving compliance with the Georgia ESCA.

(10) The permittee shall install and maintain erosion and sediment control measures in upland areas of the project site, in accordance with the Georgia Erosion and Sedimentation Control Act of 1975 to minimize the introduction of sediment into and the erosion of streams, wetlands and other waters of the United States. This permit does not authorize installation of check-dams, weirs, riprap, bulkheads or other erosion control measures in streams, wetlands or other waters of the United States. The permittee shall obtain U.S. Army Corps of Engineers authorization prior to installing any erosion control measures in waters of the United States.

(11) The permittee shall install and maintain erosion and sediment control measures in fill material that is authorized to be discharged in streams, wetlands and other waters of the United States, in accordance with the Georgia Erosion and Sedimentation Control Act of 1975; and permanently stabilize fill areas at the earliest practicable date.

(12) Once the project site is sufficiently stabilized through re-vegetation, the permittee shall remove all silt fencing and other non-biodegradable erosion control measures from stream banks, riparian areas, wetlands and upland areas immediate adjacent to other waters of the United States.

(13) The permittee shall obtain and comply with all applicable Federal, state and local authorizations required for the authorized activity. A stream buffer variance may be required from the Georgia Department of Natural Resources, Environmental Protection Division (Georgia EPD), as defined in the Georgia Erosion and Sedimentation Control Act of 1975. Information concerning variances can be obtained from Georgia EPD on their website at www.gaepd.org, or by calling (404) 463-1463.

(14) If you or your contractors discover any federally listed threatened or endangered species and/or their habitat while accomplishing the activities authorized by this permit, you must immediately STOP work and notify the U.S. Army Corps of Engineers within 24 hours. The U.S. Army Corps of Engineers will contact the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service to determine if the species and/or habitat warrant further consultation.

(15) Prior to the commencement of any permitted construction activity in designated floodplains and/or floodways on the project site, the permittee shall ensure that the activity complies with the applicable rules, requirements and regulations of the regulatory programs administered by the Federal Emergency Management Agency and/or the Georgia Floodplain Management Office; including revision of the National Flood Insurance Program map, if required.

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

(16) This permit does not authorize the interference with any existing or proposed Federal Project and the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein, which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

(17) A copy of this permit, including the approved drawings and plans; special conditions; and any amendments shall be maintained at the work site whenever work is being performed. The permittee(s) shall assure that all contractors, subcontractors, and other personnel performing the permitted work are fully aware of the permit's terms and conditions.

(18) The permittee shall notify the issuing office, in writing (electronic facsimile is acceptable), at least 10 days in advance of their intent to commence work in waters of the United States for the permitted activity. The permittee shall also notify this office, in writing, 30 days after this project is completed using the enclosed Certification of Compliance Form.

(19) All work will be performed in accordance with the following attached exhibit which is incorporated in and made part of the permit: “Wetland Impact Exhibit” sheets EX-1 and EX-2 dated November 25, 2020

(20) Prior to the commencement of any permitted work in aquatic resources for this activity, the permittee shall purchase 25.76 wetland mitigation credits from AA Shaw Mitigation Bank and submit documentation of this credit purchase to the U.S. Army Corps of Engineers. The credit purchase documentation must reference the Corps file number assigned to the permitted project. If all or a portion of the required credits are not available from the AA Shaw Mitigation Bank, the permittee shall obtain written approval from the Corps prior to purchasing credits from an alternate mitigation bank.

(21) Wetland and/or Stream Avoidance/Minimization Areas: The Permittee shall avoid the remaining 5.48 acres of on-site potentially jurisdictional wetland, as detailed on the attached exhibit described in special condition (19). These natural wetland areas were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, agricultural activities, or other construction work whatsoever. The U.S. Army Corps of Engineers reserves the right to deny review of any requests for future impacts to these natural wetland and/or stream areas.

2. FURTHER INFORMATION:

a. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344).

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

b. Limits of this Authorization.

(1) This permit does not obviate the need to obtain other federal, state, or local authorizations required by law.

(2) This permit does not grant any property rights or exclusive privileges.

(3) This permit does not authorize any injury to the property or rights of others.

(4) This permit does not authorize interference with any existing or proposed federal projects.

c. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

(1) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

(2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

(3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

(4) Design or construction deficiencies associated with the permitted work.

(5) Damage claims associated with any future modification, suspension, or revocation of this permit.

d. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

e. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require reevaluation include, but are not limited to, the following:

(1) You fail to comply with the terms and conditions of this permit.

(2) The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

(3) Significant new information surfaces which this office did not consider in reaching the original public interest decision. Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

procedures contained in 33 Code of Federal Regulations (C.F.R.) § 325.7, or enforcement procedures such as those contained in 33 C.F.R. § 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order, which requires you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate.

(4) You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 C.F.R. § 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

f. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the U.S. Army Corps of Engineers will normally consider a request for an extension of time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

DocuSigned by:
D58BC76BB11E423...

(PERMITTEE)

9/14/2021
(DATE)

This permit becomes effective when the federal official, designated to act for the Secretary of the Army, has signed below.

Issued for and in behalf of:
Joseph R. Geary, PhD, PE
Colonel, U.S. Army
Commanding

September 28, 2021
(DATE)

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____
(TRANSFEREE) (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To request the transfer of this permit and the associated liabilities with compliance with its terms and conditions, the permittee and transferee must sign and date below.

_____
(PERMITTEE-Printed Name)

_____ _____
(PERMITTEE-Signature) (DATE)

_____
(TRANSFERREE-Printed Name)

_____ _____
(TRANSFERREE-Signature) (DATE)

By signature below, the U.S. Army Corps of Engineers hereby validates the transfer of the permit from the permittee named above to the transferee named above.

_____ _____
Issued for and in behalf of: (DATE)
Joseph R. Geary, PhD, PE
Colonel, U.S. Army
Commanding

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

Regulatory Division

CERTIFICATION OF COMPLIANCE
WITH
DEPARTMENT OF THE ARMY

PERMIT FILE NUMBER: SAS-2005-01056

PERMITTEE ADDRESS: CH Realty IX-Sansone I Savannah 21-95, L.P., Attn: Mr. Blake Roell, 120 South Central Avenue, Suite 500, St. Louis, Missouri 63105

LOCATION OF WORK: located south of the Interstate 95 and Augusta Road intersection, north of Monteith Road and bisected by Hendley Road in the city of Port Wentworth, Chatham County, Georgia (Latitude 32.1839, Longitude -81.1963)

PROJECT DESCRIPTION: The project will permanently discharge fill material into 4.52 acres of wetland to construct a warehouse facility and associated infrastructure.

ACRES OF WATERS OF THE UNITED STATES IMPACTED: 4.52 acres of wetland

DATE WORK IN WATERS OF THE UNITED STATES COMPLETED: _____

COMPENSATORY MITIGATION REQUIRED: 25.76 wetland credits from the AA Shaw mitigation bank.

DATE MITIGATION PURCHASED (include bank name): _____

Within 30 days of completion of the activity authorized by this permit, sign this certification and return it to the following address:

Commander
U.S. Army Engineer District, Savannah
Attention: Coastal Branch, Regulatory Division
100 West Oglethorpe Avenue
Savannah, Georgia 31401

Please note that your permitted activity is subject to compliance inspection by an U.S. Army Corps of Engineers' representative. If you fail to comply with the permit conditions, it may be subject to suspension, modification or revocation.

I hereby certify that the work authorized by the above referenced permit as well as any required mitigation (if applicable) has been completed in accordance with the terms and conditions of the said permit.

_____ _____
Signature of Permittee Date

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: CH Realty IX-Sansone I Savannah 21-95, L.P.		File Number: SAS-2005-01056	Date: September 28, 2021
Attached is:			See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
X	PROFFERED PERMIT (Standard Permit or Letter of permission)		B
	PERMIT DENIAL		C
	APPROVED JURISDICTIONAL DETERMINATION		D
	PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice .

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appeal able. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

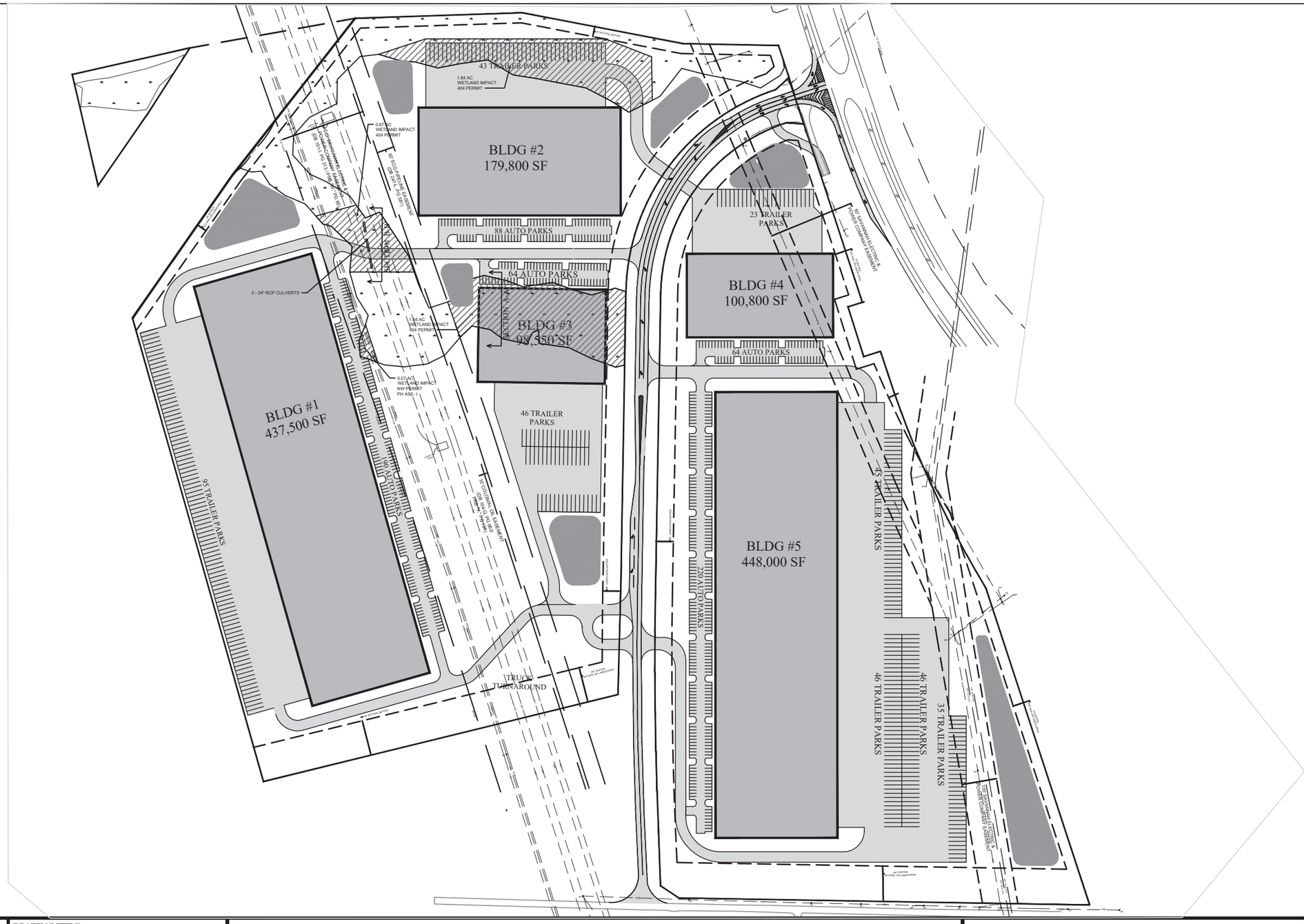
POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Ross Sullivan U.S. Army Corps of Engineers, Savannah District 100 W. Oglethorpe Avenue, Savannah, Georgia 31401 Phone: (912) 652-5618 Email: roscoe.l.sullivan@usace.army.mil	Mr. Philip Shannin Administrative Appeal Review Officer CESAS-PDS-O 60 Forsyth Street Southwest, Floor M9 Atlanta, Georgia 30303-8803 Phone: (404) 562-5136; Fax: (404) 562-5138 Email: Philip.a.shannin@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507



SCALE:	1"=300'
PROJECT NO:	150110.000
DATE:	11/25/20
DRAWN BY:	CRZ
CHECKED BY:	CRZ
SHEET NO:	EX-1

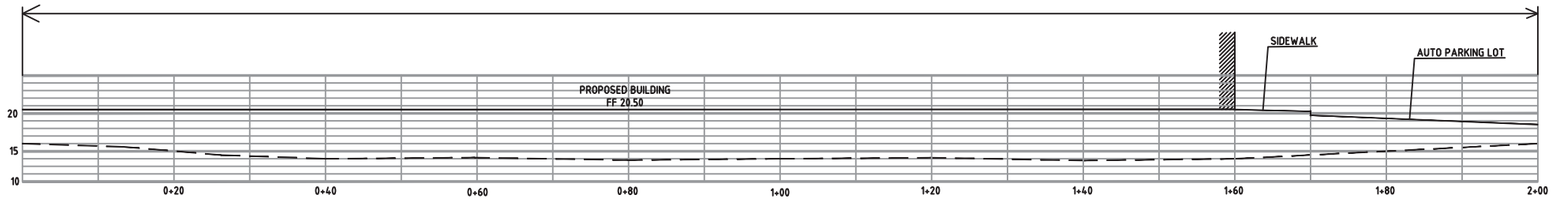
DRAWING TITLE:

WETLAND
IMPACT
EXHIBIT

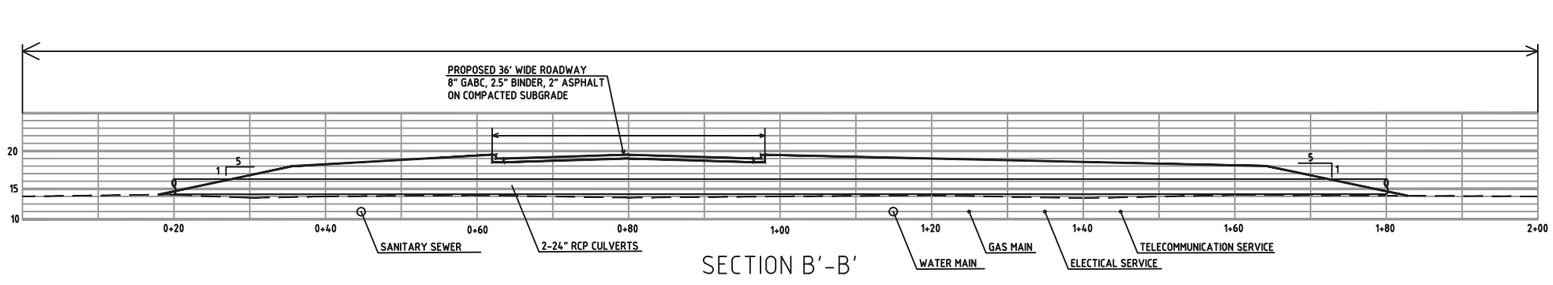
MONTIETH INDUSTRIAL DEVELOPMENT
AT GA HWY 21 / HENDLEY ROAD
PORT WENTWORTH, GA

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) • P.O. Box 15179 • Savannah, Georgia 31416
Phone: (912) 354-8400 Fax: (912) 356-1865 Email: info@kernengineering.com

DocuSign Envelope ID: C4CD7706-7653-4DBC-A85F-A00D196D4507



SECTION A'-A'



SECTION B'-B'

SCALE:	1"=20'
PROJECT NO:	150110.000
DATE:	11/25/20
DRAWN BY:	CRZ
CHECKED BY:	CRZ
SHEET NO:	EX-2

DRAWING TITLE:

WETLAND IMPACT EXHIBIT

MONTIETH INDUSTRIAL DEVELOPMENT AT GA HWY 21 / HENDLEY ROAD PORT WENTWORTH, GA

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) • P.O. Box 15179 • Savannah, Georgia 31416
Phone: (912) 354-8400 Fax: (912) 356-1865 Email: info@kernengineering.com

October 01, 2021

U.S. Army Corps of Engineers
Regulatory Division, Coastal Branch
Attn: Mr. Brian Moore
100 W. Oglethorpe Ave.
Savannah, GA 31401

RE: Credit Sale Statement
AA Shaw Wetland Mitigation Bank (Reg. No.: SAS-2011-00031)

Dear Mr. Moore:

As the authorized agent for AA Shaw, LLC, owner of the AA Shaw Wetland Mitigation Bank, Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) hereby submits this notification of a credit sale to the U.S. Army Corps of Engineers (USACE).

In accordance with the Savannah District's instructions for reporting credit sales, we are providing the following to document a mitigation bank credit sale:

Date of Sale:	October 01, 2021
Dept. of Army File Number:	SAS-2005-01056
Permittee:	CH Realty IX-Sansone I Savannah 21-95, LP
County:	Chatham
Watershed:	03060109
Type of Credits:	Wetland
Number of Credits Sold:	25.76
Project Service Area of Bank:	Primary
Impact Meets Sales Restrictions on Bank:	Yes

Please note, as a condition of the issued Section 404 wetland impact permit for the above referenced project, the AA Shaw Wetland Mitigation Bank was approved for use in satisfying wetland mitigation obligations for this project. Also please find attached hereto an updated credit ledger for the AA Shaw Wetland Mitigation Bank and as always please contact me should you have any questions.

Sincerely,

Hodges, Harbin, Newberry & Tribble, Inc. (HHNT)

Brandon F. Smith, PWS
Sr. Environmental Consultant
Bank Point of Contact

AA Shaw Wetland Mitigation Bank
Credit Sale Ledger

								Wetlands & Stream			
Type	**Jurisdiction**	**Date**	**Credits**	**Permits**	**Credit Classification**	**Impact HUC**	**Impact Quantity**	**TW**	**BoR**	**MP**	**Comment**
Wdr	Federal	9/9/2020	2.72	SAS-2005-01229	Wetlands	03060109		1,279.09	561.11	561.11	Chesterfield, LLC - GA Int. Trade Ctr.
Wdr	Federal	10/5/2020	0.64	SAS-2003-20390	Wetlands	03060109		1,279.73	560.47	560.47	Savannah Indurstrial Development, LLC
Wdr	Federal	10/15/2020	10.00	SAS-2003-20390	Wetlands	03060109		1,289.73	550.47	550.47	Savannah Indurstrial Development, LLC
Wdr	Federal	12/14/2020	14.40	SAS-1991-00500	Wetlands	03060109		1,304.13	536.07	536.07	GDOT - Eff. Pkwy. Squirrel Run Covenant
Wdr	Federal	12/14/2020	153.52	SAS-2011-00953	Wetlands	03060109		1,457.65	382.55	382.55	GDOT - Effingham Parkway
Wdr	Federal	12/31/2020	0.30	SAS-2016-01128	Wetlands	03060109		1,457.95	382.25	382.25	Savannah Mobility Contractors - I95/I16 Imp.
Wdr	Federal	1/22/2021	80.72	SAS-2015-00634	Wetlands	03060109		1,538.67	301.53	301.53	Savannah / Hilton Head Int. Airport - SE Drainage
Wdr	Federal	2/17/2021	1.20	SAS-2018-00099	Wetlands	03060108		1,539.87	300.33	300.33	GDOT - PI# 0013925
Wdr	Federal	6/16/2021	1.80	SAS-2009-00984	Wetlands	03060109		1,541.67	298.53	298.53	Yevoc, LLC
Wdr	State	7/7/2021	3.10	BV-025-21-05	Wetlands	03060109		1,544.77	295.43	295.43	GDOT - PI #0006328
Wdr	Federal	7/21/2021	17.52	SAS-2020-00736	Wetlands	03060109		1,562.29	277.91	277.91	Effingham Co. BOC - Old Augusta/Goshen Conn.
Wdr	Federal	8/16/2021	1.68	SAS-2020-00872	Wetlands	03060106		1,563.97	276.23	276.23	Georgia Power Company
Wdr	Federal	9/9/2021	4.00	SAS-2021-00047	Wetlands	03060109		1,567.97	272.23	272.23	Mungo Homes - Webb Tract
Wdr	Federal	9/21/2021	2.96	SAS-2020-00527	Wetlands	03060109		1,570.93	269.27	269.27	OACC Land Venture, LLC
Wdr	Federal	10/1/2021	25.76	SAS-2005-01056	Wetlands	03060109		1,596.69	243.51	243.51	CH Realty IX-Sansone I Savannah 21-95, LP

TW = Total Withdrawal of Credits; BoR = Balance of Released Credits; MP = Maximum Potential Credits Remaining

AA Shaw, LLC – RECEIPT

Date	Invoice #
10/01/2021	2013162

Bill To:
Mr. John Joseph Brown CH Realty IX-Sansone I Savannah 21-95, LP 120 S. Central Ave., Suite 500 St. Louis, MO 63105

Payable To:
AA Shaw, LLC c/o: Hodges, Harbin, Newberry & Tribble, Inc. (HHNT) Attn: Mr. Brandon Smith 17 Park of Commerce Blvd., Suite 110 Savannah, GA 31405

Reg. Branch No.	**Terms**	**Buyer's Project Name**
SAS-2005-01056	Net 30 days	Montieth Industrial Dev.

Line Item	**Description**	**Quantity**	**Unit Price**	**Amount**
01	Wetland Mitigation Credits	25.76	$55,500.00	$1,429,680.00
			TOTAL Balance	$1,429,680.00
			Amount Received Via Wire Transfer #211001012706 on 10/01/2021	$1,429,680.00
Thank you for your business			**Total Currently Due**	$0.00 – PAID IN FULL

Requested invoice was for compensatory mitigation for wetland impacts associated with the Montieth Industrial Development located in Chatham County, GA. Request for invoice was made by Resource + Land Consultants, Mr. Troy Smith.

CITY OF PORT WENTWORTH

7224 Highway 21 | Port Wentworth, Georgia 31407
Phone (912) 964-4379 | Fax (912) 966-7429
www.cityofportwentworth.com

ELECTED OFFICIALS

MAYOR
Gary Norton

COUNCIL MEMBERS
Thomas Barbee, At-Large
Lynwood Griner, District 3
Donald Hodges, District 1
Glenn Jones, District 4
Linda Smith, At-Large
Mark Stephens, District 2

INTERIM CITY MANAGER
Phil Jones

28 October, 2020

RE: Zoning Verification for PIN(s): 7097701027, 7097701028, 7097702002

To Whom It May Concern,

According to City records, the property located in the vicinity of Hendley Drive, Monteith Road, and GA Highway 21, Port Wentworth, Georgia 31407 and identified as PIN(s): 7097701027, 7097701028, and 7097702002 is currently zoned P-I-2 (Planned Industrial). To the best of my knowledge, there are no outstanding or pending planning, zoning, or building related issues associated with the subject property, and the conceptual plan submitted for review with the rezoning application has been approved by the Port Wentworth City Council.

Sincerely,

J. Brian Harvey, CBO, CFM
Director of Development Services
City of Port Wentworth, Georgia

SITE DRAWINGS OF

LEGACY PARK - BUILDING #3

FOR

CH REALTY IX - SANSONE I, LLC

PORT WENTWORTH, GA

KC PROJECT #:210071.000

FEBRUARY 2022

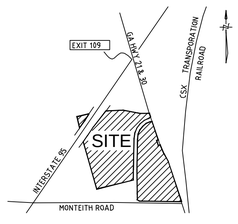
NOT FOR CONSTRUCTION

RELEASED FOR CONSTRUCTION

DATE: _____ BY: _____

NRCS REVISION DATE:

VICINITY MAP:



VICINITY MAP

PROJECT PREPARED BY:

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

INITIAL APPROVAL BY GOVERNING AGENCY DATE:

REVISIONS

REV NO.	DATE	DESCRIPTION	SHEETS

PROJECT SITE DATA:

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

INDEX OF DRAWINGS:

	COVER SHEET		
N1	GENERAL NOTES		
EX1	EXISTING CONDITIONS		
EX2	EXISTING CONDITIONS		
SESC -1	INITIAL EROSION PLAN		
SESC-2	INTERMEDIATE EROSION PLAN		
SESC-3	FINAL EROSION PLAN		
C1	STAKING PLAN		
C2	PAVING, GRADING & DRAINAGE PLAN		
C3	UTILITY PLAN		
SESC-4	EROSION NOTES		
SESC-5	EROSION NOTES		
SESC-6	EROSION NOTES		
SESC-7	SOIL EROSION & SEDIMENTATION CONTROL DETAILS		
DET-1	SITE DETAILS		

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern-Coleman & Co. LLC.

SESC NOTES

SESC NOTES:

1. ALL NEW DISTURBED AREAS WILL BE GRASSED BY SEEDING OR SPRIGGING AS TEMPORARY STABILIZATION. ALL PERMANENT GRASS SHALL BE SOD.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING ALL EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
3. CONTRACTOR SHALL PROVIDE DUST CONTROL OF ALL DISTURBED AREAS BY THE USE OF WATER AND FAST GROWING, TEMPORARY VEGETATIVE ON ALL STOCKPILED SOILS.
4. CONTRACTOR WILL PROVIDE A CONSTRUCTION SCHEDULE INCLUDING ALL EROSION AND SEDIMENT CONTROL MEASURES.
5. CONTRACTOR SHALL PROVIDE 1.5"–3.5" STONE 6" THICK, 50' MIN. LONG BY 20' MIN. WIDE AT ALL CONSTRUCTION EXITS TO MINIMIZE TRANSPORT OF SOIL FROM SITE BY VEHICLE WHEELS.
6. ALL EXISTING INLETS AND DITCHES SUBJECT TO STORM WATER RUNOFF FROM THE SITE AND ALL NEW INLETS SHALL BE PROVIDED WITH HAY BALES SILT CARRIERS TO MINIMIZE SOIL TRANSPORT OFF SITE BY STORM WATERS.
7. ALL CONSTRUCTION WILL BE IN ACCORDANCE WITH THE GOVERNING AGENCY'S, STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS (AVAILABLE FROM THE CITY OF SAVANNAH'S WEBSITE) AND THE SPECIFICATIONS, NOTES AND DETAILS ON THESE DRAWINGS.
8. TESTING – COORDINATE ALL TESTING AS REQUIRED IN THE SPECIFICATIONS. PROVIDE ENGINEER WITH COPY DIRECT FROM TESTING LAB.
9. CONTRACTOR SHALL MAINTAIN SITE ON A DAILY BASIS TO PROVIDE FOR POSITIVE DRAINAGE. CONTRACTOR, AT HIS COST, SHALL GRADE SITE AND PROVIDE NECESSARY TEMPORARY DRAINAGE SWALES TO INSURE STORM WATER DOES NOT POND ON SITE.
10. PRIOR TO CONSTRUCTION, ALL BUILDING AREAS, PLUS 10 FEET ON EACH SIDE AND ALL AREAS TO BE PAVED, SHOULD BE STRIPPED OF ALL VEGETATION, TOP SOIL AND ROOT SYSTEMS.
11. SITE DRAINAGE SHALL BE ESTABLISHED TO PREVENT ANY PONDED WATER CONDITIONS WITHIN THE CONSTRUCTION AREA AND TO FACILITATE THE RAPID RUN–OFF OF STORM WATER.
12. ANY STUMP HOLES OR OTHER DEPRESSIONS SHOULD BE CLEARED OF LOOSE MATERIAL AND DEBRIS AND SHOULD THEN BE BACK FILLED WITH APPROVED FULL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557. TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
13. ANY UTILITIES THAT UNDERLIE THE SITE SHOULD, UNLESS NOTED OTHERWISE, BE RELOCATED AND THE TRENCHES BACK FILLED WITH APPROVED SOIL. THE BACK FILL SHOULD BE PLACED IN SIX INCH MAXIMUM LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
14. THE SUBGRADE SHOULD BE PROOF ROLLED WITH A LOADED DUMP TRUCK TO LOCATE UNSTABLE OR SOFT AREAS. THESE AREAS SHOULD THEN BE INVESTIGATED TO DETERMINE THE CAUSE OF THE INSTABILITY. IF DUE TO UNSUITABLE SOIL, SUCH AS HIGHLY ORGANIC SOILS OR SOFT CLAYS, THE AREA SHOULD BE UNDERCUT TO A FIRM SOIL AND REPLACED WITH APPROVED FILL COMPACTED IN SIX INCH LIFTS TO MINIMUM DENSITY OF 95% IN ACCORDANCE WITH ASTM–D–1557. IF THE INSTABILITY IS DUE TO EXCESS MOISTURE IN OTHERWISE SUITABLE SOIL, THE AREA SHOULD BE DRAINED AND COMPACTED TO 95% DENSITY. ANY FILL REQUIRED TO LEVEL OR RAISE THE SITE SHOULD THAN BE PLACED IN 6" THICK LOOSE LIFTS AND COMPACTED TO 95% DENSITY IN ACCORDANCE WITH ASTM–D–1557.
15. ALL OF THE FILL FOR THIS PROJECT SHOULD CONSIST OF A CLEAN, FREE DRAINING SAND WITH A MAXIMUM OF 15% FINES. THE FILL SHOULD BE FREE OF OBJECTIONABLE ROOTS, CLAY LUMPS AND DEBRIS.
16. ANY FOOTING EXCAVATIONS THAT ARE DIRECTLY ADJACENT TO THE EXISTING FOUNDATIONS SHOULD BE DONE IN SMALL INCREMENTS TO AVOID UNDERMINING THEM AND CAUSING A LOSS OF SUPPORT TO THE EXISTING STRUCTURE. IF NECESSARY, THE EXCAVATIONS SHOULD BE SHEETED AND BRACED OR THE SOIL IN THE AFFECTED AREA SHOULD BE STABILIZED BY GROUTING.
17. THE FOOTING EXCAVATIONS AND ALL OF THE PREPARED SLAB UPGRADE SHOULD BE MAINTAINED IN A DRY AND COMPACTED CONDITION UNTIL THE CONCRETE IS PLACED. AREAS THAT ARE SOFTENED BY WATER OR BY CONSTRUCTION ACTIVITY BEARING, SHOULD BE REWORKED AND RECOMPUTED TO THE REQUIRED DENSITY AND BEARING.
18. MOISTURE CONTENT SHALL BE AT OR BELOW OPTIMUM.
19. ALL CONSTRUCTION WITHIN THE CITY'S RIGHT–OF–WAY WILL REQUIRE AN ENCROACHMENT PERMIT FROM PUBLIC WORKS DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THIS PERMIT PRIOR TO CONSTRUCTION.
20. ALL CONSTRUCTION SHALL CONFORM TO GOVERNING AGENCY'S TECHNICAL SPECIFICATIONS AND STANDARD CONSTRUCTION DETAILS.
21. THE DETENTION BASINS SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND GRADING TO HELP PREVENT THE LOSS OF SEDIMENT FROM THE SITE. THE CONTRACTOR SHALL CLEAN OUT ANY SEDIMENT DEPOSITED IN THE BASINS DURING THE CONSTRUCTION PERIOD SO THAT THE SPECIFIED WATER DEPTH AT NORMAL POOL IS MAINTAINED; THE CONTRACTOR MAY OVER EXCAVATE THE BASINS TO ACCOMPLISH THIS, IF DESIRED, AT THIS OWN EXPENSE AND WITH THE CONCURRENCE OF THE ENGINEER.
22. SEDIMENTATION BASIN SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK.

WATER & SEWER

WATER – SEWER NOTES:

1. FOR ALL WATER, SANITARY SEWER LINES AND STORM DRAINAGE INSTALLATION, CALL – ONE CALL UTILITIES PROTECTION CENTER BEFORE YOU DIG DIAL 811 OR 1–800–282–7411. WWW.GEORGIA811.COM CALL 3 WORKING DAYS BEFORE YOU DIG.
2. IN ADDITION TO THE SEDIMENTATION AND EROSION CONTROL MEASURES AS INDICATED ON THE PLANS THE CONTRACTOR SHALL TAKE WHATEVER ACTIONS AS ARE NECESSARY TO ENSURE THAT ALL SEDIMENTATION IS CONFINED TO THE SITE AND THAT NO OFFSITE EROSION IS CAUSED BY THE WORK EITHER DIRECTLY OR INDIRECTLY.
3. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYSTEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.
4. PIPE, FITTINGS, VALVES AND OTHER ACCESSORIES SHALL, UNLESS OTHERWISE DIRECTED, BE UNLOADED AT THE POINT OF DELIVERY, AND STORED WHERE THEY WILL BE PROTECTED AND WILL NOT BE HAZARDOUS TO TRAFFIC. THEY SHALL AT ALL TIMES BE HANDLED WITH CARE TO AVOID DAMAGE. THE INTERIOR OF ALL PIPE, FITTINGS AND OTHER ACCESSORIES SHALL BE KEPT FREE FROM DIRT AND OTHER FOREIGN MATTER AT ALL TIMES.
5. ANY DEFECTIVE, DAMAGED OR UNSOUND PIPE SHALL BE REJECTED. ALL FOREIGN MATTER OR DIRT SHALL BE REMOVED FROM THE INSIDE OF THE PIPE BEFORE IT IS LOWERED INTO ITS POSITION IN THE TRENCH AND IT SHALL BE KEPT CLEAN BY APPROVED MEANS DURING AND AFTER LAYING. CARE SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE JOINT SPACE. AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY APPROVED MEANS AND NO TRENCH WATER SHALL BE PERMITTED TO ENTER THE PIPE.
6. CLEAN THE INTERIORS OF ALL PIPE BY WASHING OUT ALL DIRT BEFORE LAYING.
7. FLUSH THE NEW PIPE LINES UNTIL WATER RUNS CLEAR AT THE END OF ALL MAINS AND LATERALS. THIS SHOULD BE DONE AFTER THE PRESSURE TEST AND BEFORE DISINFECTION. A MINIMUM TIME OF 2 MINUTES AND UNTIL THE WATERMAIN RUNS CLEAR IS REQUIRED IN ORDER TO PURGE THE LINE OF ANY FOREIGN MATERIALS.
8. DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, AR APPROVED EQUAL, WILL BE USED TO FORM A WATER TIGHT SEAL AT BOTH ENDS OF THE LINE BEING LAID.
9. MAINTAIN A MINIMUM OF EIGHTEEN (18") INCH VERTICAL SEPARATION DISTANCE BETWEEN ALL WATER LINE/LATERALS AND ALL STORM DRAIN LINES AND SANITARY SEWER LINES/LATERALS.
10. IF AN IRRIGATION SYSTEM IS PROPOSED FOR SUBJECT DEVELOPMENT, COMPLY WITH THE FOLLOWING REQUIREMENTS BEFORE ANY CONNECTION TO THE CITY WATER SYSTEM:
    (A) SUBMIT PLANS AND SPECIFICATIONS FOR SUBJECT IRRIGATION SYSTEM.
    (B) INSTALL AN APPROVED BACKFLOW PREVENTOR ON THE IRRIGATION SYSTEM.(C) METER THE IRRIGATION SYSTEM IN ACCORDANCE WITH THE GOVERNING AGENCY'S SPECIFICATIONS.
    (D) RESTRAIN ALL CRITICAL BENDS AND CONNECTIONS.
    (E) PROVIDE ERU CALCULATIONS FOR THE IRRIGATION SYSTEM
11. ALL WATER USED FOR CONSTRUCTION SHALL BE METERED THROUGH AN APPROVED BACKFLOW PREVENTION DEVICE AND FIRE HYDRANT METER OBTAINED FROM THE GOVERNING AGENCY'S WATER OPERATION DEPARTMENT.
12. ALL CONNECTIONS TO EXISTING MANHOLES SHALL BE DONE BY THE CORE DRILL METHOD.
13. THE WATER SERVICE LATERAL SERVING THE FACILITY SHALL BE INSTALLED BY THE DEVELOPER/CONTRACTOR FROM THE WATER MAIN TO THE METERS. THE PUBLIC WORKS DEPARTMENT WILL ONLY MAKE THE WET TAP. THE GOVERNING AGENCY WILL NOT INSTALL THE WATER SERVICE LATERAL.
14. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL CERTIFICATIONS OF BACKFLOW DEVICES TO THE ENGINEER.
15. ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE GOVERNING AGENCY'S LATEST CONSTRUCTION SPECIFICATION AND DETAILS.
16. LOCATE HIGHPOINT OF WATERMAIN AND INSTALL AIR RELIEF VALVE TO FACILITATE AIR REMOVAL FROM WATERMAIN.
17. AN APPROVED WATER SUPPLY FOR FIRE PROTECTION, EITHER TEMPORARY OR PERMANENT, SHALL BE MADE AVAILABLE AS SOON AS COMBUSTIBLE MATERIAL ARRIVES ON THE SITE.
18. CONTRACTOR TO VERIFY ALL INVERT ELEVATIONS OF SANITARY SEWER LATERALS PRIOR TO CONSTRUCTION. NOTIFY ENGINEER WITH INVERT DATA TO INSURE THERE ARE NO CONFLICTS.
19. SEE ARCHITECTURAL PLUMBING PLAN FOR EXACT TIE LOCATION & LINE SIZES.
20. ALL WATER METERS AND STRAINERS SHALL BE PURCHASED FROM THE CITY.
21. THE INDIVIDUAL REQUESTING WATER SERVICE SHALL BE RESPONSIBLE FOR EXCAVATION, TAPPING, AND BACKFILLING THE WATER MAIN FROM WHICH THE SERVICE IS REQUIRED.
22. ALL MATERIAL USED FROM TAP TO DISCHARGE PIPE SHALL BE M.J. DUCTILE IRON, RESTRAINED JOINT, INCLUDING BY–PASS.
23. ALL VALVES 4–INCHES OR LARGER SHALL BE INSTALLED IN A MANHOLE, FOR THE TAPPING VALVE ONLY.
24. ALL TAPPING SLEEVES SHALL BE DUCTILE IRON, MJ, AND PRESSURE TESTED AT 150 PSI FOR A MINIMUM OF ONE HOUR WITH A PRESSURE LOSS NO GREATER THAN 1 PSI.
25. THE GOVERNING AGENCY'S WATER DEPARTMENT SHALL INSPECT THE PRESSURE TEST, IF THE CITY DOES NOT INSPECT THE PRESSURE TEST, THE CITY WILL NOT ACCEPT ANY RESPONSIBILITY OF MAINTENANCE FOR THE TAPPING VALVE OR SLEEVE.
26. THE TAPPING GATE VALVE SHALL BE RESILIENT SEAT, EPOXY COATED, M.J. BY FLANGE, DOMESTIC MADE.
27. ALL MATERIAL USED AND WHICH COMES IN CONTACT WITH DRINKING WATER DURING ITS DISTRIBUTION SHALL NOT ADVERSELY AFFECT DRINKING WATER QUALITY OR PUBLIC HEALTH. MATERIALS MUST BE CERTIFIED FOR CONFORMATION WITH AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION STANDARD 61 (ANSI/NSF STANDARD 61).
28. BACKFLOW PREVENTOR, VALVES AND POST INDICATOR VALVES FOR FIRE SPRINKLER SYSTEMS SHALL BE ELECTRICALLY SUPERVISED BY A TAMPER SWITCH INSTALLED IN ACCORDANCE WITH NFPA72.
29. IF THIS IS AN EXISTING FACILITY, THE WATER METER AND BACKFLOW PREVENTOR WILL NEED TO MEET THE CURRENT STANDARDS.
30. FOR FORCE MAIN DISCHARGE MANHOLES (INCLUDING THE TWO (2) MANHOLES DOWNSTREAM OF THE DISCHARGE MANHOLE, FOR A TOTAL OF THREE (3) MANHOLES), DROP MANHOLES AND LIFT STATION WETWELLS: THE PROTECTIVE COATING SHALL BE A POLYMER BASED POLYURETHANE OR A HIGH–BUILD, SOLVENT–FREE EPOXY COATING. FOR SMALL LIFT STATIONS AT THE DISCRETION OF THE CITY, THE NUMBER OF MANHOLES REQUIRING COATING MAY BE REDUCED.
31. FOR LIFT STATION WETWELLS, THE COATING LIMITS SHALL INCLUDE FROM THE BOTTOM OF FILLET, WETWELL WALLS, AND ROOF. COATING SYSTEM SHALL OVERLAP 1' TO 2' WHERE HATCHES SIT ON THE ROOF; BUT SHALL EXCLUDE THE WETWELL FLOOR. FOR MANHOLES, THE COATING LIMITS SHALL INCLUDE FROM THE FLOW LINE IN THE TROUGH OF THE INVERT UP TO THE RING WITH A 1' TO 2' OVERLAY ON THE RING.
32. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR GRAVITY SEWER AND FORCE MAINS AT APPROXIMATELY 30" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO MANHOLE RINGS. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
33. ALL SANITARY SEWER LATERALS SHALL BE PROPERLY MARKED AT THE POINT WHERE LATERALS TERMINATE WITH PVC PIPE PAINTED GREEN. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. LATERALS SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
34. A CONTINUOUS RUN OF PLASTICIZED METALLIC TAPE SHALL BE INSTALLED ABOVE THE TOP OF PVC PIPE USED FOR WATER MAINS AT APPROXIMATELY 18" TO 24" BELOW FINISHED GRADE. THE TAPE SHALL BE SUITABLE FOR DETECTION WITH METAL PIPE LOCATION EQUIPMENT, COLOR CODED AND LABELED TO IDENTIFY CONTENTS OF THE PIPE AND BRIGHTLY COLORED TO CONTRAST WITH THE SOIL. IN ADDITION TO THE TAPE, A CONTINUOUS RUN OF TRACER WIRE SHALL BE ATTACHED TO THE PIPE AND CONNECTED TO CURB STOPS AND BROUGHT TO TOP OF VALVE. ON PIPE RUNS GREATER THAN 500', THE TRACER WIRE SHALL BE ATTACHED TO A 2" GALVANIZED PIPE WITH A 180 DEGREE BEND AT THE TOP, EXTENDING 36" ABOVE GRADE FOR CONNECTION TO LOCATOR EQUIPMENT. THE MAXIMUM DISTANCE BETWEEN 2" PIPE STUBS SHALL BE 500'.
35. ALL WATER SERVICES SHALL BE PROPERLY MARKED ABOVE GROUND WITH PVC PIPE PAINTED BLUE. ADDITIONAL MARKINGS SHALL BE STAMPED IN THE CURB OR MARKED ON THE EDGE OF PAVING WITH AN APPROVED PERMANENT MARKER CAPABLE OF BEING LOCATED BY A MAGNETIC LOCATOR, SUCH AS A NAIL WITH CAP, IF NO CURB PRESENT. SERVICES SHALL BE MARKED WITH MARKING TAPE AN TRACER WIRE AS DESCRIBED ABOVE.
36. ALL SIGNS SHALL BE 30" HIGH INTENSITY OR DIAMOND GRADE.
37. THREE INCH AND LARGER WATER METER AND STRAINERS SHALL BE PURCHASED FROM THE CITY.

***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 216' OF 4" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE ALLOWS MAXIMUM OF 700' OF 6" SANITARY SEWER @ 1%.
***CURRENT BUILDING CODE REQUIRES CLEANOUT EVERY 100' & AT TURNS > 45 DEGREES.

SITE NOTES

SITE NOTES:

1. THE GOVERNING AGENCY RESERVES THE RIGHT TO ACCESS PROPERTY FOR ON SITE INSPECTIONS.
2. PROPOSED DETENTION AND/OR SEDIMENTATION POND SHALL BE CONSTRUCTED IN CONJUNCTION WITH CLEARING AND PRIOR TO ANY OTHER SITE WORK OR BUILDING ERECTION.
3. EROSION CONTROL MEASURES SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE INSTALLED AS DEEMED NECESSARY BY ON SITE INSPECTION.
4. PROPERTY OWNER WILL BE RESPONSIBLE FOR MAINTENANCE AND REPAIR OF CONTROL STRUCTURE & DETENTION POND UPON COMPLETION OF THE CONTRACT.
5. CONTRACTOR WILL NEED TO OBTAIN A RIGHT OF WAY PERMIT PRIOR TO PERFORMING CONSTRUCTION ACTIVITY IN THE CITY'S/COUNTY'S RIGHT OF WAY.
6. NO TREE MULCHING WITHIN OR ON TOP OF THE DETENTION BASIN.
7. ALL DRAINAGE STRUCTURES GREATER THAN 3 FEET SHOULD HAVE STEPS FOR EASY ACCESS.
8. AS–BUILT SHALL CONTAIN ACCURATE INFORMATION INCLUDING DEPTH, LENGTH, SIZE, SLOPE OF PIPES. ALSO REQUIRED ARE SPOT ELEVATIONS ON THE STORMWATER DETENTION FACILITY, PAVEMENTS TO ENSURE THE SITE GRADING PLAN AND THE CAPACITY OF THE DETENTION FACILITY ARE BUILT ACCORDING TO THE ACCEPTED CONSTRUCTION PLANS. THE CONTRACTOR SHALL KEEP ACCURATE RECORDS FOR "AS BUILTS" PROPOSES AND PROVIDE THIS INFORMATION TO THE ENGINEER AT THE COMPLETION OF THE PROJECT. IF THE CONTRACTOR FAILS TO FURNISH THIS INFORMATION, THE ENGINEER WILL OBTAIN THE NECESSARY INFORMATION AND CHARGE THE CONTRACTOR FOR THE SERVICES. THE ENGINEER WILL CHECK INFORMATION PROVIDED BY THE CONTRACTOR FOR ACCURACY. AS BUILT INFORMATION INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING: ALL UTILITIES INCLUDING INVERTS, TOP ELEVATIONS, PIPE LENGTHS AND TYPE OF CONSTRUCTION MATERIAL; SPOT ELEVATIONS ON FORCE MAINS AND WATER LINES. THE DISTANCE OF THE CENTERLINE UTILITIES FROM A PERMANENT STRUCTURE. ALL VALVE MANHOLES AND VALVE BOXES SHALL BE LOCATED WITH RESPECT TO A PERMANENT STRUCTURE. GRADES SHALL BE CONFIRMED IN ROADS AND PARKING AREAS AS WELL AS SWALES TO SHOW DIRECTION OF STORMWATER FLOW. THE FINISHED FLOOR ELEVATION SHALL BE SHOWN ON ALL BUILDINGS. IF THE LANDSCAPING IS CHANGED IN ANY WAY AN AS BUILT OF THE LANDSCAPE PLAN IS TO BE SUBMITTED TO THE ENGINEER; AND ANY OTHER REQUIREMENT MADE BY THE GOVERNING AGENCY'S.
9. THE GOVERNING AGENCY MAY RESERVE THE RIGHT TO REQUIRE TELEVISING, PER CITY TELEVISING MANUAL, OF ALL SANITARY SEWER LINES 8" OR LARGER, ALL NEWLY CONSTRUCTED STORMWATER LINES AND STORMWATER LINES WHERE DAMAGE COULD OCCUR DURING CONSTRUCTION.
10. ANY AND ALL UTILITY CROSSINGS FOR WATER MAINS BETWEEN STORM OR SEWER PIPING SHOULD BE ACCOMPLISHED BY USING OF 45° BENDS BOTH DOWN AND UP.
11. ALL KNOWN UTILITY FACILITIES ARE SHOWN SCHEMATICALLY ON THE PLANS AND ARE NOT NECESSARILY ACCURATE AS TO PLAN OR ELEVATION. UTILITY FACILITIES SUCH AS SERVICE LINES OR UNKNOWN FACILITIES NOT SHOWN ON THE PLANS WILL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES, EXCEPT AS NOTED BELOW. THE CONTRACTOR WILL NOT BE RESPONSIBLE FOR THE COST OF REPAIRS TO DAMAGED UTILITY FACILITIES OTHER THAN SERVICE LINES FROM STREET MAINS TO ABUTTING PROPERTY WHEN SUCH FACILITIES ARE NOT SHOWN ON THE PLANS AND THEIR EXISTENCE IS UNKNOWN TO THE CONTRACTOR PRIOR TO THE DAMAGES OCCURRING PROVIDING THE ENGINEER DETERMINES THE CONTRACTOR HAS OTHERWISE FULLY COMPLIED WITH THE SPECIFICATIONS, AND OBTAINED UTILITY LOCATES AS REQUIRED.
12. CONTRACTOR WILL BE REQUIRED TO ATTEND A PRE–CONSTRUCTION CONFERENCE WITH THE GOVERNMENTAL AGENCY IN CHARGE OF THE PROJECT.
13. CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED PERMITS AND INSPECTIONS AS REQUIRED FOR APPROVAL OF THE WORK WITH THE GOVERNMENTAL AGENCY WITH JURISDICTION.
14. CONTRACTOR WILL BE RESPONSIBLE FOR COST OF AND COORDINATION WITH LOCAL UTILITY COMPANIES OR AGENCIES FOR RELOCATION OF, OR CONNECTION TO, ALL EXISTING UTILITIES INCLUDING POWER AND TELEPHONE POLES AND WIRES.
15. ALL ELEVATIONS ARE BASED ON MEAN SEA LEVEL DATUM. NAVD 88.
16. A MINIMUM SHOULDER WIDTH OF 4 FEET WITH A MINIMUM TRANSVERSE SLOPE OF 5% WILL BE PROVIDED ADJACENT TO CURBS AND WALKS. ALL WALKS SHALL HAVE A MAXIMUM CROSS SLOPE OF 2%.
17. MAXIMUM EARTH SLOPES WILL BE 3:1. GRADE FROM SHOULDER EDGE TO RIGHT– OF–WAY AT 1% MINIMUM.
18. UNSUITABLE SUBGRADE MATERIAL WILL BE DETECTED BY PROOF ROLLING A MINIMUM OF 2 PASSED WITH A MINIMUM TRUCK WEIGHT OF 40 KIPS AFTER ROADWAY HAS BEEN BROUGHT TO APPROXIMATE SUBGRADE ELEVATION, TO BE OBSERVED BY ENGINEER AND GOVERNMENTAL INSPECTOR.
19. REMOVAL AND REPLACEMENT OF UNSUITABLE SUBGRADE MATERIAL WILL BE PAID FOR ON A CUBIC YARD BASIS IN PLACE MEASUREMENT, AT SUCH AUTHORIZED PRICE PER CUBIC YARD, AS AUTHORIZED BY THE ENGINEER.
20. SUBGRADE WILL BE COMPACTED FOR A DEPTH OF 24" EXTENDING 24" BEYOND PAVEMENT EDGES, TO A MINIMUM OF 100% STANDARD PROCTOR DENSITY AS MEASURED A.A.S.H.O. METHOD T–99.
21. UNLESS OTHERWISE NOTED, ALL PAVEMENT MARKING WILL BE AN ENGINEER APPROVED VEHICULAR TRAFFIC PAINT. (WHITE IN COLOR & 4" WIDE)
22. PROVIDE 1/2" EXPANSION JOINT IN NEW WALKS FOR DEPTH OF CONCRETE, WITH BITUMINOUS SEAL FOR TOP 1 INCH MINIMUM DEPTH AT ABUTMENTS WITH BUILDINGS OR OTHER CONCRETE STRUCTURES.
23. SAW–CUT CONTRACTION JOINTS WILL BE PROVIDED IN ACCORDANCE WITH DETAILS, CUT TO BE 1/4 DEPTH OF CONCRETE MINIMUM.
24. ALL DIMENSIONS ARE TO EXTERIOR FACE OF BUILDING, EDGE OF SURFACE COURSE OR BACK OF CURBING.
25. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE NOTED.
26. ALL RADII ARE 5' UNLESS OTHERWISE NOTED.
27. SEE BUILDING PLANS FOR EXACT BUILDING DIMENSIONS.
28. ALL UTILITIES WILL BE INSTALLED UNDERGROUND UNLESS OTHERWISE NOTED.
29. THE CONTRACTOR IS RESPONSIBLE TO BRING PROPOSED MANHOLE TOPS TO GRADE.
30. HIGHLY CHLORINATED DISINFECTED WATER SHALL NOT BE DISCHARGED INTO THE STORMWATER SYSTEM. IT SHALL BE DISCHARGED INTO THE SANITARY SEWER SYATEM AS PER THE ENGINEER DIRECTION AND THE CITY'S/COUNTY'S INSPECTION DEPARTMENT OBSERVATION.

ADA NOTES

ADA NOTES:

1. ACCESSIBLE ROUTE - EXTERIOR:
   MINIMUM CLEAR WIDTH IS 3'. IF ACCESSIBLE ROUTE HAS LESS THAN 5' CLEAR WIDTH, THEN PASSING SPACES AT LEAST 5'X5' SHALL BE LOCATED EVERY 200' OR LESS (INTERSECTING SIDEWALKS SHOULD MEET THIS REQUIREMENT). LONGITUDINAL (RUNNING) SLOPE MAY NOT EXCEED 5% UNLESS RAMP IS INSTALLED (RAMPS MAY NOT EXCEED 8.33%). CROSS SLOPE MAY NOT EXCEED 2%. GAPS IN ROUTE MAY NOT EXCEED 1/2" IN WIDTH.
2. FINISHED SURFACE HEIGHT DIFFERENCE REQUIREMENTS:
   A. 0 TO 1/4" : NO REQUIREMENTS
   B. 1/4" TO 1/2" : BEVEL WITH 1:2 SLOPE
   C. LARGER THAN 1/2" : CONFORM TO REQUIREMENTS FOR RAMP
3. RAMPS:
   - MAX RAMP SLOPE 8.33% (1:12)
   - RAMPS STEEPER THAN 8.33% ARE NOT ACCEPTABLE
   - MAX RISE FOR ANY RAMP RUN IS 30" (AT 8.33% SLOPE, MAXIMUM RUN OF
   - RAMP IS 30') MAX CROSS SLOPE OF RAMP 2% (1:50)

A. LANDINGS:
   - RAMPS SHALL HAVE LEVEL LANDINGS AT BOTTOM AND TOP OF EACH RAMP.
   - LANDINGS SHALL BE AT LEAST AS WIDE AS RAMP LEADING TO IT.
   - LANDING LENGTH SHALL BE MINIMUM 5' CLEAR
   - IF RAMPS CHANGE DIRECTION AT LANDING, MINIMUM LANDING SIZE SHALL BE 5'X5'.
   - ALL LANDINGS ARE TO BE NO MORE THAN 2% SLOPE IN ANY DIRECTION.

B. HANDRAILS:
   - HANDRAILS REQUIRED ON BOTH SIDES (MIN. 36" CLEAR BETWEEN HANDRAILS) WHEN RAMP RISE IS GREATER THAN 6".
   - PROVIDE MINIMUM 12" LONG HANDRAIL EXTENSIONS AT TOP AND BOTTOM LANDINGS.
   - PROVIDE MINIMUM 2" HIGH EDGE PROTECTION OR RAIL WITH LESS THAN 4" CLEAR TO RAMP IF RAMP HAS DROP-OFFS.
   - ROUTES BETWEEN BUILDINGS WITH ONLY DWELLING UNITS DO NOT HAVE TO HAVE HANDRAILS.
   - STAIRS NOT ALLOWED AS PART OF ACCESSIBLE ROUTE BUT IF ADJACENT TO ROUTE OR PART OF TENANT SPACE MUST MEET REQUIREMENTS FOR STAIR RAILS.

4. CURB RAMPS:
   - MAX SLOPE OF CURB RAMP 8.33%
   - MAX SLOPE OF SIDE FLARES 10%
   - MAX SLOPE OF ADJOINING GUTTERS, ROAD SURFACE, OR ACCESSIBLE ROUTE 5%.
   - MIN WIDTH 36" (NOT INCLUDING SIDE FLARES).
   - DETECTABLE WARNING IS REQUIRED ON CURB RAMPS IN PUBLIC RIGHT OF WAYS, AND SHALL BE 24" MINIMUM IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE. DETECTABLE WARNINGS SHALL BE LOCATED SO THE EDGE NEAREST THE CURB LINE IS 6" TO 8" FROM THE CURB LINE.

5. PAVEMENT MARKINGS:
   - AS REQUIRED BY LOCAL JURISDICTIONAL AUTHORITY (RECOMMENDED CROSSWALK MARKING TO DESIGNATE ACCESSIBLE PEDESTRIAN ROUTE)

6. PARKING SPACES:
   - MINIMUM 8' WIDE ACCESSIBLE PARKING SPACE.
   - MINIMUM 5' WIDE ACCESS AISLE AT STANDARD SPACES
   - MINIMUM 8' WIDE ACCESS AISLE AT VAN ACCESSIBLE SPACES
   - MAXIMUM 2% (1:50) SLOPE IN ANY DIRECTION

7. SIGNAGE:
   ACCESSIBLE PARKING SPACES SHALL BE DESIGNATED AS RESERVED BY A SIGN SHOWING THE SYMBOL OF ACCESSIBILITY. VAN ACCESSIBLE SPACES SHALL HAVE AN ADDITIONAL SIGN "VAN ACCESSIBLE" MOUNTED BELOW THE SYMBOL. SUCH SIGNS SHALL BE LOCATED SO THEY CANNOT BE OBSCURED BY A VEHICLE PARKED IN THE SPACE (60" ABOVE GRADE UNLESS OTHER HEIGHT REQUIRED BY LOCAL JURISDICTION).

8. ACCESSIBLE ROUTES:
   MUST COMPLY WITH ADA. THE FAIR HOUSING ACT AND ICC/ANSI A117.1-2003

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED PROFESSIONAL 025285 ENGINEER 2/22/22 CHRISTOPHER R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
GENERAL NOTES

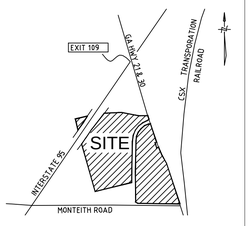
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
N1

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:08am - cstinson
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #3 FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

EXISTING CONDITIONS

UTILITIES PROTECTION CENTER

811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

(IN FEET)
1 inch = X ft.

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

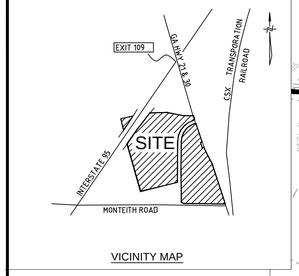
☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:

EX1

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are, the purposes of this item and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:58am crittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

HENDLEY DRIVE

SURVEY CONTROL: 1/2" IRON ROD N 794,891.13 E 956,815.39

SURVEY CONTROL: 1/2" IRON ROD N 794,250.35 E 956,826.46

STATE ROUTE 30 MONTEITH ROAD 60' R/W (AKA MONTEITH ROAD)

146 LF 24" RCP CULVERT @ 0.28%

1170.87'

395.01'

S 06°56'58" W

S 14°33' W

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • LandScape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 32285 ENGINEER 2/22/22 CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INITIAL EROSION PLAN

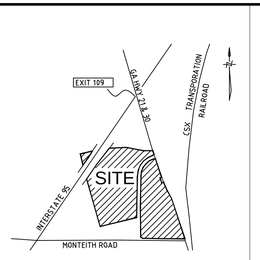
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-1C

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:59am crittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

Wed, 02 Mar 2022 - 9:58am cliffrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Building 2&3.dwg

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INITIAL EROSION PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-1A

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

UTILITIES PROTECTION CENTER

811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

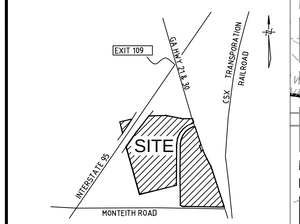
CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

(IN FEET)
1 inch = X ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
No. 32295
PROFESSIONAL
ENGINEER
CHADWICK R. ZYLSTRA
2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INITIAL EROSION PLAN

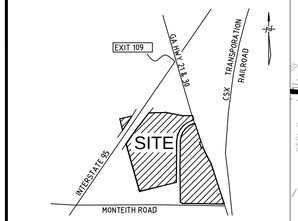
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-1B

COPYRIGHT Kern & Co., LLC. © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:20am, cstroup
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

HENDLEY DRIVE

SURVEY CONTROL: 1/2" IRON ROD N 794,891.13 E 956,815.39

SURVEY CONTROL: 1/2" IRON ROD N 794,250.35 E 956,826.46

Pn

Pl

Ok

146 LF 24" RCP CULVERT @ 0.28%

6377 LF SINGLE ROW SILT FENCE

STATE ROUTE 30 MONTEITH ROAD 60' R/W (AKA MONTEITH ROAD)

CFES IE 11.37

CFES IE 11.00

Asphalt

GW

OHU

UP

W

FES

HW PROP

5'XS' RWCHF (Broken)

Wed, 02 Mar 2022 - 8:20am crittmoser
DRAWING PATH: G:\2021\210071.000 \dwg\ Sansone - Buildings 2&3.dwg

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED 3085 PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INITIAL EROSION PLAN

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

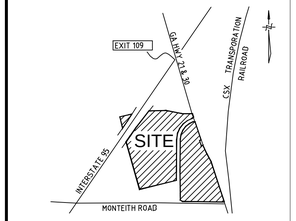
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:

SESC-1C

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

(IN FEET)
1 inch = X ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

REGISTERED PROFESSIONAL ENGINEER — GEORGIA — No. 35285 — CHADWICK R. ZITTROUER — 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

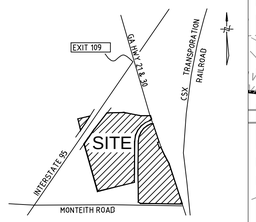
PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INTERMEDIATE EROSION PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	SESC-2A

Wed, 02 Mar 2022 - 9:20am cittmoyer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Building 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

Wed, 02 Mar 2022 - 8:20am cstinsner
DRAWING PATH: G:\2021\210071.000 \dwg\Sansone - Buildings 2&3.dwg

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED No. 33695 PROFESSIONAL 2/22/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

INTERMEDIATE EROSION PLAN

UTILITIES PROTECTION CENTER

811 KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

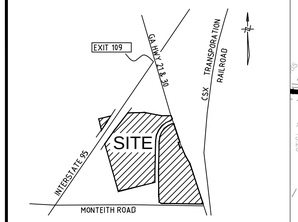
(IN FEET)
1 inch = 50 ft.

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-2B

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

HENDLEY DRIVE

SURVEY CONTROL: 1/2" IRON ROD N 794,295.13 E 956,815.39

GRATE INLET TOP:14.50 INV:10.26

238 LF 24" RCP @ 0.10%

GRATE INLET TOP:14.50 INV:10.50

146 LF 24" RCP CULVERT @ 0.28%

CFES IE 11.37

CFES IE 11.00

173 LF 24" RCP @ 0.25%

CURB INLET TOP: 18.30 IE: 13.67

CURB INLET TOP:18.90 IE:13.23

90 LF 24" RCP @ 0.25%

12' X 18' RIP RAP APRON (OUTLET PROTECTION)

CFES IE:13.00

6377 LF SINGLE ROW SILT FENCE

STATE ROUTE 30 MONTEITH ROAD 60' R/W (AKA MONTEITH ROAD)

SURVEY CONTROL: 1/2" IRON ROD N 794,250.35 E 956,826.46

Pn

Pl

Ok

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NOT FOR CONSTRUCTION

RELEASED FOR CONSTRUCTION

DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 22295 ENGINEER CHADWICK R. ZITTROWER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #3 FOR CH REALTY IX - SANSONE I

DRAWING TITLE:

INTERMEDIATE EROSION PLAN

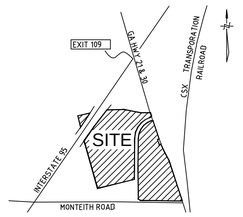
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-2C

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:20am crittmoyer
DRAWING PATH: G:\2021\210071.000 \dwg\ Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

Wed, 02 Mar 2022 - 9:20am cstinson
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

(IN FEET)
1 inch = X ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3333

STAMP:

GEORGIA REGISTERED No. 32295 PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

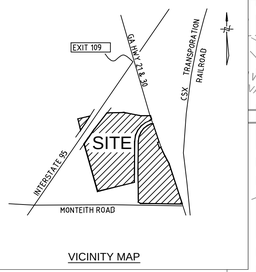
PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

FINAL EROSION PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	SESC-3A

COPYRIGHT Kern & Co., LLC. © 2017 This drawing and its reproductions are the property of the firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #3
735,000 SF
FF 20.50

HENDLEY DRIVE 40' R/W

SURVEY CONTROL
1/2" IRON ROD
N 794,894.13
E 956,813.99

BM #1

146 LF 24" RCP CULVERT @ 0.25%

6377 LF SINGLE ROW SILT FENCE

12' X 14' RIP RAP APRON
(OUTLET PROTECTION)

STATE ROUTE 30 MONTEITH ROAD

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA
REGISTERED
PROFESSIONAL
CHADWICK R. ZITTROUER
2/22/22
ENGINEER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

FINAL EROSION PLAN

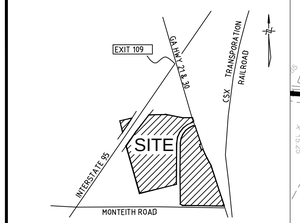
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:

SESC-3B

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:20am cittrouzer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

735,000 SF
FF 20.50

HENDLEY DRIVE

SURVEY CONTROL:
1/2" IRON ROD
N 794,215.13
E 956,815.89

SURVEY CONTROL:
1/2" IRON ROD
N 794,210.35
E 956,826.46

146 LF 24" RCP CULVERT @ 0.2%

CFES
IE 11.00

LE = 11.04'

5'X5' RW(CHF (Broken))

GW(S)

6377 LF SINGLE ROW SILT FENCE

1170.87'

STATE ROUTE 30 MONTEITH ROAD 60' R/W
(AKA MONTIETH ROAD)

LE = 13.72'

LE = 13.77'

Asphalt

12' X 14' RIP RAP APRON
(OUTLET PROTECTION)

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5353

STAMP:

GEORGIA REGISTERED PROFESSIONAL ENGINEER 032285 CHARLMECK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

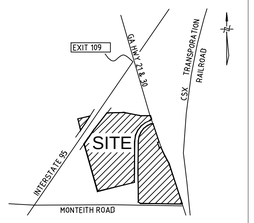
DRAWING TITLE:

FINAL EROSION PLAN

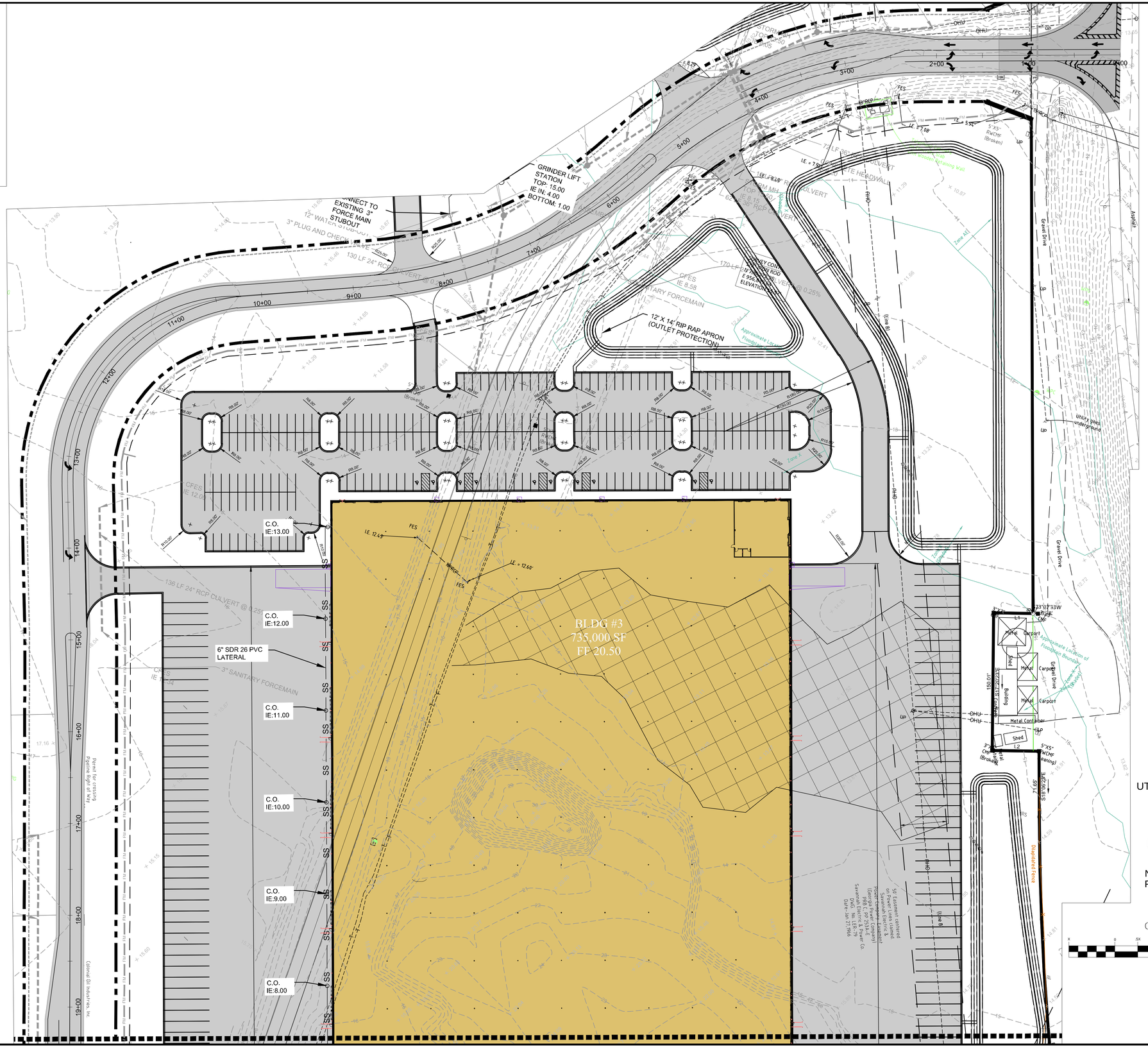
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	SESC-3C

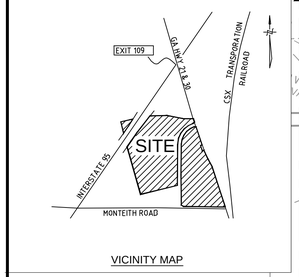
COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:20am cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Building 2&3.dwg



VICINITY MAP


GRINDER LIFT STATION
TOP: 15.00
IE IN: 4.00
BOTTOM: 1.00
CONNECT TO EXISTING 3" FORCE MAIN STUBOUT
3" PLUG AND CHECK
12" WATER LINE
130 LF 24" RCP CULVERT @ 0.25%
3" SANITARY FORCEMAIN
12' X 14' RIP RAP APRON (OUTLET PROTECTION)
C.O. IE:13.00
C.O. IE:12.00
C.O. IE:11.00
C.O. IE:10.00
C.O. IE:9.00
C.O. IE:8.00
6" SDR 26 PVC LATERAL
136 LF 24" RCP CULVERT @ 0.25%
BLDG #3
735,000 SF
FF 20.50
170 LF 24" RCP CULVERT @ 0.25%
70 LF 36" RCP CULVERT
24" RCP HEADWALL
Asphalt
Gravel Drive
Unpaved Area
Approximate Location of Floodplain Boundary
Approximate Limits of Wetlands
Duplicated Fence
Utility poles underground
Metal Carport
Metal Building
Metal Container
Shed
Pond
Pond for crossing Property to be filled
Ditch to be filled
Ditch to be filled
Ditch



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #3
735,000 SF
FF 20.50

HENDLEY DRIVE 100' R/W

SURVEY CONTROL 1/2" IRON ROD N 794,894.13 E 956,813.99

BM #1

146 LF 36" RCP CULVERT @ 0.2%

STATE ROUTE 30 MONTEITH ROAD

12" X 50' RIP RAP APRON (OUTLET PROTECTION)

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-5373

STAMP:

GEORGIA REGISTERED No. 25285 PROFESSIONAL ENGINEER 2/22/22 CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #3 FOR CH REALTY IX - SANSONE I

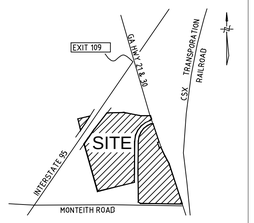
DRAWING TITLE:

STAKING PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C1-2

COPYRIGHT Kern & Co., LLC. © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:20am cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #3
735,000 SF
FF 20.50

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

(IN FEET)
1 inch = X ft.

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA REGISTERED PROFESSIONAL ENGINEER CHADWICK R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

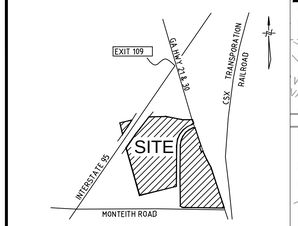
DRAWING TITLE:

PGD
PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C2

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:20am crittmore
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #3
735,000 SF
FF 20.50

HENDLEY PARKWAY 40' R/W

STATE ROUTE 30 MOCCASIN TRAIL

GRATE INLET TOP:14.50 INV:9.97

GRATE INLET TOP:14.50 INV:10.26

GRATE INLET TOP:14.50 INV:10.50

284 LF 30" RCP @ 1.10%

236 LF 24" RCP @ 0.10%

146 LF 24" RCP CULVERT @ 0.25%

173 LF 24" RCP @ 0.25%

80 LF 24" RCP @ 0.25%

CURB INLET TOP:18.30 IE:13.67

CURB INLET TOP:18.90 IE:13.23

CFES IE 11.00

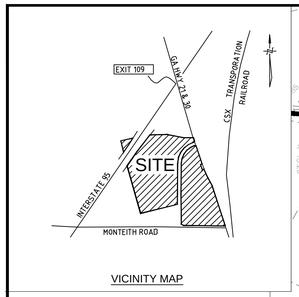
CFES IE:13.00

12' X 15' RIP RAP APRON (OUTLET PROTECTION)

SURVEY CONTROL 1/2" IRON ROD N 794,893.13 E 956,813.99

3" SANITARY SEWER FORCE MAIN

Savannah Electric & Power Company (Georgia Power Co.) Right of Way Easement Deed Book C, Page 289 Deed Book C, Page 290 Deed Book C, Page 291 Deed Book C, Page 292 Deed Book C, Page 293 Deed Book C, Page 294 Deed Book C, Page 295 Deed Book C, Page 296 Deed Book C, Page



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

735,000 SF
FF 20.50

HENDLEY DRIVE

SURVEY CONTROL:
1/2" IRON ROD
N 794,850.13
E 956,815.99

GRATE INLET
TOP:14.50
INV:10.26

GRATE INLET
TOP:14.50
INV:10.50

238 LF 24" RCP @ 0.10%

173 LF 24" RCP @ 0.25%

CURB INLET
TOP:18.30
IE:13.67

CURB INLET
TOP:18.90
IE:13.23

146 LF 24" RCP CULVERT @ 0.25%

180 LF 24" RCP @ 0.25%

12' X 34' RIP RAP APRON
(OUTLET PROTECTION)

CFES
IE 13.00

CFES
IE 11.00

STATE ROUTE 30 MONTEITH ROAD 60' R/W
(AKA MONTIETH ROAD)

SURVEY CONTROL:
1/2" IRON ROD
N 794,250.35
E 956,836.46

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
REGISTERED
10023285
PROFESSIONAL
2/22/22
ENGINEER
CHADWICK R. ZITTROWER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

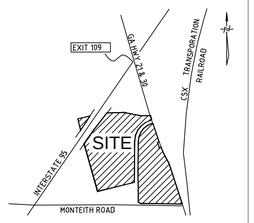
PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
PGD PLAN

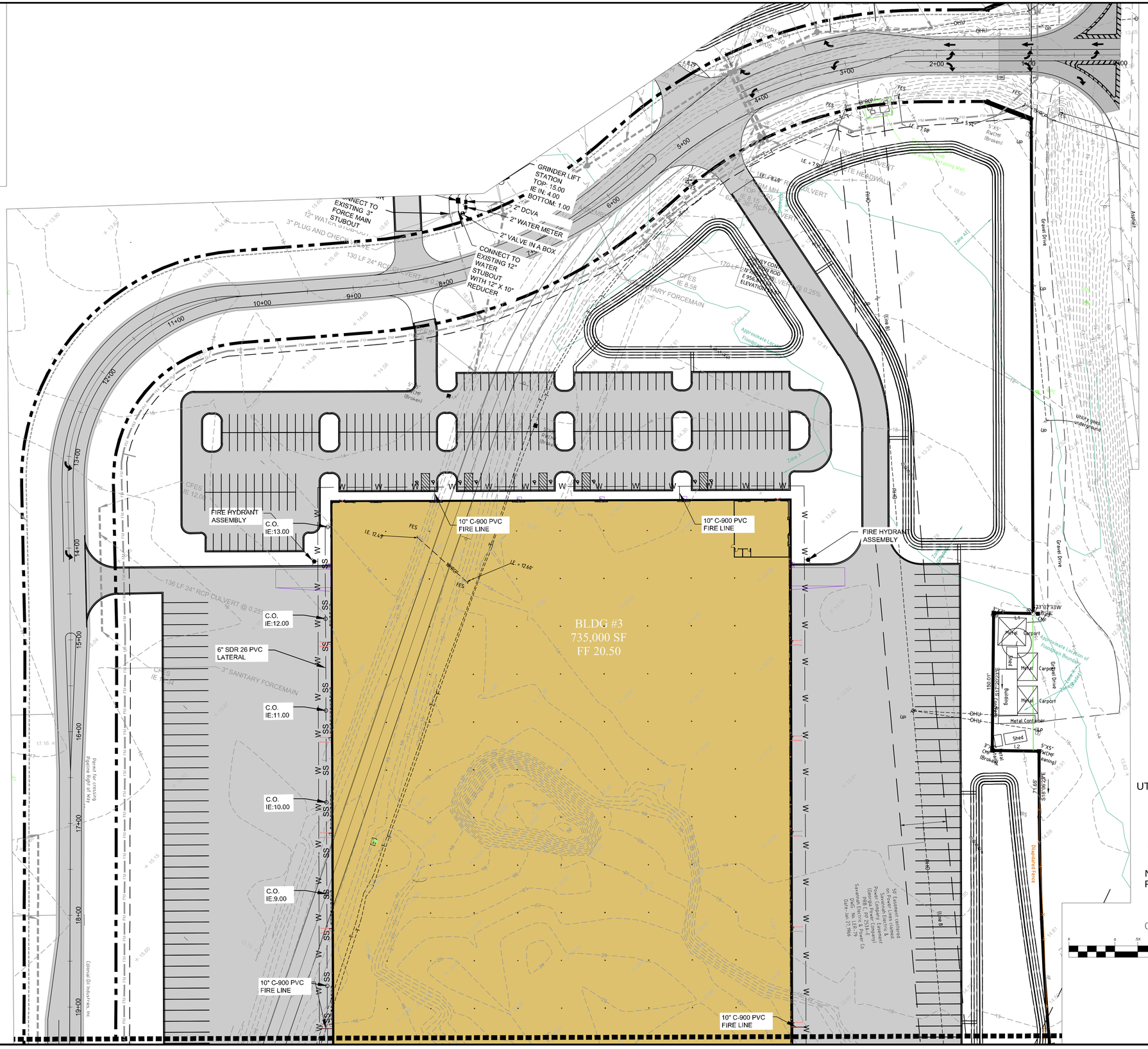
SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ
SHEET NO:	C2-3

COPYRIGHT Kern & Co., LLC. © 2017 This drawing and its reproductions are, the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:21am cittrower
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg



VICINITY MAP



SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW. CALL BEFORE YOU DIG. DIAL 811 OR 1-800-282-7411 WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

X 0 .5X X 2X 4X

(IN FEET)
1 inch = X ft.

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street, Suite A Statesboro, Georgia 30458 Phone: (912) 225-3333

STAMP:

GEORGIA REGISTERED PROFESSIONAL No. 002285 CHRISTOPHER R. ZITTROUER 2/22/22

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK - BUILDING #3 FOR CH REALTY IX - SANSONE I

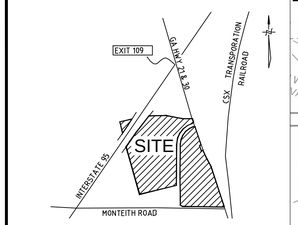
DRAWING TITLE:

UTILITY PLAN

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO: C3

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.



VICINITY MAP

SITE DATA:

PROJECT AREA: 71.41 AC

AREA OF DISTURBANCE: 60.65 AC

ZONING: I-1

P.I.N.: 70977 01027

PROJECT ADDRESS: HENDLEY DR

PROJECT CITY: PORT WENTWORTH

DISTRICT NUMBER: ???

LOT NUMBER: ???

OWNER NAME: CH REALTY IX - SANSONE I, LLC

CONTACT: ???

OWNER ADDRESS: 3819 MAPLE AVENUE

OWNER CITY: DALLAS, TX

TELEPHONE NO.: ???

DATE OF SURVEY: 6/23/2020

GOVERNING AGENCY: ???

BLDG #3
735,000 SF
FF 20.50

10" RPZ BACKFLOW PREVENTOR

2" VALVE IN A BOX

CONNECT TO EXISTING 12" WATER STUBOUT WITH 12" X 10" REDUCER

2" DCVA WATER METER

2" POLYETHYLENE WATER LATERAL

10" C-900 PVC FIRE MAIN

C.O. IE: 6.00

CONNECT TO EXISTING 3" FORCE MAIN STUBOUT

10" C-900 PVC FIRE MAIN

GRINDER LIFT STATION
TOP:16.50
IE IN: 3.50
BOTTOM 0.00

10" C-900 PVC FIRE LINE

C.O. IE:7.00

C.O. IE:8.00

C.O. IE:9.00

C.O. IE:10.00

6" SDR 26 PVC LATERAL

10" C-900 PVC FIRE LINE

C.O. IE:11.00

C.O. IE:12.00

FIRE HYDRANT ASSEMBLY

C.O. IE:13.00

10" C-900 PVC FIRE LINE

10" C-900 PVC FIRE LINE

10" C-900 PVC FIRE LINE

FIRE HYDRANT ASSEMBLY

HENDLEY DRIVE

100' R/W

3" SANITARY FORCE MAIN

146 LF 24"RCP CULVERT @ 0.25%

CFES IE 11.00

STATE ROUTE 30 MONTEITH ROAD

BM #1

SURVEY CONTROL MONUMENT #3 N 958,870.39 E 958,870.39

Industrial & Domestic Water Supply City of Savannah Easement Plat Record Book C, Pages 224 A-D

Electric & Power Company Easement Plat Record Book C, Page 289 Savannah Electric & Power Co. DWC Metric & Power Co. Date: Jan 27 1966

Overhead Utility Lines

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-6400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

GEORGIA
PERMIT NO.
PE 025205
PROFESSIONAL
2/22/22
ENGINEER
CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:

UTILITY PLAN

UTILITIES PROTECTION CENTER

811

KNOW WHAT'S BELOW.
CALL BEFORE YOU DIG.
DIAL 811 OR 1-800-282-7411
WWW.GEORGIA811.COM

CALL THREE WORKING DAYS BEFORE YOU DIG

NOT FOR CONSTRUCTION FOR PERMITTING PURPOSES ONLY!

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
C3-2

COPYRIGHT Kern & Co., LLC. © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 8:21am cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

EROSION AND SEDIMENTATION CONTROL ACTIVITIES SCHEDULE

TENTAIVE VS. SPECIFIC BEGIN/END DATES	APRIL 2021	MAY 2021	JUNE 2021	JULY 2021	AUGUST 2021	SEPTEMBER 2021
IMPLEMENTATION OF SILT FENCE, SEDIMENT STORAGE & CONSTRUCTION EXIT						
CLEARING, GRUBBING & INSTALL TREE PROTECTION FENCING						
EXCAVATION AND ROUGH GRADING						
CONSTR. OF TEMPORARY & PERMANENT SEDIMEN-TATION CONTROL & TEMP. GRASSING						
FINISHED GRADING						
PAVING, CONSTRUCTION UTILITIES, ETC.						
REMOVAL OF TEMPORARY SEDIMENTATION CONTROL STRUCTURES						
FINAL STABILIZATION & FINAL GRASSING						
MAINTENANCE OF BMP'S						

NOTE: NO CLEARING AND/OR GRUBBINGACTIVITIES WILL COMMENCE PRIOR TO THE INITIAL PERIMETER & SEDIMENT STORAGE BMP'S ARE IMPLEMENTED UNLESS THOSE ACTIVITIES ARE STRICTLY TO INSTALL SAID BMP'S.

Ds1

SITE PREPARATION
1. GRADE TO PERMIT THE USE OF EQUIPMENT FOR APPLYING AND ANCHORING MULCH.
2. INSTALL NEEDED EROSION CONTROL MEASURES AS REQUIRED SUCH AS DIKES, DIVERSIONS, BERMS TERRACES AND SEDIMENT BARRIERS.
3. LOOSEN COMPACT SOIL TO AMINIMUM DEPTH OF 3 INCHES.

MULCHING MATERIALS
1. DRY STRAW OR HAY SHALL BE APPLIED AT A DEPTH OF 2 TO 4 INCHES PROVIDING COMPLETE SOIL COVERAGE.
2. WOOD WASTER SHALL BE APPLEIED AT A DEPTHH OF 2 TO 3 INCHES. ORGANIC MATERIAL FROM THE CLEARING STAGE SHOULD REMAIN ON SITE, BECHIPED AND APPLIED AS MULCH.
3. POLYEHYLENE FILM SHALL BE SECURED OVER BANKS OR STOCKPILED SOIL MATERIAL FOR TEMPORARY PROTECTION.

APPLYING MULCH
1. DRY STRAW OR HAY MULCH AND WOOD CHIPS BE APPLIED UNIFORMLY BYHAND OR BY MECHANICAL EQUIPMENT
2. IF THE AREA WILL EVENTUALLY BE COVERED WITH PERENNIAL VEGETATION, 20–30 POUNDS OF NITROGEN PER ACRE IN ADDITION TO THE NORMAL AMOUNT SHALL BE APPLIED TO OFFSET THE UPTAKE OF NITROGEN CAUSED BY THE DECOMPOSITION OF THE ORGANIC MULCHES..

Ds2

Table 6-4.1. Temporary Cover or Companion Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR TEMPORARY COVER OR COMPANION CROPS

Species	Broadcast Rates		Resource Area	Planting Dates by Resource Area	Remarks
	Rate per Acre	Pure Live Seed (PLS) per 1000 sqft			
BARLEY *Hordeum vulgare*					
alone	3 bu. (144 lbs)	3.3 lbs	M-L	August - November	14,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (24 lbs)	0.6 lb	P	August - December	Use on productive soils.
			C	September - December	
LESPEDEZA, ANNUAL *Lespedeza striata*					
alone	40 lbs	0.9 lb	M-L	February - April	200,000 seed per pound. May volunteer
in mixture	10 lbs	0.2 lb	P	February - April	for several years. Use inoculant EL.
			C	January - March	
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - June	1,500,000 seed per pound. May last for
in mixture	2 lbs	0.05 lb	P	March - June	several years. Mix with Sericea
			C	February - June	lespedeza.
MILLET, BROWNTOP *Panicum fasciculatum*					
alone	40 lbs	0.9 lb	M-L	April - June	137,000 seed per pound. Quick dense
in mixture	10 lbs	0.2 lb	P	April - July	cover. Will provide excessive competion
			C	April - July	in mixtures if seeded at high rate.
MILLET, PEARL *Pennisetum glaucum*					
alone	50 lbs	1.1 lbs	M-L	March - July	88,000 seed per pound. Quick dense
			P	April - August	cover. May reach 5feet in height. Not
			C	April - August	recommended for mixtures.
OATS *Avena sativa*					
alone	4 bu. (128 lbs)	2.9 lbs	M-L	September - November	13,000 seed per pound. Use on
in mixture	1 bu. (32 lbs)	0.7 lb	P	September - November	productive soils. Not as a winter hardy
			C	September - November	as rye or barley.
RYE *Secale cereale*					
alone	3 bu. (168 lbs)	3.9 lbs	M-L	July - November	18,000 seed per pound. Quick cover.
in mixture	1/2 bu. (28 lbs)	0.6 lb	P	August - December	Drought tolerant and winter hardy.
			C	January - February September - December	
RYEGRASS, ANNUAL *Lolium temulentum*					
alone	40 lbs	0.9 lb	M-L	January - April August - December	227,000 seed per pound. Dense cover.
			P	January - April August - December	Very competitive and is not to be
			C	January - March August - December	used in mixtures.
SUDANGRASS *Sorghum sudanese*					
alone	60 lbs	1.4 lbs	M-L	April - August	55,000 seed per pound. Good on
			P	April - August	droughty sites. Not recommended for
			C	March - July	mixtures.
TRITICALE *X-Triticosecale*					
alone	3 bu. (144 lbs)	3.3 lbs	C	January, September-October, December	Use on lower part of Southern Coastal
in mixture	1/2 bu. (24 lbs)	0.6 lb			Plain and in Atlantic Coastal Flatwoods
					only.
WHEAT *Triticum aestivum*					
alone	3 bu. (180 lbs)	4.1 lbs	M-L	September - December	15,000 seed per pound. Winter hardy.
in mixture	1/2 bu. (30 lbs)	0.7 lb	P	October - December	
			C	January, October-December	

Temporary cover crops are very competitive and will crowd out perennials if needed too heavily
Reduce seeding rates by 50 % when drilled.
M-L represents the Mountains, Blue Ridge, and ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents Southern Coastal Plain, Sand Hills, Black Lands, and Atlantic Coast Flatwoods MLRAs

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

Table 6-5.2- Permanent Cover Crops
PLANT, PLANTING RATE, AND PLANTING DATE FOR PERMANENT COVER

Species	Broadcast Rates		Resource Area[3]	Planting Dates by Resource Area	Remarks
	Rate per Acre[2]	Pure live Seed (PLS) per 1000 sqft			
BAHIA, PENSACOLA *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	P	March - June	166,000 seed per pound. Low growing. Sod forming. Slow to establish. Plant with a companion crop. Will spread
with other perennials	30 lbs	0.7 lb	C	February - May	
BAHIA, WILMINGTON *Paspalum notatum*					
alone or with tem porary cover	60 lbs	1.4 lbs	M-L	March - May	
with other perennials	30 lbs	0.7 lb	P	February - May	Same
BERMUDA, COMMON *Cynodon dactylon*					
hulled seed			P	April - May	1,787,000 seed per pound. Quick cover. Low growing and sod forming. Full sun. Good for athletic fields.
alone	10 lbs	0.2 lb	C	April - May	
with other perennials	6 lbs	0.7 lb			
BERMUDA, COMMON *Cynodon dactylon*					
Unhulled seed					
with tem porary cover	10 lbs	0.2 lb	P	January - May October - December	Plant with winter annuals
with other perennials	6 lbs	0.1 lb	C	January November - December	Plant with Tall Fescue
BERMUDA SPRINGS *Cynodon dactylon*					
Coastal, Common, Midland, or Tift 44	40 sq ft or sod plugs 3' x 3'	0.9 sq ft	M-L	April - June	A cubic foot contains approximately 650 springs. A bushel contains 1.25 cubic feet or approximately 800 springs.
			P	April - June	
Coastal, Common, of Tift 44			C	March - May	Same as above
Tift 79			C	April - May	Southern Coastal Plain only
CENTIPEDE *Eremochloa Ophiuroides*					
	Block sod only		P	January - May November - December	Drought tolerant. Full sun or partial shade. Effective adjacent to concrete and in concentrated flow areas; irrigation is needed until fully established. Do not plant near pastures. Winterhardy as far as north Athens and Atlanta.
			C	January - May November - December	
CROWNVETECH *Coronilla varia*					
with winter annuals or cool season grasses	15 lbs	0.3 lb	M-L P	September - October September - October	330, seed per pound. Dense growth. Drought tolerant and fire resistant. Attractive rose, pink and white blossoms spring to late fall. Mix with 30 pounds of Tall Fescue or 15 pounds of rye. Inoculate see with M inoculant. Use from North Atlanta and Northward.
FESCUE, TALL *Festuca aroundinacea*					
alone	50 lbs	1.1 lb	M-L	March - April August - October	227,000 seed per pound. Use alone only on better sites. Mix with perennial legumeslike or Crownvetch Apply topdressing in spring following fall plantings. Not for heavy use areas or athletic fields.
with other perennials	30 lbs	0.7 lb	P	August - October	
KUDZU *Pueraria rhomberginea*					
Plants or crowns	3' - 7' apart		ALL	January - March	Rapid and vigorous growth. Excellent in gully erosion control. Will climb. Good livestock forage.
LESPEDEZA SERICEA *Lespedeza cuneata*					
scarified	60 lbs	1.4 lb	M-L P C	April - May March - May February - May	350,000 seed per pound. Widely adapted. Low maintenance. Mix with Weeping lovegrass, Common bermuda, bahia, or tall f escue. Takes 2 to 3 years to become fully established. Excellent on roadbanks. Inoculate seed with EL inoculant.
unscarified	75 lbs	1.7 lb	M-L P C	January - February January - February January - February	Mix with Tall fesue or winter annuals.
seed - bearing hay	3 tons	1338 lbs	M-L P C	January - February January January	Cut when seed mixture is mature, but before, it shatters. Add Tall fescue or winter annuals.
LESPEDEZA *Anthyllis vulgata* *Lespedeza virgata DC* or ***Appalow*** *Lespedeza cuneata (Dumont) G. Don)*					300,000 seed per pound. Height of growth is 18 to 24 inches. Advantageous in urban areas. Spreading type growth. New growth has bronze coloration. Mix with weeping lovegrass, common bermuda, bahia, tall fescue or winter annuals. Do not mix with Sericea lespedeza. Slow to develop sod stands. Inoculate seed with EL inoculant.
scarified	60 lbs	1.4 lb	M-L P C	March - May March - May February - May	
unscarified	75 lbs	1.7 lb	M-L P C	January - February January - February	
LESPEDEZA, SHRUB *Lespedeza bicolor* *Lespedeza thunbergii*					
plants	3' x 3'		M-L P C	January - March January - March January - February	Provide wildlife food and cover.
LOVEGRASS, WEEPING *Eragrostis curvula*					
alone	4 lbs	0.1 lb	M-L	March - May	1,500,000 seed per pound. Quick cover. Drought
with other perennials	2 lbs	0.05 lb	P C	March - May March - May	tolerant. Grows well with Sericea lespedeza on roadbanks.
MAIDENCANE *Panicum hemitomon*					
sprigs	3' x 3' spacing	ALL		February - April	For very wet sites. May clog channels. Dig sprigs from local sources. Use along river banks and shorelines.
PANICGRASS, ATLANTIC COASTAL *Panicum amarum var amarulum*					
	20 lbs	0.5 lb	P C	March - April March - April	Grows well on coastal sand dunes, borrow areas, and gravel pits. Provides winter cover for wildlife. Mix with Sericea lespedeza except on sand dunes.
REED CANARY GRASS *Phalaris arundinacea*					
alone	50 lbs	1.1 lb	M-L	August - October	
with other perennials	30 lbs	0.7 lb	P	August - October	Grows similar to Tall fescue.
SUNFLOWER, "AZTEC" MAXIMILLIAN *Helianthus maximiliani*					
	10 lbs	0.2 lb	M-L P C	April - May April - May April - May	227,000 seed per pound. Mix with Weeping lovegrass or other low-growing grasses or legumes.

1 Reduce seedingrates by 50% when drilled.
2 PLS is an abbreviation for Pure Live Seed. Refer to Section V.E. of these specifications.
3 M-L represents to Mountain; Blue Ridge, and Ridges and Valleys MLRAs
P represents the Southern Piedmont MLRA
C represents the Southern Coastal Plain; Sand Hills; Black Lands; and Atlantic Coast Flatwoods MLRAs. See Figure 6-4.1

AGRICULTURAL LIME IS REQUIRED UNLESS SOIL TESTS INDICATE OTHERWISE. APPLY AGRICULTURAL LIME AT A RATE DETERMINED BY SOIL TEST FOR PH.

TABLE 6-5.1. FERTILIZER REQUIREMENTS

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. Cool season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 1/3/
	Second	6-12-12	1000 lbs./ac.	
	Maintenance	10-10-10	400 lbs./ac.	30
2. Cool season grasses and legumes	First	06-12-12	1500 lbs./ac.	0-50 lbs./ac. 1/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	
3. Ground covers	First	10-10-10	1300 lbs./ac. 3/	
	Second	10-10-10	1000 lbs./ac. 3/	
	Maintenance	10-10-10	1100 lbs./ac.	
4. Pine seedlings	First	20-10-5	one 21-gram pellet per seedling placed in the closing hole	
5. Shrub Lespedeza	First	0-10-10	700 lbs./ac.	
	Maintenance	0-10-10	700 lbs./ac.	
6. Temporary cover crops seeded alone	First	10-10-10	900 lbs./ac.	30 lbs./ac. 5/
7. Warm season grasses	First	6-12-12	1500 lbs./ac.	50-100 lbs./ac. 2/6/
	Second	6-12-12	800 lbs./ac.	50-100 lbs./ac. 2/
	Maintenance	10-10-10	400 lbs./ac.	30 lbs./ac.
8. Warm season grasses and legumes	First	6-12-12	1500 lbs./ac.	50 lbs./ac./6/
	Second	0-10-10	1000 lbs./ac.	
	Maintenance	0-10-10	400 lbs./ac.	

1/ Apply in spring following seeding.
2/ Apply in split applications when high rates are used.
3/ Apply in 3 split applications.
4/ Apply when plants are pruned.
5/ Apply to grass species only.
6/ Apply when plants grow to a height of 2 to 4 inches.

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE CONSTRUCTION PROJECTS

OGEECHEE RIVER
Project Name: OLD AUGUSTA COMMERCE CENTER
Address: OLD AUGUSTA PARKWAY
City/County: EFFINGHAM COUNTY, GEORGIA
Date on Plans: 3/03/2021
NAME AND EMAIL: BECKNELL INDUSTRIAL
JOEL REPISCAK
jrepiscak@becknellindustrial.com

TO BE SHOWN ON ES&PC PLAN

PAGE #	Y/N		
	Y	1.	The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1of the year in which the land-disturbing activity was permitted.(The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
	Y	2.	Level II certification number issued by the Commission, signature and seal of the certified design professional.(Signature, seal and Level II number must be on each sheet pertaining to ES&PC plan or the Plan will not be reviewed)
	N/A	3.	Limit of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office. If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.*(A copy of the written approval by EPD must be attached to the plan for the plan to be reviewed.)
SESC 6	Y	4.	The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
SESC2	Y	5.	Provide the name, address and phone number of primary permittee.
SESC2	Y	6.	Note total and disturbed acreage of the project or phase under construction.
SESC2	Y	7.	Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
COVER	Y	8.	Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
SESC6	Y	9.	Description of the nature of construction activity.
SESC2	Y	10.	Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
SESC6	Y	11.	Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, marshlands, etc. which may be affected.
SESC5	Y	12.	Design professional's certification statement and signature that the site was visited prior to development of the ES&PC plan as stated on part iv page 23 of the permit.
SESC5	Y	13.	Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on part iv pg 22 of the permit.*
SESC5	Y	14.	Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*
SESC6	Y	15.	Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation or within 25 feet of the coastal marshland buffer as measured from the Jurisdictional Determination Line without first acquiring the necessary variances and permits."
	N/A	16.	Provide a description of any buffer encroachments and indicate whether a buffer variance is required.
SESC5	Y	17.	Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*
SESC5	Y	18.	Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as authorized by a section 404 permit."*
SESC6	Y	19.	Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of erosion and sediment control measures and practices prior to land disturbing activities."
SESC6	Y	20.	Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the approved plan does not provide for effective erosion control, additional erosion and sediment control measures shall be implemented to control or treat the sediment source."
SESC6	Y	21.	Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be stabilized with mulch or temporary seeding."
SESC6	N/A	22.	Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those areas of the site which discharge to the Impaired Stream Segment.*
SESC6	N/A	23.	If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in item 21 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific conditions or requirements included in the TMDL Implementation Plan.*
SESC5	Y	24.	BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout of the drumat the construction site is prohibited.*
SESC5	Y	25.	Provide BMPs for the remediation of all petroleum spills and leaks.
SESC6	Y	26.	Description of the measures that will be installed during the construction process to control pollutants in storm water that will occur after construction operations have been completed.*
SESC6	Y	27.	Description of practices to provide cover for building materials and building products on site.
SESC4	Y	28.	Description of the practices that will be used to reduce the pollutants in storm water discharges.*
SESC5	Y	29.	Description and chart or timeline of the intended sequence of major activities which disturb soils for the major portions of the site (i.e., initial perimeter and sediment storage BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).

SEDIMENT STORAGE CALCULATIONS:

DISTURBED AREA = 49.52 AC

REQUIRED STORAGE:
67 CY/AC x 49.52 AC = 3317 CY
3317 CY x 27CF/CY = 89,559 CF OF REQUIRED STORAGE

PROVIDED STORAGE :
(ELEV 13 – ELEV 9)(239,419 SF AT ELEV 13 + 171,605 SF AT ELEV 9) / 2 = 822,168 CF OF PROVIDED STORAGE

PAGE #	Y/N		
SESC5	Y	30.	Provide complete requirements of inspections and record keeping by the primary permittee.*
SESC5	Y	31.	Provide complete requirements of sampling frequency and reportinof sampling results.*
SESC5	Y	32.	Provide complete details for retention of records as per Part IV.F. of the permit.*
SESC6	Y	33.	Description of analytical methods to be used to collect and analyze the samples from each location.*
SESC1,2,3	Y	34.	Appendix B rationale for NTU values at all outfall sampling points where applicable.*
SESC4	Y	35.	Delineate all sampling locations, perennial and intermittent streams and other water bodies into which storm water is discharged.*
SESC2	Y	36.	A description of appropriate controls and measures that will be implemented at the construction site including: (1) initial sediment storage requirements and perimeter control BMPs, (2) intermediate grading and drainage BMPs, and (3) final BMPs. For construction sites where there will be no mass grading and the initial perimeter control BMPs, intermediate grading and drainage BMPs, and final BMPs are the same, the plan may combine all of the BMPs into a single phase.*
SESC2	Y	37.	Graphic scale and north arrow.
	N/A	38.	Existing and proposed contour lines with contour lines drawn at an interval in accordance with the following:

Map Scale	Ground Slope	Contour Intervals, ft.
1 inch = 100ft or larger scale	Flat 0 - 2%	0.5 or 1
	Rolling 2 - 8%	1 or 2
	Steep 8% +	2,5 or 10

	N/A	39.	Use of alternative BMPs whose performance has been documented to be equivalent to or superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). Please refer to the Alternative BMP Guidance Document found at www.gaswcc.org.
ALL	Y	40.	Use of alternative BMP for application to the Equivalent BMP List. Please refer to Appendix A-2 of the Manual for Erosion & Sediment Control in Georgia 2016 edition*
ALL	Y	41.	Delineation of the applicable 25-foot or 50-foot undisturbed buffers adjacent to state waters and any additional buffers required by the Local Issuing Authority. Clearly note and delineate all areas of impact.
POST	Y	42.	Delineation of on-site wetlands and all state waters located on and within 200 feet of the
HYDRO	Y		project site.
PRE&POST	Y	43.	Delineation and acreage of contributing drainage basins on the project site.
		44.	Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.*
SESC1,2,3	Y	45.	An estimate of the runoff coefficient or peak discharge flow of the site prior to and after construction activities are completed.
SESC1,2,3	Y	46.	Storm-drain pipe and weir velocities with appropriate outlet protection to accommodate
ALL	Y		discharges without erosion.Identify/Delineate all storm water discharge points.
SESC4	Y	47.	Soil series for the project site and their delineation.
		48.	The limits of disturbance for each phase of construction.
SESC1,2,3	Y	49.	Provide a minimum of 67 cubic yards of sediment storage per acre drained using a temporary sediment basin, retrofitted detention pond, and/or excavated inlet sediment traps for each common drainage location. Sediment storage volume must be in place prior to and during all land disturbance activities until final stabilization of the site has been achieved. A written justification explaining the decision to use equivalent controls when a sediment basin is not attainable must be included in the plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual must be included for structural BMPs and all calculations used by the design professional to obtain the required sediment storage when using equivalent controls. When discharging from sediment basins and impoundments, permitees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasible, a written justification explaining this decision must be included in the plan.
SESC7	Y	50.	Location of Best Management Practices that are consistent with and no less stringent than the Manual for Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with legend.
SESC7	Y	51.	Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set forth in the Manual for Erosion and Sediment Control in Georgia.
		52.	Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of year that seeding will take place and for the appropriate geographic region of Georgia.

*If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

Effective January 1, 2021

CHAD ZITTROUER
MARK D. CRAPPS

GSWCC CERTIFICATION # 8150
GSWCC CERTIFICATION # 2888

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED PROFESSIONAL No. 22795 2/22/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSION NOTES

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-4

COPYRIGHT Kern & Co., LLC © 2021 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 09 Mar 2022 - 9:21am rottmeyer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

Hazardous Wastes:

All hazardous waste materials will be disposed of in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. The job site superintendent, who will also be responsible for seeing that these practices are followed, will instruct site personnel in these practices. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. An MSDS will be posted in the immediate area where such product is stored and/or used and another copy of each MSDS will be maintained in the ESPCP file at the job site construction trailer office. Each employee who must handle a substance with hazardous properties will be instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques.

The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this ESPCP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials or hazardous waste will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. It shall be the responsibility of the job site superintendent to properly train all personnel in the use of the SPCC plan.

Sanitary Wastes:

A minimum of one portable sanitary unit will be provided for every ten (10) workers on the site. All sanitary waste will be collected from the portable units a minimum of one time per week by a licensed portable facility provider in complete compliance with local and state regulations.

All sanitary waste units will be located in an area where the likelihood of the unit contributing to storm water discharge is negligible. Additional containment BMP's must be implemented, such as gravel bags or specially designed plastic skid containers around the base, to prevent wastes from contributing to storm water discharges. The location of sanitary waste units must be identified on the Intermediate Erosion Control Plan Sheet by the contractor once the locations have been determined.
Sanitary Sewer will be provided by Municipal Authority/Septic System at the completion of this project.

WASTE MATERIALS SHALL NOT BE DISCHARGED TO WATERS OF THE STATE, EXCEPT AS AUTHORIZED BY A SECTION 404 PERMIT.

Waste Materials:

All waste materials will be collected and stored in a securely lidded metal dumpster. The dumpster will meet all solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpster. The dumpster will be emptied a minimum of once per week or more often if necessary and trash will be hauled as required by local regulations. No construction waste will be buried onsite.

All personnel will be instructed on proper procedures for waste disposal. A notice stating these practices will be posted at the jobsite and the contractor will be responsible for seeing that these procedures are followed.
ALL DISCHARGES FROM THIS SITE SHALL BE COMPOSED ENTIRELY OF STORM WATER WITH THE FOLLOWING EXCEPTIONS:

ACCEPTABLE NON–STORM WATER DISCHARGES

Storm water discharge from a construction site or construction activities that is mixed with a storm water discharge from an industrial source or activity other than construction where:

a. the industrial source or activity other than construction is located on the same site as the construction activity and is an integral part of the construction activity;

b. the storm water discharges associated with industrial activity from the areas of the site where construction activities are occurring are in compliance with the terms of NPDES Permit No. GAR100001; and

c. storm water discharges associated with industrial activity from the areas of the site where industrial activity other than construction are occurring are covered by a different NPDES general permit or individual permit authorizing such discharges and the discharges are in compliance with a different NPDES permit.

d. discharges from fire fighting activities; fire hydrant flushing; potable water sources including water line flushing; irrigation drainage; air conditioning condensate; springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials or pollutants.

Spill Cleanup and Control Practices:

– Local, State and manufacturer's recommended methods for spill cleanup will be clearly posted and procedures will be made available to site personnel.
– Material and equipment necessary for spill cleanup will be kept in the material storage areas. Typical materials and equipment includes, but is not limited to brooms, dustpans, mops, rags, gloves, goggles, cat litter, sand, sawdust and properly Labeled plastic and metal waste containers.
– Spill prevention practices and procedures will be reviewed after a spill and adjusted as necessary to prevent future spills.
– All spills will be cleaned up immediately upon discovery. All spills will be reported as required by local, State and Federal regulations.
– FOR SPILLS THAT IMPACT SURFACE WATER (LEAVE A SHEEN ON SURFACE WATER), THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITHIN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS OF AN UNKNOWN AMOUNT, THE NATIONAL RESPONSE CENTER (NRC) WILL BE CONTACTED WITH IN 24 HOURS AT 1–800–424–6602.
– FOR SPILLS GREATER THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE EPD WILL BE CONTACTED WITHIN 24 HOURS.
– FOR SPILLS LESS THAN 25 GALLONS AND NO SURFACE WATER IMPACTS, THE SPILL WILL BE CLEANED UP AND LOCAL AGENCIES WILL BE CONTACTED AS REQUIRED.

The contractor shall notify the licensed professional who prepared this plan if more than 1320 gallons of petroleum is stored onsite (this includes capacities of equipment) or if any one piece of equipment has a capacity greater than 660 gallons. The Contractor will need a Spill Prevention Containment and Countermeasures Plan prepared by that licensed professional.

Product Specific Practices:

Petroleum Based Products – Containers for products such as fuels, lubricants and tars will be inspected daily for leaks and spills. This includes on–site vehicle and machinery daily inspections and regular preventative maintenance of such equipment. Equipment maintenance areas will be located away from state water, natural drains and storm water inlets. In addition, temporary fueling tanks shall have a secondary containment liner to prevent/minmize site contamination. Discharge of oils, fuels and lubricants is prohibited. Proper disposal methods will include collection in a suitable container and disposal as required by local and State regulations.

Paints/Finishes/Solvents – All products will be stored in tightly sealed original containers when not in use. Excess product will not be discharged to the storm water collection system. Excess product, materials used with these products and product containers will be disposed of according to manufacturer's specifications and recommendations.

Concrete Truck Washing – NO concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water onsite.

Fertilizer/Herbicieds – These products will be applied at rates that do not exceed the manufacturer's specifications or above the guidelines set forth in the crop establishment or in the GSWCC Manual for Erosion and Sediment Control in Georgia. Any storage of these materials will be under roof in sealed containers.

Building Materials – No building or construction materials will be buried or disposed of onsite. All such material will be disposed of in proper waste disposal procedures.

INSPECTIONS:

Permittee Requirements.

(1). Each day when any type of construction activity has taken place at a primary permitee's site, certified personnel provided by the primary permittee shall inspect:(a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment and (b) all locations at the primary the site for the evidence of off–site sediment tracking. These inspections must be conducted until a Notice of Termination has been submitted.
(2). Measure rainfall once every 24 hours except and non–working Saturday, non–working Sunday and non–working Federal holiday until a Notice of Termination is submitted. Measurement of rainfall may be suspended if all areas of the site have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region.
(3). Certified personnel (provided by the primary permittee) shall inspect the following at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or any non–working Saturday, non–working Sunday or any non–working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day , whichever occurs first): (a) disturbed areas of the primary permittee's construction site; (b) areas used by the primary permittee for storage of materials that are exposed to precipitation; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region, the permittee must comply with Part IV.D.4.a.(4). These inspections must be conducted until a Notice of Termination is submitted.
(4). Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is received by EPD) the areas of the site that have undergone final stabilization or established a crop of annual vegetation and a seeding of target perennials appropriate for the region. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible , they shall be inspected to ascertain whether erosion control measure are effective in preventing significant impacts to receiving water(s).
(5). Based on the results of each inspection,the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as practical but in no case later than seven (7) calendar days following each inspection.
(6). A report of each inspection that includes the name(s) of certified personnel making each inspection, the date(s) of each inspection, construction phase (i.e., initial, intermediate or final), major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(5)..of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall be readily available by end of the second business day and/ or working day and shall identify all incidents of best management practices that have not been properly installed and/or maintained as described in the Plan. Where the report does not identify an incident, the inspection report shall contain a statement that the best management practices are in compliance with the Erosion, Sedimentation and Pollution Control Plan. The report shall be signed in accordance with Part V.G.2. of this permit.

5. Maintenance
The Plan shall include a description of procedures to ensure the timely maintenance of vegetation, erosion and sediment control measures and other protective measures identified in the site plan.

6. Sampling Requirements
This permit requires the monitoring of nephelometric turbidity in receiving waters or outfalls in accordance with this permit. This section is applicable to primary permittees with a total planned disturbance equal to or greater than one (1) acre and tertiary permittees with a total planned disturbance equal to or greater that five (5) acres. This section is not applicable to secondary permittees. The following procedures constitute EPD's guidelines for sampling turbidity.

a. Sampling Requirements shall include the following:
(1). A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is equal to or more detailed that a 1:24000 map showing the location of the site or the common development: (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map, and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the storm water is discharged and (b) the receiving water and/or outfall sampling locations. When the permittee has chosen to use a USGS topographic map and the receiving water(s) must be hand–drawn on the USGS topographic map from where the storm water(s) enter the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;
(2). The analytical method used to collect and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each sampling location;
(3). When the permittee has determined that some or all outfalls will be sampled, a rationale must be included on the Plan for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm water fisheries); and
(4). Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the permittee of the information necessary and the timeline for submittal.

b. Sample Type. All sampling shall be collected by "grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by by 40 CFR Part 136 (unless other test procedures have been approved); the guidance document titles "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001" and guidance documents that may be prepared by the EPD.
(1). Sample containers should be labeled prior to collecting samples.
(2). Samples should be well mixed before transferring to a secondary container.
(3). Large mouth, clean and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.
(4). Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. If automatic sampling is utilized, and the automatic sampler is not activated during the qualifying event, the permittee must utilize manual sampling or rising stage sampling during the next qualifying event. Dilution of samples is not required. Samples may be analyzed using a direct reading, properly calibrated turbidimeter. Samples are not required to be cooled.
(5). Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

c. Sampling Points
(1). For construction activities the primary permittee with a total planned disturbance equal to or greater than one (1) acre and tertiary permittee with a total planned disturbance equal to or greater than five (5) acres must sample all receiving waters , or all outfalls, or a combination of receiving water and outfalls. Samples taken for the purpose of compliance with this permit shall be representative of the monitored activity and representative of the water quality of the receiving waters and/or the storm water outfalls using the following minimum guidelines:
(a) The upstream sample for each receiving water(s) must be taken immediately upstream of the confluence of the first storm water discharge from the permitted activity (i.e., the discharge farthest upstream at the site) but downstream of any other storm water discharges not associated with the permitted activity. Where appropriate, several upstream samples from across the receiving waters may need to be taken and the arithmetic average of the turbidity of these samples used for the upstream turbidity value.
(b). The downstream sample for each receiving water(s) must be taken downstream of the confluence of the last storm water discharge from the permitted activity (i.e.,the discharge furthest downstream at the site) but upstream of any other storm water discharge not associated with permitted activity. Where appropriate, several downstream samples from across the receiving waters may need to be taken and arithmetic average of the turbidity of these samples used for the downstream turbidity value.
(c) Ideally the samples should be taken from horizontal and vertical center of the receiving waters or the storm water outfall channels.
(d) Care should be taken to avoid stirring the bottom sediments in the receiving waters or in the outfall storm water channel.
(e) The sampling container should be held so that the opening faces upstream.
(f) The samples should be kept free from floating debris.
(g) Permittees do not have to sample sheet flow that flows onto undisturbed natural areas or areas stabilized by the project. For purposes of this section , stabilized shall mean, for unpaved areas and areas not covered by permanent structures and areas located outside the waste disposal limits of a landfill cell that has been certified by EPD for waste disposal, 100% of the soil surface is uniformly covered in permanent vegetation with a density of 70% or greater, or landscaped according to the Plan (uniformly covered with landscaping materials in planned landscape areas), or equivalent permanent stabilization measures as defined in the Manual (excluding a crop of annual vegetation and seeding of target crop perennials appropriate for the region).
(h) All sampling pursuant to this permit must be done in such a way (including generally accepted sampling methods, locations, timing, and frequency)as to accurately reflect whether storm water runoff from the construction site is in compliance with the standard set forth in Parts III.D.3. or III.D.4., whichever is applicable.

d. Sampling Frequency.
(1) The primary permittee must sample in accordance with Plan at least once for each rainfall event described below. For a qualifying event, the permittee shall sample at the beginning of any storm water discharge to a monitored receiving water and.or from a monitored outfall within forty–five (45) minutes or as soon as possible..
(2) However, where manual and automatic sampling are impossible (as defined in this permit), or are beyond the permittees control, the permittee shall take samples as soon as possible, but in no case more than twelve (12) hours after beginning of the storm water discharge.
(3) Sampling by the permittee shall occur for the following qualifying events:
(a) For each area of the site that discharges to a receiving water or from an outfall, the first rain event reaches or exceeds 0.5 inch with a storm water discharge that allows for sampling during normal business hours as defined in this permit after all clearing and grubbing operations have been completed, but prior to completion of mass grading operations, in the drainage area of the location selected as the sampling location.
(b) In addition to (a) above, for each area of the site that discharges to a receiving water or from an outfall, the first rain event that reaches or exceeds 0.5 inch with a storm water discharge that occurs during normal business hours as defined in the permit either 90 days after the first sampling event or after all mass grading operations have been completed, but prior to submittal of a NOT, in the drainage area of the location selected as the sampling location, whichever comes first;
(c) At the time of sampling performed pursuant to (a) and (b) above, if BMPs in any area of the site that discharges to a receiving water or from an outfall are not properly designed , installed and maintained, corrective action shall be defined and implemented within two (2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal business hours until the selected turbidity standard is attained, or until post–storm event inspections determine that BMPs ar properly designed, installed and maintained;
(d) Where sampling pursuant to (a), (b) or (c) above is required but not possible (or not required because there was no discharge), the permittee, in accordance with Part IV.D.4.a.(6)., or the tertiary permittee, in accordance with Part IV.D.4.c.(6)., must include a written justification in inspection report of why sampling was not performed. Providing this justification does not relieve the permittee of any subsequent sampling obligations under (a), (b) or (c) above; and
(e) Existing construction activities , i.e., those that are occurring on or before the effective date of this permit, that must met the sampling required by (a) above shall sample in accordance with (b). Those existing construction activities that have met the sampling required by (b) above shall not be required to conduct additional sampling other than as required by (c) above.
*Note that the Permittee may choose to meet the requirements of (a) and (b) above by collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and allows for sampling at any time of the day or week
(7) Non–storm water discharges. Except for flows from fire fighting activities, sources of non–storm water listed in Part III.A.2. of this permit that are combined with stormwater discharge associated with construction activity must be identified in the Plan. The Plan shall identify and ensure the implementation of appropriate pollution prevention measures for non–storm water components of the discharge.

A. Reporting

1. The applicable permittees are required to submit the sampling results to the EPD at the address shown in Part II.C. by the fifteenth day of the month following the report period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G.2. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.
2. All sampling reports shall include the following information:
a. The rainfall amount, date, exact place and time of sampling or measurements;
b. The name(s) of the certified personnel who performed the sampling and measurements;
c. The date(s) analyses were performed;
d. The time(s) analyses were initiated;
e. The name(s) of the certified personnel who performed the analyses;
f. References and written procedures, when available, for the analytical techniques or methods used;
g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results;
h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU," and
i. Certification statement that sampling as conducted as per the Plan.
3. All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to the schedule in Appendix A of this permit. The applicable permittees shall retain a copy of the proof of submittal at the construction site or the proof of the submittal shall be readily available at a designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI. If an electronic submittal is provided by EPD then the written correspondence may be submitted electronically; if required, a paper copy must also be submitted by return receipt certified mail or similar service.

F. Retention of Records

1. The primary permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement of construction until such time as a NOT is submitted in accordance with Part VI:
a. A copy of all Notices of Intent submitted to EPD;
b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit;
c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5. of this permit;
d. A copy of all sampling information, results, and reports required by this permit;
e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this permit.
f. A copy of all violation summaries and violation summary reports generated in accordance with Part III.D.2. of this permit; and
g. Daily rainfall information collected in accordance with Part IV.D.4.a.(2). of this permit.
2. Copies of all Notices of Intent, Notices of Termination, inspection reports, sampling reports (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) or other reports requested by the EPD, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the date that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the primary permittee's primary place of business once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at anytime upon written notification to the permittee.

STORMWATER SAMPLING
SAMPLE ANALYSIS

Storm water samples are to be analyzed in accordance with methodology and test procedures established by 40 CFR Part 136 and the guidance document titled "NPDES Storm Water Sampling Guidance Document, EPA 833–B–92–001."

Storm water is to be sampled for nephelometric turbidity units (NTU) at the outfall location. A discharge of storm water runoff from disturbed areas where best management practices have not been properly designed, installed, and maintained shall constitute a separate violation for each day on which such condition results in the turbidity of the discharge exceeding 25, the value that was selected from Appendix B in Permit No. GAR100001. The NTU is based upon the disturbed acreage of 49.52 acres for the project site, the surface water drainage area of 1 square miles, and receiving water which supports warm water fisheries.

An "Erosion & Sedimentation Inspection and Maintenance Report" sheet is attached.
Should inspection reveal any deficiencies, a copy of the report shall be sent to:

ATTN: CH REALTY IX–SANSOME I, LLC
3819 MAPLE AVENUE
DALLAS, TX 75219
PHONE

ATTN: Kern & Co.
7 Mall Court
Savannah, GA 31406
912–354–8400

Governing Agency: Georgia Environmental Protection Division
Coastal District – Brunswick Office
One Conservation Way
Brunswick, GA 31520
1–800–241–4113

The design professional who prepared the ES&PC plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation.

DESIGN PROFESSIONAL 7–DAY VISIT CERTIFICATION

DATE OF INSPECTION: _____

I Certify the site was in compliance with the ES&PC Plan on the date of inspection.

_____
GSWCC LEVEL II DESIGN PROFESSIONAL CERTIFICATION #

Inspection revealed the following discrepancies from the ES&PC Plan.

_____
_____
_____

These deficiencies must be addressed within two days and a re–inspection scheduled.
Work shall not proceed on the site until design Professional Certification is obtained.

ANY AMENDMENT TO THE EROSION CONTROL PLANS WHICH HAVE A SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL.

I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT, UNDER MY DIRECT SUPERVISION.

MARK D. CRAPPS GSWCC CERTIFICATION # 2888
CHAD ZITTROUER GSWCC CERTIFICATION # 8150

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED No. 002285 PROFESSIONAL 2/22/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSOON NOTES

SCALE: 1" = 50'
PROJECT NO: 210071.000
DATE: 2/22/22
DRAWN BY: WM
CHECKED BY: CRZ

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO:
SESC-5

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and its reproduction are the property of this firm and may not be reproduced, published, or used in any way with out the written permission of Kern & Co., LLC.

Wed, 02 Mar 2022 - 9:21am cittrouer
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

SECONDARY PERMITTEES

NOTE: THIS MASTER LIST TO BE COMPLETE AND SIGNED. KEPT IN THE ON SITE CONSTRUCTION TRAILER

SECONDARY PERMITTEE'S SIGN WHEN RECEIVING PLANS. ALL SECONDARY PERMITTEES MUST SUBMIT SECONDARY NOI AT LEAST 14 DAYS PRIOR TO BEGINNING CONSTRUCTION ACTIVITY.

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

NAME: PHONE:
COMPANY: FAX:
ADDRESS:
ADDRESS: _____
GSWCC LEVEL IA CERTIFICATION NO. _____ SIGNATURE

APPENDIX B

Nephelometric Turbidity Unit (NTU) Tables

Cold Water (Trout Stream)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	25	50	75	150	300	500	500	500
10.01–25	25	25	50	75	150	200	500	500
25.01–50	25	25	25	50	75	100	300	500
50.01–100	20	25	25	35	59	75	150	300
100.01+	20	20	25	25	25	50	60	100

Warm Water (Supporting Warm Water Fisheries)

Site Size, acres	Surface Water Drainage Area, square miles: 0–4.99	5–9.99	10–24.99	25–49.99	50–99.99	100–249.99	250–499.99	500+
1.00–10	75	150	200	400	750	750	750	750
10.01–25	50	100	100	200	300	500	750	750
25.01–50	50	50	100	100	200	300	750	750
50.01–100	50	50	50	100	100	150	300	600
100.01+	50	50	50	50	50	100	200	100

To use these tables, select the size (arces) of the facility or common development. Then, select the surface water drainage area (square miles). The NTU matrix value arrived at from the above tables is the one to use.

Wed, 09 Mar 2022 - 9:21am - rottmoser
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

EROSION AND SEDIMENT NARRATIVE NOTES

1. DESCRIPTION: 1 WAREHOUSE, TRAILOR PARKING, EMPLOYEE PARKING, WATER & SEWER SYSTEM, STORM DRAINAGE, AND REQUIRED SOIL EROSION CONTROL.
2. SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION: FOR INFORMATION REGARDING THE SOILS, TOPOGRAPHIC AND DRAINAGE INFORMATION PLEASE REFERENCE THE PAVING, GRADING, AND DRAINAGE PLAN, AND THE SOIL EROSION PLAN OF THE CONSTRUCTION DRAWINGS. THE ENTIRE SITE IS COMPOSED OF SOIL TYPE Cc(Cape Fear), Oj(Ocilla Complex), Pj(Pelham Loamy Sand)
3. VEGETATION: THE EXISTING SITE IS CURRENTLY WOODED.
4. EROSION CONTROL PROGRAM: VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER VEGETATION AND MULCH WILL BE APPLIED TO APPLICABLE AREAS IMMEDIATELY AFTER GRADING IS COMPLETED. LAND WILL BE SCHEDULED TO LIMIT EXPOSURE OF BARE SOILS TO EROSION ELEMENTS. STORM WATER MANAGEMENT STRUCTURES WILL BE EMPLOYED TO PREVENT EROSION IN AREAS OF CONCENTRATED WATER FLOWS. EROSION AT THE EXITS OF ALL STORM WATER STRUCTURES WILL BE PREVENTED BY THE INSTILLATION OF STORM DRAIN OUTLET PROTECTION DEVICES. STORM DRAIN OUTLET PROTECTION DEVICES.
5. SEDIMENT CONTROL PROGRAM: SEDIMENT CONTROL WILL BE ACCOMPLISHED BY THE INSTALLATION OF SILT FENCE. A CONSTRUCTION EXIT BE INSTALLED TO PREVENT THE TRANSPORT OF SEDIMENT FROM THE SITE BY VEHICULAR TRAFFIC.
6. STANDARDS AND SPECIFICATIONS: ALL DESIGNS WILL CONFORM TO AND ALL WORK WILL BE PERFORMED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE PUBLICATION ENTITLED, "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA".
7. SAFETY PROTECTION: CONSTRUCTION ACTIVITIES WILL BE PERFORMED IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES AND REGULATIONS.
8. MAINTENANCE PROGRAM: SEDIMENT AND EROSION CONTROL MEASURES WILL BE INSPECTED DAILY. ANY DAMAGES OBSERVED WILL BE REPAIRED BY THE END OF THAT DAY. CLEANOUT OF SEDIMENT CONTROL STRUCTURES WILL BE ACCOMPLISHED IN ACCORDANCE WITH THE SPECIFICATIONS AND SEDIMENT DISPOSAL ACCOMPLISHED BY SPREADING ON THE SITE. BARRIERS WILL REMAIN IN PLACE UNTIL SEDIMENT CONTRIBUTING AREAS ARE STABILIZED. THE SEDIMENT FENCES, AND THE BARRIERS WILL THEN BE REMOVED AND THE AREAS OCCUPIED BY THESE DEVICES WILL THEN BE VEGETATED. GUIDELINES FOR THE MAINTENANCE OF ESTABLISHED VEGETATION WILL BE PROVIDED TO THE OWNER WHEN ALL DISTURBED AREAS ARE STABILIZED.
9. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
10. MAINTENANCE OF ALL SOIL EROSION AND SEDIMENTATION CONTROL PRACTICES, WHETHER TEMPORARY OR PERMANENT, SHALL BE AT ALL TIMES THE RESPONSIBILITY OF THE OWNER.
11. "I CERTIFY THAT THE PERMITTEE'S EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND THE DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA" (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND-DISTURBING ACTIVITY WAS PERMITTED, PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."
12. THERE ARE NO STATE WATERS ON OR WITHIN 200' OF THIS SITE. NO WRESTED VEGETATION – NO BUFFER REQUIRED.
13. ALL NON-EXEMPT ACTIVITIES SHALL NOT BE CONDUCTED WITHIN THE 25 OR 50-FOOT UNDISTURBED STREAM BUFFERS AAS MEASURED FROM THE POINT OF WRESTED VEGETATION OR WITHIN 25-FEET OF THE COASTAL MARSHLAND BUFFER AS MEASURED FROM THE JURISDICTIONAL DETERMINATION WITHOUT FIRST ACQUIREING THE NECESSARY VARIANCES AND PERMITS.
14. THE POINT OF CONTACT FOR CIVIL SITE WORK FOR THIS PROJECT IS:
    KERN & CO., LLC
    P.O. BOX 15179
    SAVANNAH, GA 31416
    912.354.8400
15. DEVELOPER/OWNER/PRIMARY PERMITTEE:
    CH REALTY IX-SAMSONE 1
    3819 MAPLE AVENUE
    DALLAS, TX 75219
    PHONE #:
16. TWENTY-FOUR HOUR CONTACT RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL: SHERRY KERN, KERN & CO., LLC 912-547-8402
17. DRAINAGE FLOWS THROUGH LITTLE HEARST BRANCH AND THEN INTO SAVANNAH RIVER.
18. RUNOFF COEFFICIENT
    PRE DEVELOPED: ?
    POST DEVELOPED: ?
19. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO LAND-DISTURBING ACTIVITIES.
20. ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD OF GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.
21. ALL GRASSING SHALL BE IN ACCORDANCE WITH THE GEORGIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 1983 EDITION
22. CONTRACTOR SHOULD BE RESPONSIBLE FOR NOTIFYING THE ENGINEER SEVEN DAYS PRIOR TO CONSTRUCTION. IF CONTRACTOR FAILS TO NOTIFY ENGINEER A $1,000.00 FINE SHOULD BE ACCESSED.
23. HYDRAULIC SEEDING SHALL INCLUDE THE SEED, FERTILIZER, & WOOD CELLULOSE OR WOOD PULP FIBER MULCH WITH WATER. APPLY IN A SLURRY UNIFORMLY OVER THE AREA AT A RATE OF 500 LBS/ACRE.
24. THE OPERATOR WILL ENSURE THAT ALL MEASURES AND FACILITIES FOR CONTROL OF EROSION AND SEDIMENTATION DURING SITE PREPARATION, OPERATION, AND/OR RECLAMATION ACTIVITIES SHALL ADHERE TO THE FOLLOWING:
25. ALL EROSION AND SEDIMENTATION CONTROL MEASURES OR FACILITIES, WHETHER TEMPORARY OR PERMANENT, SHALL BE CONTINUOUSLY MAINTAINED BY THE OPERATOR, SO AS TO BE EFFECTIVE.
26. SEDIMENT IN SURFACE RUNOFF WATER SHALL BE TRAPPED BY USE OF DEBRIS BASINS, SEDIMENT BASINS, SILT TRAPS, SEDIMENT BARRIERS OR SIMILAR STRUCTURES.
27. PERMANENT VEGETATION SHALL BE INSTALLED AS SOON AS POSSIBLE. TEMPORARY VEGETATION AND/OR MULCH SHALL BE EMPLOYED WHERE NECESSARY TO PROTECT EXPOSED CRITICAL AREAS UNTIL PERMANENT VEGETATION OR STABILIZATION IS ATTAINED.
28. NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED WHEREVER FEASIBLE TO PROVIDE FOR NATURAL BUFFER AREAS.
29. DIVERSIONS, DIKES, AND BERMS SHALL BE EMPLOYED TO RETAIN, DIRECT AND CONTROL SURFACE WATER RUNOFF FROM AFFECTED AREAS INTO SEDIMENT CONTROL STRUCTURES.
30. ALL SURFACE WATER DISCHARGES SHALL BE CONTROLLED AND RELEASED AT A NON-EROSIVE VELOCITY ONTO STABILIZED AREAS OR INTO STABILIZED CHANNELS.

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:
GEORGIA REGISTERED No. 32085 PROFESSIONAL 2/22/22 ENGINEER CHADWICK R. ZITTROUER

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF
LEGACY PARK - BUILDING #3
FOR
CH REALTY IX - SANSONE I

DRAWING TITLE:
EROSION NOTES

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO:
SESC-6

COPYRIGHT Kern & Co., LLC © 2013 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

GEORGIA

UNIFORM CODING SYSTEM

FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Cd	CHECKDAM			A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.
Ch	CHANNEL STABILIZATION			Improving, constructing or stabilizing an open channel, existing stream, or ditch.
Co	CONSTRUCTION EXIT		Co	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.
Cr	CONSTRUCTION ROAD STABILIZATION		Cr	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.
Dc	STREAM DIVERSION CHANNEL			A temporary channel constructed to convey flow around a construction site while a permanent structure is being constructed.
Di	DIVERSION			An earth channel or dike located above, below or across a slope to divert runoff. This may be a temporary or permanent structure.
Dn1	TEMPORARY DOWNDRAIN STRUCTURE		Dn1	A flexible conduit of heavy-duty fabric or other material designed to safely conduct surface runoff down a slope. This is temporary and inexpensive.
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.
Gr	GRADE STABILIZATION STRUCTURE		Gr	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.
Lv	LEVEL SPREADER			A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.
Rd	ROCK FILTER DAM			A permanent or temporary stone filter dam installed across small streams or drainageways.
Re	RETAINING WALL			A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.
Rt	RETRO FITTING		Rt	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.
Sd1	SEDIMENT BARRIER			A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.
Sd2	INLET SEDIMENT TRAP			An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.
Sd3	TEMPORARY SEDIMENT BASIN			A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.
Sk	FLOATING SURFACE SKIMMER			A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.
Spb	SEEP BERM			Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.

STRUCTURAL PRACTICES

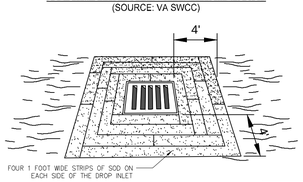
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING		Sr	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		Su	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN		Tc	A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Tp	TOPSOILING		Tp	The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION		Tr	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL			Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

VEGETATIVE PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf	Strip of undisturbed original vegetation, enhanced or restored existing vegetation or the reestablishment of vegetation surrounding an area of disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)		Cs	Planting vegetation on dunes that are denuded artificially constructed, or re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where seedings may not have a suitable growing season to produce an erosion retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing seedings on disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)		Ds3	Establishing a permanent vegetative cover such as trees, shrubs, vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable or critically eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction site, roadways and similar sites.
Fl-Co	FLOCCULANTS AND COAGULANTS		Fl-Co	Substance formulated to assist in the solids/liquid separation of suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)		Sb	The use of readily available native plant materials to maintain and enhance streambanks, or to prevent, or restore and repair small streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.
Tac	TACKIFIERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the organic material to bind together.

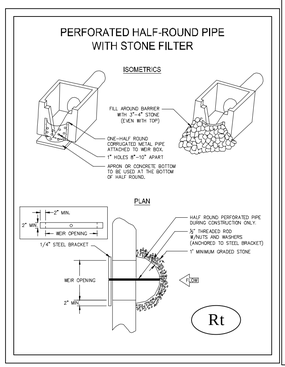
INLET SEDIMENT TRAP

SOD STRIPS PROTECT INLET AREA FROM EROSION
(SOURCE: VA SWCC)



Sd2-F

PERFORATED HALF-ROUND PIPE WITH STONE FILTER

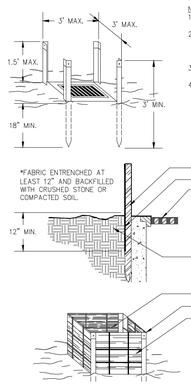


Rt

GaSWCC (Amended – 2013)

FABRIC AND SUPPORTING FRAME FOR INLET PROTECTION

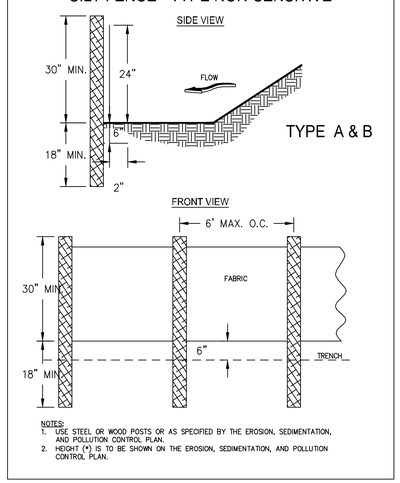
STEEL FRAME AND SILT FENCE INSTALLATION



NOTES:
1. DESIGN IS FOR SLOPES NO GREATER THAN 5% (NOT DESIGNED FOR CONCENTRATED FLOWS).
2. THE STEEL POSTS SUPPORTING THE SILT FENCE MATERIAL SHOULD BE SPACED EVENLY AROUND THE PERIMETER OF THE INLET (MAXIMUM OF 3' APART).
3. THE STEEL POSTS SHOULD BE SECURELY DRIVEN AT LEAST 18" DEEP.
4. THE FABRIC SHOULD BE ENTRENCHED AT LEAST 12" AND THEN BACKFILLED WITH CRUSHED STONE OR COMPACTED SOIL.

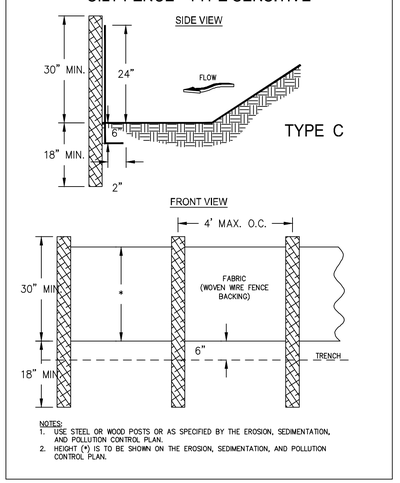
Sd2-F

SILT FENCE - TYPE NON-SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

SILT FENCE - TYPE SENSITIVE



NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

A PERMANENT VEGETATION USING SODS ON HIGHLY ERODIBLE OR CRITICALLY ERODED LANDS.

- BRING SOIL SURFACE TO FINAL GRADE. CLEAR SURFACE OF TRASH, WOODY DEBRIS, STONES AND CLODS LARGER THAN 1". APPLY SOD TO SOIL SURFACES ONLY AND NOT FROZEN SURFACES OR GRAVEL TYPE SOILS.
- TOPSOIL PROPERLY APPLIED WILL HELP GUARANTEE A STAND. DO NOT USE TOPSOIL RECENTLY TREATED WITH HERBICIDES OR SOIL STERILANTS.
- MIX FERTILIZER INTO SOIL SURFACE. FERTILIZE BASED ON SOIL TESTS OR TABLE 1.

Ds4

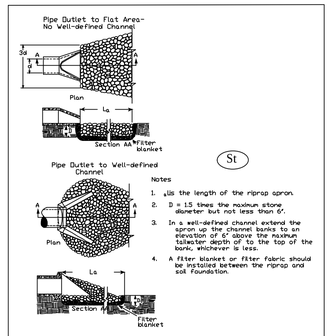
Fertilizer Requirements for soil Surface Application

Fertilizer Type	Fertilizer Type (lbs./acre)	Fertilizer Type (lbs./sq.ft.)	Season
10-10-10	1000	.025	Fall

- AGRICULTURAL LIME SHOULD BE APPLIED BASED ON SOIL TESTS OR AT A RATE OF 1 TO 2 TONS PER ACRE.
- LAY SOD WITH TIGHT JOINTS AND IN STRAIGHT LINES. DON'T OVERLAP JOINTS. STAGGER JOINTS AND DO NOT STRETCH SOD.
- ON SLOPES STEEPER THAN 3:1, SOD SHOULD BE ANCHORED WITH PINS OR OTHER APPROVED METHODS.
- INSTALLED SOD SHOULD BE ROLLED OR TAMPED TO PROVIDE GOOD CONTACT BETWEEN SOD AND SOIL.
- IRRIGATE SOD AND SOIL TO A DEPTH OF 4" IMMEDIATELY AFTER INSTALLATION.
- SOD SHOULD NOT BE CUT OR SPREAD IN EXTREMELY WET OR DRY WEATHER.
- IRRIGATION SHOULD BE USED TO SUPPLEMENT RAINFALL FOR A MINIMUM OF 2-3 WEEKS.

SOD PLANTING REQUIREMENTS

GRASS	VARIETIES	RESOURCE AREA	GROWING SEASON
BERMUDAGRASS	COMMON TIFWAY TIFREEN TIFLAWN	M–L,P,C P,C P,C P,C	WARM WEATHER
BAHIAGRASS	PENSACOLA	P,C	WARM WEATHER
CENTIPEDE	–––	P,C	WARM WEATHER
ST. AUGUSTINE	COMMON BITTERBLUE RALEIGH	C	WARM WEATHER
ZOYSIA	EMERALD MYER	P,C	WARM WEATHER

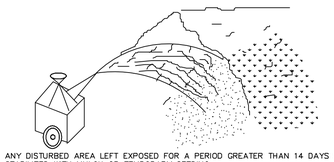


St

Notes
1. La is the length of the riprap apron.
2. D = 1.5 times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth or to the top of the banks, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation.

Figure 6-24.3 – Riprap Outlet Protection (Modified From Va SWCC)

ESTABLISHING TEMPORARY VEGETATIVE COVER WITH FAST GROWING SEEDINGS ON DISTURBED OR DENUDED AREAS.



ANY DISTURBED AREA LEFT EXPOSED FOR A PERIOD GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING.

- SITE PREPARATION
  - –GRADING AND SHAPING
  - –SEEDBED PREPARATION
  - –APPLY LIME AND FERTILIZER
  - –PLANT SEEDING, SELECT SPECIES BY SEASON AND REGION
  - –APPLY MULCHING MATERIAL IF NEEDED
  - –IRRIGATE IF NEEDED BUT NOT AT RATE TO CAUSE EROSION

*PLANTING DATES DEPEND ON SPECIES AND REGION (MOUNTAIN, PIEDMONT OR COASTAL)

Ds2 DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)

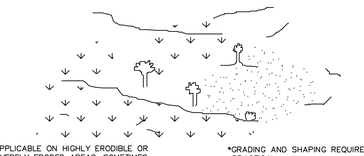
SEEDING RATES FOR TEMPORARY SEEDINGS

SPECIES	RATE PER 1,0000 SQ. FT.	RATE PER ACRESñ	PLANTING DATESô MTS–L'STONE	PIEDMONT	COASTAL
RYEGRASS	0.9 POUNDS	40–50 LBS.	8/1–12/1	8/15–1/1	8/15–3/1
ANNUAL LESPEDEZA	0.9 POUNDS	40 LBS.	3/1–4/1	3/1–4/1	2/1–3/1
WEEPING LOVEGRASS	0.1 POUNDS	4–6 LBS.	3/15–8/1	3/1–8/15	2/15–8/15

* ALL SEEDING NUMBERS ARE ALONE FOR MIXTURE NUMBER SEE MANUAL FOR EROSION AND SEDIMENT TABLE 6–24.1 PAGES 6–134 – 6–136.

ñ UNUSUAL SITE CONDITIONS MAY REQUIRE HEAVIER SEEDING RATES.
ô SEEDING DATES MAY NEED TO BE ALTERED TO FIT TEMPERATURE VARIATIONS AND LOCAL CONDITIONS.

Ds3 ESTABLISHING A PERMANENT VEGETATIVE COVER AS A DISTURBED AREA.
- –TO STABILIZE THE SOIL
- –TO REDUCE DAMAGE FROM SEDIMENT AND RUNOFF TO DOWNSTREAM AREAS
- –TO IMPROVE WILDLIFE HABITAT AND VISUAL RESOURCES



*APPLICABLE ON HIGHLY ERODIBLE OR SEVERELY ERODED AREAS, SOMETIMES CALLED "CRITICAL AREAS"

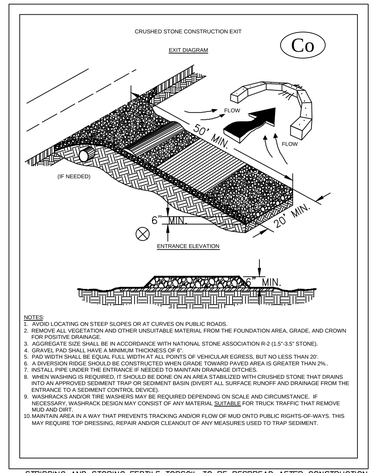
INCLUDING:
- –CUT OR FILL SLOPES
- –EARTH SPILLWAYS
- –BORROW AREAS
- –CHANNEL BANKS
- –BERMS
- –ROADSIDES
- –SPOILS AREAS
- –GULLIED LANDS

*GRADING AND SHAPING REQUIRED WHERE FEASIBLE PRACTICAL
*SEEDED PREPARATION
–NOT REQUIRED IF USING HYDRAULIC SEEDING AND FERTILIZING
–WHEN REQUIRED:

SLOPE	SEEDBED
3:1 OR FLATTER	≥ 4" DEEP
2:1 TO 3:1	1" TO 4" DEEP
2:1 OR STEEPER	DEPRESSION EVERY 6"–8" WITH HAND TOOL

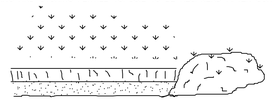
*HAVE SOIL ANALYZED FOR LIME AND FERTILIZER RATE
*MULCH ALL SLOPES STEEPER THAN 3% AND IN BOTTOM OF SPILLWAYS AND ON ROAD BANKS
*ANCHOR MULCH IMMEDIATELY

DISTURBED AREA STABILIZATION (With Permanent Vegetation)



NOTES
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION N-2 (1.5"-3.5" STONE).
4. LENGTH SHALL BE NOT LESS THAN 50' EXCEPT FOR A SINGLE RESIDENCE LOT.
5. PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
6. A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
7. INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
8. WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
9. WASHRACKS AND/OR TIRE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY, WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
10. MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

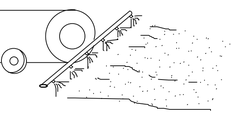
STRIPPING AND STORING FERTILE TOPSOIL TO BE RESPREAD AFTER CONSTRUCTION.



*RECOMMENDED FOR SIDE 2:1 OR FLATTER SLOPES
*TOPSOIL SHOULD BE TESTED TO JUSTIFY STRIPPING
–pH 5.0 TO 7.5
–SOLUABLE SALTS ≤ 500 ppm
*STOCKPILE SHOULD NOT OBSTRUCT NATURAL DRAINAGE OR CAUSE OFF-SITE ENVIRONMENTAL DAMAGE
*RECOMMEND RESPREADING 5" DEEP

Tp TOPSOILING

CONTROLLING DUST AT THE SITE



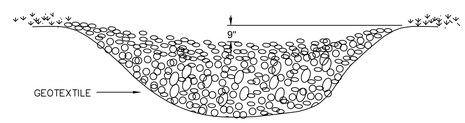
*TEMPORARY METHODS:
–MULCHES
–TEMPORARY VEGETATIVE COVER
–SPRAY ON ADHESIVES
–TELLAGE
–IRRIGATION
–BARRIERS
–CALCIUM CHLORIDE

*PERMANENT METHODS
–PERMANENT VEGETATION
–TOPSOILING
–STONE COVER

*CHEMICAL CONTROL

ADHESIVE	WATER DILUTION	TYPE OF NOZZLE	APPLICATION RATE (GAL/AC)
ANIONIC ASPHALT EMULSION	7:1	SPRAY	1,200
LATEX EMULSION	12 1/2:1	FINE SPRAY	235
RESIN–IN–WATER EMULSION	4:1	FINE SPRAY	300

Du DUST CONTROL ON DISTURBED AREAS



Cd-S STONE CHECK DAM

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK FOR CH REALTY IX - SANSONE I

DRAWING TITLE: EROSION & SEDEMENTATION DETAILS

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

CHAD ZITTROUER
GSWCC CERTIFICATION # 8150
MARK D. CRAPPS
GSWCC CERTIFICATION # 2888

☐ NOT FOR CONSTRUCTION
☐ RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

SHEET NO: SESC-7

COPYRIGHT Kern & Co., LLC. © 2013 This drawing and the representations on this drawing may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC.

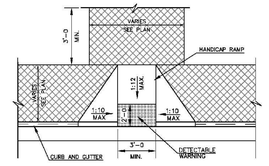
Wed, 02 Mar 2022 - 9:22am cstinsser
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg

DETECTABLE WARNINGS ON WALKING SURFACE OF HANDICAP RAMP

DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0.9 IN (23mm), A HEIGHT OF NOMINAL 0.2 IN (5mm) AND A CENTER-TO-CENTER SPACING OF NOMINAL 2.35 IN (60mm) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE INTEGRAL PART OF THE WALKING SURFACE. DETECTABLE WARNINGS USED ON SURFACES SHALL DIFFER FROM ADJOINING WALKING SURFACES IN RESILIENCY OR SOUND-ON-CANE.

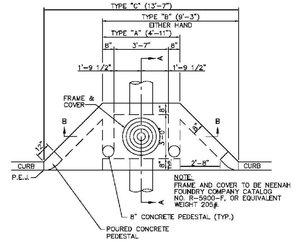
SURFACES SHALL MEET THE ADA ACCESSIBILITY GUIDELINES SECTION 4.29.2.



HANDICAP RAMP TYPE "A"

City of Port Wentworth
TECHNICAL DETAILS
P-4

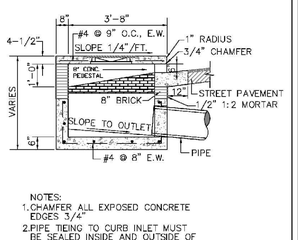
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



PLAN OF CURB INLET

City of Port Wentworth
TECHNICAL DETAILS
SD-1

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



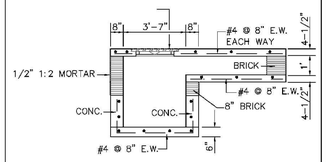
NOTES:
1. CHAMFER ALL EXPOSED CONCRETE EDGES 3/4"
2. PIPE TIEING TO CURB INLET MUST BE SEALED INSIDE AND OUTSIDE OF STRUCTURE WITH BRICK AND MORTAR

CURB INLET SECTION A – A

City of Port Wentworth
TECHNICAL DETAILS
SD-3

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

NOTE:
C.I. MANHOLE FRAME AND COVER EQUIVALENT TO NEENAH R-5900-F. FRAME AND COVER TO BE MACHINE FITTED PRIOR TO LEAVING SHOP. WEIGHT – 205 LBS.

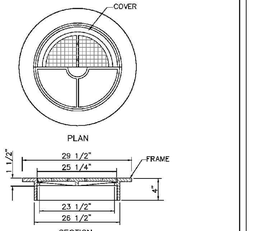


NOTES:
1. MATCH TOP OF PIPE ELEVATIONS WHEN DIFFERENT SIZE PIPES ARE CONSTRUCTED IN CURB INLET.
2. TYPE "B" INLET SHOWN

CURB INLET SECTION B – B

City of Port Wentworth
TECHNICAL DETAILS
SD-4

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

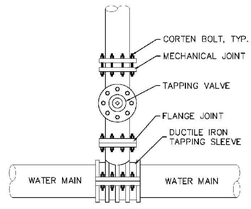


NOTES:
1. FRAME AND COVER TO BE NEENAH FOUNDRY COMPANY CATALOG NO. R-5900-F OR EQUIVALENT WEIGHT 205#.
2. COVER MUST HAVE FOUNDRY STAMP SHOWING THE UTILITY (DRAINAGE).

INLET FRAME & COVER

City of Port Wentworth
TECHNICAL DETAILS
SD-5

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



PLAN VIEW

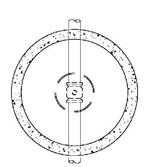
NOTE:
1. TAPPING SLEEVE AND VALVE MUST BE INSTALLED IN A MANHOLE, SEE DWG W-7 FOR THE MANHOLE DETAIL.

STANDARD TAPPING SLEEVE

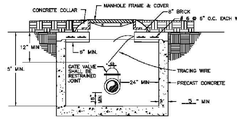
City of Port Wentworth
TECHNICAL DETAILS
W-5

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

NOTES:
1. MANHOLE FRAME AND COVER SHALL BE NEENAH FOUNDRY CO., CATALOG NO. R-1466, TYPE C, LABELED "WATER".
2. THE BOTTOM OF THE MANHOLE FRAME SHALL NOT BE MORE THAN 12" ABOVE THE TOP OF THE MANHOLE STRUCTURE.
3. PRECAST CONCENTRIC CONE RISERS MAY BE USED WHERE REQUIRED FOR DEPTH.
4. THE MANHOLE FRAME AND COVER MUST BE CENTERED OVER THE VALVE.



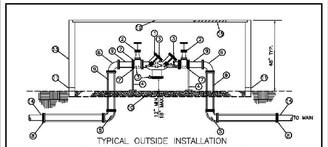
PLAN



VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS
W-14

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



TYPICAL OUTSIDE INSTALLATION
(2", 2 1/2", 3", 4", 6", 8", & 10" SIZES)

MATERIALS

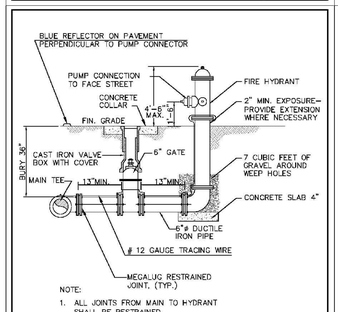
ITEM	QUAN	DESCRIPTION
1	1	REDUCED PRESSURE ZONE DEVICE
2	2	O.S. & Y. RESILIENT GATE VALVES
3	4	TEST COCKS
4	2	3" ISO- 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
5	2	ISO 49 CIP 90° BENDS
6	4	FLANGED 45° CIP 90° BENDS
7	6	FLANGED COUPLING ADAPTER SHALL BE USED FOR 3")
8	1	COPPER STRAINER SCREEN
9		DUCTILE IRON PIPE CIP TO FIT
10	1	4" REX DRAIN, IN BOTTOM OF 37" CIP CONCRETE SLAB
11	2	DRAIN PORTS SIZE ACCORDING TO PIPE SIZE
12		3/16 ALUMINUM TREAD PLATE / WITCH COVER W/ SUPPORTS AS NEEDED
13		BOX-CONCRETE BLOCK, POURED CONCRETE OR PREFABRICATED BOX PER CITY SPECS
14		D.I. OR PVC PIPE
15	2	2" X 2" MIN. HATCH

NOTES:
1. FOR FINAL APPROVAL ASSEMBLY MUST BE CENTERED IN ENCLOSURE OF INSTALLABLE UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND A BACKFLOW PREVENTER. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED IMMEDIATELY DOWNSTREAM OF METER.
2. UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR ANY USE OTHER THAN BACKFLOW DEVICE TESTING.

REDUCED PRESSURE DETECTOR FOR FIRE SYSTEM

City of Port Wentworth
TECHNICAL DETAILS
W-24

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

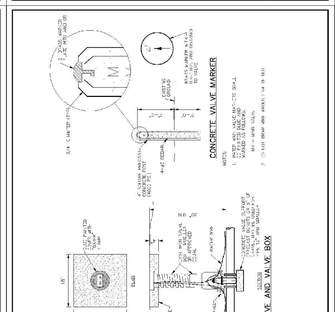


NOTE:
1. ALL JOINTS FROM MAIN TO HYDRANT SHALL BE RESTRAINED.
2. PROTECT BOLTS AND THREADS FROM CONCRETE.

STANDARD FIRE HYDRANT

City of Port Wentworth
TECHNICAL DETAILS
W-9

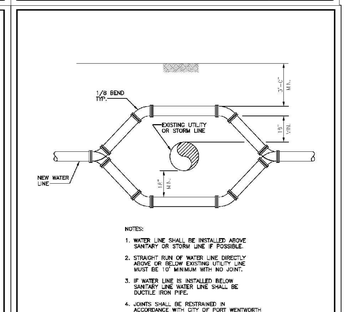
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



WATER VALVE 4" OR 6"

City of Port Wentworth
TECHNICAL DETAILS
W-36

PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007

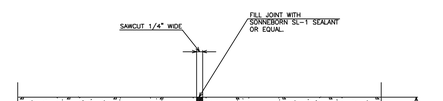


NOTES:
1. WATER LINE SHALL BE INSTALLED ABOVE SANITARY OR STORM LINE IF POSSIBLE.
2. STRAIGHT RUN OF WATER LINE DIRECTLY ABOVE OR BELOW EXISTING UTILITY LINE MUST BE 10' MINIMUM WITH NO JOINT.
3. IF WATER LINE IS INSTALLED BELOW SANITARY LINE WATER LINE SHALL BE DUCTILE IRON PIPE.
4. JOINTS SHALL BE RESTRAINED IN ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.

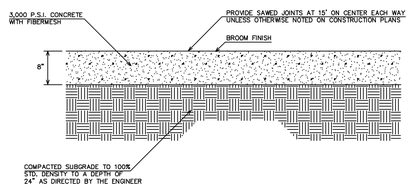
STANDARD UTILITY CROSSING

City of Port Wentworth
TECHNICAL DETAILS
W-6

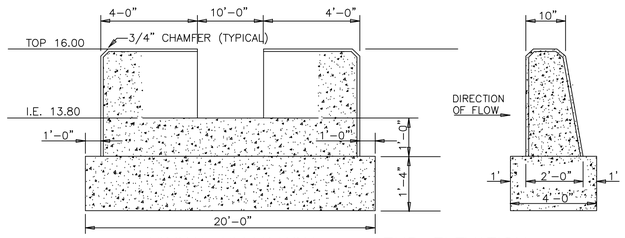
PREPARED BY STEVENSON & PALMER ENGINEERING, INC. SCALE: N.T.S. DATED: FEBRUARY 2007



JOINT SEALER DETAIL



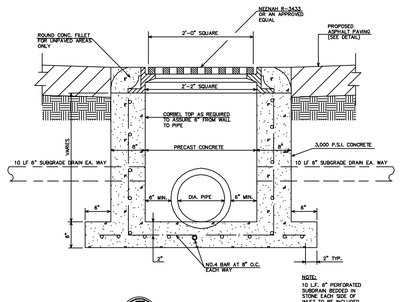
P-19 CONCRETE PAVEMENT



FRONT ELEVATION END ELEVATION

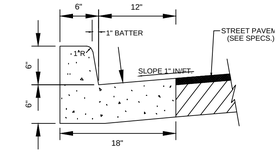
NOTE:

D-26 RETANGULAR WEIR



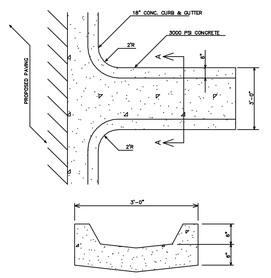
NOTE:
10 L.F. 6" PERFORATED SUBDRAIN BEDDED IN STONE EACH SIDE OF INLET TO BE INCLUDED IN COST OF INLET.

D-5 GRATE INLET



NORMAL GUTTER

P-3 18" CURB AND GUTTER



SECTION A–A

D-21 CONCRETE FLUME

Kern & Co., LLC
Consulting Engineers • Land Surveyors • Land Planners
Architects • Landscape Architects • Environmental Scientist
7 Mall Court (31406) P.O. Box 15179 (31416) Savannah, Georgia (912) 354-8400
319 Walnut Street Suite A Statesboro, Georgia 30458 Phone: (912) 225-3373

STAMP:

STAMP:

ORIGINAL RELEASED FOR CONSTRUCTION DATE:

NO	DATE	REVISION

PLANS OF LEGACY PARK FOR CH REALTY IX - SANSONE I

DRAWING TITLE: SITE DETAILS

SCALE:	1" = 50'
PROJECT NO:	210071.000
DATE:	2/22/22
DRAWN BY:	WM
CHECKED BY:	CRZ

SHEET NO: DET-1

NOT FOR CONSTRUCTION
RELEASED FOR CONSTRUCTION
DATE: _____ BY: _____

COPYRIGHT Kern & Co., LLC © 2021 This drawing and its reproductions are the property of this firm and may not be reproduced, published, or used in any way without the written permission of Kern & Co., LLC

Wed, 02 Mar 2022 - 9:22am cstrouser
DRAWING PATH: G:\2021\210071.000\dwg\Sansone - Buildings 2&3.dwg