City Council
7224 GA Highway 21
Port Wentworth, GA 31407

SUBMITTED

Meeting: 03/23/23 07:00 PM
Department: Development Services
Category: Planning/Zoning Item
Prepared By: Melanie Ellis
Department Head: Brian Harvey

AGENDA ITEM (ID # 2807)

DOC ID: 2807

Site Plan Review Application submitted by Guy Davidson, Rice Creek Landing LLC for PIN # 7-0906-01-018 and 7-0906-01-012 (Highway 21) for a General Development Site Plan to allow a multi-family development (Rice Creek Apartments) in a P-R-M (Planned Multifamily Residential) Zoning District

Issue/Item: Site Plan Review Application submitted by Guy Davidson, Rice Creek Landing LLC for PIN # 7-0906-01-018 and 7-0906-01-012 (Highway 21) for a General Development Site Plan to allow a multi-family development (Rice Creek Apartments) in a P-R-M (Planned Multifamily Residential) Zoning District

Background: The subject property is currently vacant woodland. There are no buildings or structures on the subject property.

Facts and Findings: Rice Creek Apartments will consist of approximately two hundred fifty-three (253) dwelling units (6 buildings), leasing center and amenities, associated parking, utilities, drainage and infrastructure improvements. The purposed main entrance is off of Rice Creek Road and a secondary entrance off of Highway 21. These parcels are identified by the 2021-2041 City of Port Wentworth Comprehensive Plan as being in the Suburban Character Area. These parcels are in Council District 1.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, March 13, 2023 at 3:30 PM. **/ UPDATE: The Planning Commission voted unanimously to approve this application with the condition that the Dog Park location be changed to not interfere with neighbors and the Highway 21 exit is required.**

ATTACHMENTS:

- Rice Creek Apartments 7-0906-01-018, 012 G-Site Plan 2023-Application (PDF)
- Rice Creek Apartments 7-0906-01-018, 012 G-Site Plan 2023-APO(PDF)
- Rice Creek Apartments 7-0906-01-018, 012 G-Site Plan 2023-Timeline (DOCX)
- Rice Creek Apartments 7-0906-01-018, 012 G-Site Plan 2023-Site Plan (PDF)

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 Highway 21

PIN #(s): 70906 01018, 70906 01012

Zoning: P-R-M Estimated Cost of Construction: $_____

Type of Construction: Planned Multifamily

Applicant's Name: Rice Creek Landing LLC / Guy Davidson

Mailing Address: 110 Park of Commerce Drive, Suite #110
Savannah, GA 31405

Phone #: 912-944-4410 Email: gpd@daicommercial.com

Owner's Name (If Different form Applicant): Rice Creek Landing LLC / Guy Davidson

Mailing Address: 110 Park of Commerce Drive, Suite #110
Savannah, GA 31405

Phone #: 912-944-4410 Email: gpd@daicommercial.com

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

_____ 1/11/23
Applicant's Signature Date

_____ _____
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)
- N/A ☐ 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)
- N/A ☐ 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

_____ 1/11/23

Applicant's Signature Date

Updated 4/28/2020

Adjacent Property Owners Within 250 Feet

Quentin Foster, Sr.
PIN: 70906 01008
Property Address: Highway 21,
Port Wentworth, Georgia 31407
Mailing Address: 127 Bridge View Drive,
Marietta, Georgia 30066

City of Port Wentworth
PIN: 70906 01009
Property Address: Highway 21,
Port Wentworth, Georgia 31407
Mailing Address: 305 S. Coastal Hwy,
Port Wentworth, Georgia 31407

Carolina Self Storage Centers, Inc.
PIN: 70906 01014
Property Address: 7975 Highway 21,
Port Wentworth, Georgia 31407
Mailing Address: 1476 Jefferies Hwy,
Walterboro, South Carolina 29488

Armando M. Sanches and Johana E. Insaurralde
PIN: 70906C05041
Property & Mailing Address: 10 Burnt Oak Road,
Port Wentworth, Georgia 31407

William Holden, Jr.
PIN: 70906C07011
Property & Mailing Address: 13 Burnt Oak Road, Port Wentworth, Georgia 31407

Darren C. Clay
PIN: 70906C07010
Property & Mailing Address: 15 Burnt Oak Road, Port Wentworth, Georgia 31407

Carolyn Eiland
PIN: 70906C07009
Property & Mailing Address: 17 Burnt Oak Road, Port Wentworth, Georgia 31407

James R. & Britany Jane Burrell
PIN: 70906C07008
Property & Mailing Address: 19 Burnt Oak Road, Port Wentworth, Georgia 31407

James G. & LaShuanda N. Hudson
PIN: 70906C05042
Property & Mailing Address: 12 Burnt Oak Road, Port Wentworth, Georgia 31407

Bridgett Bernadett Levine
PIN: 70906C05043
Property & Mailing Address: 14 Burnt Oak Road, Port Wentworth, Georgia 31407

Sonna R. Vanover
PIN: 70906C05044
Property & Mailing Address: 16 Burnt Oak Road, Port Wentworth, Georgia 31407

Karm D. Sourabie & Sherrell L. Adkins
PIN: 70906C05045
Property & Mailing Address: 18 Burnt Oak Road, Port Wentworth, Georgia 31407

John I. Farrell
PIN: 70906C05046
Property & Mailing Address: 20 Burnt Oak Road, Port Wentworth, Georgia 31407

Willie Warren Durdley II & Sheilla A. Durdley
PIN: 70906C05047
Property & Mailing Address: 22 Burnt Oak Road, Port Wentworth, Georgia 31407

American Homes 4 Rent Properties Eight LLC
PIN: 70906C05048
Property Address: 24 Burnt Oak Road,
Port Wentworth, Georgia 31407
Mailing Address: 23975 Park Sorrento,
Suite 300, Calabasas, California 91302

Attachment: 7-0906-01-012 HWY 21 EXLEY ZMA SEPT 2021 - Application (2513 : Zoning Map Amendment 7-0906-01-012 Exley Hwy 21)

Earline E. Mason
PIN: 70906C06001
Property & Mailing Address: 2 Twelve Oaks Road, Port Wentworth, Georgia 31407

Ahmad J. Castle
PIN: 70906C06002
Property & Mailing Address: 4 Twelve Oaks Road, Port Wentworth, Georgia 31407

Daniel Rivera
PIN: 70906C06011
Property & Mailing Address: 3 Huntington Road, Port Wentworth, Georgia 31407

Linda Manies
PIN: 70906C06010
Property & Mailing Address: 1 Huntington Road, Port Wentworth, Georgia 31407

Rashida M. Sharp
PIN: 70906C05049
Property & Mailing Address: 26 Burnt Oak Road, Port Wentworth, Georgia 31407

Quentin Mungin, Sr.
PIN: 70906C05050
Property & Mailing Address: 28 Burnt Oak Road, Port Wentworth, Georgia 31407

Angela Dove
PIN: 70906C05051
Property & Mailing Address: 30 Burnt Oak Road, Port Wentworth, Georgia 31407

Rice Creek Homeowners Associate of Port Wentworth, Georgia, Inc.
PIN: 70906C05052
PIN: 70906C05073
Property Address: Burnt Oak Road, Port Wentworth, Georgia 31407
Mailing Address: 119 Canal Street, Suite 102, Pooler, Georgia 31322

Andrew T. Aponte &
Chantal K. Garzon-Aponte
PIN: 70906C05072
Property & Mailing Address: 32 Burnt Oak Road, Port Wentworth, Georgia 31407

Kontar L. Briggs
PIN: 70906C05071
Property & Mailing Address: 34 Burnt Oak Road, Port Wentworth, Georgia 31407

Parcardi Trappio
PIN: 70906C05070
Property & Mailing Address: 36 Burnt Oak Road, Port Wentworth, Georgia 31407

Jared Abraham Gaik
PIN: 70906C12007
Property & Mailing Address: 38 Burnt Oak Road, Port Wentworth, Georgia 31407

Marquitha S. Gibson
PIN: 70906C12006
Property & Mailing Address: 12 Mangrove Terrace, Port Wentworth, Georgia 31407

Patrick F. Thomas
PIN: 70906C12005
Property & Mailing Address: 10 Mangrove Terrace, Port Wentworth, Georgia 31407

Patrick B. Cope and Waltien Miller Cope
PIN: 70906C05069
Property & Mailing Address: 2 Lafayette Court, Port Wentworth, Georgia 31407

Willie B. & Danielle L. Wallace
PIN: 70906C05068
Property & Mailing Address: 4 Lafayette Court, Port Wentworth, Georgia 31407

John A. & Anna M. Stoutland
PIN: 70906C05067
Property & Mailing Address: 6 Lafayette Court, Port Wentworth, Georgia 31407

Attachment: 7-0906-01-012 HWY 21 EXLEY ZMA SEPT 2021 - Application (2513 : Zoning Map Amendment 7-0906-01-012 Exley Hwy 21)

Troy A. Pollen
PIN: 70906C05066
Property & Mailing Address: 8 Lafayette Court, Port Wentworth, Georgia 31407

Albert E. & Janice F. Allen
PIN: 70906C05065
Property & Mailing Address: 10 Lafayette Court, Port Wentworth, Georgia 31407

Richard C. Calhoun
PIN: 70906C05064
Property & Mailing Address: 12 Lafayette Court, Port Wentworth, Georgia 31407

Rebecca Angelica Santibanez
PIN: 70906C05063
Property Address: 14 Lafayette Court, Port Wentworth, Georgia 31407
Mailing Address: 5000 Augusta Road, Savannah, Georgia 31408

Anthony L. Sesmundo
PIN: 70906C05062
Property & Mailing Address: 15 Lafayette Court, Port Wentworth, Georgia 31407

Chevella S. Stokes
PIN: 70906C05061
Property & Mailing Address: 13 Lafayette Court, Port Wentworth, Georgia 31407

Jamal Khari Manning & Cathy C. Williams-Manning
PIN: 70906C05060
Property & Mailing Address: 11 Lafayette Court, Port Wentworth, Georgia 31407

Gerry L. & Myra T. Lattimore
PIN: 70906C05059
Property & Mailing Address: 9 Lafayette Court, Port Wentworth, Georgia 31407

Attachment: 7-0906-01-012 HWY 21 EXLEY ZMA SEPT 2021 - Application (2513 : Zoning Map Amendment 7-0906-01-012 Exley Hwy 21)

Project Timeline

Project Number: 230069

Project Name: Rice Creek Apartments 7-0906-01-018, 012 G-Site Plan March 2023

Applicant / Engineer: Rice Creek Landing LLC (Guy Davidson) / T&H

Owner: Rice Creek Landing LLC/Guy Davidson

City Review Engineer: N/A

- 01/27/2023 – Application received: Complete. [S.C.]
- 2/24/2023 – public notice letters mailed 2/24/23. [M.E.]
- 2/26/2023 – public notice published in Savannah Morning News. [M.E.]
- 3/13/2023 - The Planning Commission voted unanimously to approve this application with the condition that the Dog Park location be changed to not interfere with neighbors and the Highway 21 exit is required. [M.E.]

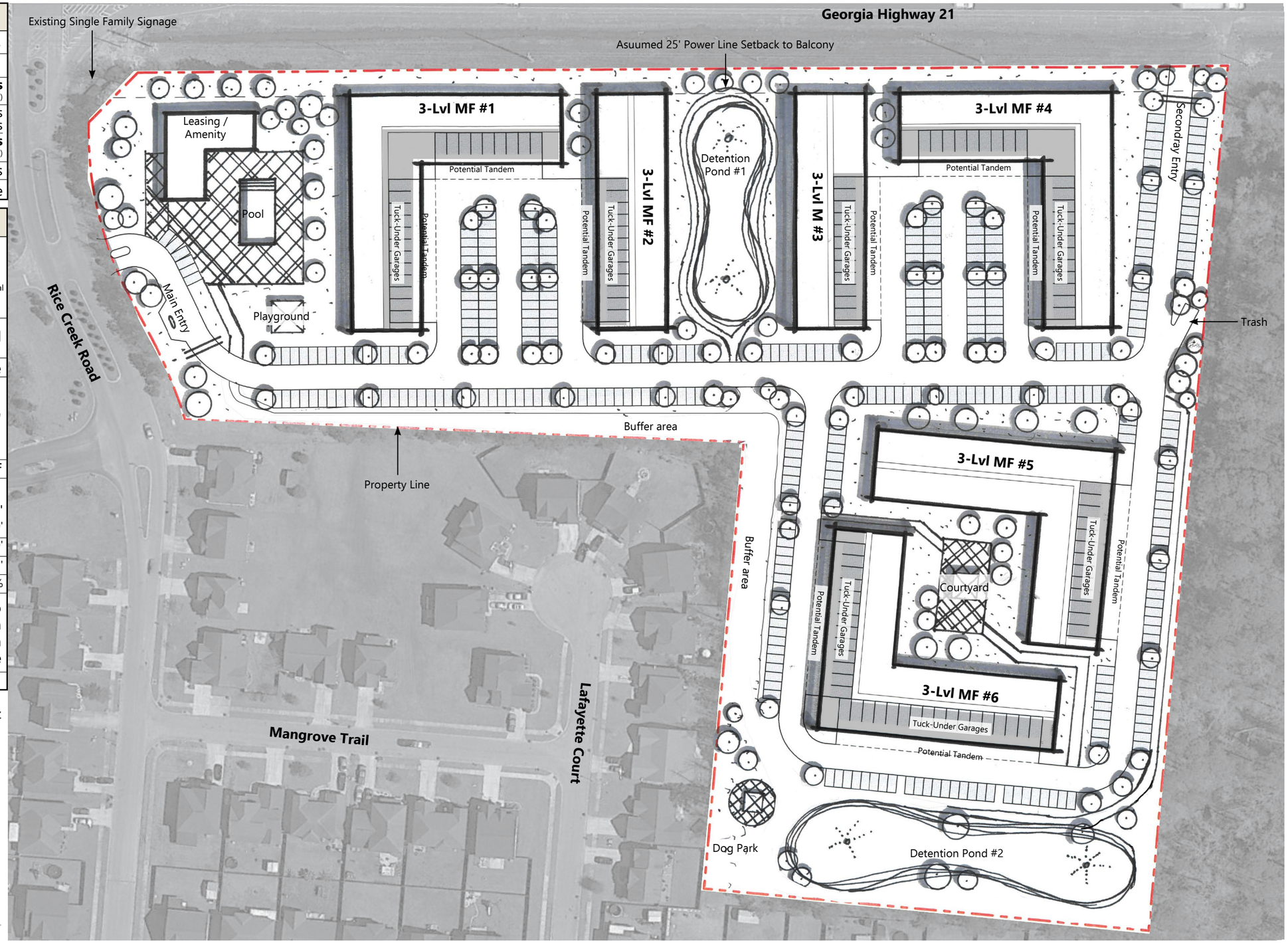
PROJECT DATA

Residential	assumed 40% 1 BR, 50% 2 BR, 10% 3 BR assumed 1,075 sf avg	**253 units**
Leasing/Amenity		8,000 s.f.
Parking Required		**431 sps** (1.7 sps/Unit)
Parking Provided	Surface: Tuck-Under: **Total:**	351 sps 109 sps **460 sps** (1.8 sps/Unit)
Site Area		14.1 acres
Density		18 units/acre

SITE CONDITIONS

Zoning District	**Current zoning:** Planned overlay-Multifamily Residential	**P-R-M**
Permitted Uses	**P-R-M:**	MF is permitted
Density		Max. 18 units/acre
Height		Max. 50'
Lot Area/Unit		Min. 2,400 sf
Setbacks	**Front yard:** (from center of the street) Major Artery: Conneting Route/All Others: **Side yard:** **Rear yard:**	 Min.70' Min.60' Min.10' Min.25'
Bldg. Coverage		45%
Required Parking		1.25 sps/studio 1.5 sps/1 bedroom 1.75 sps/2 bedroom 2 sps/3 or more
Easement		Existing power line along Hwy 21

Zoning Reviewed By: zz



JHP
Architecture / Urban Design

A FIRM WITH A VIBRANT & EXCITING CULTURE RECOGNIZED FOR ELEVATED DESIGN

STONERIVER COMPANY

Rice Creek Apartments

Port Wentworth, Georgia

SITE PLAN

Copyright © JHP 2022. Not for Regulatory Approval, Permit or Construction:
John Schrader.
Registered Architect of State of Georgia , Registration No. RA013349.

01.19.2023

01
#2022057 AK

Site Plan Review Application submitted by Third Lake Development, LLC., on behalf of Bald Eagle Partners for PIN # 7-0906-04-091 (Rice Hope Rd) for a Specific Development Site Plan to allow a Multifamily Development (The Cottages at Rice Hope Plantation) in a M-P-O (Master Plan Overlay) Zoning District

Issue/Item: Site Plan Review Application submitted by Third Lake Development, LLC., on behalf of Bald Eagle Partners for PIN # 7-0906-04-091 (Rice Hope Rd) for a Specific Development Site Plan to allow a Multifamily Development (The Cottages at Rice Hope Plantation) in a M-P-O (Master Plan Overlay) Zoning District

Background: The subject property is currently vacant. There are no buildings or structures on the subject property. The general development plan for this project was approved during the regular City Council meeting on September 23, 2021.

Facts and Findings: This project is a specific development plan for a single family for rent neighborhood. The project will consist of four hundred forty-seven (447) homes, community center with amenities and all associated roads, drainage, water and sewer utilities, and parking. The site plan has been reviewed by City engineers, Thomas & Hutton and a final review letter has been issued. This parcel is identified by the 2021-2041 City of Port Wentworth Comprehensive Plan as being in the Suburban Character Area. This parcel is in Council District 1.

Funding: N/A

Recommendation: The Planning Commission will hear this application on Monday, March 13, 2023 at 3:30 PM. **/ UPDATE: The Planning Commission voted unanimously to approve this application.**

ATTACHMENTS:

- The Cottages at RH 7-0906-04-091 S-Site Plan 2022 - Application (PDF)
- The Cottages at RH 7-0906-04-091 S-Site Plan 2022 - Timeline (DOCX)
- The Cottages at RH 7-0906-04-091 S-Site Plan 2022 - Concurrence letter T&H 1.27.23 (PDF)

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 Rice Hope Road, Port Wentworth, GA 31407

PIN #(s): 70906 04091

Zoning: M-P-O Estimated Cost of Construction: $ 30,000,000

Type of Construction: Horizontal Multifamily

Project Name: Rice Hope Third Lake

Applicant's Name: Third Lake Development, Attn: Mr. Grant Barnes

Mailing Address: 1600 E. 8th Avenue, Suite A132, Tampa, FL 33605

Phone #: (727) 349-9100 Email: jbarnes@thirdlakedevelopment.com

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Owner's Name (If Different form Applicant): Bald Eagle Partners Attn: Mr. Scott DeCain

Mailing Address: 4800 Hampden Lane, Suite 200, Bethesda, MD 20814

Phone #: (571) 426-4310 Email: sdecain@baldeaglepartners.com

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

Applicant's Signature — Date: 04/25/22

Owner's Signature (If Different form Applicant) — Date: 6/7/2022

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

_____ 04/25/22

Applicant's Signature Date

Updated 10/19/2021

CITY OF PORT WENTWORTH

(912) 964-4379

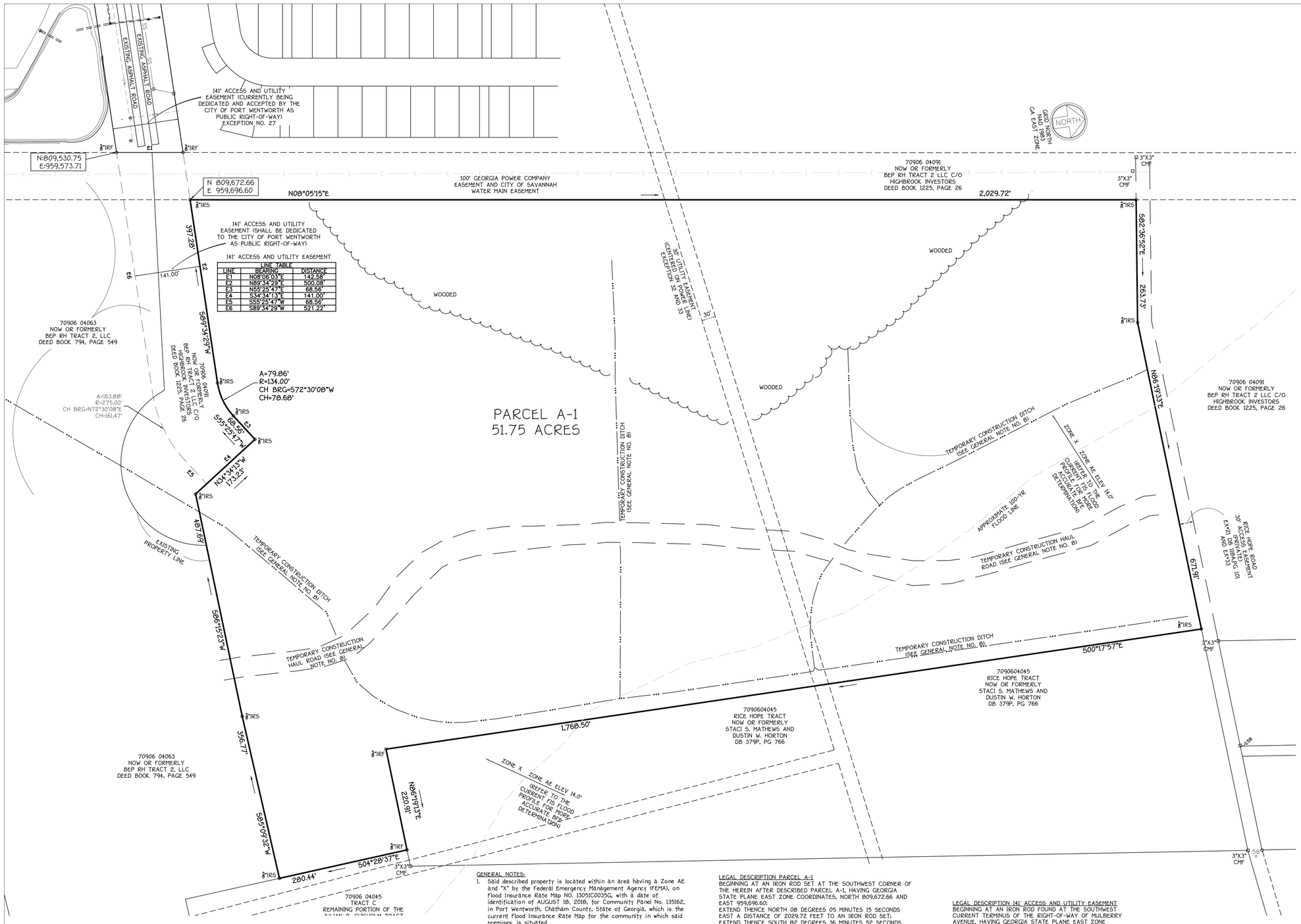
REC#: 00357323 6/09/2022 3:20 PM
OPER: ME TERM: 011
REF#: CK 1114

TRAN: 112.0000 BLDG PERMIT
220277 886.00CR
BALD EAGLE PARTNERS
7-0906-04-091
DEV-SPR 886.00CR

TENDERED: 886.00 CHECK
APPLIED: 886.00-

CHANGE: 0.00

WWW.CITYOFPORTWENTWORTH.COM



SUNDIAL LAND SURVEYING, PC
LSF000937
1410 WEST US HIGHWAY 80, SUITE 2
BLOOMINGDALE, GA 31302
912-235-2477
mhussey@sundiallandsurveying.com
sundiallandsurveying.com

GEORGIA REGISTERED No. 2509 LAND SURVEYOR MICHAEL A. HUSSEY

MICHAEL A. HUSSEY
Ga. Reg. No. 2509

SURVEYOR'S CERTIFICATION
This survey is made for the benefit of: (a) Third Lake Development, LLC (b) Stewart Title Guaranty Company. (c) ------- and its successors and assigns; (d) --------; (e) --------. This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1, 2, 3, 4, 8, 13, 16, 17, 18 and 19 of Table A thereof.

Michael A. Hussey
Professional Land Surveyor, GA No. 2509

GENERAL NOTES:
1. Said described property is located within an area having a Zone AE and "X" by the Federal Emergency Management Agency (FEMA), on Flood Insurance Rate Map NO. 13051C0035G, with a date of identification of AUGUST 18, 2018, for Community Panel No. 135162, in Port Wentworth, Chatham County, State of Georgia, which is the current Flood Insurance Rate Map for the community in which said premises, is situated.
2. Water and sewer shall be connected to City of Port Wentworth System.
3. The property is currently Zoned M-P-O.
4. The property has direct physical access to Mulberry Drive a public street or highway, via an Access and Utility Easement.
5. The property described hereon is the same as the property described in _____ Title Insurance Company Commitment No. _____ with an effective date of _____ and that all easements, covenants and restrictions referenced in said title commitment or apparent from a physical inspection of the site or otherwise known to have been plotted hereon or otherwise noted as to their effect on the subject property.
6. The accompanying survey was made on the ground and correctly shows the location of all buildings, structures and other improvements situated on the above premises; there are no visible encroachments on the subject property or upon adjacent land abutting said property except as shown hereon and was made in accordance with laws and/or Minimum Standards of the State of Georgia.
7. The physical address for Parcel _____.
8. To my knowledge there are no recorded easements for the temporary ditches and haul road shown on this survey and based on information from the owner of the property the ditches were not constructed for the purpose of conveying storm water drainage.

LEGAL DESCRIPTION PARCEL A-1
BEGINNING AT AN IRON ROD SET AT THE SOUTHWEST CORNER OF THE HEREIN AFTER DESCRIBED PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60;
EXTEND THENCE NORTH 08 DEGREES 05 MINUTES 15 SECONDS EAST A DISTANCE OF 2029.72 FEET TO AN IRON ROD SET;
EXTEND THENCE SOUTH 82 DEGREES 36 MINUTES 52 SECONDS EAST A DISTANCE OF 263.73 FEET TO AN IRON ROD SET;
EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 33 SECONDS EAST A DISTANCE OF 671.91 FEET TO AN IRON ROD SET;
EXTEND THENCE SOUTH 00 DEGREES 17 MINUTES 57 SECONDS EAST A DISTANCE OF 1760.50 FEET TO AN IRON ROD FOUND;
EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 13 SECONDS EAST A DISTANCE OF 220.91 FEET TO AN IRON ROD FOUND;
EXTEND THENCE SOUTH 04 DEGREES 28 MINUTES 37 SECONDS EAST A DISTANCE OF 280.44 FEET TO AN IRON ROD FOUND;
EXTEND THENCE SOUTH 85 DEGREES 09 MINUTES 32 SECONDS WEST A DISTANCE OF 356.77 FEET TO AN IRON ROD SET;
EXTEND THENCE SOUTH 89 DEGREES 15 MINUTES 23 SECONDS WEST A DISTANCE OF 407.69 FEET TO AN IRON ROD SET;
EXTEND THENCE NORTH 34 DEGREES 34 MINUTES 13 SECONDS WEST A DISTANCE OF 173.23 FEET TO AN IRON ROD SET;
EXTEND THENCE SOUTH 55 DEGREES 25 MINUTES 47 SECONDS WEST A DISTANCE OF 68.56 FEET TO AN IRON ROD SET;
THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 134.00', (AND BEING SUBTENDED BY A CHORD BEARING SOUTH 72 DEGREES 30 MINUTES 08 SECONDS WEST, A CHORD DISTANCE OF 78.68), A DISTANCE OF 79.86', ALONG SAID CURVE TO AN IRON ROD SET;
EXTEND THENCE SOUTH 89 DEGREES 34 MINUTES 29 SECONDS WEST A DISTANCE OF 397.28 FEET TO THE POINT OF BEGINNING.
THE ABOVE-DESCRIBED PARCEL CONTAINS 51.75 ACRES.

LEGAL DESCRIPTION 141' ACCESS AND UTILITY EASEMENT
BEGINNING AT AN IRON ROD FOUND AT THE SOUTHWEST CORNER OF THE TERMINUS OF THE RIGHT-OF-WAY OF MULBERRY AVENUE, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,530.75AND EAST 959,573.71;
EXTEND THENCE NORTH 08 DEGREES 06 MINUTES 03 SECONDS EAST A DISTANCE OF 142.58 FEET TO AN IRON FOUND;
EXTEND THENCE NORTH 89 DEGREES 34 MINUTES 29 SECONDS EAST A DISTANCE OF 500.08 FEET TO AN IRON FOUND;
THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 134.00', (AND BEING SUBTENDED BY A CHORD BEARING NORTH 72 DEGREES 30 MINUTES 08 SECONDS EAST, A CHORD DISTANCE OF 78.68), A DISTANCE OF 79.86', ALONG SAID CURVE TO AN IRON FOUND;
EXTEND THENCE NORTH 55 DEGREES 25 MINUTES 47 SECONDS EAST A DISTANCE OF 68.56 FEET TO A POINT;
EXTEND THENCE SOUTH 34 DEGREES 34 MINUTES 13 SECONDS EAST A DISTANCE OF 141.00 FEET TO A POINT;
EXTEND THENCE SOUTH 55 DEGREES 25 MINUTES 47 SECONDS WEST A DISTANCE OF 68.56 FEET TO A POINT;
THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 275.00', (AND BEING SUBTENDED BY A CHORD BERING SOUTH 72 DEGREES 30 MINUTES 08 SECONDS WEST, A CHORD DISTANCE OF 161.47), A DISTANCE OF 163.88', ALONG SAID CURVE TO A POINT;
EXTEND THENCE SOUTH 89 DEGREES 34 MINUTES 29 SECONDS WEST A DISTANCE OF 521.22 FEET TO THE POINT OF BEGINNING.
THE ABOVE-DESCRIBED ACCESS AND UTILITY EASEMENT CONTAINS 2.27 ACRES.

LEGEND
IRF - IRON ROD FOUND
CMF - CONCRETE MONUMENT FOUND
IRS - IRON ROD SET
-E- OVERHEAD POWER
-X- TREE LINE

EXCEPTIONS
The following are special exceptions as listed in Part II, Schedule B of the commitment for title insurance prepared by STEWART TITLE GUARANTY COMPANY, Commitment No. HVSEH-21-21112, Commitment Date: June 07, 2021 at 8:00 A.M.

8. Taxes for the current year and subsequent years a lien not yet due and payable and any additional taxes, interest and/or penalties which may be assessed for prior tax years by virtue of adjustment, re-appraisal, re-assessment, appeal or other amendment to the tax records of the city or county in which the insured property is located.
9. Taxes for the year 2022 and subsequent years, a lien not yet due nor payable.
10. This (commitment/policy) does not insure against any loss or damage which might arise out of any roll-back taxes, recapture or conservation assessment as contemplated under the terms and provisions of O.C.G.A. 48-5-32.1.
11. No insurance is afforded as to the exact amount of acreage contained in the property described herein.
12. Ingress and egress for pedestrian and vehicular access is neither guaranteed nor insured.
13. Encroachments, overlaps, deficiency in quantity of land, unrecorded easements, roadways, boundary line disputes, access, matters not of record, and any other matters which would be disclosed by an accurate survey and inspection of the premises.
14. Affidavits confirming ownership interests in the Steele Tract and Chisolm Tract as set forth in the following documents: NOT PLOTABLE
    a. Affidavit made by Richard J. Youngblood, dated January 8, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 170, Chatham County, Georgia Records;
    b. Affidavit made by Jesse William Exley, dated January 15, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 168, Chatham County, Georgia Records;
    c. Affidavit made by Harold R. Johnson, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 162, Chatham County, Georgia Records;
    d. Affidavit made by William M. Exley, dated January 18, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 166, Chatham County, Georgia Records;
    e. Affidavit Affecting Title to Land made by William G. Glass, dated December 21, 2015, filed for record January 21, 2016, recorded at Deed Book 716, Page 737, Chatham County, Georgia Records;
    f. Affidavit made by Murray A. Galin, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 124, Chatham County, Georgia Records;
    g. Affidavit made by Murray A. Galin, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 124, Chatham County, Georgia Records.
15. Right-of-Way Deed from Julian F. Chisholm to the State Highway Department of Georgia, filed for record January 21, 1947, recorded at Deed Book 43-Y, Page 219, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
16. Right-of-Way Easement made by Julian F. Chisholm, Sr., to the Mayor and Alderman of the City of Savannah, dated June, 1947, filed for record July 11, 1947, recorded at Deed Book 44-X, Page 443, aforesaid records. DOES NOT AFFECT PROPERTY.
17. Easement made by Julian F. Chisolm to the Savannah Electric and Power Company, dated September 8, 1950, filed for record July 11, 1951, recorded at Deed Book 54-D, Page 410, aforesaid records. DOES NOT AFFECT PROPERTY.
18. Easement set forth in Deed from William W. Chisholm and Polly C. Wylly, et al, to Pine Forest Utility Corp., dated October 5, 1963, filed for record November 8, 1963, recorded at Deed Book 84-U, Page 275, aforesaid records. DOES NOT AFFECT PROPERTY.
19. Easement from William W. Chisholm and Polly C. Wylly, et al, to Savannah Electric and Power Company, dated April 3, 1964, filed for record April 8, 1964, recorded at Deed Book 85-W, Page 641, aforesaid records. DOES NOT AFFECT PROPERTY.
20. Easement from the Julian F. Chisholm Estate to Savannah Electric and Power Company, dated May 16, 1977, filed for record May 4, 1978, recorded at Deed Book 110-O, Page 894, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
21. Non-exclusive access easements and reservation of hunting rights set out in warranty deed from William W. Chisholm, et al. to John Hancock Mutual Live Insurance Company, dated February 4, 1982 and recorded in Deed Book 118-A, Page 101, aforesaid records.
22. Right-of-Way Deed from the Northern Trust Company, as successors Trustee of the Trust Fund of the W.R. Grace & Company Retirement Plans Under Master Trust Agreement, dated April 1, 1986, to the Department of Transportation, dated December 31, 1994, filed for record January 31, 1995, recorded at Deed Book 171-D, Page 569, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
23. Utility Easement made by Wallace E. Miller Family Partnership, LP, to the City of Port Wentworth, Georgia, January 18, 2001, filed for record February 11, 2002, recorded at Deed Book 232-A, Page 323, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
24. Master Communications Easement for Rice Hope made by and between Rice Hope Development, Inc., a Georgia corporation, and Wentworth Land Investors, LLC, a Georgia limited liability Company, and Rice Hope Infrastructure Management, Inc., a Georgia corporation, dated December 1, 2005, filed for record January 17, 2006, recorded at Deed Book 300-O, Page 41, and that certain Master Communications Easement for Rice Hope by and between BLS Development, Inc., and Rice Hope Infrastructure Management, Inc., dated December 1, 2005, recorded January 17, 2006, in Book 300-O, Page 53, Chatham County records (together, the "Master Communications Easements"), as amended by Second Amendment to Easement and Memorandum of Agreement dated December 23, 2014, filed for record March 16, 2015, recorded at Deed Book 483, Page 379, aforesaid records; as amended by Amendment to Master Communications Easement for Rice Hope, dated November 21, 2017, recorded at Deed Book 1225, Page 55, aforesaid records; as amended by Third Amendment to Easement and Memorandum of Agreement, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 62, aforesaid records. NOT A SURVEY MATTER, NOT PLOTABLE.
25. Easement made by BEP Rice Hope, LLC, to Savannah Land Investors, LLC, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 849, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
26. Easement Agreement made by Waypoint Savannah Owner, LLC, a Delaware limited liability company, to BEP Rice Hope, LLC, a Georgia limited liability company, dated July 15, 2015, filed for record July 17, 2015, recorded at Deed Book 584, Page 407, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
27. Access Easement set forth in Quitclaim Deed from BEP Rice Hope, LLC, and BEP RH Tract 2, LLC, to Rice Hope Plantation Community Association, Inc., dated November 20, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 26, aforesaid records. SHOWN ON SURVEY
28. Easement for Construction and Maintenance of Berms made by and between Rice Hope Plantation Community Association, Inc., BEP RH Tract 2, LLC, and Ardmore Port Wentworth, LLC, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 98, aforesaid records. SHOWN ON SURVEY
29. Temporary Access and Construction Easement made by and between Rice Hope Plantation Community Association, Inc., BEP RH Tract 2, LLC, and Ardmore Port Wentworth, LLC, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 71, aforesaid records. SHOWN ON SURVEY
30. Terms and Provisions of Declaration of Covenants and Restrictions (wetlands) dated October 7, 2004 and recorded October 11, 2004 in Deed Book 277-I at Page 138, aforesaid records, as may be amended, supplemented or modified from time to time by documents recorded in the Office of the Superior Court for Chatham County, Georgia. NOT A SURVEY MATTER, NOT PLOTABLE
31. Terms and Provisions of Declaration of Covenants, Conditions and Restrictions for Rice Hope made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated July 12, 2004, filed for record July 14, 2004, recorded at Deed Book 272-W, Page 434, Chatham County, Georgia Records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Black Creek), dated July 12, 2004, filed for record July 14, 2004, recorded at Deed Book 272-W, Page 507, aforesaid records; as supplemented by Second Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated July 14, 2005, filed for record July 26, 2005, recorded at Deed Book 291-O, Page 335, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside 1), made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated March 31, 2006, filed for record April 3, 2006, recorded at Deed Book 304-D, Page 1, aforesaid records; as amended by Amendment to Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Black Creek) made by BLS Development, Inc., a Georgia corporation, dated May 31, 2007, filed for record June 5, 2007, recorded at Deed Book 326-T, Page 230, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope, dated July 19, 2007, filed for record July 20, 2007, recorded at Deed Book 329-B, Page 392 (which amendment was subsequently declared invalid pursuant to Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859); as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope, made by BLS Development, Inc., a Georgia corporation, dated July 19, 2007, filed for record July 20, 2007, recorded at Deed Book 329-B, Page 395 (which amendment was subsequently declared invalid pursuant to Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859); as affected by Third Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Commercial Property) made by Wentworth Land Investments, LLC, a Georgia limited liability company, and Rice Hope Partners, LLC, a Georgia limited liability company, dated September 7, 2007, filed for record September 13, 2007, recorded at Deed Book 331-R, Page 859, aforesaid records; as affected by Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope to Withdraw Property, made by Wentworth Land Investments, LLC, a Georgia limited liability company, dated February 28, 2013, filed for record March 6, 2013, recorded at Deed Book 385-K, Page 705, aforesaid records; as affected by Assignment of Declarant's Rights, made by Wentworth Land Investors, LLC, a Georgia limited liability company, and BEP Rice Hope, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 834, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope to Withdraw Property, made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 2, 2013, recorded at Deed Book 389-U, Page 971 (releasing billboard parcel); as affected by Assignment of Communications Easements and Other Rights made by Rice Hope Infrastructure Management, Inc., a Georgia corporation, Rice Hope Development, Inc., a Georgia corporation, Wentworth Land Investors, LLC, a Georgia limited liability company, and BEP Rice Hope, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 844, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions and Restrictions for Rice Hope – Villages at Rice Hope Apartment Tract, dated July 15, 2015, filed for record July 17, 2015, recorded at Deed Book 584, Page 391, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Parkside at Rice Hope Neighborhood) dated November 7, 2017, filed for record November 20, 2017 recorded at Deed Book 1222, Page 113, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions and Restrictions for Rice Hope – Ardmore at Rice Hope Apartment Tract, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 36, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Addition of Property to Parkside at Rice Hope Neighborhood), dated October 9, 2018, filed for record October 16, 2018, recorded at Deed Book 1469, Page 700, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside I at Rice Hope Neighborhood), dated June, 2019, filed for record June 28, 2019, recorded at Deed Book 1557, Page 119, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Mulberry Subdivision, Phase 1), dated November 6,2019, filed for record December 12, 2019, recorded at Deed Book 1795, Page 731, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Addition to Parkside at Rice Hope Neighborhood), dated December 23, 2019, filed for record December 31, 2019, recorded at Deed Book 1812, Page 602, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside Phase 1C-1 at Rice Hope Plantation), dated October 6, 2020, filed for record October 6, 2020, recorded at Deed Book 2090, Deed Book 1225, Page 62, aforesaid records. NOT A SURVEY MATTER, NOT PLOTABLE. 25. Easement made by BEP Rice Hope, LLC, to Savannah Land Investors, LLC, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 849, aforesaid records. DOES NOT AFFECT THIS PROPERTY.
32. Easements, setbacks, rights of way and other matters of title as shown on a plat entitled "Plat of the Remaining Portion of the Julian F. Chisholm Tract, 8th G.M. District, Port Wentworth, Chatham County, Georgia" surveyed for East Coast Trading Company, Inc., by Vincent Helmley, Registered Land Surveyor, dated March 28, 1997 and recorded in Plat Book 14P at Page 178 in the Office of the Clerk of the Superior Court of Chatham County, Georgia, including, but not limited to the following:
    a. 100' Savannah Electric and Power Co. & City of Savannah Easement; DOES NOT AFFECT PROPERTY
    b. Overhead Power Line. SHOWN ON SURVEY
33. Easements, setbacks, rights of way and other matters of title as shown on a plat entitled "A minor subdivision of aportion of Tract A-2 and Lot 12 being a portion of the Julian R. Chisolm Tract and being a portion of Rice Hope Plantation, 8th B.M. District City of Port Wentworth, Chatham County, Georgia, prepared by Terry Mack Coleman, Registered Land Surveyor, dated November 16, 2017 and recorded in the Office of the Clerk of the Superior Court of Chatham County, Georgia, in Plat Book 51 at Page 213, including, but not limited to the following:
    a) 100' Savannah Electric & Power Co. & City of Savannah Water Main Easement; DOES NOT AFFECT PROPERTY
    b) 30' Utility Easement (Centered on Power Line); SHOWN ON SURVEY
    c) Approximate Location of Flood Hazard Zone; SHOWN ON SURVEY
    d) Rice Hope Road (Private Road) 30' access easement. DOES NOT AFFECT PROPERTY.

Total Area: 52.40 Acres
Field Survey Date: 06-18-2021
Error Of Closure (Plat): 1/532,563
Error Of Closure (Field): 1/32,550
Angular Error: 2" Per Point
Equipment Used: Sokkia Set 5 2" Total Station

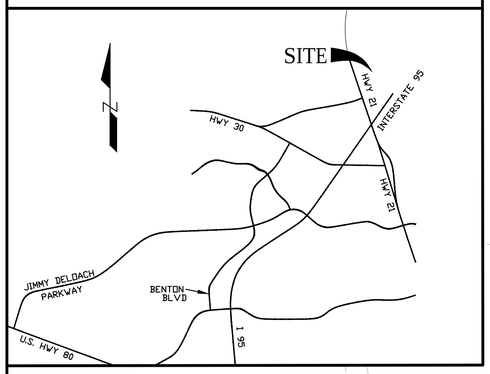
ALTA/NSPS LAND TITLE SURVEY

BEING A 52.40 ACRE PORTION OF PARCEL "A" OF THE FORMER JULIAN R. CHISHOM TRACT, 8TH G.M. DISTRICT, PORT WENTWORTH, CHATHAM COUNTY, GEORGIA

0 100 200
SCALE: 1"=100'

DATE: 09-21-2021

PROJECT LOCATION MAP



N

ADJACENT PROPERTY OWNER LABEL (TYPICAL)

20

S04°28'37"E
280.44'

N86°19'13"E
270.91'

S85°09'32"W
336.77'

18

NORTH

S00°17'57"E
1,798.99'

1,453.99'
S00°17'57"E

17

NORTH

345.00'
S00°17'57"E

21

PROJECT AREA

S86°15'25"W
487.69'

19

16

N34°34'13"W
173.23'

S55°25'47"W
68.98'

A=79.86'
R=134.00'
CH BRG=S72°30'08"W
CH=78.68'

S89°34'29"W
397.28'

N86°19'53"E
672.62'

PARCEL A-1
46.39 ACRES

TOTAL PARCEL A-1 AND PARCEL A-2
52.40 ACRES

PARCEL A-2
6.01 ACRES

S82°36'52"E
258.59'

N08°05'15"E
245.00'

N08°05'15"E
1,814.81'

N08°05'15"E
2,059.81'

0 100 200 Feet

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

REV.	REVISIONS	BY	DATE

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

ADJACENT PROPERTY OWNERS EXHIBIT

RICE HOPE 52 ACRES TRACT
CITY OF PORT WENTWORTH, GEORGIA

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	2021-TL
Drawn By:	JMGL
Designed By:	JMGL
Checked By:	JMGL
Scale:	1"=100'
Date:	7/28/21

SHEET
EX

Owner Name	Mailing Address	PIN #	#
Clayton Properties Group, INC.	10 Wild Silk Way	70906D03001	1
Sheldon D Barnes & Chelsey Alexandria Snell	12 Wild Silk Way	70906D03002	2
Rice Hope Plantation Community	Wild Silk Way	70906D03003	3
Clayton Properties Group, INC.	14 Wild SilkWay	70906D03004	4
Rosena G. Best	16 Wild Silk Way	70906D03005	5
Derrick Butler	18 Wild Silk Way	70906D03006	6
Piyushkumar Hasmmukhrai Bhatt	20 Wild Silk Way	70906D03007	7
Clayton Properties Group, INC.	22 Wild Silk Way	70906D03008	8
Clayton Properties Group, INC.	24 Wild Silk Way	70906D03009	9
Clayton Properties Group, INC.	26 Wild Silk Way	70906D03010	10
Clayton Properties Group, INC.	28 Wild Silk Way	70906D03011	11
Rice Hope Plantation Community	Wild Silk Way	70906D03012	12
Clayton Properties Group, INC.	30 Wild Silk Way	70906D03013	13
Clayton Properties Group, INC.	32 Wild Silk Way	70906D03014	14
Clayton Properties Group, INC.	34 Wild Silk Way	70906D03015	15
BEP EH TRACT 2 LLC C/O HIGHBROOK INVESTORS	0 Rice Hope Rd	70906 04091	16
Harry Jack Stewart	502 Rice Hope Plantation Rd	70906 03023	17
Staci S Matthews	507 Rice Hope Plantation Rd	70906 04001	18
BEP EH TRACT 2 LLC	Mulberry Ave	70906 04063	19
John E Hill	Rice Hope Rd	70906 04012	20
BEP RH TRACT 2 LLC	Rice Hope Rd	70906 04011	21

Project Timeline

Project Number: 220277

Project Name: The Cottages at Rice Hope

Applicant / Engineer: Third Lake Development/Pittman Engineering

Owner: Bald Eagle Partners

City Review Engineer: Thomas & Hutton

- 6/08/2022 – Application received; Need individual PDF file of Site Plan & Hydro [M.E.]
- 6/10/2022 – Called and spoke to Ray Pittman. Asked him to send me separate PDF's of the site plan and hydro [M.E.]
- 6/10/2022 – received the PDF's [M.E.]
- 6/24/2022 – send files to Thomas & Hutton for review. [M.E.]
- 7/18/2022 – received email from Jennifer Roach (T&H) stating that to complete the site plan review, they need the latest copy of the revised Comprehensive Stormwater Master Plan. [M.E.]
- 7/19/2022 – sent email to Jason Bryant (Pittman Engineering) asking him to send a copy of the revised Comprehensive Stormwater Master Plan. [M.E.]
- 7/22/2022 – received email from Kevin Smith (T&H) stating that once the Comprehensive Stormwater Master Plan has been received, they should be able to complete the initial site plan review. [M.E.]
- 7/22/2022 – received email from Ray Pittman (Pittman Engineering) that they are working on the revisions and should take a week to update the Master Drainage Plan & Exhibits. [M.E.]
- 7/27/2022 – sent email to Jason Bryant (Pittman Engineering) that the site plan application would not be on the August 2022 agendas due to not having any review comments. [M.E.]
- 8/8/2022 – sent email to Kevin Smith & Jennifer Roach (T&H) asking if they had received the information that was requested from Pittman Engineering. [M.E.]
- 8/29/2022 – Received 1st comment letter from T&H. Pittman copied. [M.E.]
- 12/2/2022 – received 2nd comment letter from T&H. Pittman copied. [M.E.]
- 12/22/22 – 2nd resubmittal received from Pittman. T&H copied. [M.E.]
- 1/10/23 – received 3rd comment letter from T&H. Pittman Copied. [M.E.]
- 1/20/23 – received 3rd resubmittal from Pittman. T&H Copied. [M.E.]
- 1/27/23 – received final letter from T&H. Pittman copied. We will now schedule for the next available PC and Council meeting. [M.E.]
- 2/24/2023 – public notice letters mailed 2/24/23. [M.E.]
- 2/26/2023 – public notice published in Savannah Morning News. [M.E.]
- 3/14/23 - The Planning Commission voted unanimously to approve this application. [M.E.]

THOMAS & HUTTON
50 PARK OF COMMERCE WAY
SAVANNAH, GA 31405 | 912.234.5300
WWW.THOMASANDHUTTON.COM

January 27, 2023

Mr. Brian Harvey
Director of Development Services
City of Port Wentworth
305 South Coastal Highway
Port Wentworth, GA 31407

Re: The Cottages at Rice Hope
Port Wentworth, Georgia
Site Plan Review
J–25412.0034

Dear Mr. Harvey:

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 the application package for the proposed development 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 fourth submittal package of the Cottages at Rice Hope project and all outstanding comments appear to have been addressed except the following:

- EPD water approval – applicant to provide once received.
- Site Lighting Plan – applicant to provide Lighting Plan by Georgia Power once received.
- Current site plans indicate a sidewalk width of four or five feet throughout the site, while Sections 2.0–3.14 of the MPO Section of the Port Wentworth Code of Ordinances requires a minimum width of five feet. Please revise or provide clarification.
    - **Applicant has stated that sidewalk width has been discussed verbally with the City of Port Wentworth. City is to coordinate with the applicant regarding the request for reduced sidewalk width.**

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,

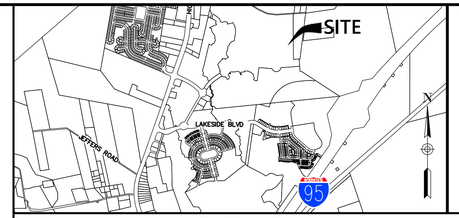
THOMAS & HUTTON

Jessica L. Routt

JR/kts

Wednesday, December 21, 2022 11:27:11 AM

CONSTRUCTION PLANS
FOR
THE COTTAGES AT RICE HOPE



VICINITY MAP

Sheet List Table

Sheet Number	Sheet Title
COV	COVER SHEET
C0.1	GENERAL CONSTRUCTION NOTES
C0.2	EXISTING CONDITIONS PLAN
C0.3	EXISTING CONDITIONS PLAN
C0.4	EXISTING CONDITIONS PLAN
C1.1	LAYOUT & STAKING PLAN
C1.2	LAYOUT & STAKING PLAN
C1.3	LAYOUT & STAKING PLAN
C2.0	SEWER COMPOSITE EXHIBIT
C2.1	WATER COMPOSITE EXHIBIT
C2.2	REUSE WATER COMPOSITE EXHIBIT
C2.3	WATER & SEWER PLAN
C2.4	WATER & SEWER PLAN
C2.5	WATER & SEWER PLAN
LAT-EXHB	WATER & SEWER LATERAL EXHIBIT
C2.6	WATER & SEWER LATERAL PLAN
C2.7	WATER & SEWER LATERAL PLAN
C2.8	WATER & SEWER LATERAL PLAN
C2.9	SEWER PROFILES
C2.10	SEWER PROFILES
C2.11	SEWER PROFILES
C2.12	SEWER PROFILES
C2.13	WATER & SEWER DETAILS
C2.14	WATER & SEWER DETAILS
C2.15	WATER & SEWER DETAILS
C2.16	WATER & SEWER DETAILS
C2.17	WATER & SEWER DETAILS
C2.18	WATER & SEWER DETAILS
C3.0	DRAINAGE COMPOSITE EXHIBIT
C3.1	PAVING, GRADING & DRAINAGE PLAN
C3.2	PAVING, GRADING & DRAINAGE PLAN
C3.3	PAVING, GRADING & DRAINAGE PLAN
C3.4	STORM DRAINAGE PROFILES
C3.5	STORM DRAINAGE PROFILES
C3.6	STORM DRAINAGE PROFILES
C3.7	STORM DRAINAGE PROFILES
C3.8	STORM DRAINAGE PROFILES
C3.9	NEIGHBORHOOD GRADING PLAN
C3.10	NEIGHBORHOOD GRADING PLAN
C3.11	NEIGHBORHOOD GRADING PLAN
C3.12	NEIGHBORHOOD GRADING PLAN
C3.13	NEIGHBORHOOD GRADING PLAN
C3.14	NEIGHBORHOOD GRADING PLAN
C3.15	NEIGHBORHOOD GRADING PLAN
C3.16	NEIGHBORHOOD GRADING PLAN
C3.17	PAVING, GRADING & DRAINAGE DETAILS
C3.18	PAVING, GRADING & DRAINAGE DETAILS
C3.19	PAVING, GRADING & DRAINAGE DETAILS
EC1.1	EROSION CONTROL PLAN – INITIAL
EC1.2	EROSION CONTROL PLAN – INITIAL
EC1.3	EROSION CONTROL PLAN – INITIAL
EC1.4	EROSION CONTROL PLAN – INITIAL
EC2.1	EROSION CONTROL PLAN – INTERMEDIATE
EC2.2	EROSION CONTROL PLAN – INTERMEDIATE
EC2.3	EROSION CONTROL PLAN – INTERMEDIATE
EC3.1	EROSION CONTROL PLAN – FINAL
EC3.2	EROSION CONTROL PLAN – FINAL
EC3.3	EROSION CONTROL PLAN – FINAL
EC4.1	EROSION CONTROL NOTES
EC4.2	EROSION CONTROL NOTES
EC4.3	EROSION CONTROL NOTES
EC4.4	EROSION CONTROL NOTES
EC5.1	EROSION CONTROL DETAILS
EC5.2	EROSION CONTROL DETAILS
EC5.3	EROSION CONTROL DETAILS
L1.0	LANDSCAPING PLAN
L1.1	LANDSCAPING PLAN
L1.2	LANDSCAPING PLAN
L1.3	LANDSCAPING PLAN

I CERTIFY THAT I HAVE BEEN IN RESPONSIBLE CHARGE OF THE DESIGN OF THIS PROJECT IN ACCORDANCE WITH THE RULES OF THE GEORGIA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS. I FURTHER CERTIFY, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED IN ACCORDANCE WITH CURRENT STANDARD ENGINEERING PRACTICES AND ACCURATELY REFLECT THE DESIGN DEVELOPMENT REPORT (DDR) PREVIOUSLY REVIEWED AND CONCURRED IN BY EPD. I FURTHER CERTIFY THAT THE SYSTEM AS DESIGNED CAN REASONABLY BE EXPECTED TO CONSISTENTLY MEET ALL CURRENTLY APPLICABLE PERMIT LIMITS, CONDITIONS, AND REGULATORY REQUIREMENTS, PROVIDED THE FACILITY IS CONSTRUCTED AS DESIGNED AND PROPERLY OPERATED AND MAINTAINED.

PREPARED FOR:

THIRD LAKE DEVELOPMENT, LLC

MAY 31, 2022

JOB NUMBER: 21-286

PROJECT DATA

DEVELOPER:	THIRD LAKE DEVELOPMENT, LLC 1600 E. 8th AVE., SUITE A132 TAMPA, FLORIDA 33605 (704) 201-1922
24 HOUR CONTACT:	ROBERT HOGAN
TELEPHONE:	(704) 201-1922
JURISDICTION:	PORT WENTWORTH, GEORGIA
ZONING:	PUD
PROPERTY OWNER OF RECORD:	THIRD LAKE DEVELOPMENT, LLC
FEMA FLOOD ZONE:	X
FEMA FLOOD PANEL:	MAP NUMBER 13051C0030G MAP DATED 8/16/18
APPROXIMATE LOCATION OF SITE:	PORT WENTWORTH, GEORGIA 31407
LATITUDE:	N032.225100000000
LONGITUDE:	W081.184600000000
VERTICAL DATUM:	NAVD 88

PREPARED BY:

PITTMAN ENGINEERING

2591 HWY 17 SUITE 303
RICHMOND HILL, GA 31324
912-445-0578
WWW.PITTMANENGINEERINGCO.COM

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

811 Know what's below. Call before you dig.

REVISION LISTING

REV. NO.	REVISION	BY	DATE
1.	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Cover Sheet.dwg

Wednesday, December 21, 2022 11:27:22 AM

GENERAL NOTES:

OWNER/DEVELOPER:
THIRD LAKE DEVELOPMENT, LLC
1600 E. 8th AVE., SUITE A132
TAMPA, FLORIDA 33605
704-201-1922
RHogan@thirdlakedevelopment.com

ENGINEER:
PITTMAN ENGINEERING CO., LLC
2591 HWY 17S SUITE 303
RICHMOND HILL, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

SITE DATA:

ZONE:	M-P-O
TOTAL PROJECT ACREAGE:	51.75 AC.
DISTURBED AREA:	51.75 AC.
FLOOD MAP:	13051C0035G
DATED:	08/18/18
FLOOD ZONE:	X, AE (BFE14.0)

SURVEY INFORMATION:

THE TOPOGRAPHIC INFORMATION:
ALL ELEVATIONS BASED ON NAVD88

CONSTRUCTION NOTES & LEGEND

General Notes:

1. All elevations are based on NAVD88
2. Existing utility locations shown are generally schematic in nature and may not accurately reflect the size and location of each particular utility. Contractor shall field verify location of all existing utilities prior to beginning construction. All existing utilities may not be shown on these drawings. It is the contractor's responsibility to coordinate his operation with all utilities which may be in conflict with his work. The contractor must maintain and protect all utilities, or relocate utilities as needed.
3. Contractor is responsible for coordination with utility companies and adjustment of existing sanitary sewer cleanouts, manholes, water meters, storm inlets, manholes, and any other appurtenances to final grade as required.
4. Contractor is responsible for worksite safety. Occurrences at worksite shall be the complete responsibility of the contractor.
5. The contractor shall not begin construction until the proper permits have been issued.
6. The contractor shall be responsible for locating all existing utilities prior to beginning construction activities and for avoiding all conflicts with the same. Any damage to existing utilities shall be repaired at the contractor's expense.
7. The contractor shall completely clear and grub all areas within the limits of disturbance unless indicated otherwise.
8. All construction shall conform to the City of Port Wentworth Ordinances.
9. Contractor shall coordinate construction activities with local utility companies and adjacent property owners. Contractor shall be responsible for protection and any necessary repairs to existing utility lines.
10. Three days notice to city and local utility companies is required prior to each different construction activity.
11. Control of stormwater and groundwater throughout the construction period shall be the responsibility of the contractor. Existing drainage is not to be impeded during construction. All penalties, claims and fees imposed on owner as a result of damage caused by actions of the contractor, his employees or subcontractors shall be borne in full by the contractor. Storm drainage conveyance shall not be impeded and dewatering may be required for the contractor. These are considered "Means and Methods," and any and all cost associated with this activity shall be included in the respective pay category.
12. Contractor shall be responsible for repairs of damage to any existing infrastructure including but not limited to roads, sidewalk, curb & gutter, landscaping, structures, and all existing conditions.
13. All signs, mail boxes, shrubbery, fences, landscaping or existing structures interfering with construction shall be removed and replaced by the contractor at the contractor's expense.
14. Contractor shall be solely responsible for all construction means, methods, techniques, and procedures and shall at all times take all reasonable safety precautions for the safety of its employees on the project and shall comply with all applicable provisions of federal, state, and municipal safety laws and building construction codes.
15. Contractor shall comply to the fullest extent with the latest standards or OSHA directives or any other agency having jurisdiction for excavation and trenching procedures. The contractor shall provide support systems, sloping, benching and other means of protection. This shall include, but not be limited to, access and egress from all excavation and trenching. Contractor is responsible for his job site to be in complete compliance with all regulatory requirements.
16. All construction debris shall be removed from the site and disposed of in an approved waste disposal area. The contractor shall be responsible for disposal of all construction debris.
17. Contractor must provide proper traffic control devices for construction in accordance with "Manual of Uniform Traffic Control Devices" (latest edition).
18. Only new Reinforced Concrete Pipe Class III, shall be used in city road rights-of-ways or for drainage systems or if any storm runoff from adjoining properties drain through the proposed project.
19. Pipes up to thirty-six inches in diameter shall have flared end sections.
20. Pipes of dissimilar size shall be vertical aligned with their energy grade line or shall have crowns of the pipe converge at a manhole or other structure.
21. All pipe joints, in addition to the required rubber gaskets, shall be covered with approved geo-textile material of sufficient width to be secured to the pipe and completely encircle the joint with 50% overlap.
22. All pipe that crosses a road shall be imbedded in suitable material compacted to minimum 100% standard proctor. Suitable materials are GW, GP, GM, GC, SP, or SW soils as classified under the Unified System.
23. All stormwater inlets structures shall be of the standard design and shall have inverts built in bottoms.
24. Swales shall have a 5:1 side slopes or flatter.
25. All PVC pipe shall be stored out of the sunlight or appropriately covered with a UV resistant cover. All PVC pipe shall be properly supported so "sagging" of the pipe doesn't occur during storage. Any PVC pipe showing UV degradation or sagging shall be removed and replaced at the contractor's expense.

Staking Notes:

1. All dimensions are to the edge of pavement unless shown otherwise on the plans.
2. Layout for manholes, inlets, etc., is not shown on this plan.
3. The contractor shall verify existing benchmarks shown on the plans to establish vertical control on the site. The contractor shall be responsible for protecting these from unauthorized removal or replacement of benchmarks. When a permanent benchmark is located such that it must be removed to complete the project, the contractor shall establish such temporary benchmarks as he may require prior to removing the permanent benchmark. The contractor shall provide the location, identification and elevation of any temporary benchmark established to the owner and engineer.

Paving, Grading and Drainage Notes:

1. The contractor shall be responsible for locating all existing underground utilities prior to beginning construction activities and for avoiding all conflicts with the same. Any damage to existing utilities shall be repaired at the contractor's expense.
2. Contours shown on these plans are for general guidance and informational purposes. The contractor shall grade the site in accordance with spot elevations shown. In cases of conflict between spot elevations and contours the spot elevations will govern.
3. Load bearing and structural fills shall be approved suitable material as defined in the project specs, geotechnical report, Georgia Department of Transportation specifications and International Builder's Code. The most stringent requirement shall be adhered to. Waste material may be used for flushing of shoulder or construction of pedestrian or landscaped areas if they can be stabilized and will support plant growth and meet the required degree of compaction.
4. Contractor shall be responsible for ensuring proper drainage of any areas which are field adjusted during construction.
5. See details for requirements for control, construction and expansion joints in concrete sidewalks and curb and gutter.
6. Standard curb and gutter will be used where the drawings indicate that the gutter is to carry water. Pitched curb and gutter will be used where the drawings indicate the water will drain away from the gutter. Transitions between the two conditions shall be made as smoothly as possible.
7. Invert elevations shown on the plans are to the invert of the lowest pipe.
8. All storm drainage pipe shall be Class III Reinforced Concrete Pipe.
9. Contractor to follow Geotechnical Engineering Report Project no. 09-08-21-5 prepared by Whitaker on September 8, 2021.

Signage and Striping Notes:

1. All traffic control measures shall conform to the latest edition of the "Manual on Uniform Traffic Control Devices." The manual identification and dimensions are shown on staking sheets for each required sign. The orientation of each sign from an approaching driver's point of view is also shown. Sign and support post material and installation shall conform to the pertinent sections of the current edition of the Georgia Department of Transportation specifications (latest edition).
2. Street name markers are required at all intersections.

Water and Sewer Notes:

1. The contractor shall be responsible for locating all existing underground utilities prior to beginning construction activities and for avoiding all conflicts with the same. Any damage to existing utilities shall be repaired at the contractor's expense.
2. All water and sewer connections to existing active systems are to be coordinated with City of Port Wentworth Engineering and Public Works Departments a minimum of 72 hours prior to construction activities. Any damage to existing County utilities shall be repaired immediately at the Contractor's expense.
3. All construction shall be in accordance with the City of Port Wentworth Ordinances.
4. All water main pipe shall be AWWA C-900 Pressure Rated Pipe, Pressure Class 150, with dimension ratio 18 or lower and blue. If Ductile Iron water mains are necessary, they shall be Pressure Class 350, with cement interior lining in accordance with the latest revision of ANSI A-21.4 (AWWA C-104) and asphaltic exterior coating. The water service laterals shall be Polyethylene PE 3408 SDR 9 conforming to all requirements of AWWA C-901 and ASTM D-2737 latest revisions.
5. All sanitary sewer pipe shall be PVC and geeen, ASTM D-3034, SDR-26.
6. Minimum slope of 4-inch sewer laterals shall be 1.0%.
7. All PVC Water Main shall be blue and all PVC Sewer shall be green.
8. Sewer pipe deflection shall not exceed 5.0%. Deflection shall be verified using a spherical or cylindrical mandrel with a diameter no less than 95% of the inside pipe diameter.
9. All manhole and inlet castings shall be American made. Manufacturer's specification sheets shall be submitted for review and approval.
10. Manhole frame heights outside of paved areas shall be a minimum of 0.2 feet above finished grade.
11. 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 pipes, fittings and other accessories shall be kept free from dirt and foreign matter at all times.
12. All water main and water lateral thrust restraint shall be handled by use of joint restraint/mechanical joints equivalent to Ebaa Iron Megalug or push-on joint type restrained joints equivalent to "Lok-Ring", "TR Flex", or "Super Lock". Concrete thrust block shall not be allowed.
13. All water mains shall have a minimum cover of 3 feet and a maximum cover of 5 feet measured from finished grade. Where the water main crosses other utility lines, the water main shall be installed 18" (pipe to pipe) below the other utility lines (if required) to avoid conflicts and maintain cover.
14. Maintain a minimum horizontal separation of 10 feet between water, sewer, and drainage lines unless otherwise shown.
15. When pipe laying is not in progress, a mechanical joint plug or cap will be used to form a water tight seal at both ends of the line being installed.
16. The following procedure shall be followed during flushing of the lines prior to connection to the water system:
    a. Flush the water mains using a full size flush having a minimum velocity of 2.5 feet per second.
    b. Continue flushing for a minimum time period of thirty minutes or until water line is purged of foreign matter and water runs clear.
9. All water used for construction, if obtained from an unmetered line, must be metered through an approved fire hydrant meter with a backflow prevention device obtained from the municipality's water department.
10. Water distribution pipe shall have a #12 Gauge Solid Copper Tracing Wire installed along its length, including laterals up to the meter or backflow preventer.
11. All connections of the #12 Gauge Solid Copper Tracing Wire shall be made with 3m brand splice kits.
12. Mylar detectable warning tape shall be installed in sanitary sewer trenches or as required by city.
13. Gate Valves & Valve Boxes: Gate Valves shall be cast iron or ductile iron body, bronze mounted, double disc, or resilient wedge design, with non-rising stems conforming to AWWA C-500, C-509, or C-515. Valves shall have a working pressure of 200 psi, and be tested at 400 psi. 8" or larger valves are to be installed in manholes.
14. Hydrants shall be Mueller or approved equal with traffic yellow enamel finish and be equipped with a 4-1/2" outlet facing the street side with two 2-1/2" outlets on either side. Hydrants shall be restrained with mechanical joint fittings and rodded. Hydrant legs shall be ductile iron pressure class 350 pipe. Tracer wire shall be extended along hydrant legs, to hydrant isolation valves and up outside of valve box, and shall also extend up hydrant base terminating above grade.

Special Notes:

1. All earthworks for roadways shall be in accordance with Georgia Department of Transportation requirements.
2. The engineer shall make periodic site visits to observe construction of the project infrastructure and furnish an engineer's letter of completion with qualifiers at project close-out.
3. All sidewalks shall have no more than 2% cross slope, including driveway crossings.
4. All earthworks for lot areas and building pads shall be in conformance with the geotechnical report prepared for owner by others. The contractor shall request this report from the owner if it has not been furnished in the bid documents. Any recommendations contested by the contractor shall be submitted to the owner prior to commencing. Failing to notify the owner and resolving any conflicts, the contractor will be considered to have proceeded at their own risk and expense.
5. Contractor shall furnish as-built data for the water, sewer and storm lines which are to be stamped by a registered land surveyor registered in the state of Georgia. The survey shall be delivered in AutoCAD format and be in compliance with the city requirements.
6. The roads and drainage in this project are public and shall be owned and maintained by City of Port Wentworth.

LEGEND

LINE STYLES

- CENTER LINE
- DEMOLITION/ABANDONMENT
- CONSTRUCTION LIMITS
- C — C — PROPOSED OVERHEAD COMMUNICATION
- — — C — — C — — EXISTING OVERHEAD COMMUNICATION
- Cu — Cu — PROPOSED UNDERGROUND COMMUNICATION
- — — Cu — — Cu — — EXISTING UNDERGROUND COMMUNICATION
- E — E — PROPOSED OVERHEAD ELECTRICAL
- — Eu — — Eu — EXISTING OVERHEAD ELECTRICAL
- Eu — Eu — PROPOSED UNDERGROUND ELECTRICAL
- — Eu — — Eu — EXISTING UNDERGROUND ELECTRICAL
- FM — FM — PROPOSED FORCE MAIN
- — — FM — — FM — EXISTING FORCE MAIN
- G — G — PROPOSED NATURAL GAS MAIN
- — — G — — G — EXISTING NATURAL GAS MAIN
- NPW — NPW — PROPOSED NON-POTABLE WATER
- — — NPW — — NPW — EXISTING NON-POTABLE WATER
- SS — SS — PROPOSED SANITARY SEWER
- — — SS — — SS — EXISTING SANITARY SEWER
- W — W — PROPOSED WATER MAIN
- — W — — W — EXISTING WATER MAIN
- RIGHT OF WAY
- PROPERTY LINE
- FILL — LIMITS OF FILL
- X — X — WELDED WIRE FABRIC
- TREE LINE
- RAIL ROAD
- DRAINAGE CHANNEL
- SILT FENCE
- PROPOSED FENCE
- EXISTING FENCE
- GAURD RAIL
- BREAK LINE
- SB — STREAM BUFFER
- LIMITS OF 100 YEAR FLOOD PLANE
- SOIL — SOIL BOUNDARY
- 1000 — PROPOSED MAJOR CONTOUR
- 1000 — EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MINOR CONTOUR

PATTERNS

- POROUS
- BLOCK WALL
- BRICK WALL
- CONCRETE (PLAN)
- CONCRETE (SECTION)
- ASPHALT (PLAN)
- ASPHALT (SECTION)
- GRATING
- GROUT
- RIP-RAP
- GRAVEL
- SWAMP
- UNDISTURBED EARTH
- DISTURBED EARTH
- SAND
- ROCK

VEGETATION

- GENERIC TREE
- DECIDUOUS TREE
- CONIFEROUS TREE
- DECIDUOUS SHRUB
- CONIFEROUS SHRUB

LEGEND

- CENTER LINE
- FIRE HYDRANT
- TAG
- W — WATER MANHOLE
- W — WATER METER
- S — SANITARY SEWER MANHOLE
- GT — GREASE TRAP
- D — STORM DRAIN MANHOLE
- C — COMMUNICATION MANHOLE
- C — COMMUNICATION VAULT
- UTILITY POLE
- IN LINE VALVE
- HORIZONTAL CONTROL POINT
- GUY WIRE
- E — ELECTRICAL MANHOLE
- BM — BENCHMARK
- VALVE IN MANHOLE
- GRATE INLET

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

JASON BRYANT
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #75897

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

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GENERAL NOTES

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

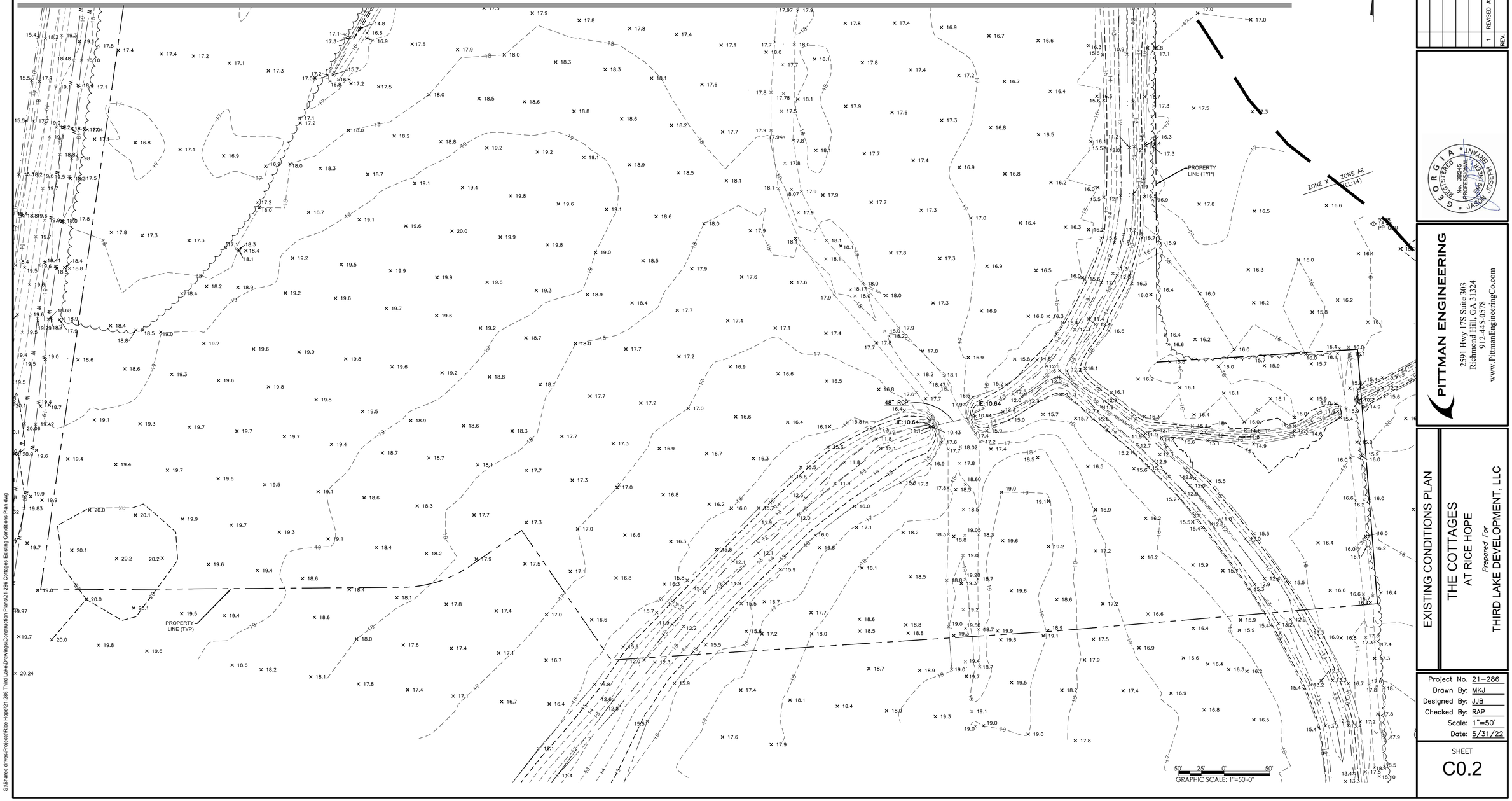
Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	NTS
Date:	5/31/22

SHEET
C0.1

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Wednesday, December 21, 2022 11:27:39 AM

MATCHLINE -- SEE SHEET C0.3



REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED
No. 38245
PROFESSIONAL ENGINEER
JASON JOSEPH LANIER

PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
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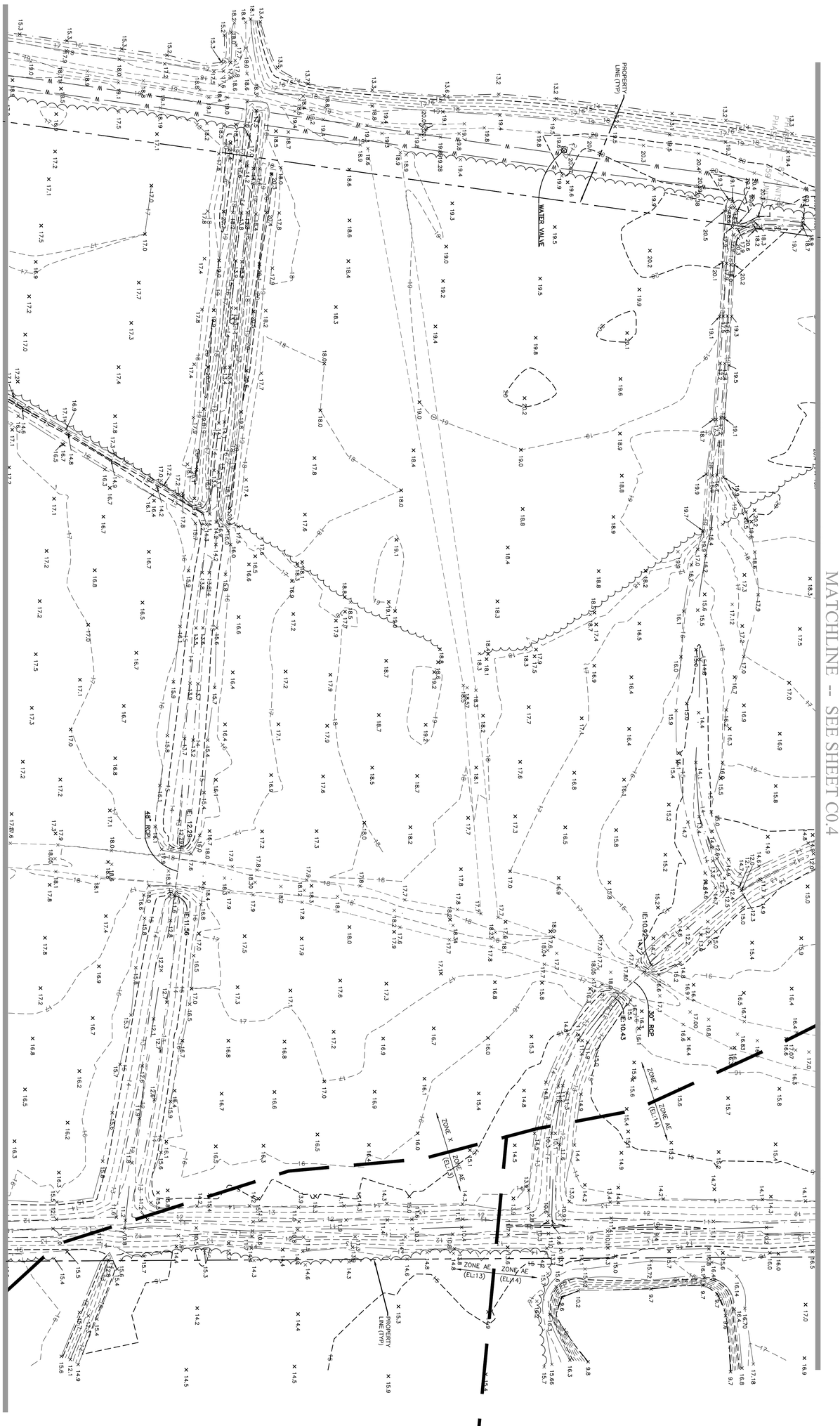
EXISTING CONDITIONS PLAN

THE COTTAGES
AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C0.2

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GRAPHIC SCALE: 1"=50'-0"

EXISTING CONDITIONS PLAN

THE COTTAGES
AT RICE HOPE

Prepared For
THIRD LAKE DEVELOPMENT, LLC

PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
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GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYAN

REV.	REVISIONS	BY	DATE
	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. PHASE 1
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: 1"=50'
Date: 5/31/22

SHEET C0.3

Wednesday, December 21, 2022 11:27:59 AM

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ZONE X

ZONE AE (EL:14)

PHASE 1 - 87 UNITS

PHASE 2 - 110 UNITS

IE:12.02

15" RCP

IE:12.41

60" RCP

IE:7.83

IE:8.22

PROPERTY LINE (TYP)

MATCHLINE -- SEE SHEET C0.3

50' 25' 0' 50'

GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH WAY

PITTMAN ENGINEERING

2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578

www.PittmanEngineeringCo.com

EXISTING CONDITIONS PLAN

THE COTTAGES
AT RICE HOPE

Prepared For

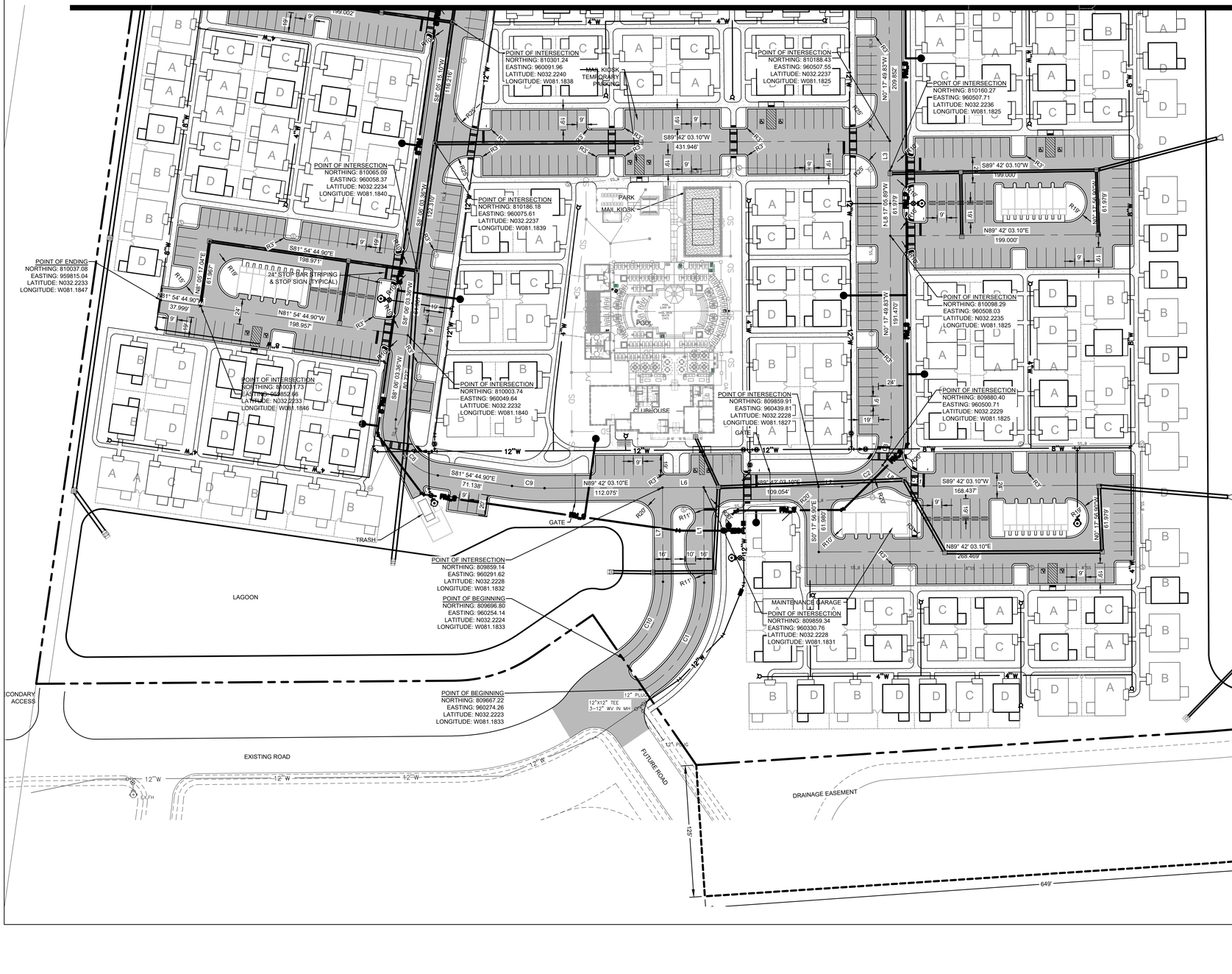
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET

C0.4

MATCHLINE -- SEE SHEET C1.2



PARKING SUMMARY

REQUIRED PARKING SPACES:
TOTAL UNITS x 2 SPACES PER UNIT = REQUIRED SPACES
444 UNITS x 2 SPACES/UNIT = 888 SPACES (REQ'D)

PROVIDED PARKING SPACES:
928 TOTAL SPACES PROVIDED

REQUIRED HANDICAP SPACES:
2% OF TOTAL SPACES PROVIDED = REQUIRED HC SPACES
928 SPACES x 0.02 = 18.56 SPACES (SAY 19)

PROVIDED HANDICAP SPACES:
42 TOTAL HC SPACES + 21 TOTAL HC STRIPED ISLES = 63

TOTAL PROVIDED PARKING SPACES:
865 STANDARD SPACES
63 HANDICAP SPACES/STRIPED ISLES
928 TOTAL PROJECT SPACES PROVIDED

Parcel Line Table		
Line #	Length	Direction
L1	90.51	N0° 17' 56.90"W
L2	22.39	N89° 42' 03.10"E
L3	28.17	N0° 19' 26.52"W
L6	39.13	S89° 42' 03.10"W
L7	89.49	S0° 17' 56.90"E
L8	25.27	N55° 27' 31.14"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	121.83	118.00	59.16	N29° 16' 45"E	116.49
C2	45.26	47.06	55.11	N62° 08' 46"E	43.54
C3	28.15	47.08	34.26	N17° 27' 48"E	27.73
C8	73.84	47.00	90.01	S36° 54' 21"E	66.48
C9	31.03	212.00	8.39	S86° 06' 21"E	31.00
C10	85.45	88.00	55.64	N27° 31' 12"E	82.14
C11	19.46	32.00	34.84	S72° 52' 44"E	19.16

NOTE:
1. CONSTRUCTION OF ALL SIDEWALKS, ADA PARKING, AND ACCESSIBLE ROUTES SHALL BE IN CONFORMANCE WITH FEDERAL ADA STANDARDS, LATEST EDITION.
2. SIDEWALKS SHALL COMPLY WITH MINIMUM STANDARD REQUIREMENTS SPECIFIED IN ARTICLE V, SECTION 3.1.4 OF THE "MPO MASTER PLAN OVERLAY".
3. ALL SIDEWALKS ON PLAN SHALL BE 4' WIDE, EXCEPT WHERE ADJACENT TO PAVEMENT/PARKING, IN WHICH CASES THEY SHALL BE 5' WIDE.

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED ENGINEER
GEORGIA
No. 38245
PROFESSIONAL
JASON J. BRYANT

PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
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STAKING & LAYOUT PLAN

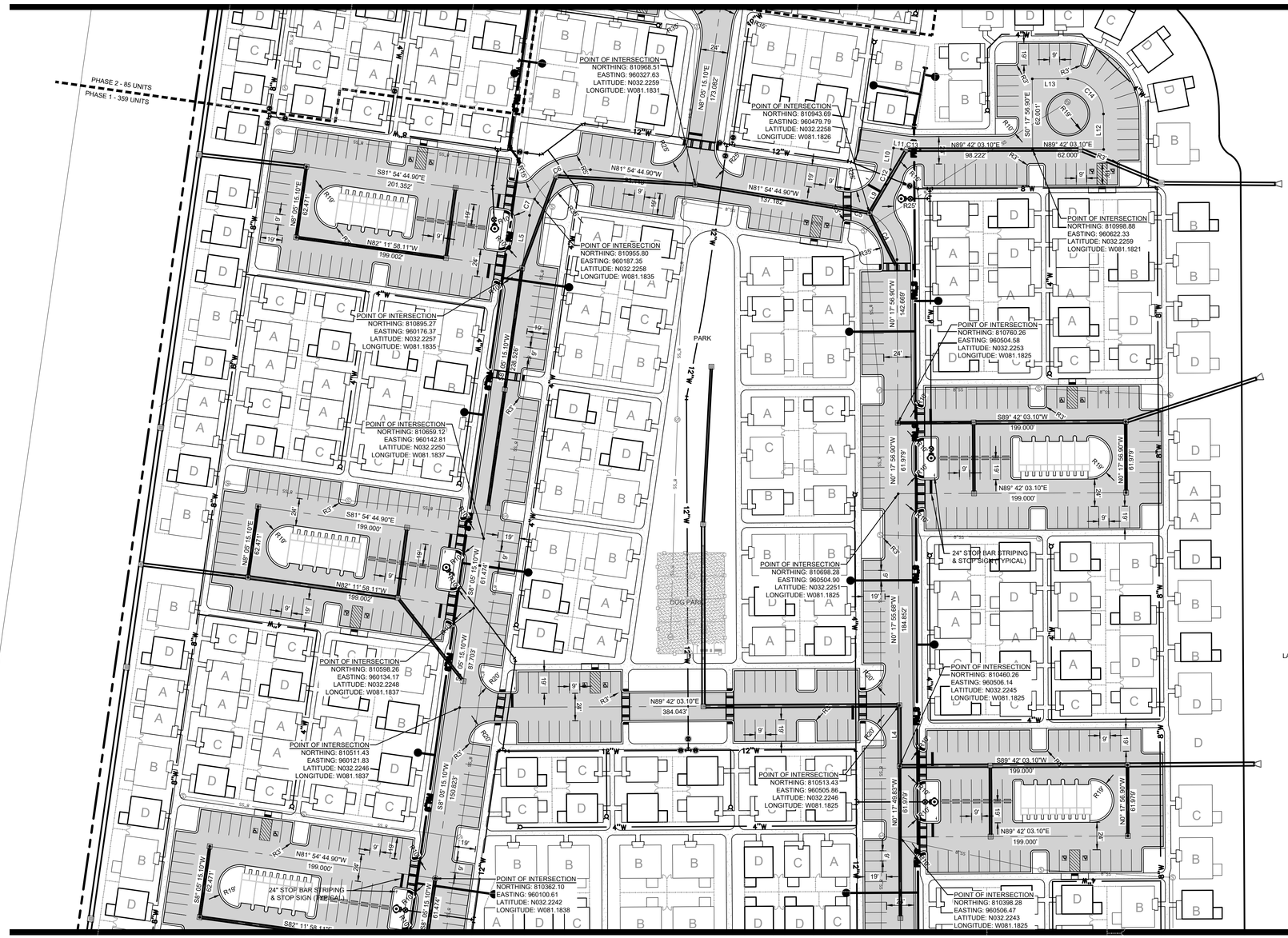
THE COTTAGES
AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C1.1

Wednesday, December 21, 2022 3:16:10 PM

MATCHLINE -- SEE SHEET C1.3



MATCHLINE -- SEE SHEET C1.1

NOTE:
1. CONSTRUCTION OF ALL SIDEWALKS, ADA PARKING, AND ACCESSIBLE ROUTES SHALL BE IN CONFORMANCE WITH FEDERAL ADA STANDARDS, LATEST EDITION.
2. SIDEWALKS SHALL COMPLY WITH MINIMUM STANDARD REQUIREMENTS SPECIFIED IN ARTICLE V, SECTION 3.1.4 OF THE "MPO MASTER PLAN OVERLAY".
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865 STANDARD SPACES
63 HANDICAP SPACES/STRIPED ISLES
928 TOTAL PROJECT SPACES PROVIDED

Parcel Line Table		
Line #	Length	Direction
L4	53.17	N0° 17' 49.83"W
L5	46.79	S8° 05' 15.10"W
L9	28.75	N29° 13' 58.76"E
L10	19.00	N8° 05' 15.10"E
L11	7.00	S81° 54' 44.90"E
L12	30.96	N0° 17' 56.90"W
L13	31.04	S89° 46' 29.73"W

Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C4	49.60	47.00	60.47	N30° 31' 59"W	47.33
C5	17.35	47.00	21.15	N71° 20' 23"W	17.25
C6	58.89	47.00	71.80	S62° 11' 21"W	55.12
C7	14.93	47.00	18.20	S17° 11' 21"W	14.87
C12	13.66	37.00	21.15	N18° 39' 37"E	13.58
C13	16.39	112.00	8.39	S86° 06' 21"E	16.38
C14	48.65	31.00	89.93	N45° 15' 44"W	43.81

REV.	DATE	BY	REVISIONS
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THE COTTAGES AT RICE HOPE

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LAYOUT & STAKING PLAN

THE COTTAGES
AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	PHASE 1
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C1.2

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Layout Staking Plan.dwg



NOTE:
1. CONSTRUCTION OF ALL SIDEWALKS, ADA PARKING, AND ACCESSIBLE ROUTES SHALL BE IN CONFORMANCE WITH FEDERAL ADA STANDARDS, LATEST EDITION.
2. SIDEWALKS SHALL COMPLY WITH MINIMUM STANDARD REQUIREMENTS SPECIFIED IN ARTICLE V, SECTION 3.1.4 OF THE "MPO MASTER PLAN OVERLAY".
3. ALL SIDEWALKS ON PLAN SHALL BE 4' WIDE, EXCEPT WHERE ADJACENT TO PAVEMENT/PARKING, IN WHICH CASES THEY SHALL BE 5' WIDE.

Parcel Line Table

Line #	Length	Direction
L14	25.06	N8° 05' 15.10"E
L15	47.68	N8° 05' 15.10"E
L16	27.38	N8° 05' 15.10"E
L17	34.09	N8° 05' 15.09"E
L18	101.71	N8° 05' 15.10"E

Curve Table

Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C15	47.98	32.00	85.90	N51° 02' 23"E	43.61
C16	4.79	9.00	30.47	N7° 08' 50"W	4.73
C17	28.05	27.00	59.53	N52° 08' 48"W	26.81
C18	2.29	32.00	4.09	S83° 57' 38"E	2.29
C19	59.84	47.00	72.95	S45° 26' 13"E	55.88
C20	13.99	47.01	17.05	S0° 26' 15"E	13.93

PARKING SUMMARY

REQUIRED PARKING SPACES:
TOTAL UNITS x 2 SPACES PER UNIT = REQUIRED SPACES
444 UNITS x 2 SPACES/UNIT = 888 SPACES (REQ'D)

PROVIDED PARKING SPACES:
928 TOTAL SPACES PROVIDED

REQUIRED HANDICAP SPACES:
2% OF TOTAL SPACES PROVIDED = REQUIRED HC SPACES
928 SPACES x 0.02 = 18.56 SPACES (SAY 19)

PROVIDED HANDICAP SPACES:
42 TOTAL HC SPACES + 21 TOTAL HC STRIPED ISLES = 63

TOTAL PROVIDED PARKING SPACES:
865 STANDARD SPACES
63 HANDICAP SPACES/STRIPED ISLES
928 TOTAL PROJECT SPACES PROVIDED

GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON J. BRYANT JOSEPH

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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

STAKING & LAYOUT PLAN

THE COTTAGES
AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C1.3

Wednesday, December 21, 2022 2:18:01 PM

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

PHASE 1 CONSTRUCTION (SHADED–TYP)

8"SS

SS

100' 50' 0' 100'
GRAPHIC SCALE-1"=100'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

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www.PittmanEngineeringCo.com

COMPOSITE SEWER PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=100'
Date:	10/25/22

SHEET
C2.0

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COMPOSITE WATER PLAN

THE COTTAGES AT RICE HOPE

PHASE 1

Prepared For

THIRD LAKE DEVELOPMENT, LLC

PITTMAN ENGINEERING

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GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: 1"=100'
Date: 10/25/22

SHEET C2.1



COMPOSITE REUSE WATER EXHIBIT

THE COTTAGES AT RICE HOPE

PHASE 1

Prepared For

THIRD LAKE DEVELOPMENT, LLC

PITTMAN ENGINEERING

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GEORGIA REGISTERED PROFESSIONAL ENGINEER No. 38245 JASON JOSEPH BRYANT

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. 21-286
Drawn By: MKJ
Designed By: RAP
Checked By: RAP
Scale: 1"=100'
Date: 10/25/22

SHEET C2.2

NOTE: 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.

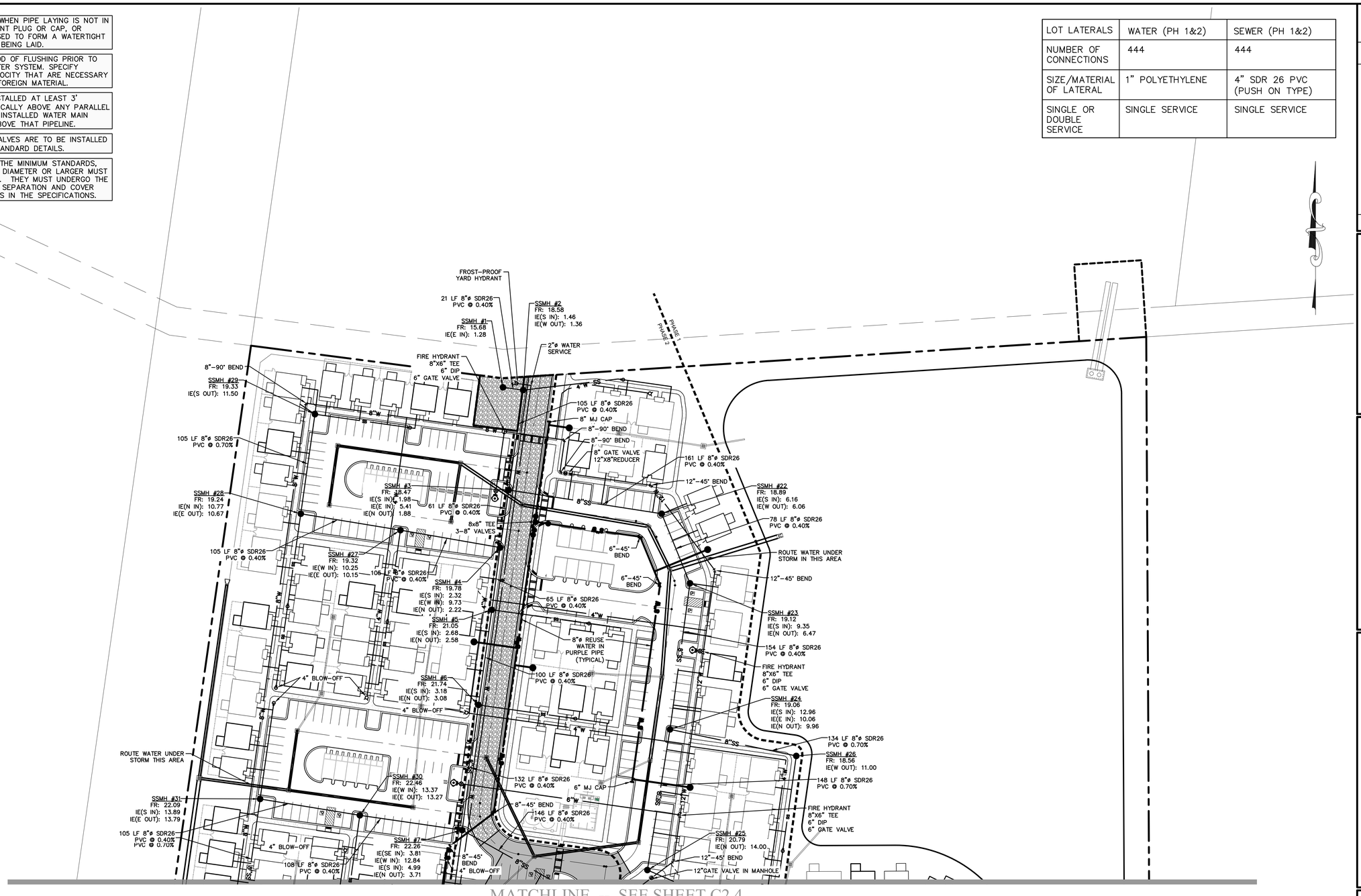
NOTE: AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE CITY WATER SYSTEM, SPECIFY MINIMUM FLUSH TIME AND VELOCITY THAT ARE NECESSARY TO PURGE THE LINE OF ANY FOREIGN MATERIAL.

NOTE: WATER MAIN TO BE INSTALLED AT LEAST 3' HORIZONTALLY, AND 18" VERTICALLY ABOVE ANY PARALLEL NPRL. IF CROSSING AN NPRL, INSTALLED WATER MAIN SHALL PASS AT LEAST 18" ABOVE THAT PIPELINE.

NOTE: ALL 8" AND LARGER VALVES ARE TO BE INSTALLED MANHOLES PER THE CITY'S STANDARD DETAILS.

NOTE: FOR THE PURPOSE OF THE MINIMUM STANDARDS, ANY WATER LINE 2 INCHES IN DIAMETER OR LARGER MUST BE TREATED AS WATER MAINS. THEY MUST UNDERGO THE SAME DISINFECTION, MARKING, SEPARATION AND COVER REQUIREMENTS ETC. FOR MAINS IN THE SPECIFICATIONS.

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE



MATCHLINE -- SEE SHEET C2.4

100' 50' 0' 100'
GRAPHIC SCALE: 1"=100'-0"

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH

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Richmond Hill, GA 31324
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WATER & SEWER PLAN
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C2.3

Wednesday, December 21, 2022 11:38:26 AM
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NOTE: 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.

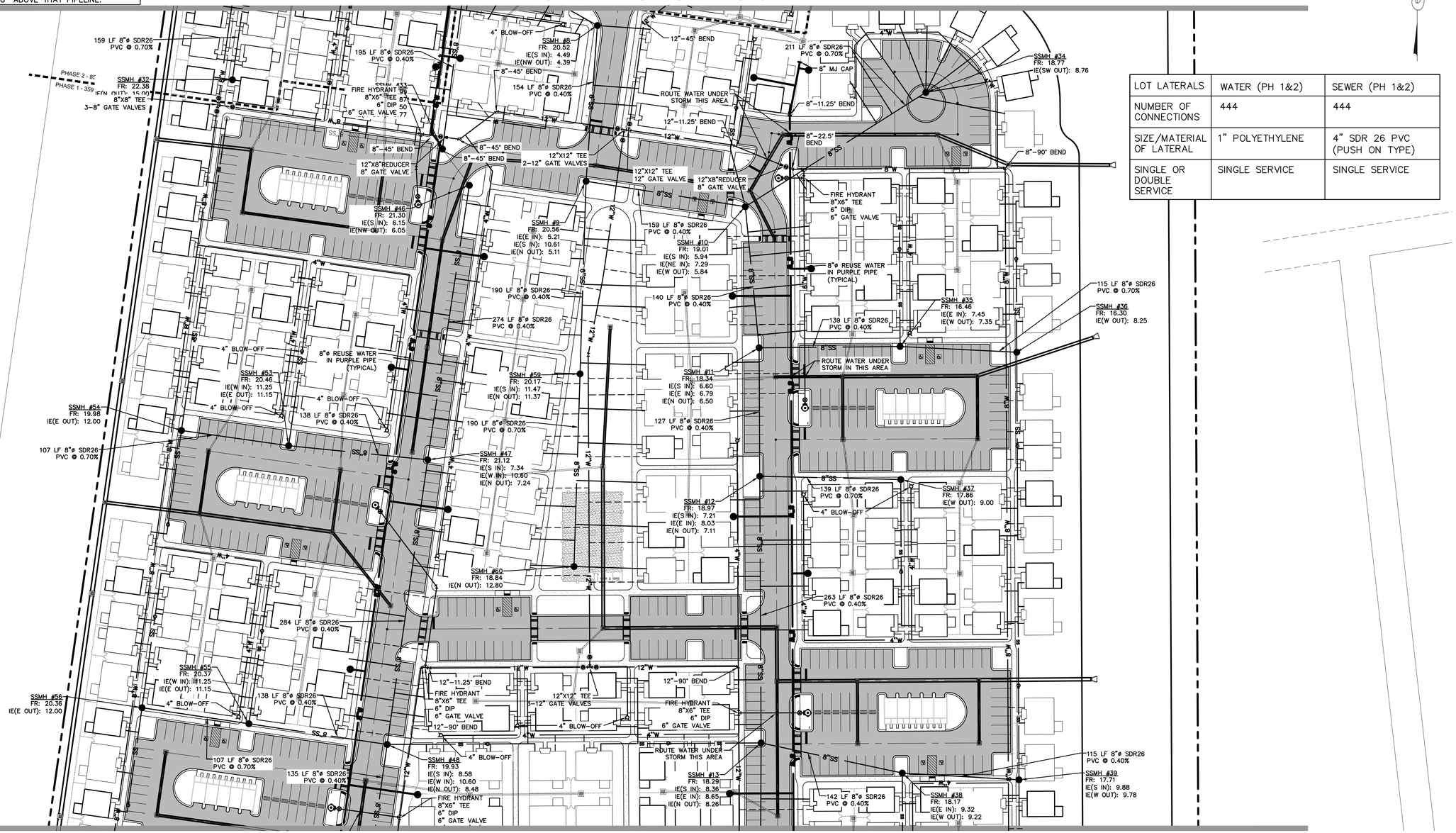
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NOTE: WATER MAIN TO BE INSTALLED AT LEAST 3' HORIZONTALLY, AND 18" VERTICALLY ABOVE ANY PARALLEL NPRL. IF CROSSING AN NPRL, INSTALLED WATER MAIN SHALL PASS AT LEAST 18" ABOVE THAT PIPELINE.

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MATCHLINE -- SEE SHEET C2.3



MATCHLINE -- SEE SHEET C2.5

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE

GRAPHIC SCALE: 1"=100'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH

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WATER & SEWER PLAN
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C2.4

Wednesday, December 21, 2022 11:38:36 AM
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Wednesday, December 21, 2022 11:38:46 AM

NOTE: 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.

NOTE: AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE CITY WATER SYSTEM. SPECIFY MINIMUM FLUSH TIME AND VELOCITY THAT ARE NECESSARY TO PURGE THE LINE OF ANY FOREIGN MATERIAL.

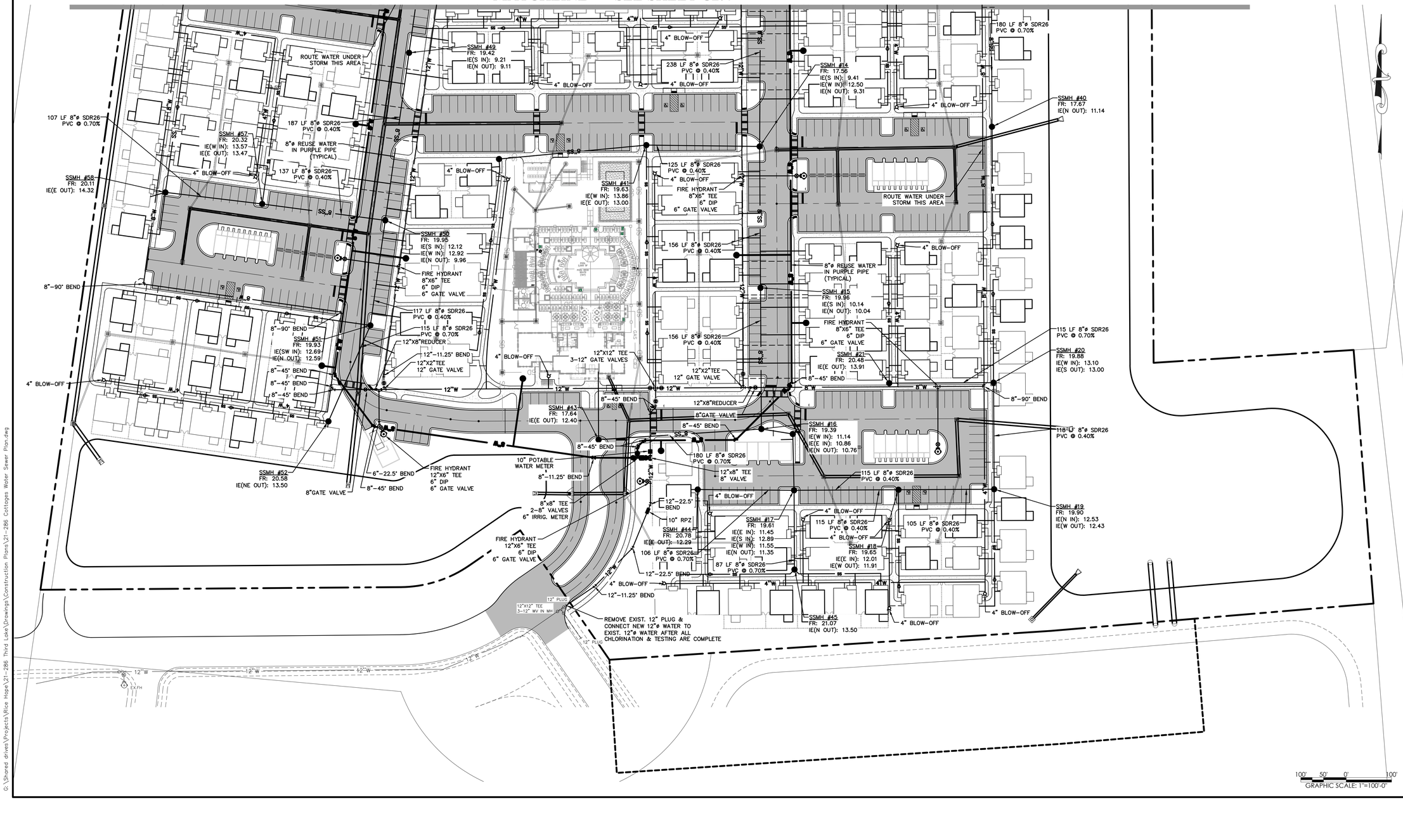
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LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE

MATCHLINE -- SEE SHEET C2.4



REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON J. JOSEPH

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WATER & SEWER PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C2.5

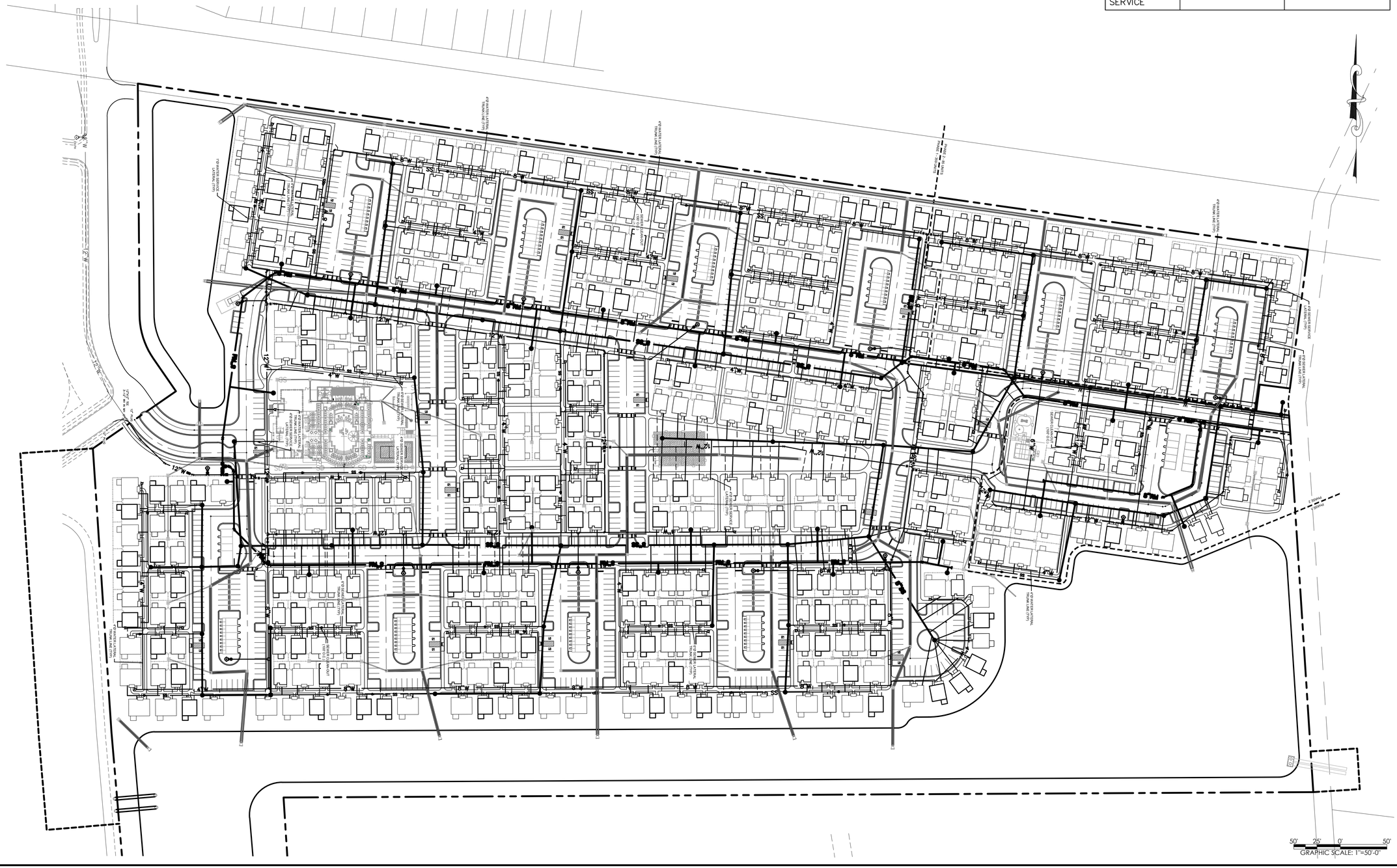
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NOTE: DURING INSTALLATION, WHEN PIPE LAYING IS NOT IN PROGRESS, A MECHANICAL JOINT PLUG OR CAP, OR APPROVED EQUAL, WILL BE USED TO FORM A WATERTIGHT SEAL AT BOTH ENDS OF LINE BEING LAID.

NOTE: AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE CITY WATER SYSTEM. SPECIFY MINIMUM FLUSH TIME AND VELOCITY THAT ARE NECESSARY TO PURGE THE LINE OF ANY FOREIGN MATERIAL.

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE



REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON BRYANT JOSEPH

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Richmond Hill, GA 31324
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WATER & SEWER LATERAL EXHIBIT

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=80'
Date:	

SHEET
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Wednesday, December 21, 2022 11:41:10 AM

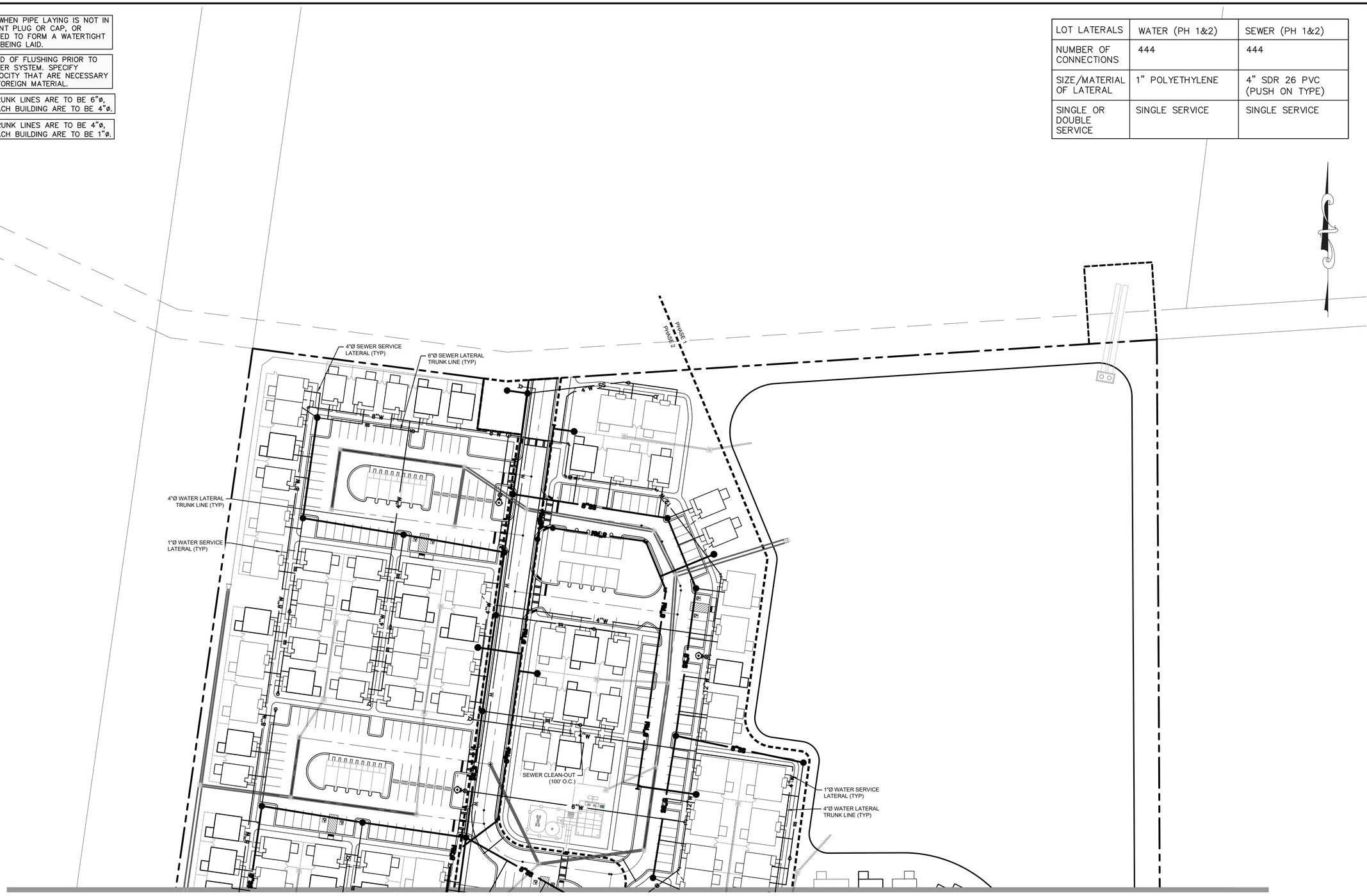
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NOTE: AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE CITY WATER SYSTEM. SPECIFY MINIMUM FLUSH TIME AND VELOCITY THAT ARE NECESSARY TO PURGE THE LINE OF ANY FOREIGN MATERIAL.

NOTE: ALL SEWER LATERAL TRUNK LINES ARE TO BE 6"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 4"ø.

NOTE: ALL WATER LATERAL TRUNK LINES ARE TO BE 4"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 1"ø.

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE



MATCHLINE -- SEE SHEET C2.7

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED 38044 PROFESSIONAL ENGINEER JOSEPH MARK JASON

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WATER & SEWER LATERAL PLAN

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: 1"=50'
Date: 5/31/22

SHEET
C2.6

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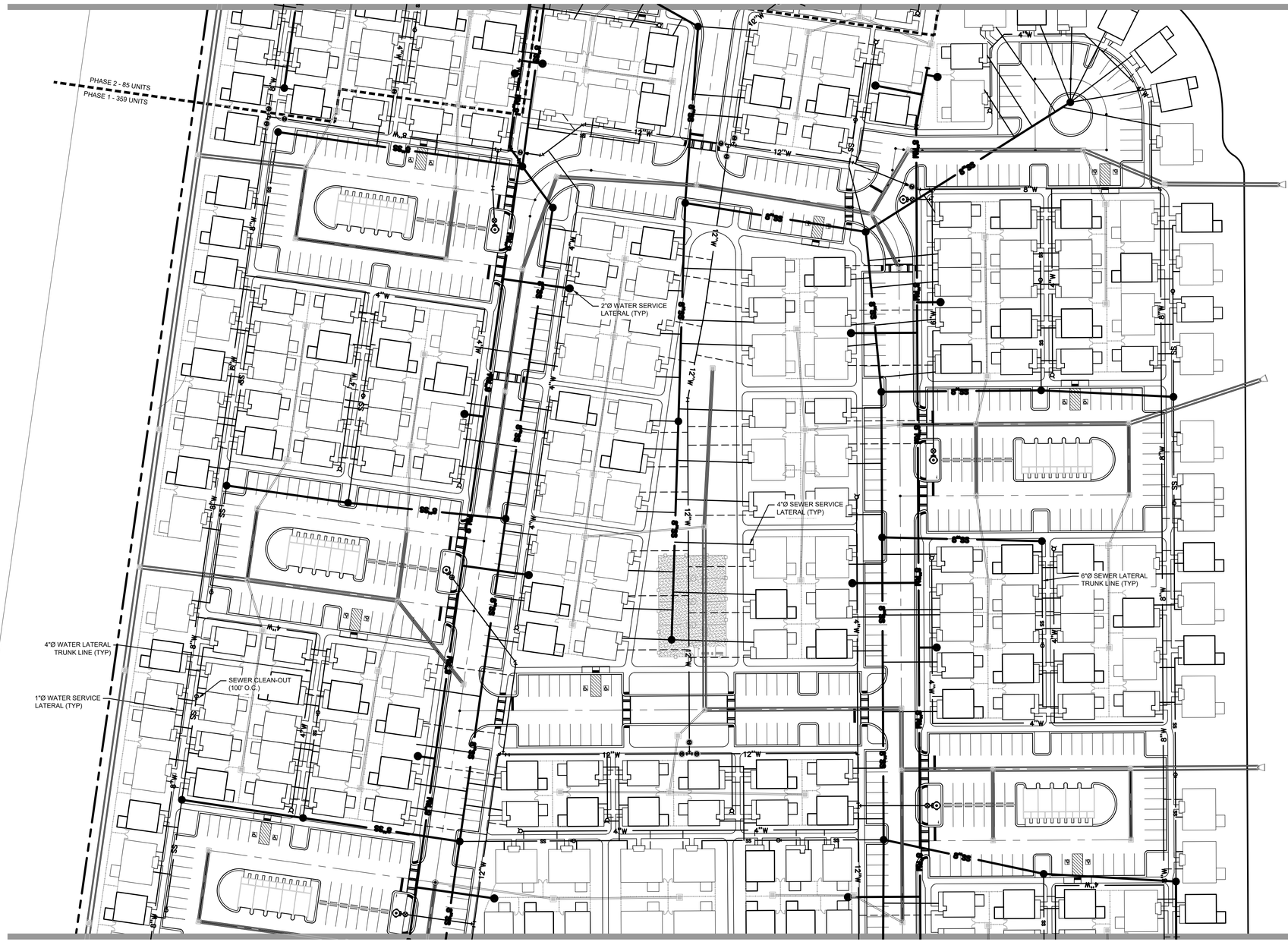
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NOTE: AN ACCEPTABLE METHOD OF FLUSHING PRIOR TO CONNECTION TO THE CITY WATER SYSTEM. SPECIFY MINIMUM FLUSH TIME AND VELOCITY THAT ARE NECESSARY TO PURGE THE LINE OF ANY FOREIGN MATERIAL.

NOTE: ALL SEWER LATERAL TRUNK LINES ARE TO BE 6"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 4"ø.

NOTE: ALL WATER LATERAL TRUNK LINES ARE TO BE 4"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 1"ø.

MATCHLINE -- SEE SHEET C2.6



MATCHLINE -- SEE SHEET C2.8

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH MOSTAFANT 38044

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WATER & SEWER LATERAL PLAN

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
C2.7

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

Wednesday, December 21, 2022 11:41:21 AM
G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Water Sewer Lateral Plan.dwg
THE COTTAGES AT RICE HOPE

NOTE: 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.

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NOTE: ALL SEWER LATERAL TRUNK LINES ARE TO BE 6"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 4"ø.

NOTE: ALL WATER LATERAL TRUNK LINES ARE TO BE 4"ø, AND SERVICE LATERALS TO EACH BUILDING ARE TO BE 1"ø.

LOT LATERALS	WATER (PH 1&2)	SEWER (PH 1&2)
NUMBER OF CONNECTIONS	444	444
SIZE/MATERIAL OF LATERAL	1" POLYETHYLENE	4" SDR 26 PVC (PUSH ON TYPE)
SINGLE OR DOUBLE SERVICE	SINGLE SERVICE	SINGLE SERVICE

MATCHLINE -- SEE SHEET C2.7



REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH

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Richmond Hill, GA 31324
912-445-0578
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WATER & SEWER LATERAL PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

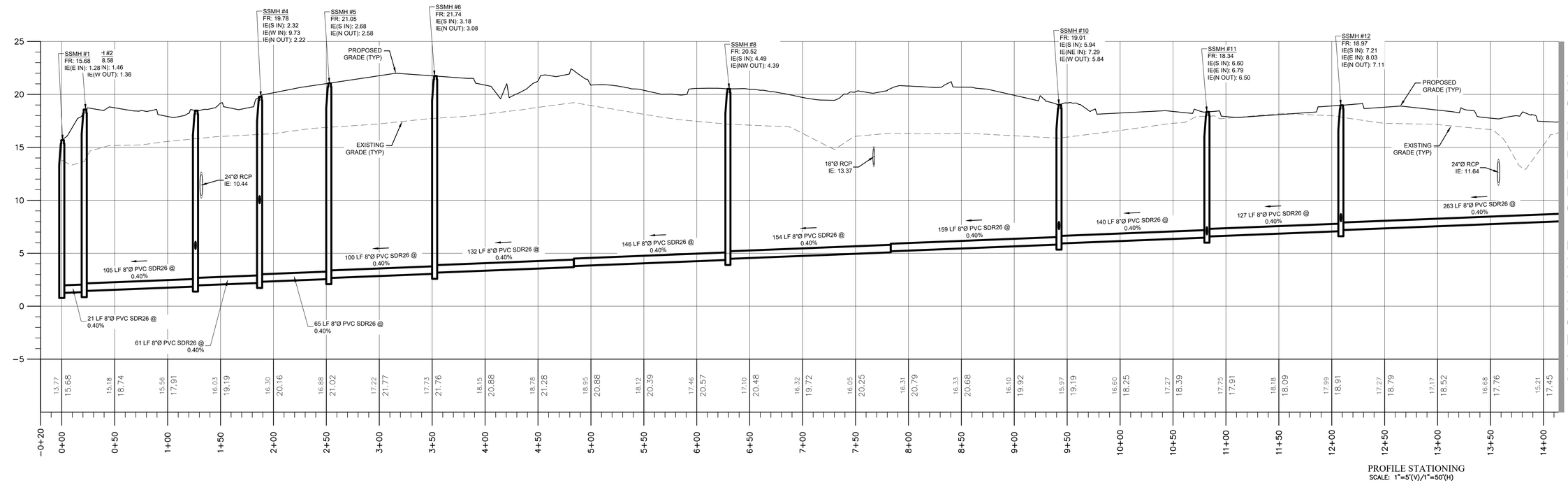
Prepared For
THIRD LAKE DEVELOPMENT, LLC

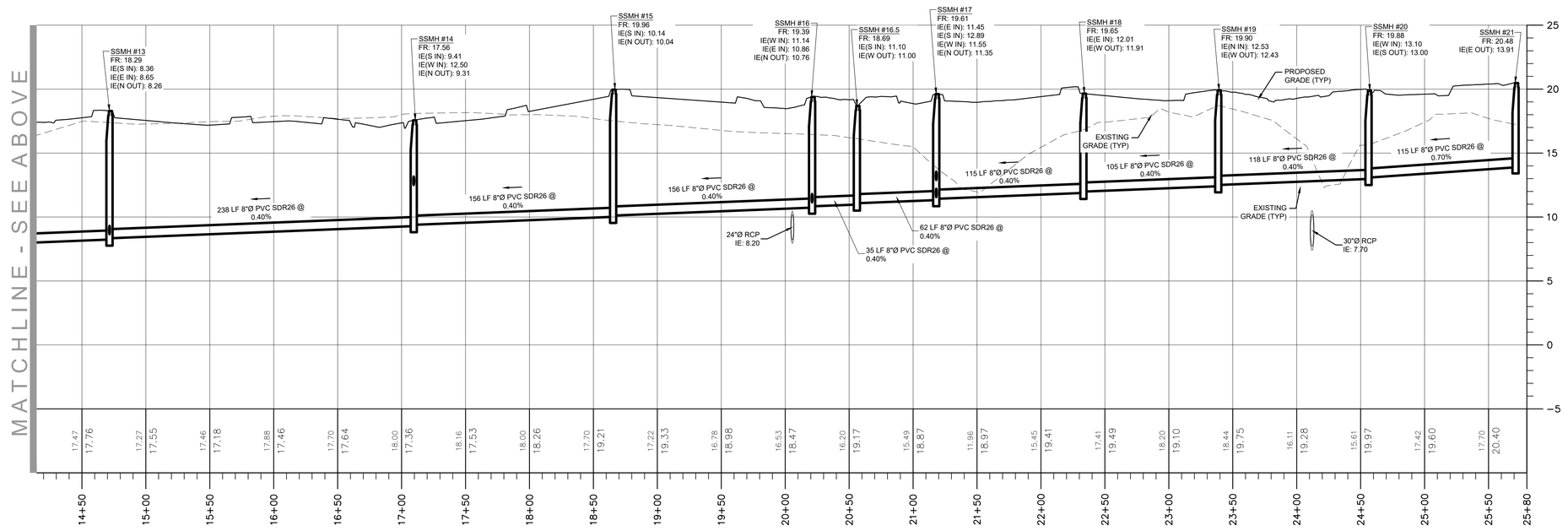
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Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

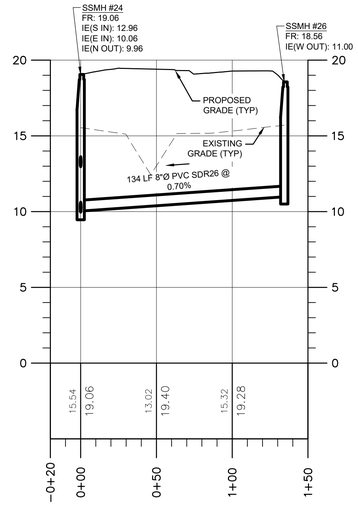
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Wednesday, December 21, 2022 2:47:49 PM

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PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GEORGIA LICENSE
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

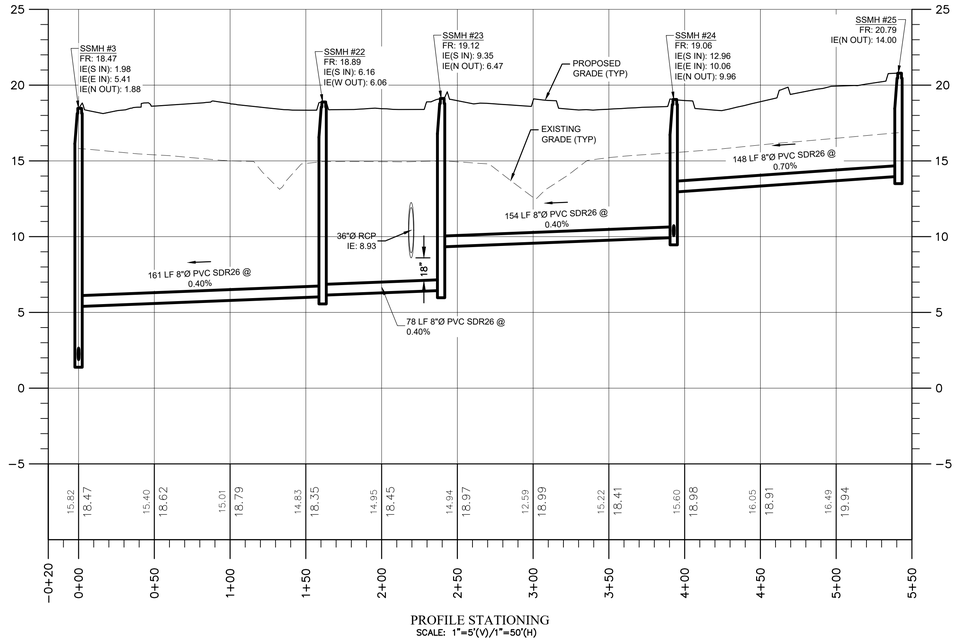
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SANITARY SEWER PROFILES

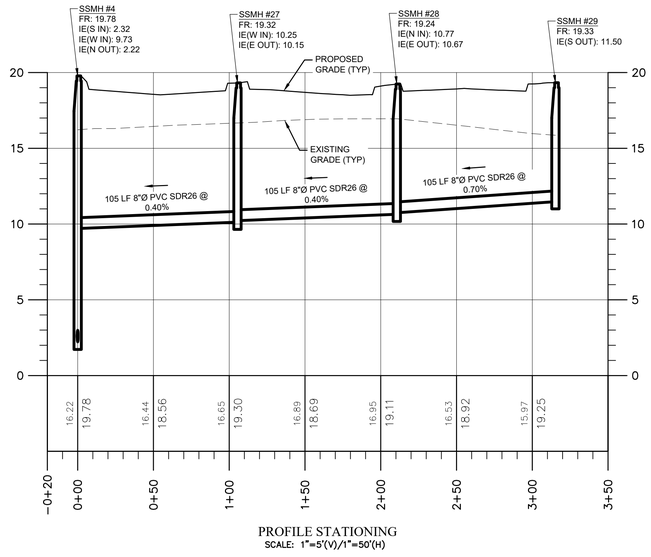
THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

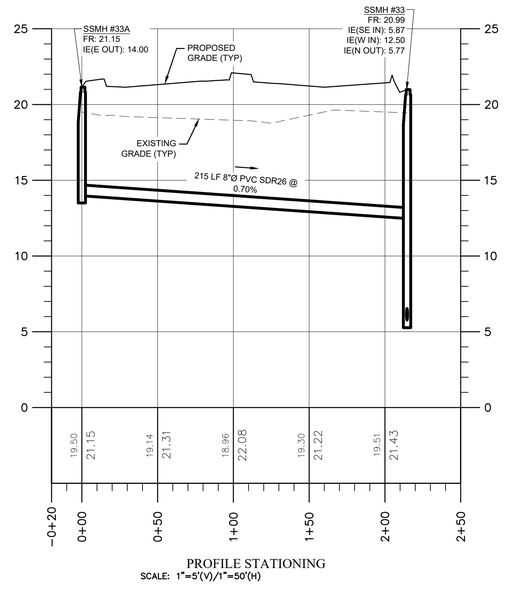
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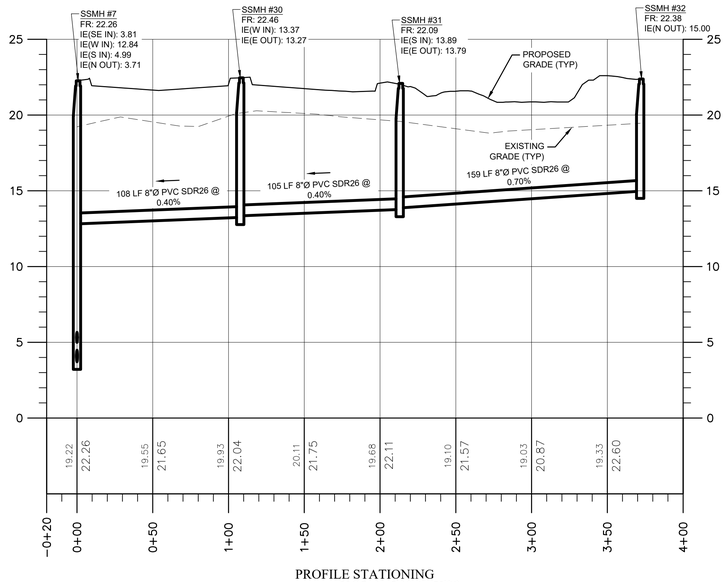
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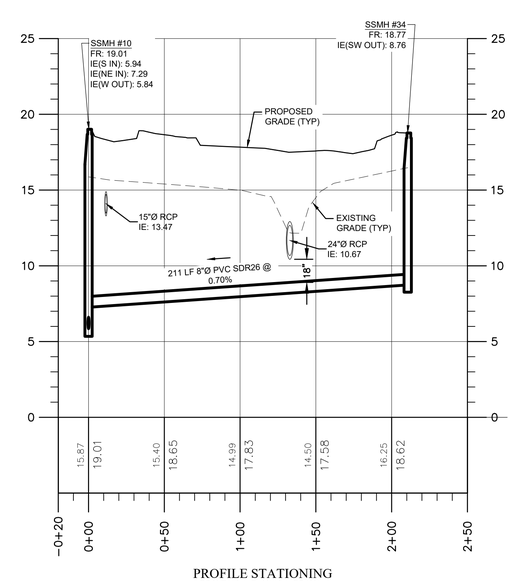
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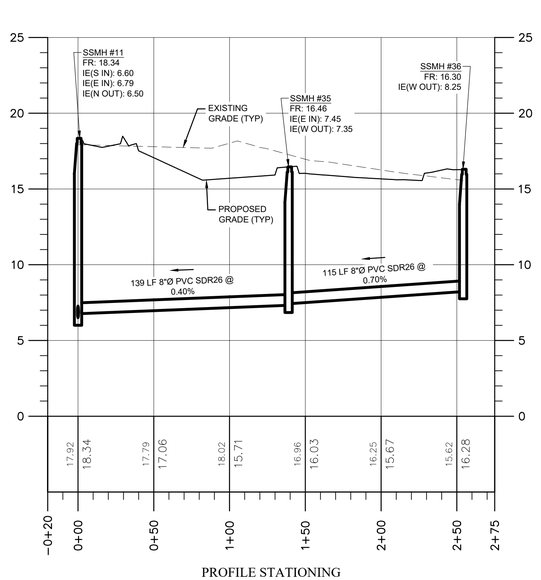
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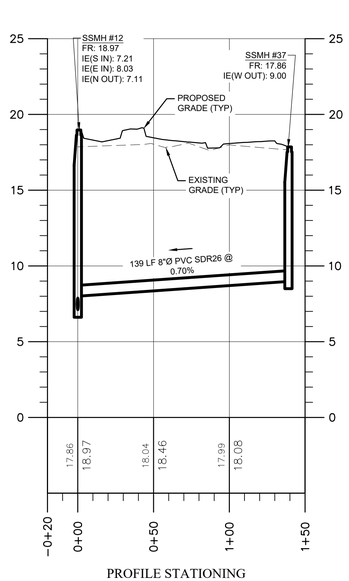
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PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GEORGIA PE #34711
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER 34711 JASON J. BRYANT JOSEPH

PITTMAN ENGINEERING
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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

SANITARY SEWER PROFILES

THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

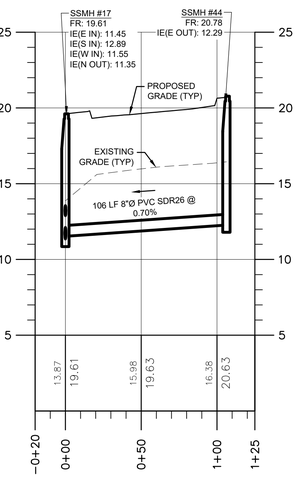
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Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

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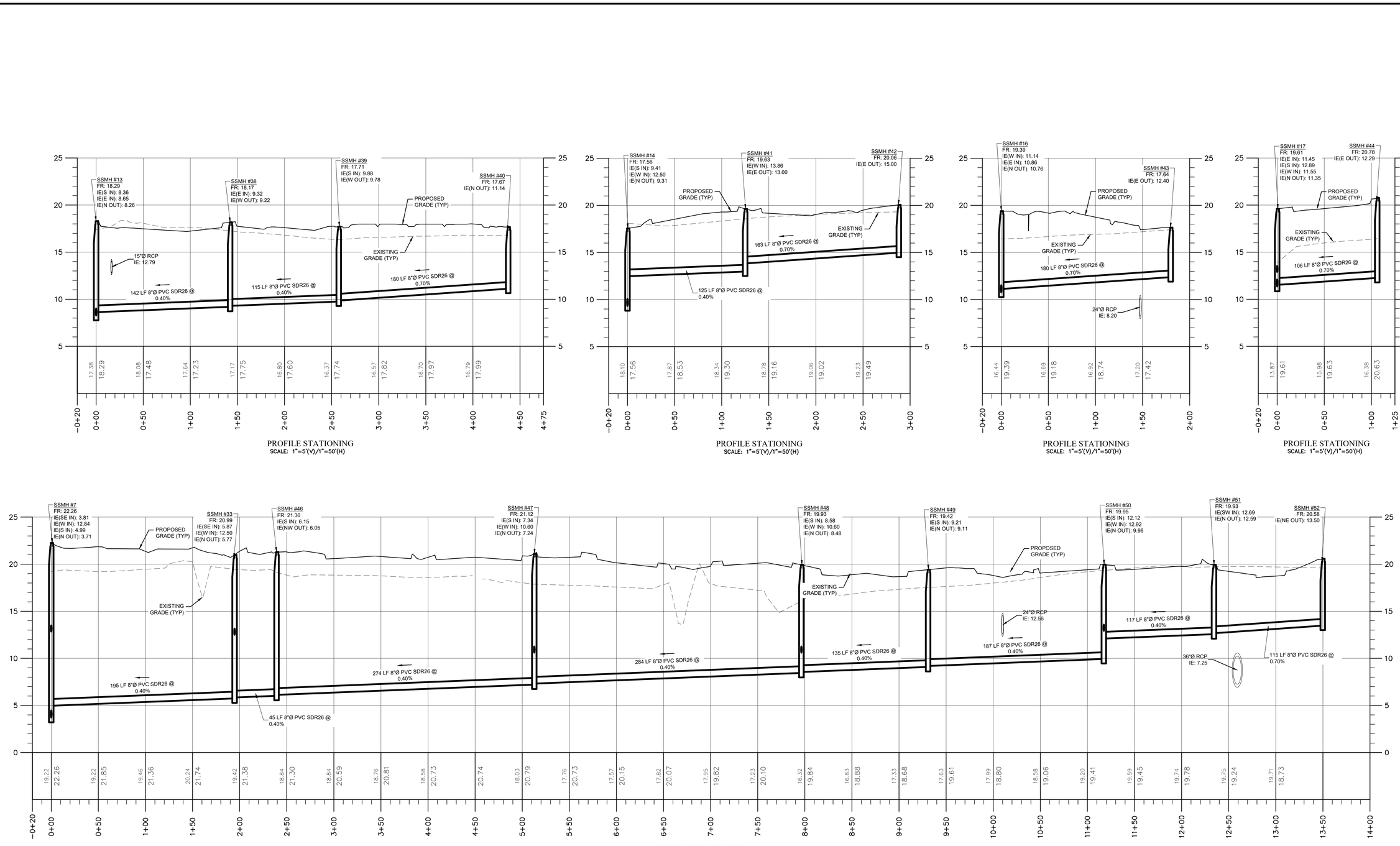
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PROFILE STATIONING
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PROFILE STATIONING
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REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GA CERT. NO. 038945
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

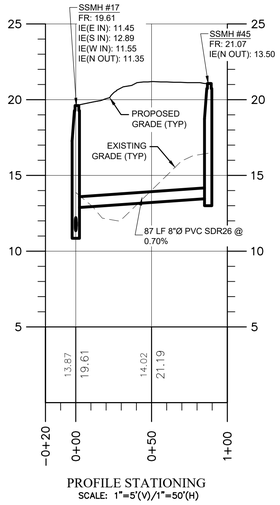
PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

SANITARY SEWER PROFILES

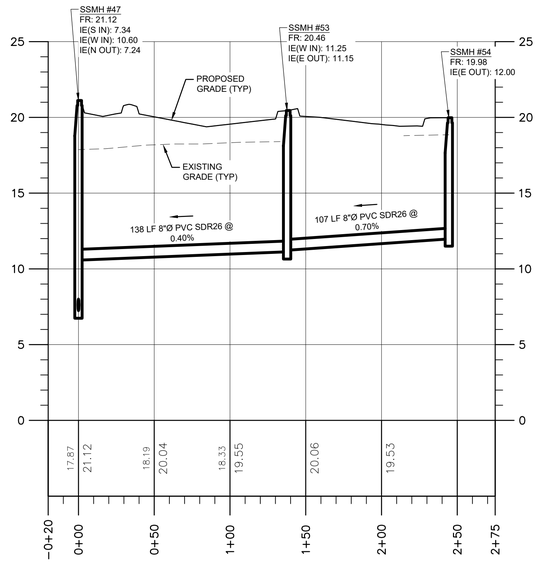
THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
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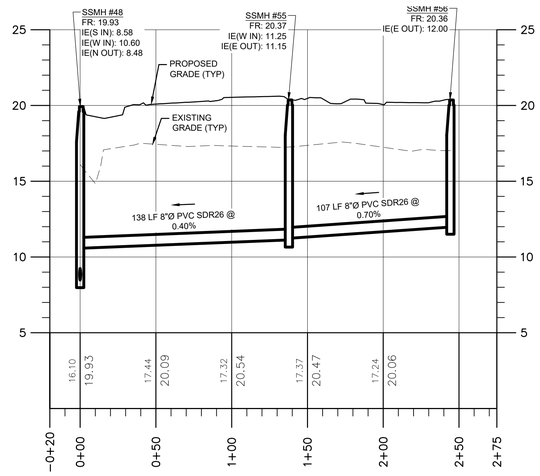
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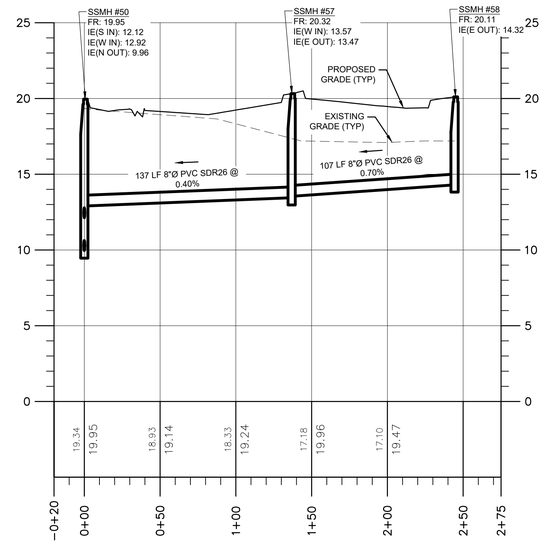
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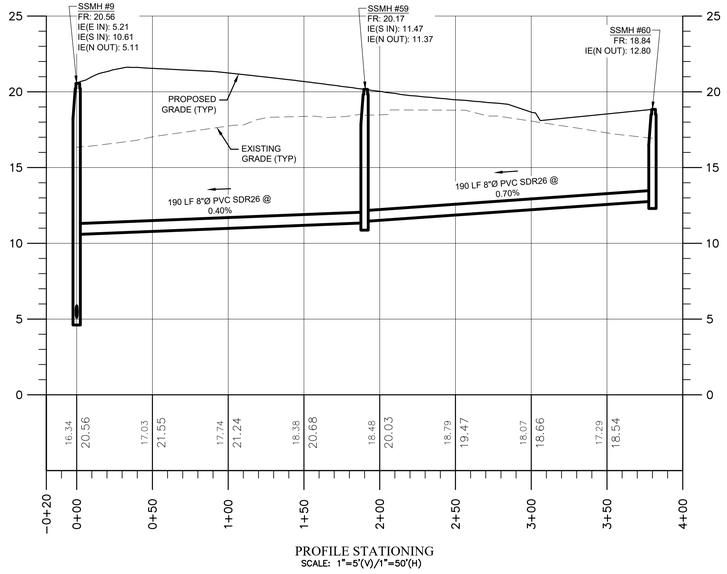
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SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GEORGIA LICENSE #
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER 38245 JASON JOSEPH BRYANT

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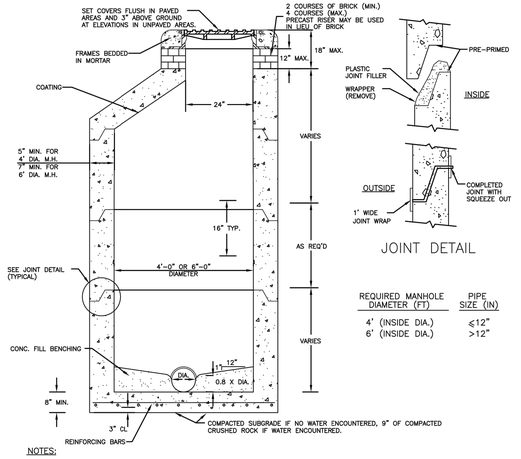
SANITARY SEWER PROFILES

THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

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Wednesday, December 21, 2022 11:43:28 AM



JOINT DETAIL

REQUIRED MANHOLE DIAMETER (FT)	PIPE SIZE (IN)
4' (INSIDE DIA.)	≤12"
6' (INSIDE DIA.)	>12"

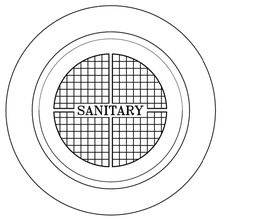
NOTES:

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.

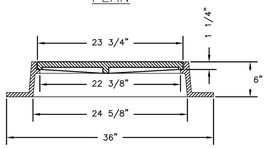
PRECAST CONCRETE MANHOLE

City of Port Wentworth
TECHNICAL DETAILS
S-1

PREPARED BY SAUSSY ENGINEERING, LLC.
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 "SANITARY" (NON VENTED). MANHOLE RING SHALL INCLUDE A WATERTIGHT GASKET. STACKING CLEATS ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

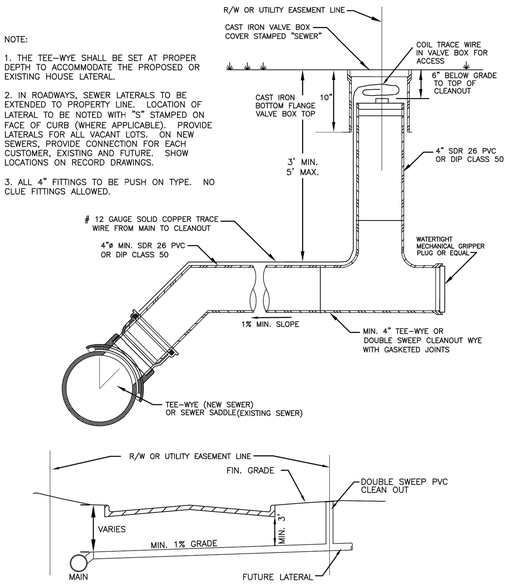
MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS
S-2

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

NOTE:

1. THE TEE-WYE SHALL BE SET AT PROPER DEPTH TO ACCOMMODATE THE PROPOSED OR EXISTING HOUSE LATERAL.
2. IN ROADWAYS, SEWER LATERALS TO BE EXTENDED TO PROPERTY LINE. LOCATION OF LATERAL TO BE NOTED WITH "S" STAMPED ON FACE OF CURB (WHERE APPLICABLE). PROVIDE LATERALS FOR ALL VACANT LOTS. ON NEW SEWERS, PROVIDE CONNECTION FOR EACH CUSTOMER, EXISTING AND FUTURE. SHOW LOCATIONS ON RECORD DRAWINGS.
3. ALL 4" FITTINGS TO BE PUSH ON TYPE. NO CLUE FITTINGS ALLOWED.

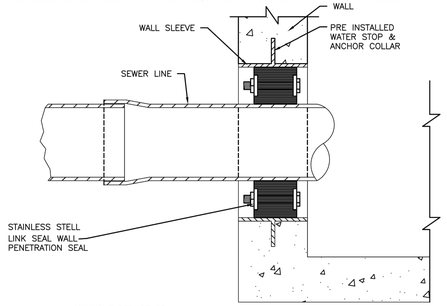


SANITARY SEWER SERVICE CONNECTION

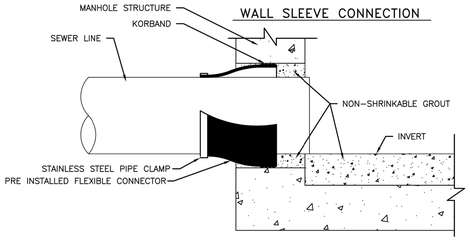
City of Port Wentworth
TECHNICAL DETAILS
S-4

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

NOTE:
WALL SLEEVE CONNECTIONS ARE REQUIRED FOR VALVE PITS & WETWELLS



WALL SLEEVE CONNECTION

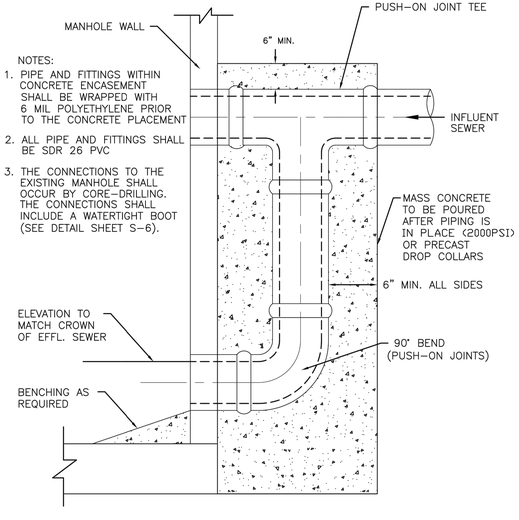


"BOOT" CONNECTION

PRECAST STRUCTURE PIPE CONNECTION

City of Port Wentworth
TECHNICAL DETAILS
S-6

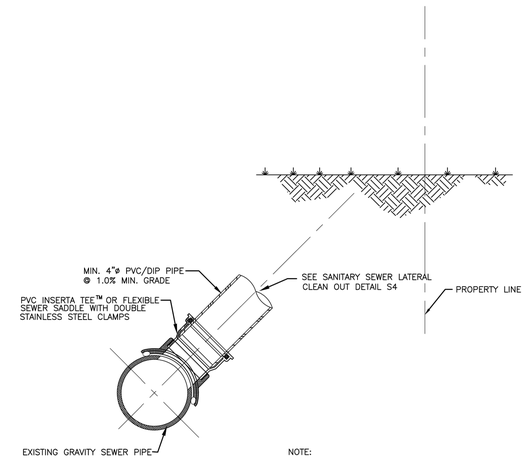
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SCALE: N.T.S.
DATED: FEBRUARY 2007



DROP MANHOLE CONNECTION

City of Port Wentworth
TECHNICAL DETAILS
S-7

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



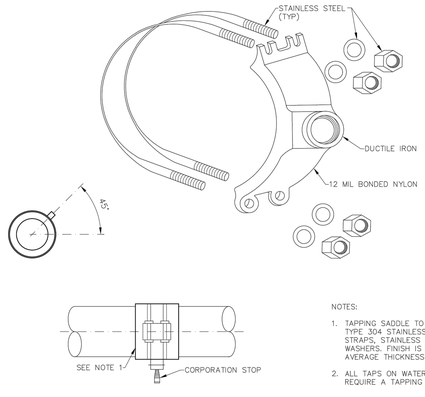
NOTE:

CONTRACTOR SHALL NOTIFY CITY OF PORT WENTWORTH WASTEWATER CONVEYANCE DEPARTMENT 24 HOURS PRIOR TO CONNECTION TO EXISTING GRAVITY SEWER PIPE. ALL CONNECTIONS TO THE EXISTING GRAVITY SEWER PIPE MUST BE INSPECTED BY THE CONVEYANCE DEPARTMENT PRIOR TO BACK FILLING.

SEWER SERVICE CONNECT TO EXT. PIPE

City of Port Wentworth
TECHNICAL DETAILS
S-5

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:

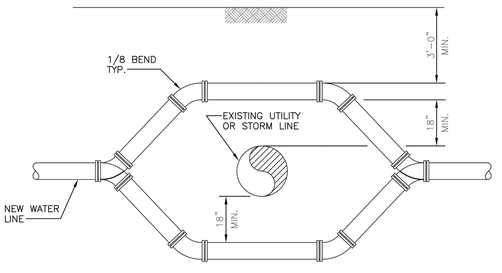
1. TAPPING SADDLE TO BE DUCTILE IRON WITH TYPE 304 STAINLESS STEEL FORGED DOUBLE STRAPS, STAINLESS STEEL BOLTS, NUTS AND WASHERS. FINISH IS FUSION-BONDED NYLON TO AVERAGE THICKNESS OF 12 MILS.
2. ALL TAPS ON WATER MAIN WILL REQUIRE A TAPPING SADDLE.

1" AND 2" TAPPING SADDLE

City of Port Wentworth
TECHNICAL DETAILS
W-2

PREPARED BY SAUSSY ENGINEERING, LLC.
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 ON ACCORDANCE WITH CITY OF PORT WENTWORTH STANDARD DETAILS.



THE SEPARATION OF WATER MAINS, SEWERS AND URBAN REUSE MAINS SHALL COMPLY WITH THE GEORGIA ENVIRONMENTAL PROTECTION DIVISION MINIMUM STANDARDS FOR PUBLIC WATER SYSTEMS, WHICH ARE GENERALLY AS FOLLOWS:

A. PARALLEL INSTALLATION:
   1. NORMAL CONDITIONS: THE INSIDE EDGE OF A WATER SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE INSIDE EDGE OF ANY SANITARY SEWER, STORM SEWER OR SEWER MANHOLE.
   2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, AND WHEN APPROVED BY THE ENGINEER, THE INSIDE EDGE OF A WATER MAIN MAY BE LAID A MINIMUM OF 5 FEET FROM THE INSIDE EDGE OF A SEWER PROVIDED THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES HIGHER THAT THE TOP OF THE SEWER (SEE DETAIL), AND THE WATER IS LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF.

B: CROSSING:
   1. NORMAL CONDITIONS: WHENEVER POSSIBLE, THE BOTTOM OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER.
   2. UNUSUAL CONDITIONS: IF A WATER MAIN MUST CROSS UNDER A SEWER OR REUSE MAIN, THE TOP OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES LOWER THAN THE BOTTOM OF THE SEWER, THE WATER MAIN PIPE SHALL BE CENTERED AT THE CROSSING SO THAT THE JOINTS ARE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, AND ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF THE SEWER AT THE CROSSING. ADEQUATE STRUCTURAL SUPPORT SHALL INCLUDE BACKFILLING THE ENTIRE UTILITY CROSSING AREA WITH 3/4" CRUSHED STONE

WHEN WATER MAINS AND WATER SERVICE LINES (BEFORE THE CURB STOP AND CUSTOMER METER) OWNED BY THE PUBLIC WATER SYSTEMS CROSS UNDER SEWERS, ADDITIONAL MEASURES SHALL BE TAKEN BY PROVIDING BOTH THE SEWER AND THE WATER MAIN SHALL BE CONSTRUCTED OF WATER MAIN MATERIALS EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES AND SUBJECTED TO HYDROSTATIC TESTS, AS PRESCRIBED IN THIS DOCUMENT. OTHER OPTIONS THAT ARE ACCEPTABLE INCLUDE:

-ENCASEMENT OF THE WATER MAIN OR SEWER IN A CARRIER PIPE CONSTRUCTED OF WATER MAIN MATERIALS, EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES.

-THE SEWER HAS A STRUCTURAL LINING THAT MEETS ASTM F1216 EXTENDING ON EACH SIDE OF THE CROSSING UNTIL AT LEAST 10 FEET SEPARATES THE TWO PIPES

STANDARD UTILITY CROSSING

City of Port Wentworth
TECHNICAL DETAILS
W-6

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA REGISTERED
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT 38245

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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

WATER & SEWER DETAILS

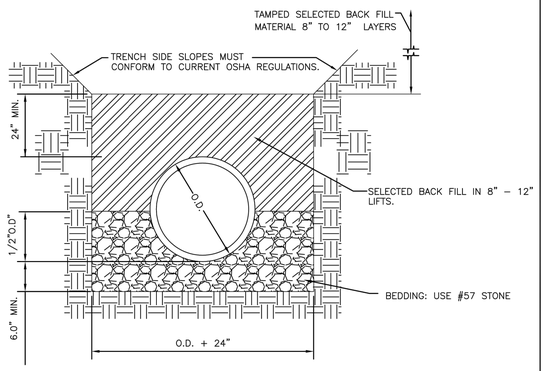
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: ----
Date: 5/31/22

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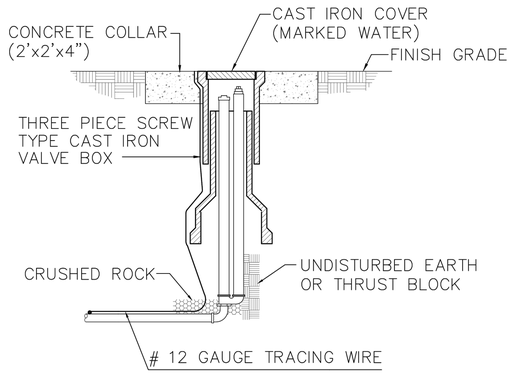
PIPE BEDDING

City of Port Wentworth
TECHNICAL DETAILS

W–8

PREPARED BY SAUSSY ENGINEERING, LLC.

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.

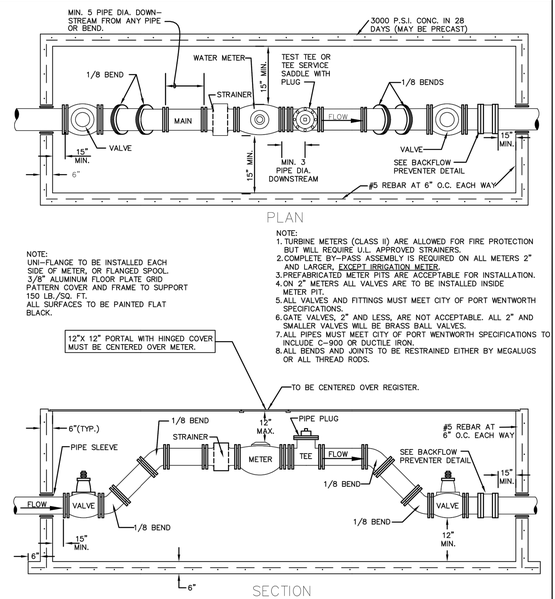
BLOW–OFF HYDRANT

City of Port Wentworth
TECHNICAL DETAILS

W–10

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DATED: FEBRUARY 2007



STANDARD IRRIGATION

City of Port Wentworth
TECHNICAL DETAILS

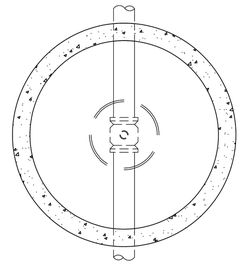
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PREPARED BY SAUSSY ENGINEERING, LLC.

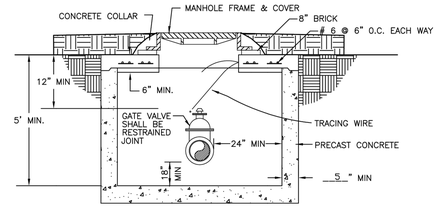
SCALE: N.T.S.
DATED: FEBRUARY 2007

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



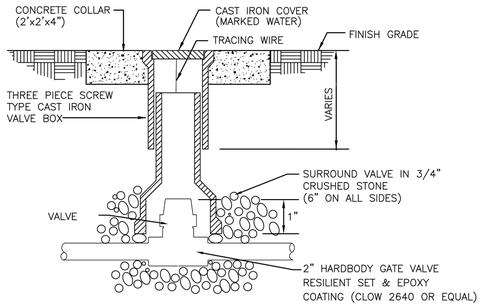
VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS

W–14

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTE:

1. THIS DETAIL APPLIES TO VALVES.
2. IN UNPAVED AREAS, SET TOP OF CONC. COLLAR 1" ABOVE FINISHED GRADE. IN PAVED AREAS SET TOP OF BOX FLUSH W/ PAVEMENT. NO CONC. COLLAR REQUIRED.
3. VALVE BOX SHALL NOT REST ON THE VALVE

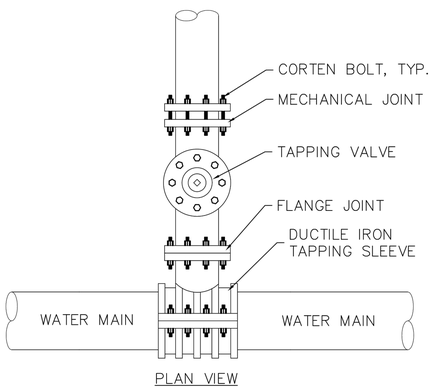
2" WATER VALVE

City of Port Wentworth
TECHNICAL DETAILS

W–18

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



PLAN VIEW

NOTE:
1. THE TAPPING SLEEVE AND VALVE MUST BE INSTALLED IN A MANHOLE. SEE DETAIL W–14 FOR THE MANHOLE DETAIL.

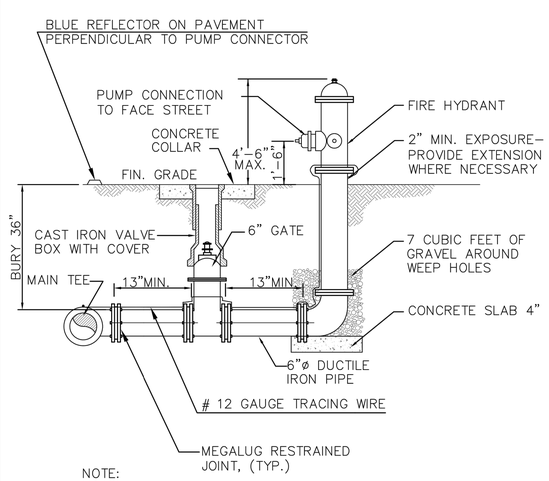
STANDARD TAPPING SLEEVE

City of Port Wentworth
TECHNICAL DETAILS

W–5

PREPARED BY SAUSSY ENGINEERING, LLC.

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.

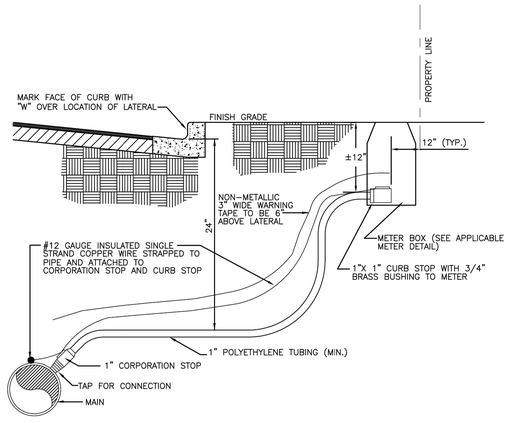
STANDARD FIRE HYDRANT

City of Port Wentworth
TECHNICAL DETAILS

W–9

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTE:
ALL FITTINGS IN LATERAL SHALL BE COMPRESSION TYPE.

WATER SERVICE LATERAL

City of Port Wentworth
TECHNICAL DETAILS

W–1

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA PE LICENSE #
DESIGN PROFESSIONAL
CERTIFICATION #73897

Pittman Engineering Co., LLC
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Richmond Hill, GA 31324
912-445-0578
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WATER & SEWER DETAILS

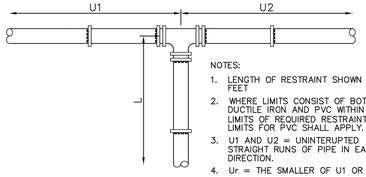
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	----
Date:	5/31/22

SHEET
C2.14

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Wednesday, December 21, 2022 11:43:47 AM



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 = UNINTERUPTED 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 SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



DUCTILE IRON LINE

PIPE DIA.	L
4	28
6	40
8	52
10	62
12	73
16	94
20	114
24	132

PVC LINE

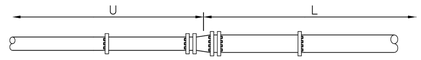
PIPE DIA.	L
4	52
6	74
8	96
10	115
12	136

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 SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



DUCTILE IRON LINE

REDUCER	U	L
6x4	30	21
8x4	72	38
8x6	29	22
10x4	123	51
10x6	63	38
10x8	26	21
12x4	186	64
12x6	106	53
12x8	59	39
12X10	26	21
16x6	214	79
16x8	141	68
16x10	91	56
16x12	54	40
20x10	174	84
20x12	123	71
20x16	51	40
24x12	207	97
24x16	113	72
24x20	48	39

PVC LINE

REDUCER	U	L
6x4	56	38
8x4	134	69
8x6	53	40
10x4	227	94
10x6	117	71
10x8	49	39
12x4	343	118
12x6	196	99
12x8	109	72
12x10	48	40

U = MINIMUM UNITERRUPTED STRAIGHT RUN OF PIPE ON SMALL SIDE OF REDUCER.

L = MINIMUM RESTRAINED LENGTH.

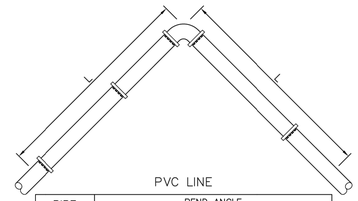
* WHERE MINIMUM "U" IS NOT MET, PIPE ON LARGE SIDE OF REDUCER SHALL BE RESTAINED FOR A MINIMUM OF "L" FEET.

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.

STANDARD REDUCER RESTRAINT

City of Port Wentworth
TECHNICAL DETAILS
W–32

PREPARED BY SAUSSY ENGINEERING, LLC.
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 SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA CERTIFICATE #
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

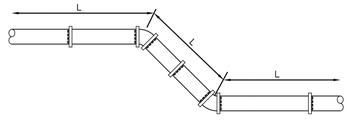
Pittman Engineering Co., LLC
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912-445-0578
www.PittmanEngineeringCo.com

WATER & SEWER DETAILS

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: ----
Date: 5/31/22

SHEET
C2.15



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

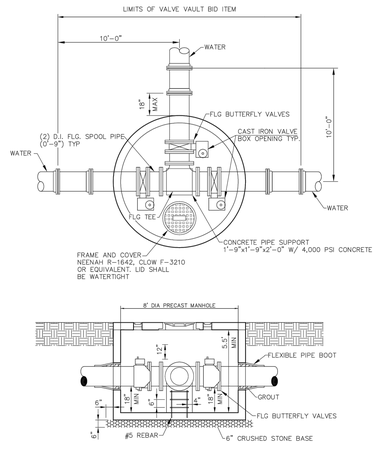
MINIMUM RESTRAINED LENGTH (L)

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

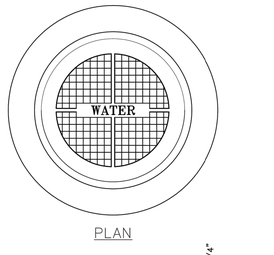
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



WATER VALVE VAULT

City of Port Wentworth
TECHNICAL DETAILS
W–35

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

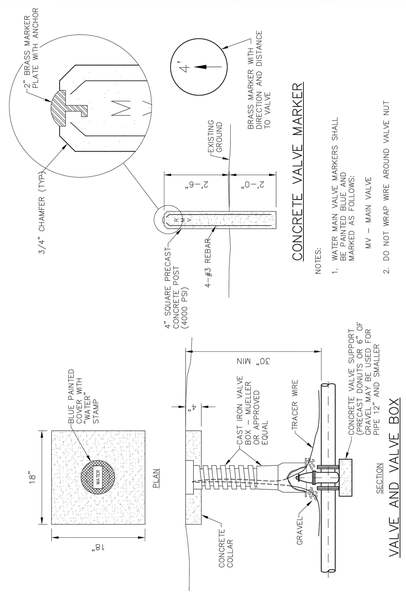


NOTE:
MANHOLE RING & COVER SHALL BE HEAVY DUTY RATED EQUAL TO U. S. FOUNDRY CO. USF 195–ORS. TOTAL WEIGHT 325# TYPE "C" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED 2 1/2" –3" LETTER HEIGHT "WATER" (NON VENTED). MANHOLE RING SHALL INCLUDE A WATERTIGHT GASKET. STACKING CLEATS ON THE BOTTOM OF THE COVER SHALL NOT BE ALLOWED.

MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS
W–34

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



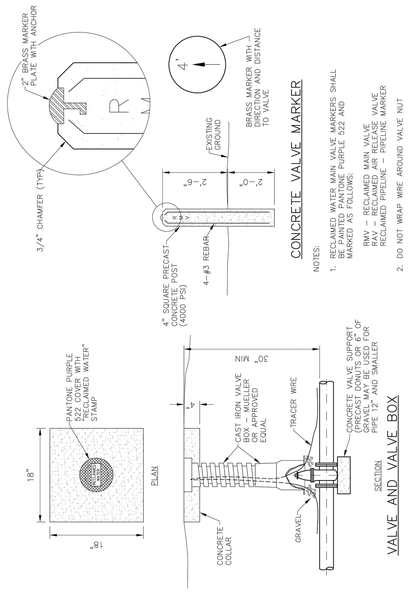
WATER VALVE 4" OR 6"

City of Port Wentworth
TECHNICAL DETAILS
W–36

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

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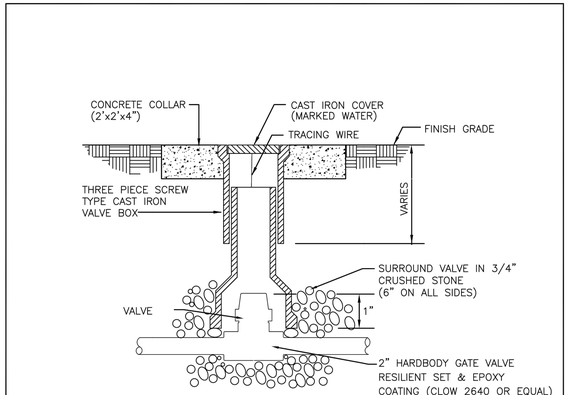
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WATER VALVE 4" OR 6"

City of Port Wentworth
TECHNICAL DETAILS
RW-6

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



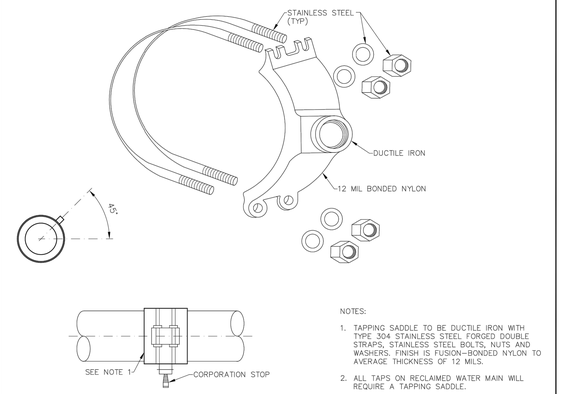
NOTE:

1. THIS DETAIL APPLIES TO VALVES.
2. IN UNPAVED AREAS, SET TOP OF CONC. COLLAR 1" ABOVE FINISHED GRADE. IN PAVED AREAS SET TOP OF BOX FLUSH W/ PAVEMENT. NO CONC. COLLAR REQUIRED.
3. VALVE BOX SHALL NOT REST ON THE VALVE

2" WATER VALVE

City of Port Wentworth
TECHNICAL DETAILS
RW-7

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



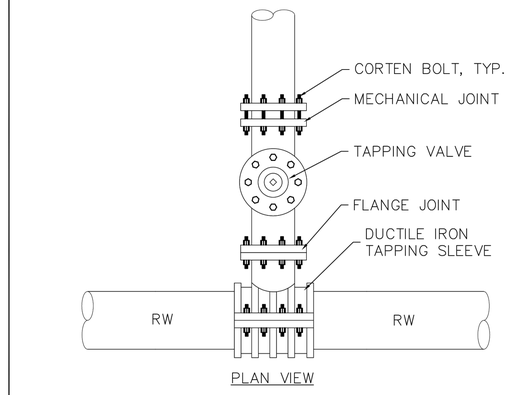
NOTES:

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 RECLAIMED WATER MAIN WILL REQUIRE A TAPPING SADDLE.

1" AND 2" TAPPING SADDLE

City of Port Wentworth
TECHNICAL DETAILS
RW-8

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



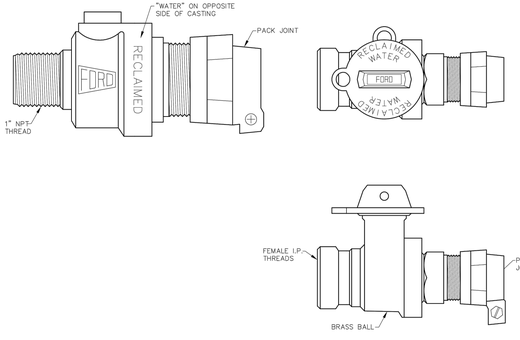
PLAN VIEW

NOTE:
1. THE TAPPING SLEEVE AND VALVE MUST BE INSTALLED IN A MANHOLE. SEE DETAIL RW-5 FOR THE MANHOLE DETAIL.

STANDARD TAPPING SLEEVE

City of Port Wentworth
TECHNICAL DETAILS
RW-9

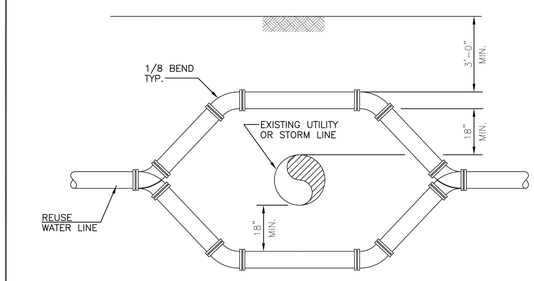
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



BRASS FITTINGS FOR WATER METER

City of Port Wentworth
TECHNICAL DETAILS
RW-14

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



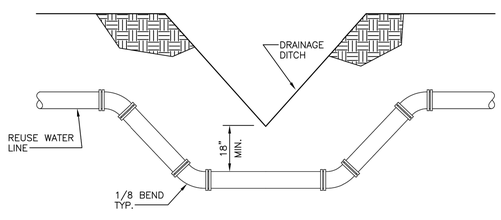
NOTES:

1. REUSE 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 REUSE 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
RW-16

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



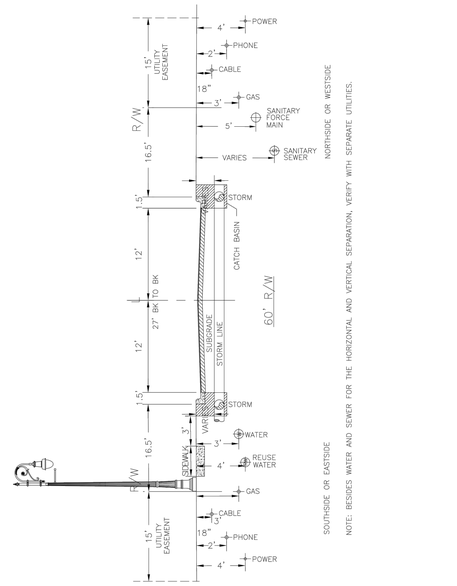
NOTES:

1. REUSE WATER LINE SHALL BE DUCTILE IRON BELOW STORM DRAINAGE DITCH.
2. STRAIGHT RUN OF REUSE 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
RW-17

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



TYP. SECTION UNDERGROUND UTILITY INSTALLATION

City of Port Wentworth
TECHNICAL DETAILS
U-1

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA CERTIFICATE NO.
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER 38245 JASON JOSEPH BRYANT

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WATER & SEWER DETAILS

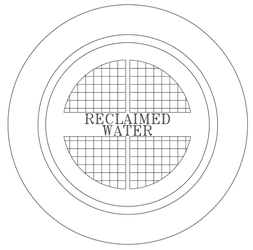
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: ----
Date: 5/31/22

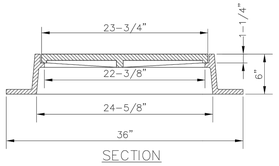
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PLAN



SECTION

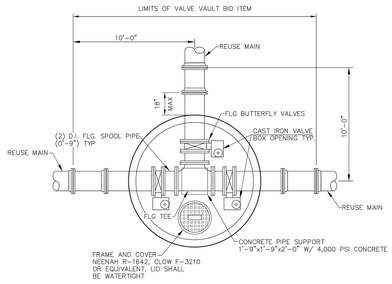
NOTE:

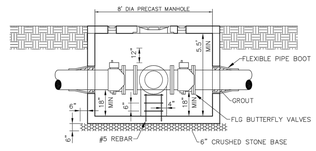
MANHOLE RIM & COVER EQUIVALENT TO U.S. FOUNDRY CO. USF 195-ORS. TOTAL WEIGHT 325#. TYPE "E" LID TO HAVE MACHINED BEARING SURFACES. LID TO BE LETTERED "RECLAIMED WATER" FOR RECLAIMED WATER ARV MANHOLES OR RECLAIMED WATER VALVE MANHOLES.

REUSE WATER MANHOLE RING & COVER

City of Port Wentworth
TECHNICAL DETAILS
RW-2

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007





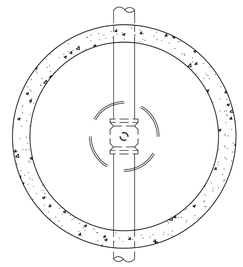
REUSE VALVE VAULT

City of Port Wentworth
TECHNICAL DETAILS
RW-3

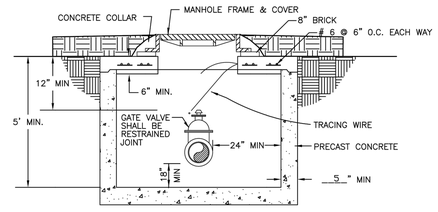
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

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.
5. POLYPROPYLENE MANHOLE STEPS SHALL BE PROVIDED AT 12" O.C. FOR MANHOLES GREATER THAN 4 FEET DEEP.



PLAN



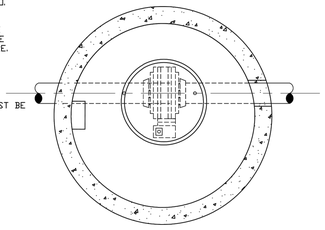
VALVE MANHOLE FOR 8" & GREATER GATE VALVE

City of Port Wentworth
TECHNICAL DETAILS
RW-5

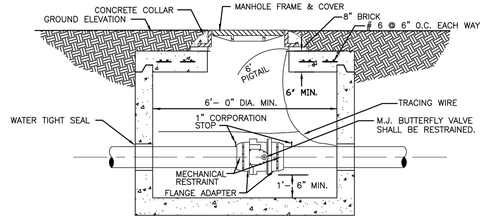
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

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.
5. POLYPROPYLENE MANHOLE STEPS SHALL BE PROVIDED AT 12" O.C. FOR MANHOLES GREATER THAN 4 FEET DEEP.



PLAN

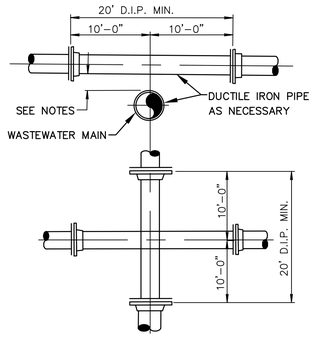


SECTION

VALVE MANHOLE FOR BUTTERFLY VALVES

City of Port Wentworth
TECHNICAL DETAILS
RW-4

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:

1. STORM SEWER, GRAVITY WASTEWATER AND RECLAIMED WATER MAIN CROSSING UNDER POTABLE WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE INVERT OF THE UPPER PIPE AND THE CROWN OF THE LOWER PIPE. WHERE THIS MINIMUM SEPARATION CANNOT BE MAINTAINED, THE CROSSING SHALL BE ARRANGED SO THAT THE STORM/WASTEWATER/RECLAIMED WATER PIPE JOINTS AND POTABLE WATER MAIN JOINTS ARE EQUIDISTANT FROM THE POINT OF CROSSING WITH NO LESS THAN TEN (10) FEET BETWEEN ANY TWO JOINTS, BOTH PIPES SHALL BE D.I.P., AND THE MINIMUM VERTICAL SEPARATION SHALL BE 6 INCHES. WHERE THERE IS NO ALTERNATIVE TO STORM/WASTEWATER/RECLAIMED WATER PIPES CROSSING OVER A POTABLE WATER MAIN, THE CRITERIA FOR MINIMUM 18" VERTICAL SEPARATION BETWEEN LINES AND JOINT ARRANGEMENT, AS STATED ABOVE, SHALL BE REQUIRED, AND BOTH PIPES SHALL BE D.I.P. IRRESPECTIVE OF SEPARATION. D.I.P. IS NOT REQUIRED FOR STORM SEWERS.
2. MAINTAIN MIN. TEN (10) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN POTABLE WATER MAIN AND STORM SEWER, WASTEWATER MAIN, OR FORCE MAIN MAINTAIN MIN. THREE (3) FEET HORIZONTAL DISTANCE (WALL TO WALL) BETWEEN RECLAIMED WATER MAIN AND POTABLE WATER MAIN, STORM SEWER, WASTEWATER GRAVITY MAIN OR FORCE MAIN.

RECLAIMED WATER PIPE SEPARATION

APPROVED BY:	DATE:	DRAWING NO.
RD	4/21/06	RW 8a
SCALE:	REVISED:	SHT. 1 OF 2

NOTES:

3. FORCE MAIN CROSSING POTABLE WATER MAIN OR RECLAIMED WATER MAIN SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18) INCHES BETWEEN THE OUTSIDE OF THE FORCE MAIN AND OUTSIDE OF THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN WITH THE POTABLE WATER MAIN OR RECLAIMED WATER MAIN CROSSING OVER THE FORCE MAIN.
4. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION FOR DUCTILE IRON PIPE. PVC PIPE CURVATURE MAY ONLY BE ACCOMPLISHED BY INSTALLING APPROPRIATE BENDS.
5. POTABLE WATER SERVICE LINES SHALL CROSS OVER WASTEWATER MAINS WITH MIN. 12" VERTICAL SEPARATION. WHERE THIS MIN. SEPARATION CAN NOT BE MAINTAINED, THE WATER SERVICE SHALL BE ENCASED IN A MIN. 10' LONG CASING CENTERED OVER THE CROSSING WITH MIN. 6" VERTICAL SEPARATION.

RECLAIMED WATER PIPE SEPARATION

APPROVED BY:	DATE:	DRAWING NO.
RD	4/21/06	RW 8b
SCALE:	REVISED:	SHT. 2 OF 2

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GA CERTIFICATE #
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

WATER & SEWER DETAILS

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: ----
Date: 5/31/22

SHEET
C2.17

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COMPOSITE STORM DRAINAGE PLAN

THE COTTAGES AT RICE HOPE

PHASE 1

Prepared For

THIRD LAKE DEVELOPMENT, LLC

PITTMAN ENGINEERING

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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

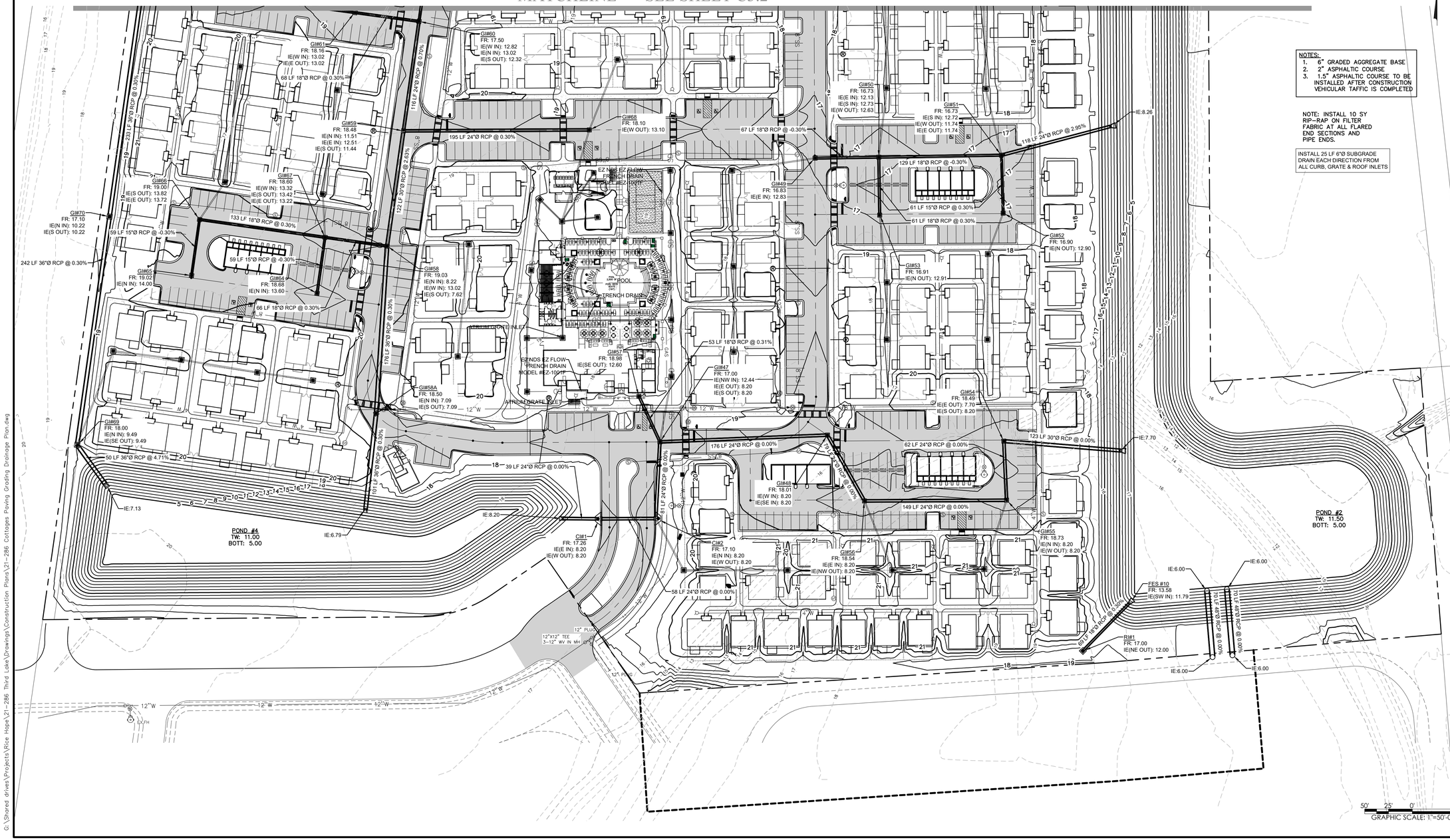
REV.	REVISIONS	BY	DATE
1.	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: 1"=100'
Date: 10/25/22

SHEET C3.0

Thursday, December 22, 2022 11:00:31 AM

MATCHLINE -- SEE SHEET C3.2



NOTES:
1. 6" GRADED AGGREGATE BASE
2. 2" ASPHALTIC COURSE
3. 1.5" ASPHALTIC COURSE TO BE INSTALLED AFTER CONSTRUCTION VEHICULAR TAFFIC IS COMPLETED

NOTE: INSTALL 10 SY RIP-RAP ON FILTER FABRIC AT ALL FLARED END SECTIONS AND PIPE ENDS.

INSTALL 25 LF 6"Ø SUBGRADE DRAIN EACH DIRECTION FROM ALL CURB, GRATE & ROOF INLETS

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH RAY

PITTMAN ENGINEERING
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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

PAVING, GRADING & DRAINAGE PLAN

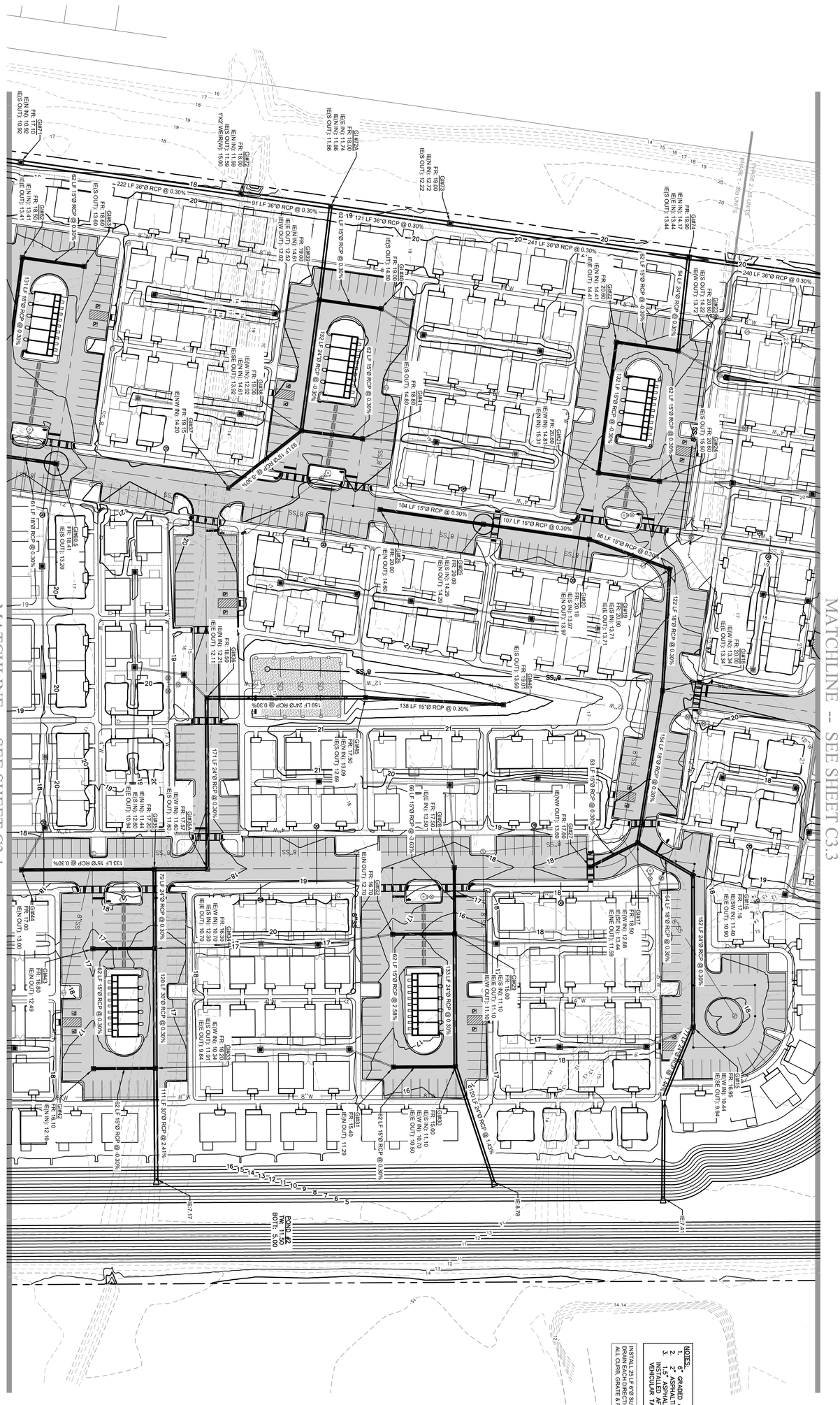
THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	3/25/22

SHEET
C3.1

G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Paving Grading Drainage Plan.dwg



PAVING, GRADING & DRAINAGE PLAN

THE COTTAGES AT RICE HOPE

PHASE 1

Prepared For

THIRD LAKE DEVELOPMENT, LLC

PITTMAN ENGINEERING

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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

GEORGIA REGISTERED PROFESSIONAL No. 38245 JASON JOSEPH BRYANT ENGINEER

Project No.	PHASE 1
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	3/25/22

SHEET C3.2

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Wednesday, December 21, 2022 11:48:32 AM

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MATCHLINE -- SEE SHEET C3.2

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

GEORGIA REGISTERED 35045 PROFESSIONAL ENGINEER JASON JOSEPH MANT

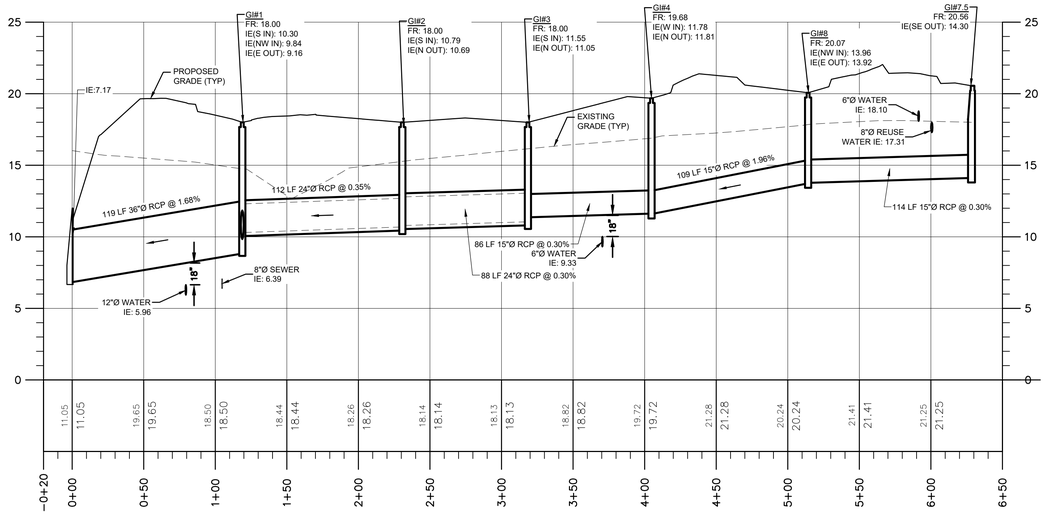
PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

PAVING, GRADING & DRAINAGE PLAN

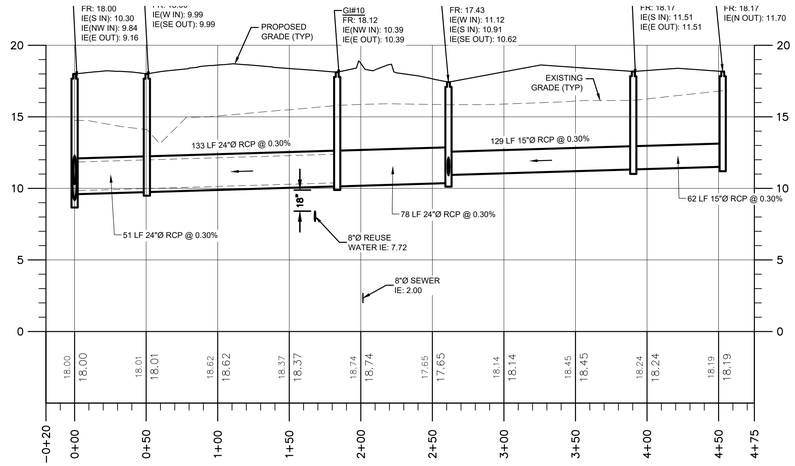
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	3/25/22

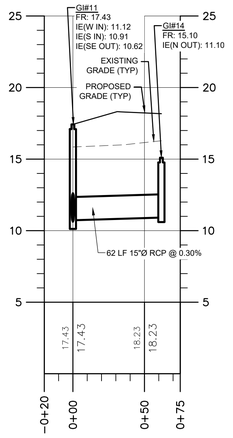
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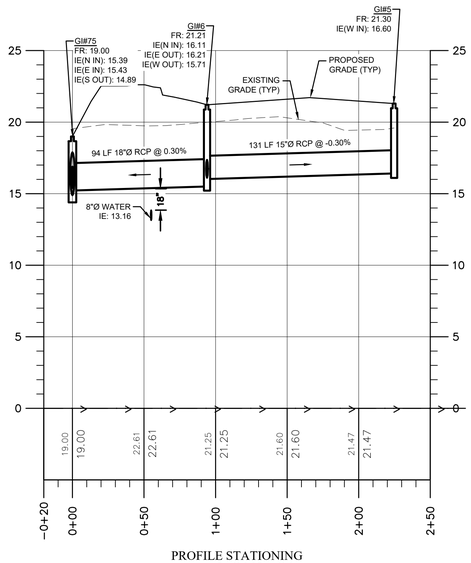
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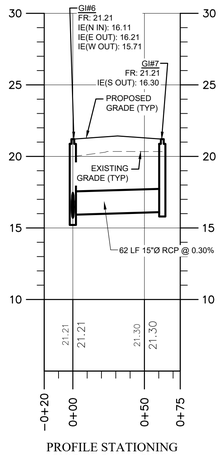
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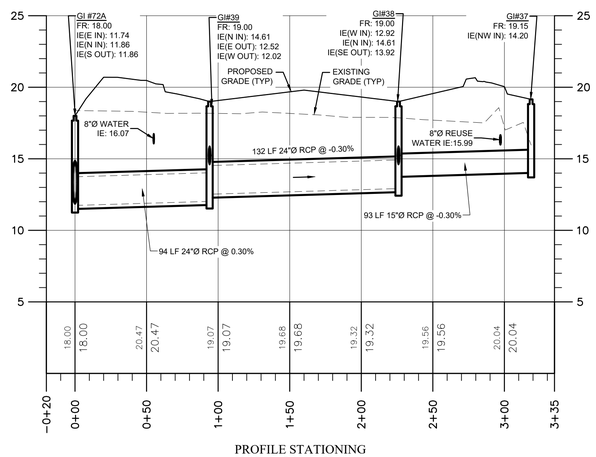
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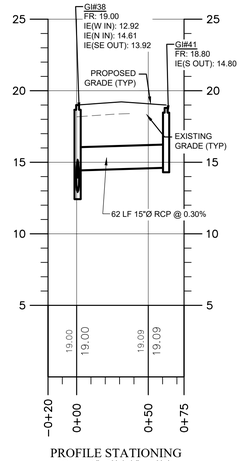
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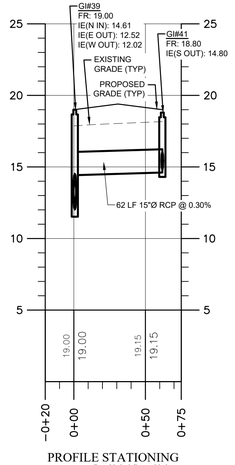
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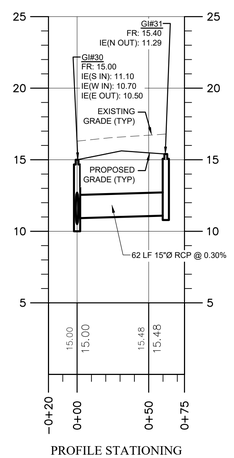
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PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA
No. 38245
PROFESSIONAL ENGINEER
JASON JOSEPH BRYANT

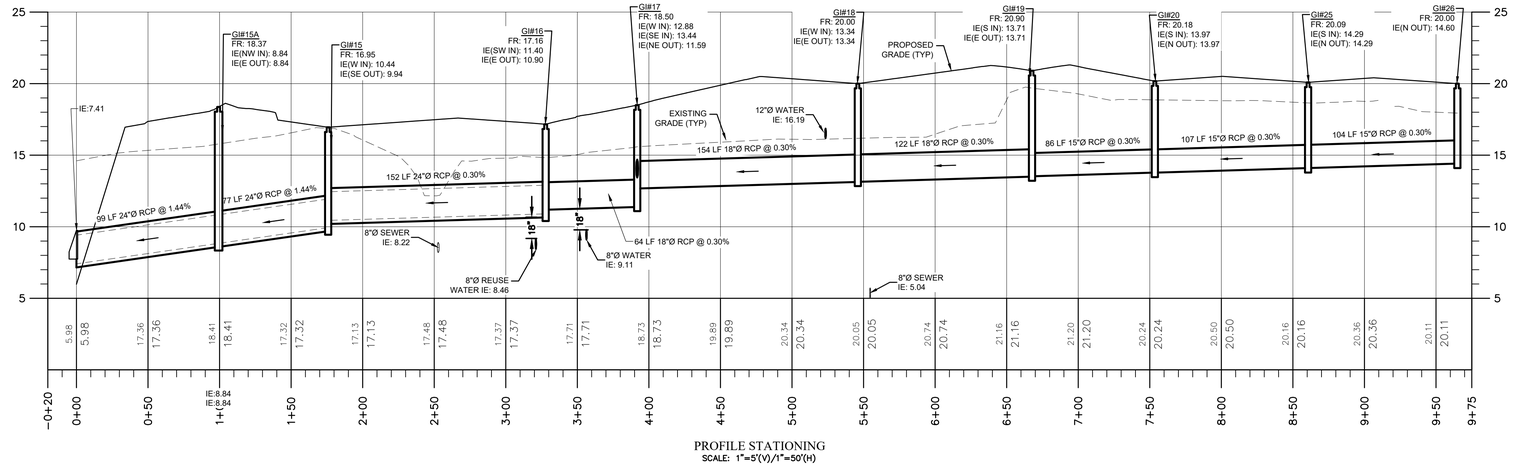
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2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

STORM DRAINAGE PROFILES

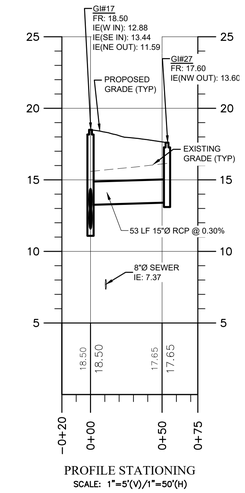
THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

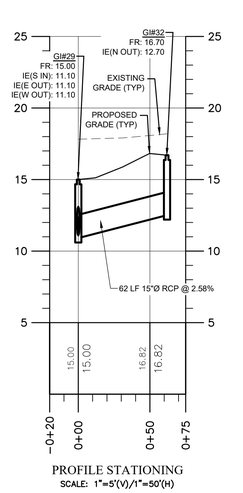
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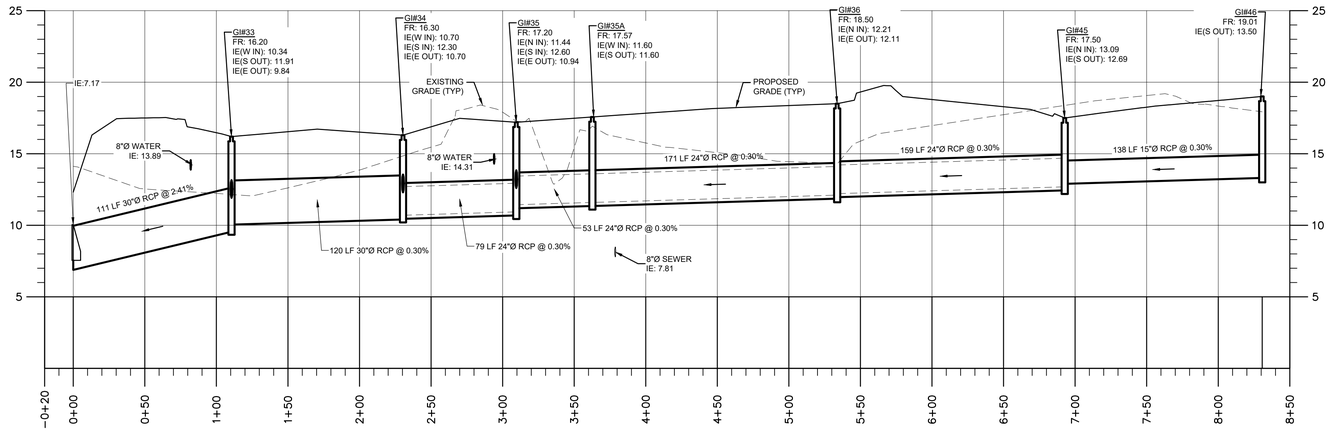
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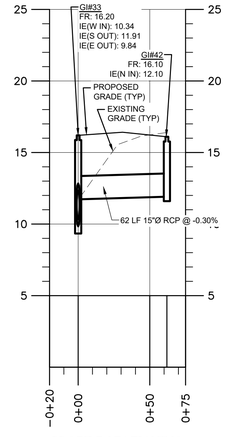
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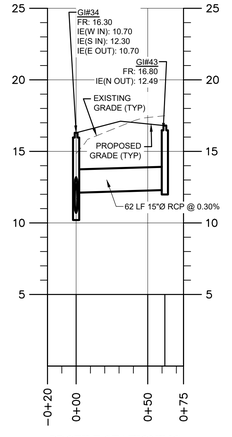
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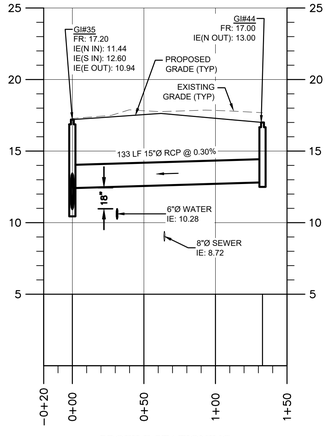
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PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #7397

REGISTERED GEORGIA PROFESSIONAL ENGINEER No. 38245 JASON JOSEPH BRYANT

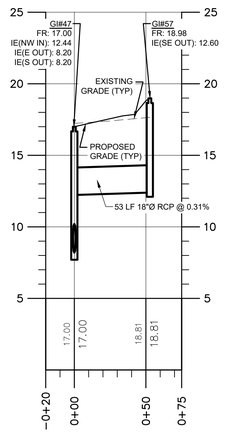
PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

STORM DRAINAGE PROFILES

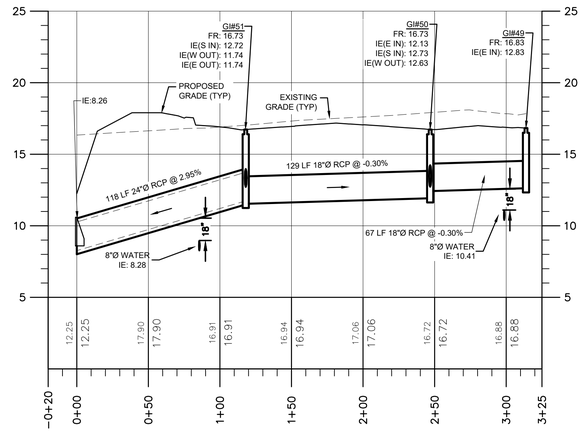
THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: AS SHOWN
Date: 5/31/22

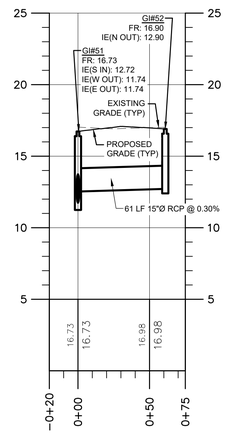
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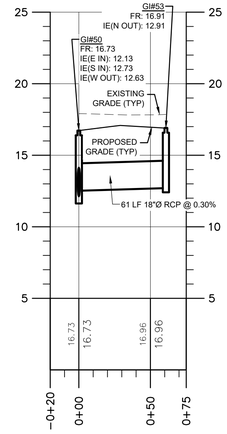
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SCALE: 1"=5'(V)/1"=50'(H)



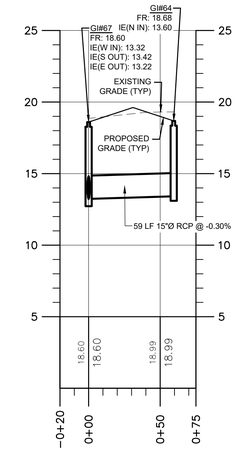
PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



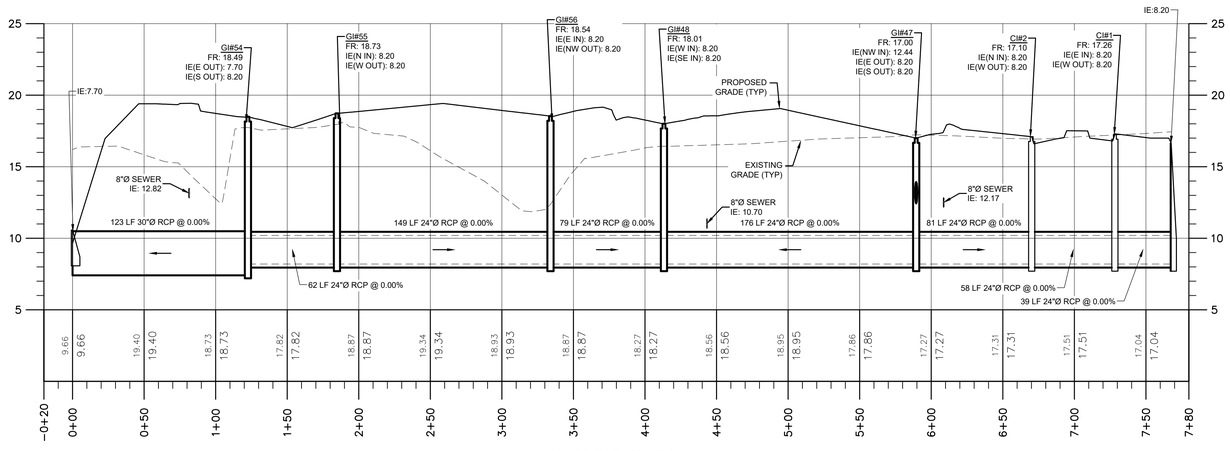
PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



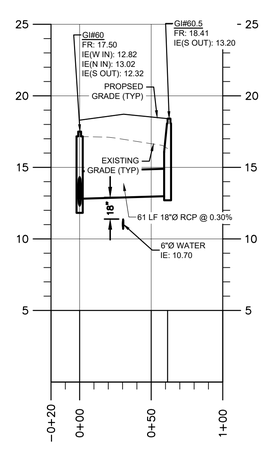
PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



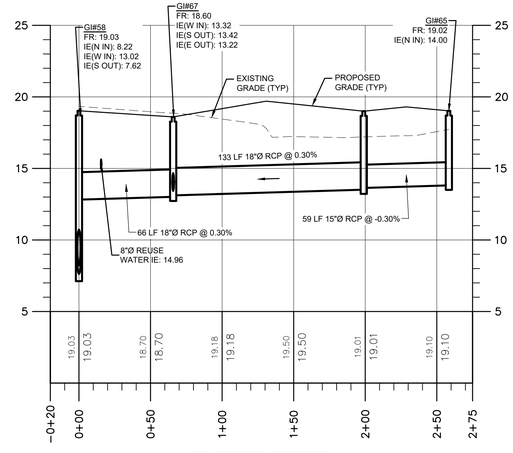
PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA
No. 38245
PROFESSIONAL ENGINEER
JASON JOSEPH BRYANT

PITTMAN ENGINEERING
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

STORM DRAINAGE PROFILES

THE COTTAGES AT RICE HOPE

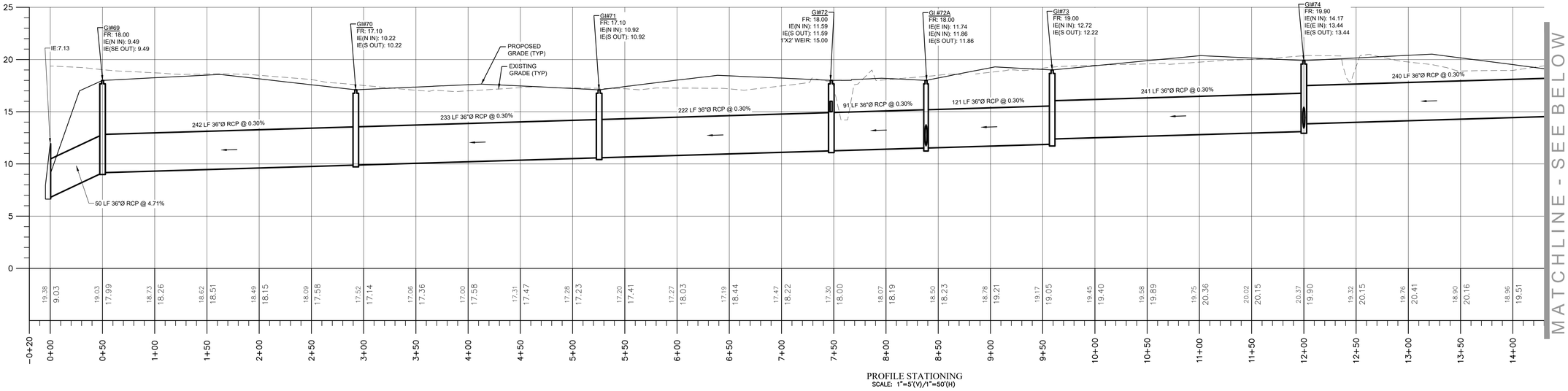
THE COTTAGES AT RICE HOPE

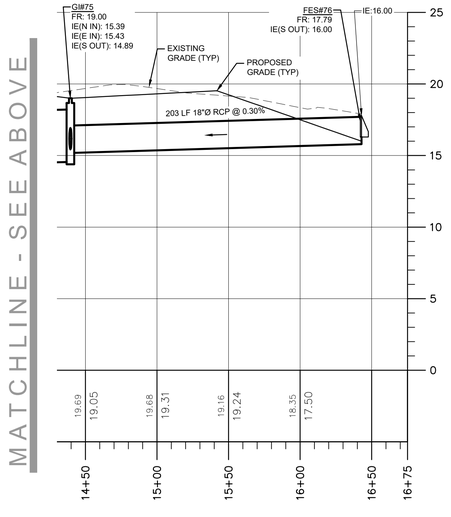
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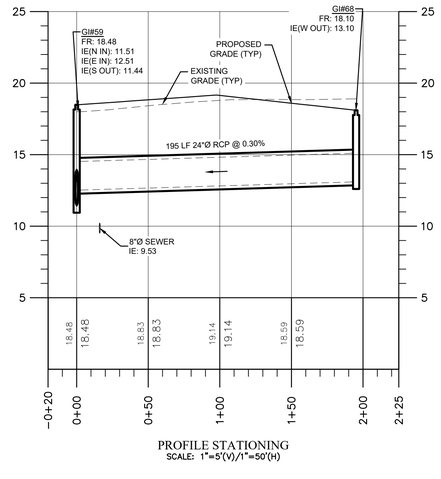
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

SHEET
C3.6







REV.	REVISIONS	BY	DATE
	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA PROFESSIONAL ENGINEER No. 38245 JASON JOSEPH BRYANT

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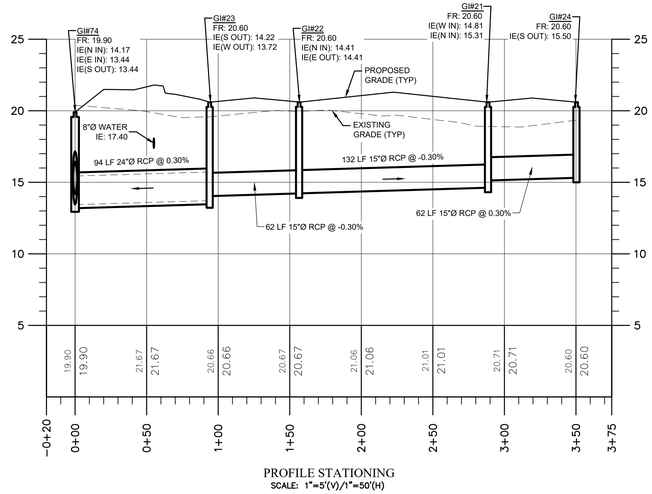
STORM DRAINAGE PROFILES

THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE

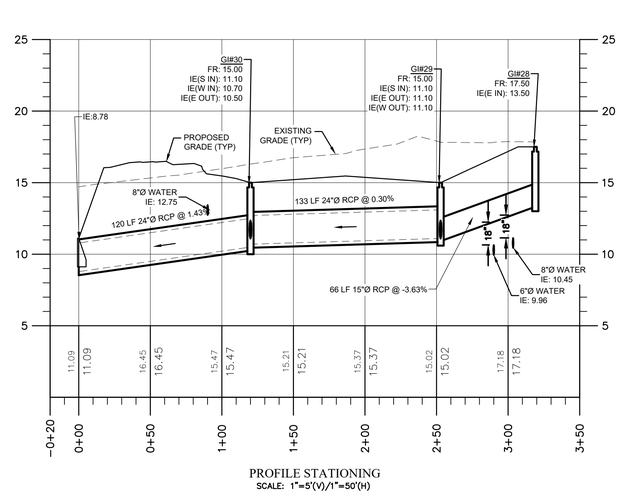
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	AS SHOWN
Date:	5/31/22

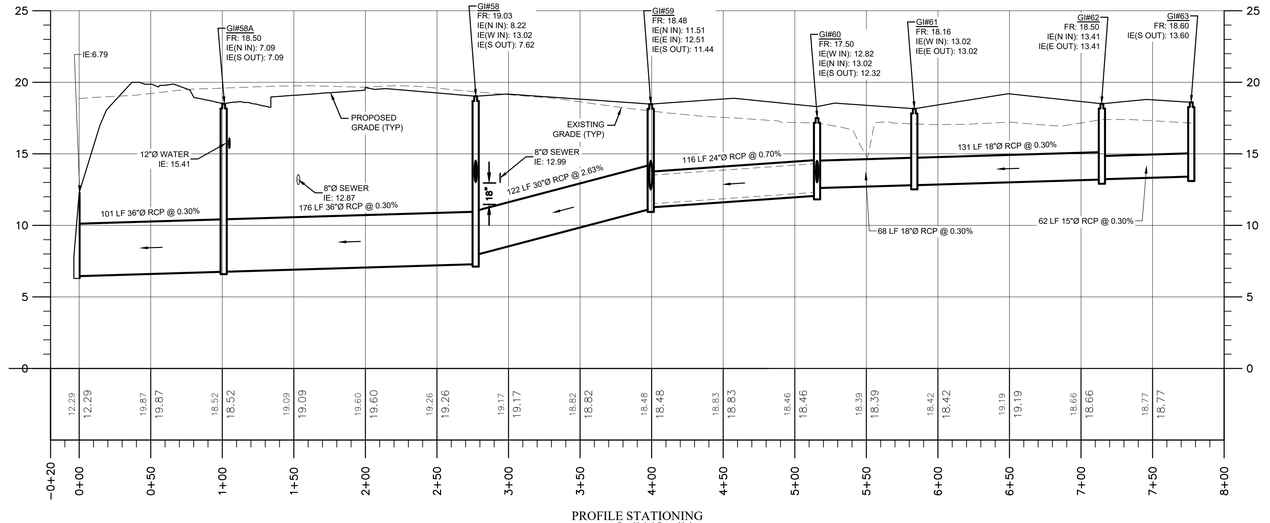
SHEET
C3.7



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)



PROFILE STATIONING
SCALE: 1"=5'(V)/1"=50'(H)

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
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DESIGN PROFESSIONAL
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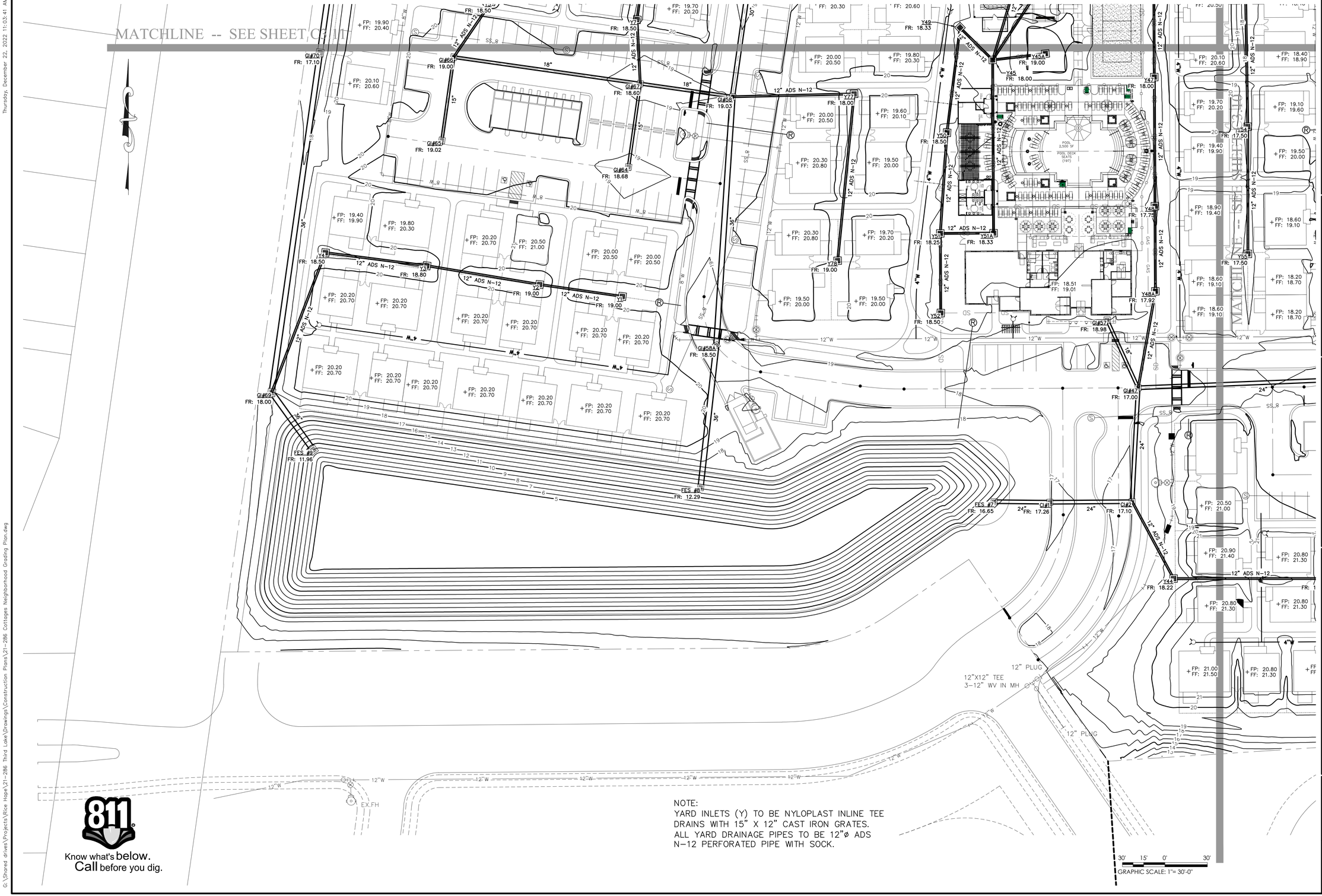
STORM DRAINAGE PROFILES

THE COTTAGES AT RICE HOPE
THE COTTAGES AT RICE HOPE
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: AS SHOWN
Date: 5/31/22

SHEET
C3.8

Thursday, December 22, 2022 11:03:41 AM



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REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

21-286 COTTAGES at RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON J. BRYANT

Pittman Engineering Co., LLC
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www.PittmanEngineeringCo.com

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.9

G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Neighborhood Grading Plan.dwg



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811

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE

PHASE 1

Prepared For

THIRD LAKE DEVELOPMENT, LLC

Pittman Engineering Co., LLC

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912-445-0578
www.PittmanEngineeringCo.com

GEORGIA REGISTERED No. 38245 PROFESSIONAL JASON JOSEPH BRYANT

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: 1"=30'
Date: 5/31/22

SHEET
C3.10

Wednesday, December 21, 2022 11:53:44 AM

MATCHLINE -- SEE SHEET C3.13

MATCHLINE -- SEE SHEET C3.9

SEE SHEET C3.12

MATCHLINE -- SEE SHEET C3.12

GRAPHIC SCALE: 1"=30'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

21-286 COTTAGES at RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA LICENSE #33824
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JAMES BRYANT JOSEPH

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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

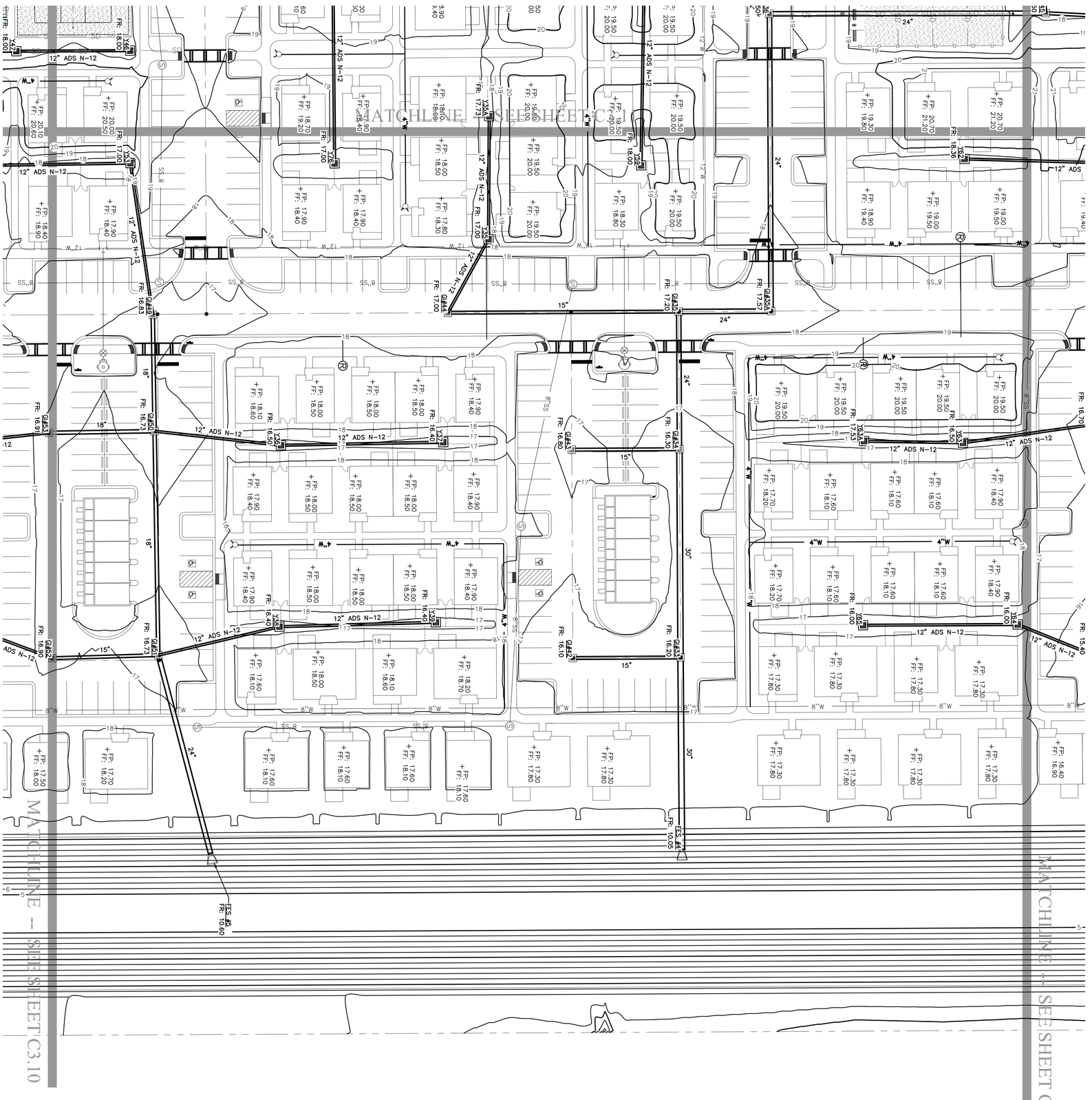
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.11

811 Know what's below. Call before you dig.

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Know what's below.
Call before you dig.

811

GRAPHIC SCALE: 1" = 30'-0"

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RJP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.12

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT No. 38245

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Wednesday, December 21, 2022 11:54:03 AM

MATCHLINE -- SEE SHEET C3.15



MATCHLINE -- SEE SHEET C3.11

Know what's below. Call before you dig.

30' 15' 0' 30'
GRAPHIC SCALE: 1"= 30'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

JASON J. BRYANT, P.E.
GEORGIA REGISTERED
CERTIFICATION #73897
PROFESSIONAL ENGINEER
JASON JOSEPH BRYANT

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NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.13

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21-286 COTTAGES at RICE HOPE

Wednesday, December 21, 2022 11:54:13 AM

MATCHLINE -- SEE SHEET C3.16

MATCHLINE -- SEE SHEET C3.13

MATCHLINE -- SEE SHEET C3.12

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REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

21-286 COTTAGES at RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA REG. #36245
DESIGN PROFESSIONAL
CERTIFICATION #73897

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www.PittmanEngineeringCo.com

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.14

Know what's below. Call before you dig.

30' 15' 0' 30'
GRAPHIC SCALE: 1"= 30'-0"

Know what's below.
Call before you dig.

811

GRAPHIC SCALE 1"=30'-0"
30' 15' 0' 30'



NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1`

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

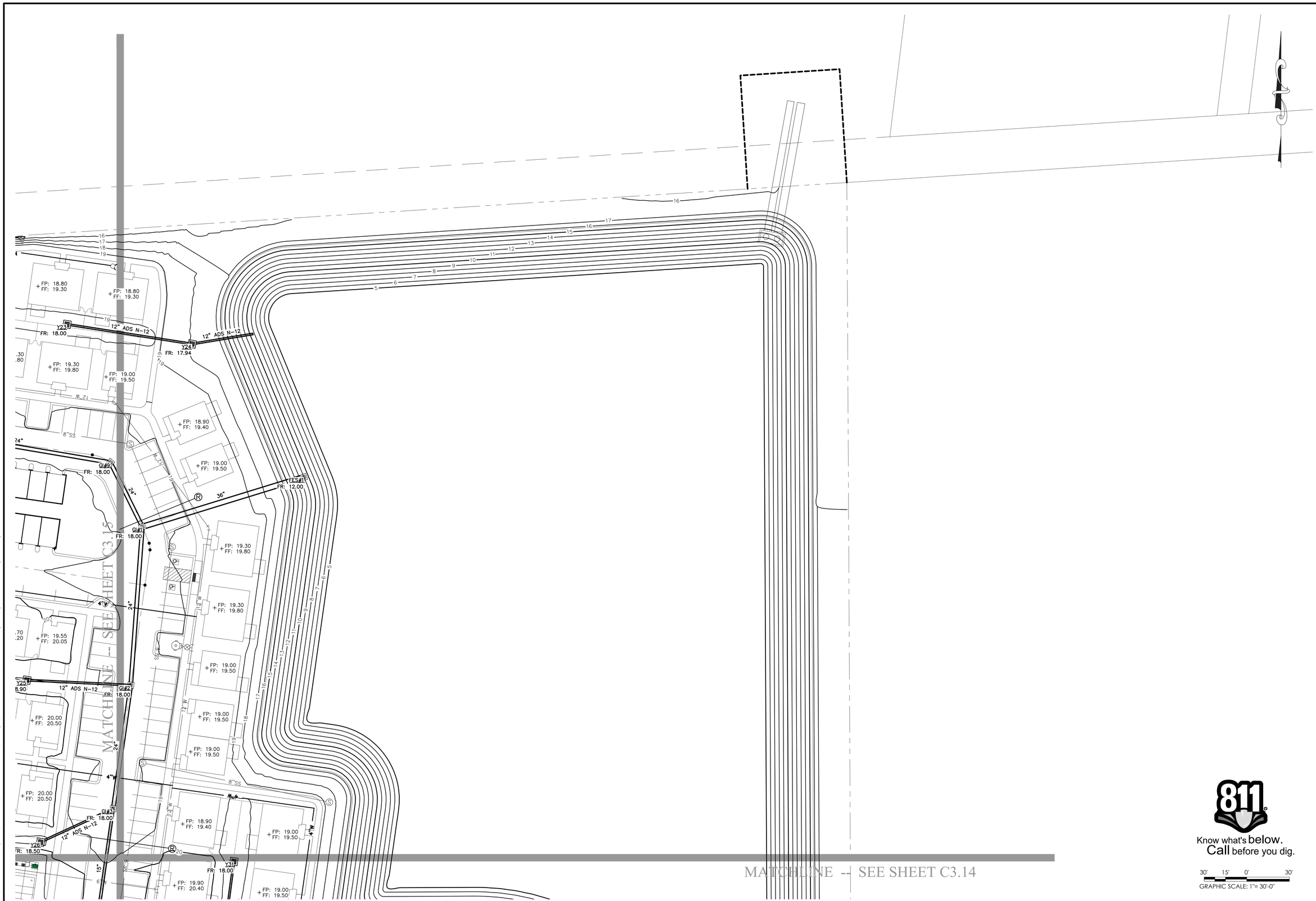
JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RJP
Scale: 1"=30'
Date: 5/31/22

SHEET
C3.15

Wednesday, December 21, 2022 11:54:32 AM



REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

21-286 COTTAGES at RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER
No. 38245
JASON JAMES BRYANT
JOSEPH

Pittman Engineering Co., LLC
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Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

NEIGHBORHOOD GRADING PLAN

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Know what's **below.**
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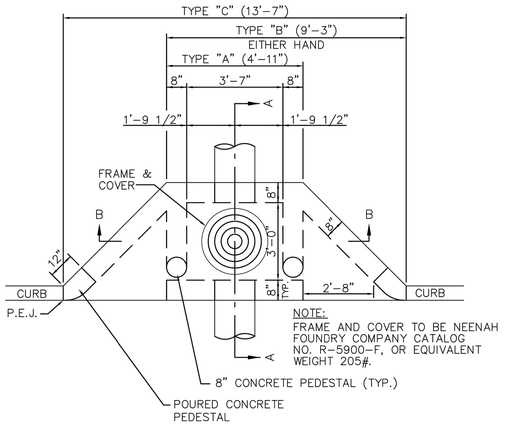
GRAPHIC SCALE: 1"= 30'-0"
30' 15' 0' 30'

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=30'
Date:	5/31/22

SHEET
C3.16

G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages Neighborhood Grading Plan.dwg

Wednesday, December 21, 2022 11:54:53 AM



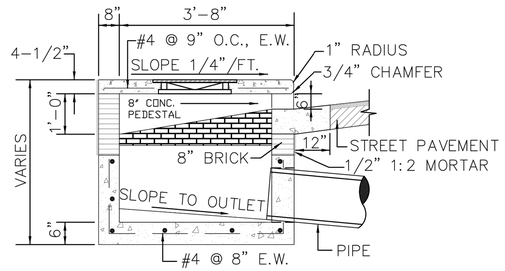
NOTE:
FRAME AND COVER TO BE NEENAH FOUNDRY COMPANY CATALOG NO. R-5900-F, OR EQUIVALENT WEIGHT 205#.

INSTALL 25 LF 6"Ø SUBGRADE DRAIN EACH DIRECTION FROM ALL CURB, GRATE & ROOF INLETS

PLAN OF CURB INLET

City of Port Wentworth
TECHNICAL DETAILS
SD-1

PREPARED BY SAUSSY ENGINEERING, LLC.
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

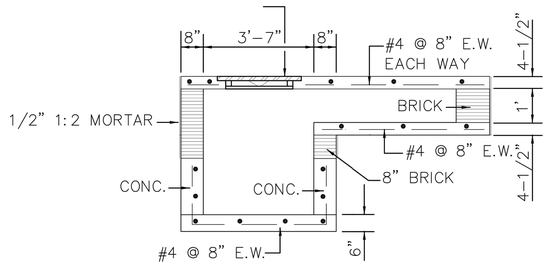
INSTALL 25 LF 6"Ø SUBGRADE DRAIN EACH DIRECTION FROM ALL CURB, GRATE & ROOF INLETS

CURB INLET SECTION A – A

City of Port Wentworth
TECHNICAL DETAILS
SD-3

PREPARED BY SAUSSY ENGINEERING, LLC.
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.



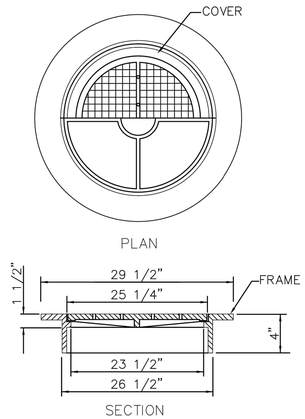
NOTES:
1. MATCH TOP OF PIPE ELEVATIONS WHEN DIFFERENT SIZE PIPES ARE CONSTRUCTED IN CURB INLET.
2. TYPE "B" INLET SHOWN

INSTALL 25 LF 6"Ø SUBGRADE DRAIN EACH DIRECTION FROM ALL CURB, GRATE & ROOF INLETS

CURB INLET SECTION B – B

City of Port Wentworth
TECHNICAL DETAILS
SD-4

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



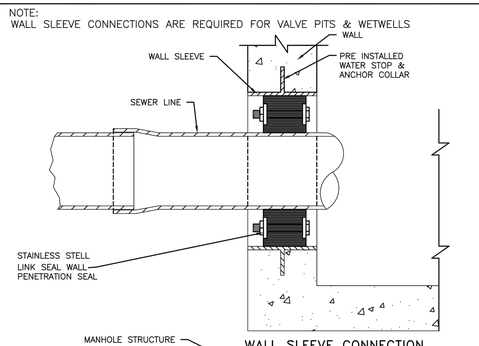
NOTES:
1. FRAME AND COVER TO BE NEENAH FOUNDRY COMPANY CATALOG NO. R-5900-F OR EQUIVALENT WEIGHT 205#.
2. COVER MUST HAVE FOUNDRY STAMP SHOWING THE UTILITY (DRAINAGE).

INLET FRAME & COVER

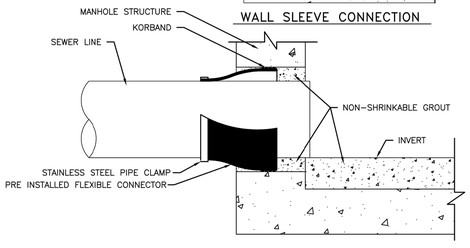
City of Port Wentworth
TECHNICAL DETAILS
SD-5

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

NOTE:
WALL SLEEVE CONNECTIONS ARE REQUIRED FOR VALVE PITS & WETWELLS



WALL SLEEVE CONNECTION

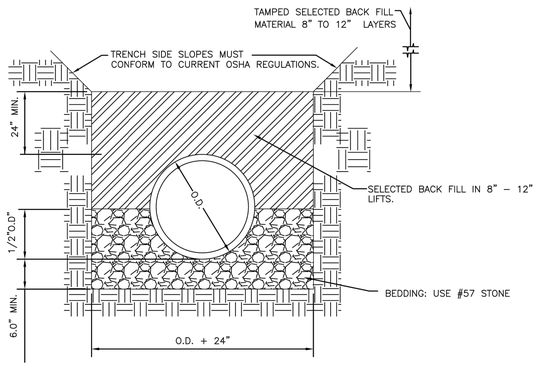


"BOOT" CONNECTION

PRECAST STRUCTURE PIPE CONNECTION

City of Port Wentworth
TECHNICAL DETAILS
S-6

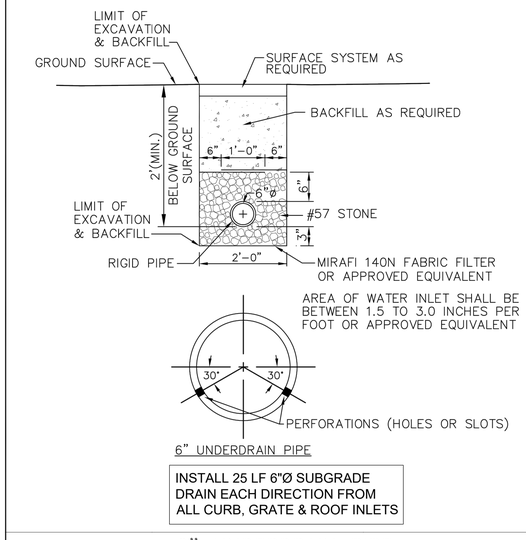
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



PIPE BEDDING

City of Port Wentworth
TECHNICAL DETAILS
S-8

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



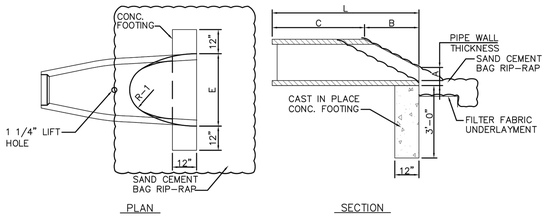
6" UNDERDRAIN PIPE

INSTALL 25 LF 6"Ø SUBGRADE DRAIN EACH DIRECTION FROM ALL CURB, GRATE & ROOF INLETS

6" UNDERDRAIN PIPE

City of Port Wentworth
TECHNICAL DETAILS
SD-10

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



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

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GEORGIA CERTIFICATE #
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

PAVING, GRADING & DRAINAGE DETAILS

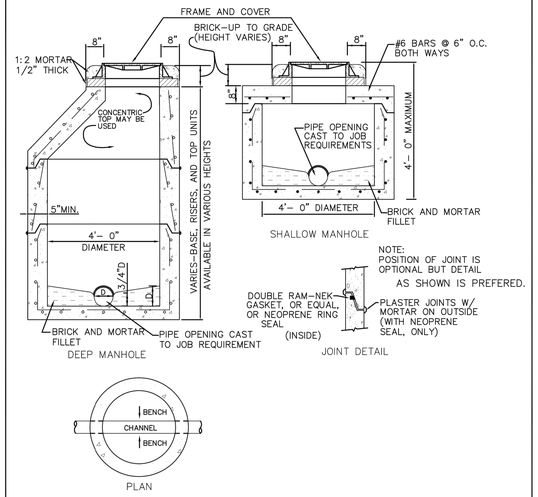
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: ----
Date: 5/31/22

SHEET
C3.17

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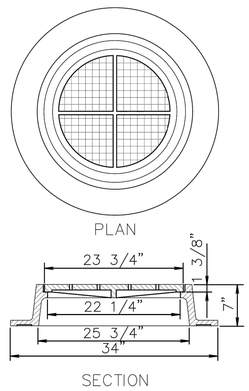
Wednesday, December 21, 2022 11:55:02 AM



PRECAST STORM MANHOLE

City of Port Wentworth
TECHNICAL DETAILS
SD-12

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



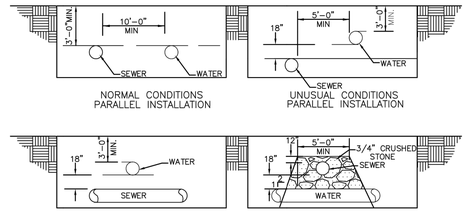
NOTE:

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.
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NOTES:

THE SEPARATION OF WATER MAINS AND SEWERS SHALL COMPLY WITH THE GEORGIA ENVIROMENTAL PROTECTION DIVISION MINIMUM STANDARDS FOR PUBLIC WATER SYSTEMS, WHICH ARE GENERALLY AS FOLLOWS:

A. PARALLEL INSTALLATION:

1. NORMAL CONDITIONS: THE INSIDE EDGE OF A WATER LINE SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE INSIDE EDGE OF ANY SANITARY SEWER, STORM SEWER OR SEWER MANHOLE.

2. UNUSUAL CONDITIONS: WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, AND WHEN APPROVED BY THE ENGINEER, THE INSIDE EDGE OF A WATER MAIN MAY BE LAID A MINIMUM OF 5 FEET FROM THE INSIDE EDGE OF A SEWER PROVIDED THAT THE BOTTOM OF THE WATER MAIN IS AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER (SEE DETAIL), AND THE WATER MAIN IS LAID IN A SEPARATE TRENCH OR ON AN UNDISTURBED EARTH SHELF.

B. CROSSINGS:

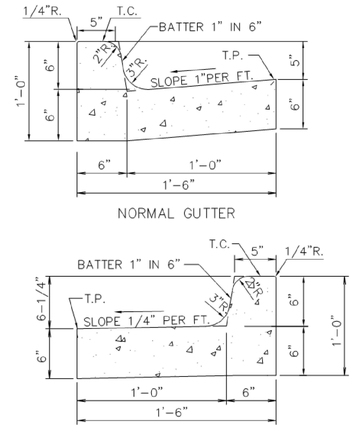
1. NORMAL CONDITIONS: WHENEVER POSSIBLE, THE BOTTOM OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES HIGHER THAN THE TOP OF THE SEWER.

2. UNUSUAL CONDITIONS: IF A WATER MAIN MUST CROSS UNDER A SEWER, THE TOP OF THE WATER MAIN SHALL BE AT LEAST 18 INCHES LOWER THAN THE BOTTOM OF THE SEWER, THE WATER MAIN PIPE SHALL BE CENTERED AT THE CROSSING SO THAT THE JOINTS ARE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE SEWER, AND ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO PREVENT EXCESSIVE DEFLECTION OF THE SEWER AT THE CROSSING. ADEQUATE STRUCTURAL SUPPORT SHALL INCLUDE BACKFILLING THE ENTIRE UTILITY CROSSING AREA WITH 3/4" CRUSHED STONE AS SHOWN IN THE DETAIL.

MINIMUM WATER & SEWER PIPE SEPARATION

City of Port Wentworth
TECHNICAL DETAILS
U-3

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTE: COMPACT SUBGRADE TO 98% (ASTM D698-00ael)

18" CURB & GUTTER

City of Port Wentworth
TECHNICAL DETAILS
P-3

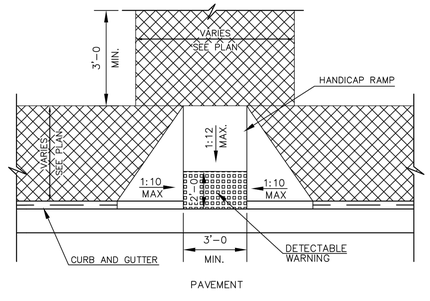
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

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

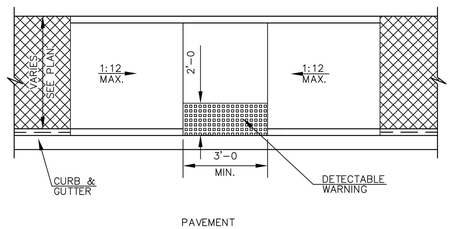
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

DETECTABLE WARNINGS ON WALKING SURFACE OF HANDICAP RAMP

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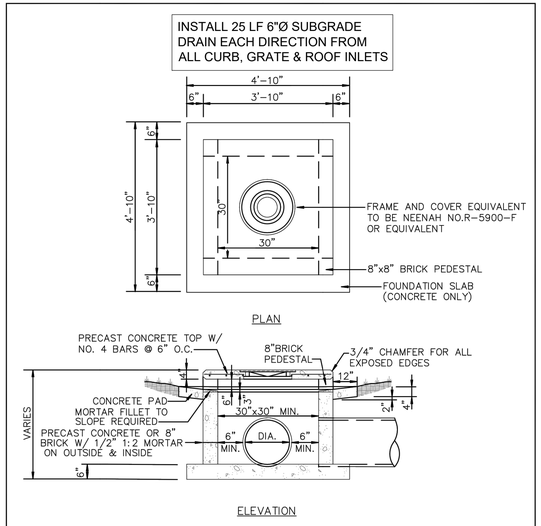
SURFACES SHALL MEET THE ADA ACCESSIBILITY GUIDELINES SECTION 4.29.2.



HANDICAP RAMP TYPE "B"

City of Port Wentworth
TECHNICAL DETAILS
P-5

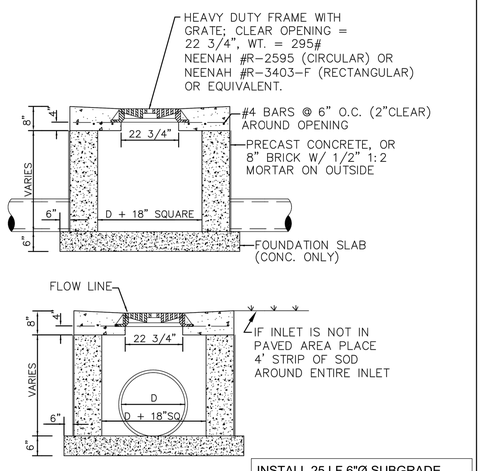
PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



ROOF INLET DETAIL

City of Port Wentworth
TECHNICAL DETAILS
SD-6

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007



GRATE INLET

City of Port Wentworth
TECHNICAL DETAILS
SD-8

PREPARED BY SAUSSY ENGINEERING, LLC.
SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #:7897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON J. BRYANT

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PAVING, GRADING & DRAINAGE DETAILS

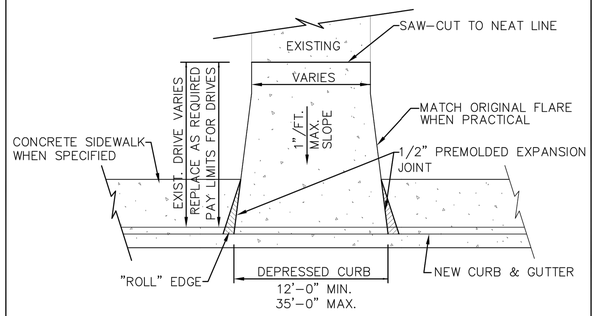
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	----
Date:	5/31/22

SHEET
C3.18

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Wednesday, December 21, 2022 11:55:09 AM



PLAN VIEW

NOTE:

1. % OF THE SLOPE FROM DRIVE TO STREET
2. DRIVEWAY THICKNESS SHALL BE 6" FIBER REINFORCED CONCRETE.

DRIVEWAY

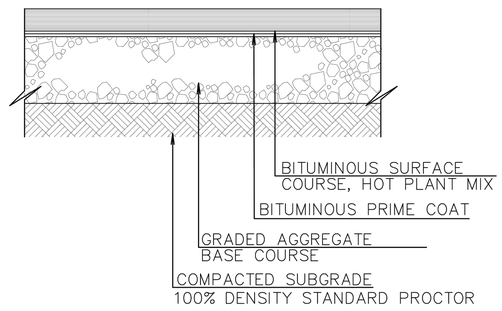
City of Port Wentworth

TECHNICAL DETAILS

P-8

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007



NOTES:
1. 6" GRADED AGGREGATE BASE
2. 2" ASPHALTIC SURFACE COURSE
3. 1.5" ASPHALTIC SURFACE COURSE TO BE INSTALLED ONCE ALL CONSTRUCTION TRAFFIC IS COMPLETED.
4. CONTRACTOR TO FOLLOW GEOTECHNICAL ENGINEERING REPORT PROJECT NO. 09-08-21-5 PREPARED BY WHITAKER ON SEPTEMBER 8, 2021.

TYPICAL BITUMINOUS PAVING SECTION

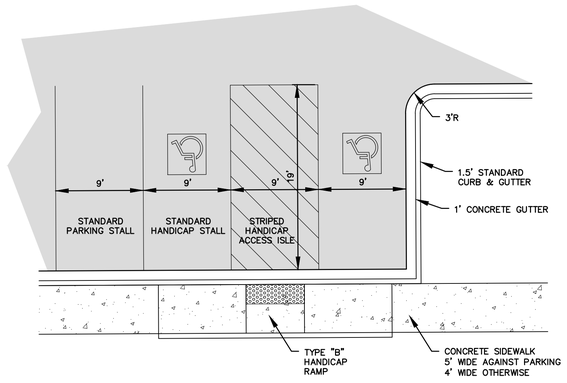
City of Port Wentworth

TECHNICAL DETAILS

P-1

PREPARED BY SAUSSY ENGINEERING, LLC.

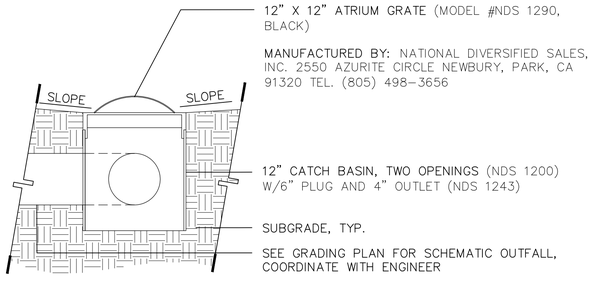
SCALE: N.T.S.
DATED: FEBRUARY 2007



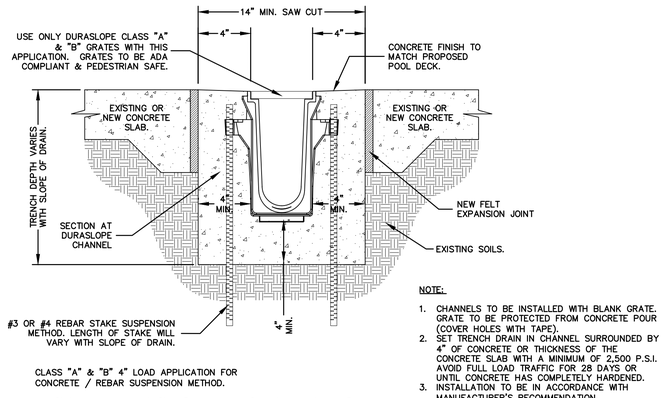
TYPICAL PARKING & HANDICAP STALL DETAIL

PITTMAN ENGINEERING CO., LLC

SCALE: N.T.S.
DATED: 10/2022



ATRIUM LANDSCAPE DRAIN



CLASS "A" & "B" 4" LOAD APPLICATION FOR CONCRETE / REBAR SUSPENSION METHOD.

TYPICAL DURASLOPE INSTALLATION
INSTALLATION LOAD "B"
(PER MANUFACTURER'S GUIDELINE)

SCALE: N.T.S.

NOTE:

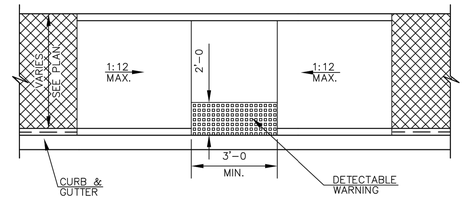
1. CHANNELS TO BE INSTALLED WITH BLANK GRATE. GRATE TO BE PROTECTED FROM CONCRETE POUR (COVER HOLES WITH TAPE).
2. SET TRENCH DRAIN IN CHANNEL SURROUNDED BY 4" OF CONCRETE OR THICKNESS OF THE CONCRETE SLAB WITH A MINIMUM OF 2,500 P.S.I. AVOID FULL LOAD TRAFFIC FOR 28 DAYS OR UNTIL CONCRETE HAS COMPLETELY HARDENED.
3. INSTALLATION TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.

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.

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SURFACES SHALL MEET THE ADA ACCESSIBILITY GUIDELINES SECTION 4.29.2.



PAVEMENT

HANDICAP RAMP TYPE "B"

City of Port Wentworth

TECHNICAL DETAILS

P-5

PREPARED BY SAUSSY ENGINEERING, LLC.

SCALE: N.T.S.
DATED: FEBRUARY 2007

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA
No. 38245
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PAVING, GRADING & DRAINAGE DETAILS

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	----
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SHEET
C3.19

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SOILS LEGEND:

Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

MATCHLINE -- SEE SHEET EC1.2

OFFSITE DRAINAGE = 0.50 AC

SOIL TYPE NAME (TYP)

DRAINAGE AREA #3 = 4.50 AC

DRAINAGE AREA #2 = 5.00 AC

DRAINAGE AREA #12 = 4.37 AC

DRAINAGE AREA #1 = 4.85 AC

DRAINAGE AREA #16 = 0.99 AC

DRAINAGE AREA #15 = 0.72 AC

DRAINAGE AREA #14 = 1.53 AC

DRAINAGE AREA #13 = 1.16 AC

LIMITS OF DISTURBANCE

SOIL TYPE LINE (TYP)

TEMPORARY SILT FENCE SINGLE ROW, TYPE "NON-SENSITIVE"

CONSTRUCTION ENTRANCE/EXIT
GRID N: 809681.76670772
GRID E: 960264.23024599
LATITUDE: N032.22232151
LONGITUDE: W081.18330083

48" RCP
IE: 10.64

ZONE AE (EL 14)

NOTE:
CALCULATIONS FOR TEMPORARY SEDIMENT TRAP w/ROCK OUTLET SIZES ON SHEET EC1.4

GRAPHIC SCALE: 1"=50'

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
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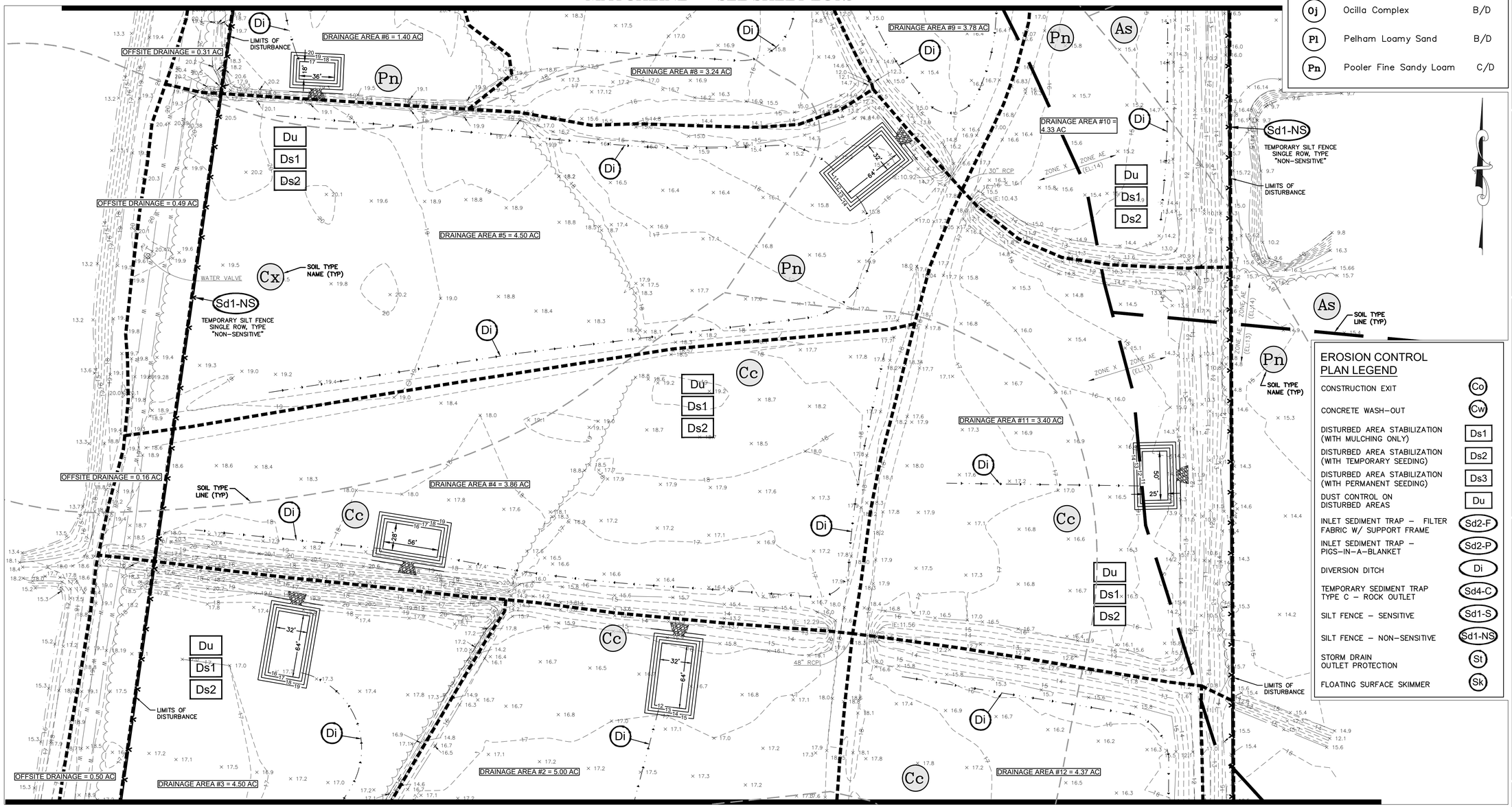
EROSION CONTROL PLAN - INITIAL

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
EC1.1

MATCHLINE -- SEE SHEET EC1.3



MATCHLINE -- SEE SHEET EC1.1

NOTE:
CALCULATIONS FOR TEMPORARY SEDIMENT TRAP w/ROCK OUTLET SIZES ON SHEET EC1.4

GRAPHIC SCALE: 1"=50'-0"

SOILS LEGEND:

Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

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THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #7897

REGISTERED PROFESSIONAL ENGINEER No. 38245 GEORGIA JASON J. BRYANT

EROSION CONTROL PLAN

CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

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EROSION CONTROL PLAN - INITIAL

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
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Scale:	1"=50'
Date:	5/31/22

SHEET
EC1.2

Wednesday, December 21, 2022 11:55:46 AM

EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

SOILS LEGEND:

Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

SOIL TYPE NAME (TYP) — Cx — SOIL TYPE LINE (TYP)

ZONE X — ZONE AE (EL:14)

LIMITS OF DISTURBANCE

TEMPORARY SILT FENCE SINGLE ROW, TYPE "NON-SENSITIVE" — Sd1-NS

OFFSITE DRAINAGE = 0.44 AC

DRAINAGE AREA #7 = 2.89 AC

OFFSITE DRAINAGE = 0.31 AC

DRAINAGE AREA #6 = 1.40 AC

DRAINAGE AREA #8 = 3.24 AC

DRAINAGE AREA #9 = 3.78 AC

DRAINAGE AREA #10 = 4.33 AC

15" RCP

60" RCP

IE:12.02

IE:12.41

IE:7.83

IE:8.22

50' × 25' × 13"

58' × 29' × 13"

27' × 54' × 15"

SOIL TYPE NAME (TYP) — Oj — SOIL TYPE LINE (TYP)

MATCHLINE -- SEE SHEET EC1.2

NOTE:
CALCULATIONS FOR TEMPORARY SEDIMENT TRAP w/ROCK OUTLET SIZES ON SHEET EC1.4

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #7897

REGISTERED PROFESSIONAL ENGINEER No. 38245 GEORGIA JASON J. BRYANT

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
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EROSION CONTROL PLAN - INITIAL

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
EC1.3

D:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages ESPC Plan – Initial.dwg

Sd4-C TEMPORARY SEDIMENT TRAP W/ROCK OUTLET CALCULATIONS

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #1
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #1: 4.85 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 4.85 AC X 67 CY/AC = 324.95 CY = 8,773.65 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 2,048 SF
ELEV. 15 = AREA: 4,100 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (2,048 SF + 4,100 SF)/2 = 6,148 SF/2 = 3,074 SF X 3' DEPTH = 9,222 CF STORAGE

9,222 CF > 8,773.65 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #2
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #2: 5.00 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 5.00 AC X 67 CY/AC = 335.00 CY = 9,045.00 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 2,048 SF
ELEV. 15 = AREA: 4,100 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (2,048 SF + 4,100 SF)/2 = 6,148 SF/2 = 3,074 SF X 3' DEPTH = 9,222 CF STORAGE

9,222 CF > 9,045.00 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #3
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #3: 4.50 AC
OFFSITE DRAINAGE: 0.50 AC
REQUIRED STORAGE 5.00 AC X 67 CY/AC = 335.00 CY = 9,045.00 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 16 = AREA: 2,048 SF
ELEV. 19 = AREA: 4,100 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (2,048 SF + 4,100 SF)/2 = 6,148 SF/2 = 3,074 SF X 3' DEPTH = 9,222 CF STORAGE

9,222 CF > 9,045.00 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #4
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #4: 3.86 AC
OFFSITE DRAINAGE: 0.16 AC
REQUIRED STORAGE 4.02 AC X 67 CY/AC = 269.34 CY = 7,272.18 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 16 = AREA: 1,568 SF
ELEV. 19 = AREA: 3,404 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,568 SF + 3,404 SF)/2 = 4,972 SF/2 = 2,486 SF X 3' DEPTH = 7,458 CF STORAGE

7,458 CF > 7,272.18 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #5
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #5: 4.50 AC
OFFSITE DRAINAGE: 0.49 AC
REQUIRED STORAGE 4.99 AC X 67 CY/AC = 334.33 CY = 9,026.91 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 11 = AREA: 2,048 SF
ELEV. 14 = AREA: 4,100 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (2,048 SF + 4,100 SF)/2 = 6,148 SF/2 = 3,074 SF X 3' DEPTH = 9,222 CF STORAGE

9,222 CF > 9,026.91 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #6
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #6: 1.40 AC
OFFSITE DRAINAGE: 0.31 AC
REQUIRED STORAGE 1.71 AC X 67 CY/AC = 114.57 CY = 3,093.39 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 17 = AREA: 648 SF
ELEV. 20 = AREA: 1,944 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (648 SF + 1,944 SF)/2 = 2,595 SF/2 = 1,296 SF X 3' DEPTH = 3,888 CF STORAGE

3,888 CF > 3,093.39 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #7
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #7: 2.89 AC
OFFSITE DRAINAGE: 0.44 AC
REQUIRED STORAGE 3.33 AC X 67 CY/AC = 223.11 CY = 6,023.97 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 1,250 SF
ELEV. 15 = AREA: 2,924 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,250 SF + 2,924 SF)/2 = 4,174 SF/2 = 2,087 SF X 3' DEPTH = 6,261 CF STORAGE

6,261 CF > 6,023.97 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #8
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #8: 3.24 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 3.24 AC X 67 CY/AC = 217.08 CY = 5,861.16 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 1,250 SF
ELEV. 15 = AREA: 2,924 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,250 SF + 2,924 SF)/2 = 4,174 SF/2 = 2,087 SF X 3' DEPTH = 6,261 CF STORAGE

6,261 CF > 5,861.16 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #9
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #9: 3.78 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 3.78 AC X 67 CY/AC = 253.26 CY = 6,838.02 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 1,458 SF
ELEV. 15 = AREA: 3,240 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,458 SF + 3,240 SF)/2 = 4,698 SF/2 = 2,349 SF X 3' DEPTH = 7,047 CF STORAGE

7,047 CF > 6,838.02 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #10
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #10: 4.33 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 4.33 AC X 67 CY/AC = 290.11 CY = 7,832.97 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 11 = AREA: 1,682 SF
ELEV. 14 = AREA: 3,572 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,682 SF + 3,572 SF)/2 = 5,254 SF/2 = 2,627 SF X 3' DEPTH = 7,881 CF STORAGE

7,881 CF > 7,832.97 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #11
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #11: 3.40 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 3.40 AC X 67 CY/AC = 227.80 CY = 6,150.60 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 11 = AREA: 1,250 SF
ELEV. 14 = AREA: 2,924 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,250 SF + 2,924 SF)/2 = 4,174 SF/2 = 2,087 SF X 3' DEPTH = 6,261 CF STORAGE

6,261 CF > 6,150.60 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

5COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #12
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #12: 4.37 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 4.37 AC X 67 CY/AC = 292.79 CY = 7,905.33 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 1,800 SF
ELEV. 15 = AREA: 3,744 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (1,800 SF + 3,744 SF)/2 = 5,544 SF/2 = 2,772 SF X 3' DEPTH = 8,316 CF STORAGE

8,316 CF > 7,905.33 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #13
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #13: 1.16 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 1.16 AC X 67 CY/AC = 77.72 CY = 2,098.44 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 13 = AREA: 392 SF
ELEV. 16 = AREA: 1,472 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (392 SF + 1,472 SF)/2 = 1,864 SF/2 = 932 SF X 3' DEPTH = 2,796 CF STORAGE

2,796 CF > 2,098.44 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #14
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #14: 1.53 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 1.53 AC X 67 CY/AC = 102.51 CY = 2,767.77 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 512 SF
ELEV. 15 = AREA: 1,700 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (512 SF + 1,700 SF)/2 = 2,212 SF/2 = 1,106 SF X 3' DEPTH = 3,318 CF STORAGE

3,318 CF > 2,767.77 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #15
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #15: 0.72 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 0.72 AC X 67 CY/AC = 48.24 CY = 1,302.48 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 12 = AREA: 200 SF
ELEV. 15 = AREA: 1,064 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (200 SF + 1,064 SF)/2 = 1,264 SF/2 = 632 SF X 3' DEPTH = 1,896 CF STORAGE

1,896 CF > 1,302.48 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

COTTAGES AT RICE HOPE - TEMPORARY SEDIMENT STORAGE IN Sd4-C
TEMPORARY SEDIMENT TRAP - ROCK OUTLET #16
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #16: 0.99 AC
OFFSITE DRAINAGE: 0.00 AC
REQUIRED STORAGE 0.99 AC X 67 CY/AC = 66.33 CY = 1,790.91 CF

STORAGE PROVIDED IN TEMPORARY SEDIMENT BASIN:
ELEV. 13 = AREA: 242 SF
ELEV. 16 = AREA: 1,160 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT
TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (242 SF + 1,160 SF)/2 = 1,402 SF/2 = 701 SF X 3' DEPTH = 2,103 CF STORAGE

2,103 CF > 1,790.91 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

REV.	DESCRIPTION	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

REVISIONS

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

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EROSION CONTROL PLAN - INITIAL

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
EC1.4

Wednesday, December 21, 2022 11:55:53 AM
G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages ESPC Plan - Initial.dwg

Thursday, December 22, 2022 10:44:51 AM

SOILS LEGEND:		
Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

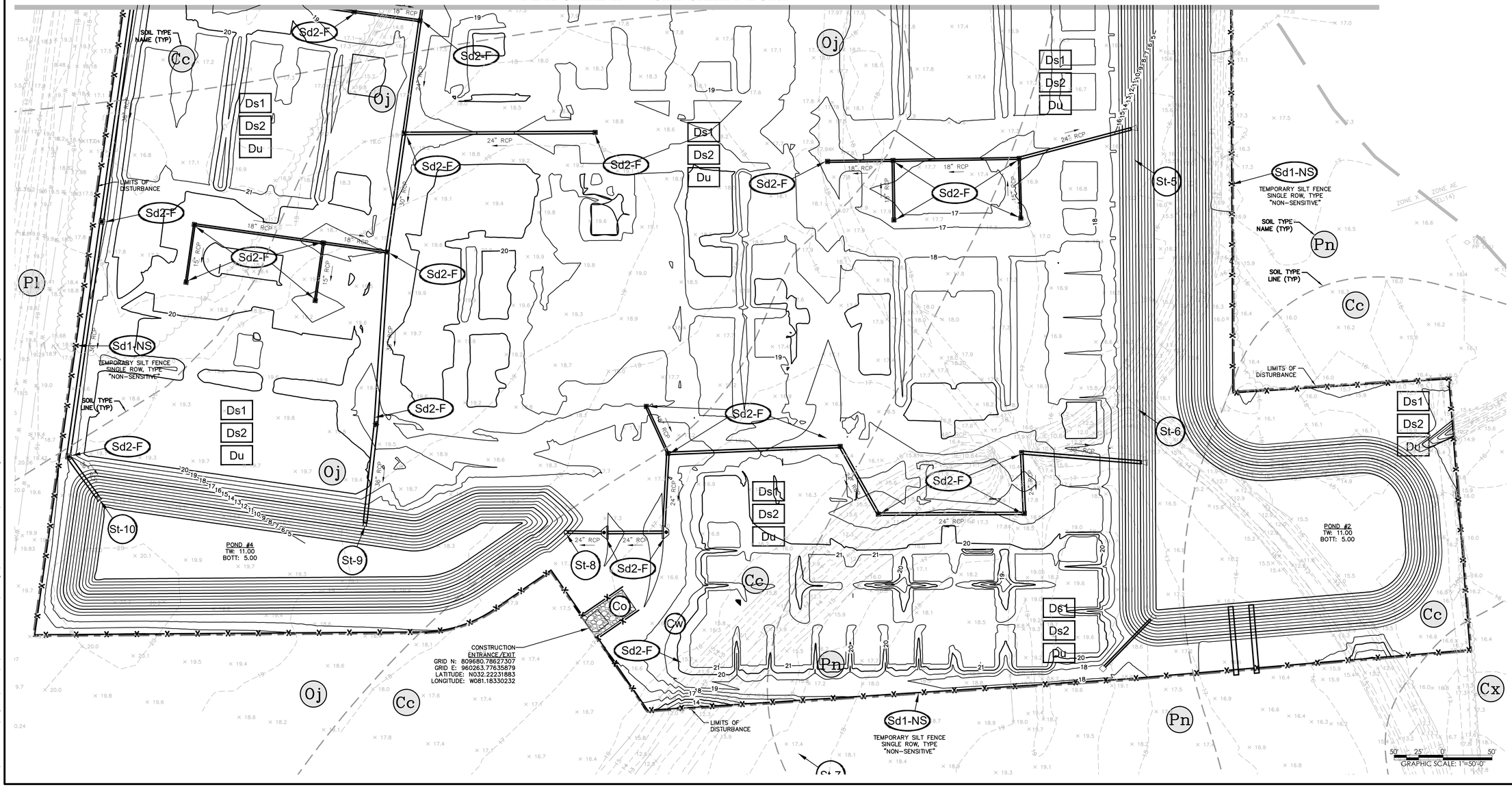
COTTAGES at RICE HOPE – TEMPORARY SEDIMENT STORAGE IN PERMANENT POND #2
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DISTURBED AREA: 51.75 AC
REQUIRED STORAGE 51.75 AC X 67 CY/AC = 3,467.25.00 CY = 93,615.75 CF

STORAGE PROVIDED IN PERMANENT PONDS #2:
BOTT. ELEV. 5.0 = AREA: 202,490 SF
STATIC ELEV. 11.5 = AREA: 297,578 SF
(BOTT. ELEV. AREA + TOW ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (202,490 SF + 297,578 SF)/2 = 500,068 SF/2 = 250,034 SF X 6.5' DEPTH = 1,625,221 CF STORAGE

1,625,221 CF > 93,615.75 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

EROSION CONTROL PLAN LEGEND	
CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

MATCHLINE -- SEE SHEET EC2.2



REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

THE COTTAGES AT RICE HOPE

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EROSION CONTROL PLAN - INTERMEDIATE

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
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SHEET
EC2.1

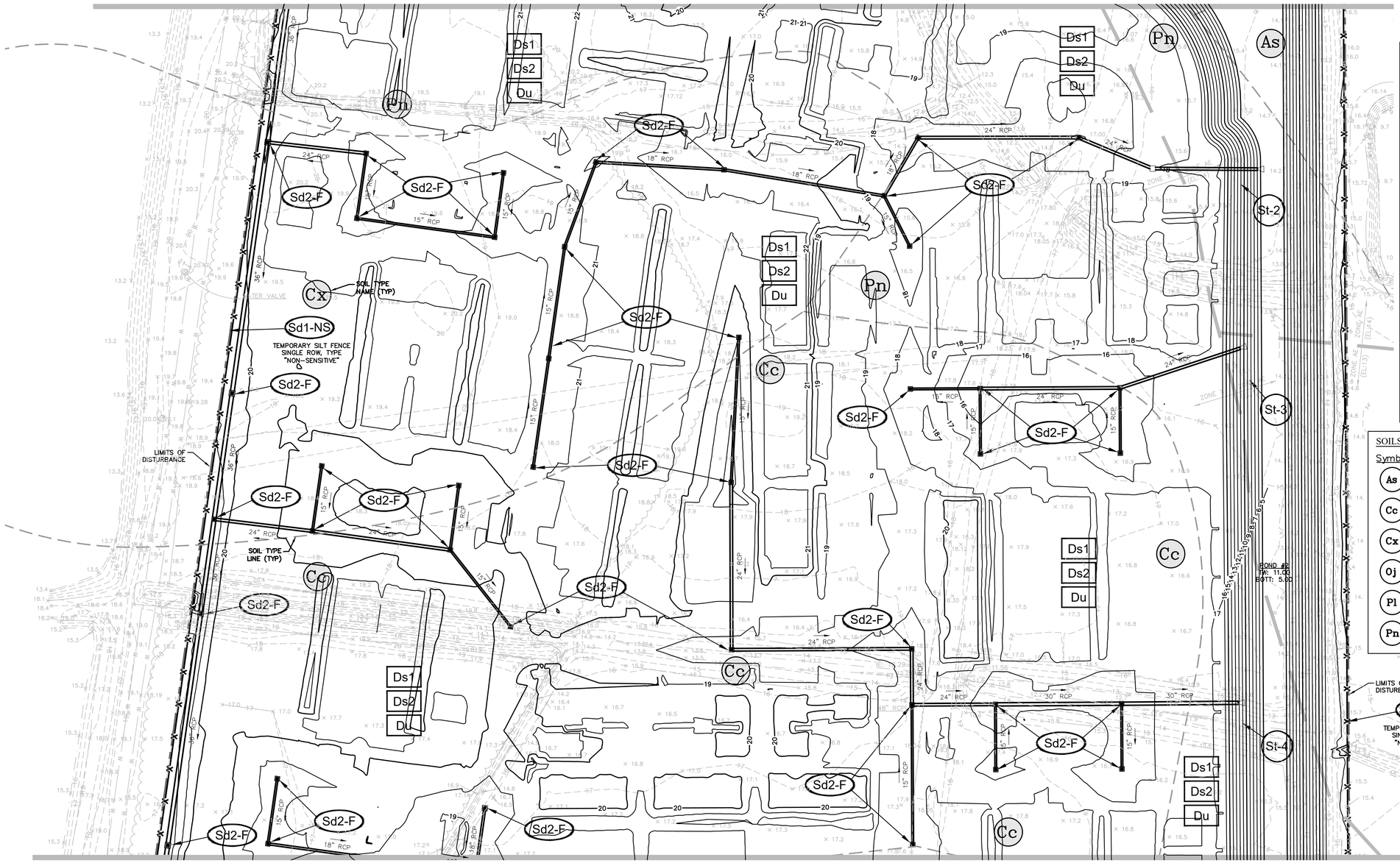
G:\Shared drives\Projects\Rice Hope\21-286 Third Lake\Drawings\Construction Plans\21-286 Cottages ESPC Plan - Intermediate.dwg

COTTAGES at RICE HOPE – TEMPORARY SEDIMENT STORAGE IN PERMANENT POND #2
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DISTURBED AREA: 51.75 AC
REQUIRED STORAGE 51.75 AC X 67 CY/AC = 3,467.25.00 CY = 93,615.75 CF

STORAGE PROVIDED IN PERMANENT PONDS #2:
BOTT. ELEV. 5.0 = AREA: 202,490 SF
STATIC ELEV. 11.5 = AREA: 297,578 SF
(BOTT. ELEV. AREA + TOW ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (202,490 SF + 297,578 SF)/2 = 500,068 SF/2 = 250,034 SF X 6.5' DEPTH = 1,625,221 CF STORAGE

1,625,221 CF > 93,615.75 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

MATCHLINE -- SEE SHEET EC2.3



MATCHLINE -- SEE SHEET EC2.1

EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH–OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS–IN–A–BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON–SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

SOILS LEGEND:

Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
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THE COTTAGES AT RICE HOPE
PHASE 1
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THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
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SHEET
EC2.2

Wednesday, December 21, 2022 11:57:48 AM

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Wednesday, December 21, 2022 11:57:57 AM

SOILS LEGEND:

Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

COTTAGES at RICE HOPE – TEMPORARY SEDIMENT STORAGE IN PERMANENT POND #2
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DISTURBED AREA: 51.75 AC
REQUIRED STORAGE 51.75 AC X 67 CY/AC = 3,467.25.00 CY = 93,615.75 CF

STORAGE PROVIDED IN PERMANENT PONDS #2:
BOTT. ELEV. 5.0 = AREA: 202,490 SF
STATIC ELEV. 11.5 = AREA: 297,578 SF
(BOTT. ELEV. AREA + TOW ELEV. AREA)/2 = AREA IN SF X DEPTH OF SEDIMENT TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (202,490 SF + 297,578 SF)/2 = 500,068 SF/2 = 250,034 SF X 6.5' DEPTH = 1,625,221 CF STORAGE

1,625,221 CF > 93,615.75 CF THEREFORE ADEQUATE STORAGE IS PROVIDED



EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds1
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds2
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P
DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

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Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	5/31/22

SHEET
EC2.3

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Thursday, December 22, 2022 10:47:16 AM

SOILS LEGEND:		
Symbol	Name	Rating
As	Albany Fine Sand	A/D
Cc	Cape Fear Soils	C/D
Cx	Craven Loamy Fine Sand	C
Oj	Ocilla Complex	B/D
Pl	Pelham Loamy Sand	B/D
Pn	Pooler Fine Sandy Loam	C/D

PINE HILL COMMUNITY – TEMPORARY SEDIMENT STORAGE IN PERMANENT POND #2
TEMPORARY SEDIMENT STORAGE REQUIREMENTS
DRAINAGE AREA #1: 15.00 AC
REQUIRED STORAGE 15.00 AC X 67 CY/AC = 1005.00 CY = 27,135.00 CF

STORAGE PROVIDED IN PERMANENT POND #2:
ELEV. 37 = AREA: 3,159.30 SF
ELEV. 42 = AREA: 13,456.50 SF
(BOTTOM ELEV. AREA + TOP ELEV. AREA)/2 = AREA IN S.F. X DEPTH OF SEDIMENT TRAP IN FEET = CF (AVERAGE END METHOD)
AREA: (3,159.30 SF + 13,456.50 SF)/2 = 16,615.80 SF/2 = 8,0307.90 SF X 5'
DEPTH = 41,539.50 CF STORAGE

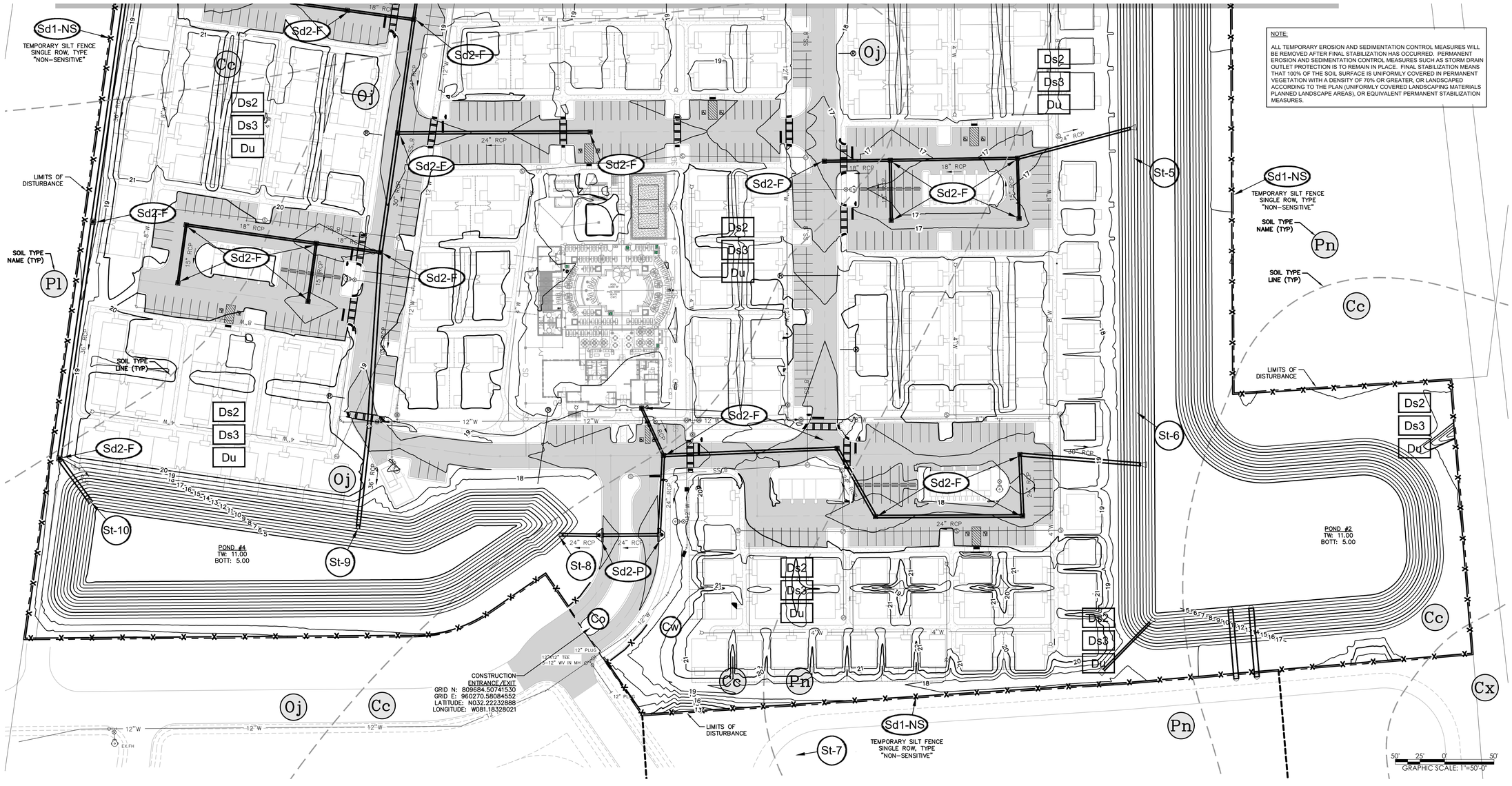
41,539.50 CF > 27,135.00 CF THEREFORE ADEQUATE STORAGE IS PROVIDED

EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH-OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds2
DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDING)	Ds3
DISTURBED AREA STABILIZATION (WITH PERMANENT SEEDING)	Ds3
DUST CONTROL ON DISTURBED AREAS	Du
INLET SEDIMENT TRAP – FILTER FABRIC W/ SUPPORT FRAME	Sd2-F
INLET SEDIMENT TRAP – PIGS-IN-A-BLANKET	Sd2-P

DIVERSION DITCH	Di
TEMPORARY SEDIMENT TRAP TYPE C – ROCK OUTLET	Sd4-C
SILT FENCE – SENSITIVE	Sd1-S
SILT FENCE – NON-SENSITIVE	Sd1-NS
STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

MATCHLINE -- SEE SHEET EC3.2



NOTE:

ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE REMOVED AFTER FINAL STABILIZATION HAS OCCURRED. PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES SUCH AS STORM DRAIN OUTLET PROTECTION IS TO REMAIN IN PLACE. FINAL STABILIZATION MEANS THAT 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 LANDSCAPING MATERIALS PLANNED LANDSCAPE AREAS), OR EQUIVALENT PERMANENT STABILIZATION MEASURES.

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

EROSION CONTROL PLAN - FINAL

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
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SHEET
EC3.1

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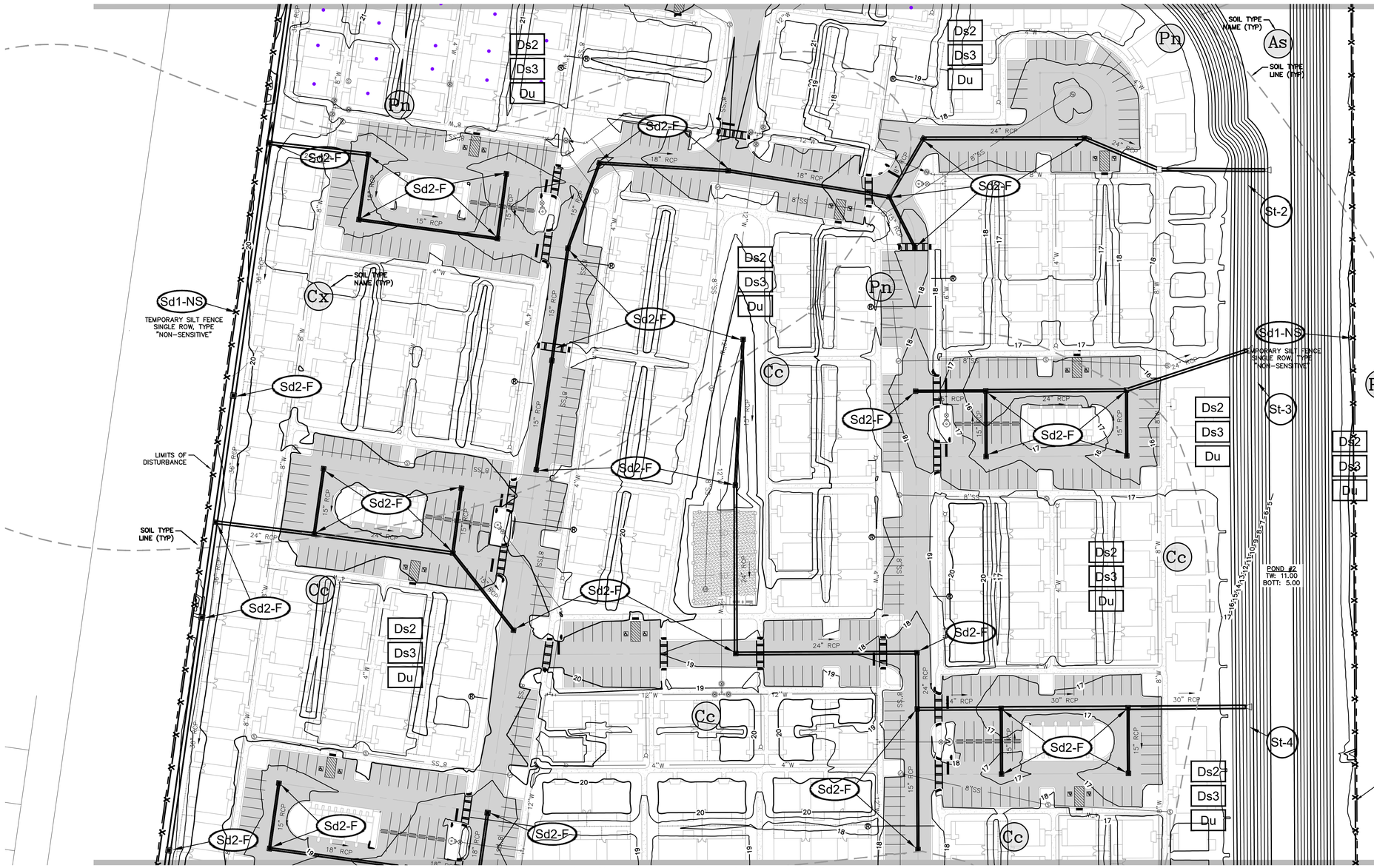
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PINE HILL COMMUNITY – TEMPORARY SEDIMENT STORAGE IN PERMANENT POND #2
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MATCHLINE -- SEE SHEET EC3.3



MATCHLINE -- SEE SHEET EC3.1

EROSION CONTROL PLAN LEGEND

CONSTRUCTION EXIT	Co
CONCRETE WASH–OUT	Cw
DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)	Ds2
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DIVERSION DITCH	Di
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STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk

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Symbol	Name	Rating
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LIMITS OF DISTURBANCE

50' 25' 0' 50'
GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

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EROSION CONTROL PLAN - FINAL

THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
Drawn By:	MKJ
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SHEET
EC3.2

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Wednesday, December 21, 2022 12:00:17 PM

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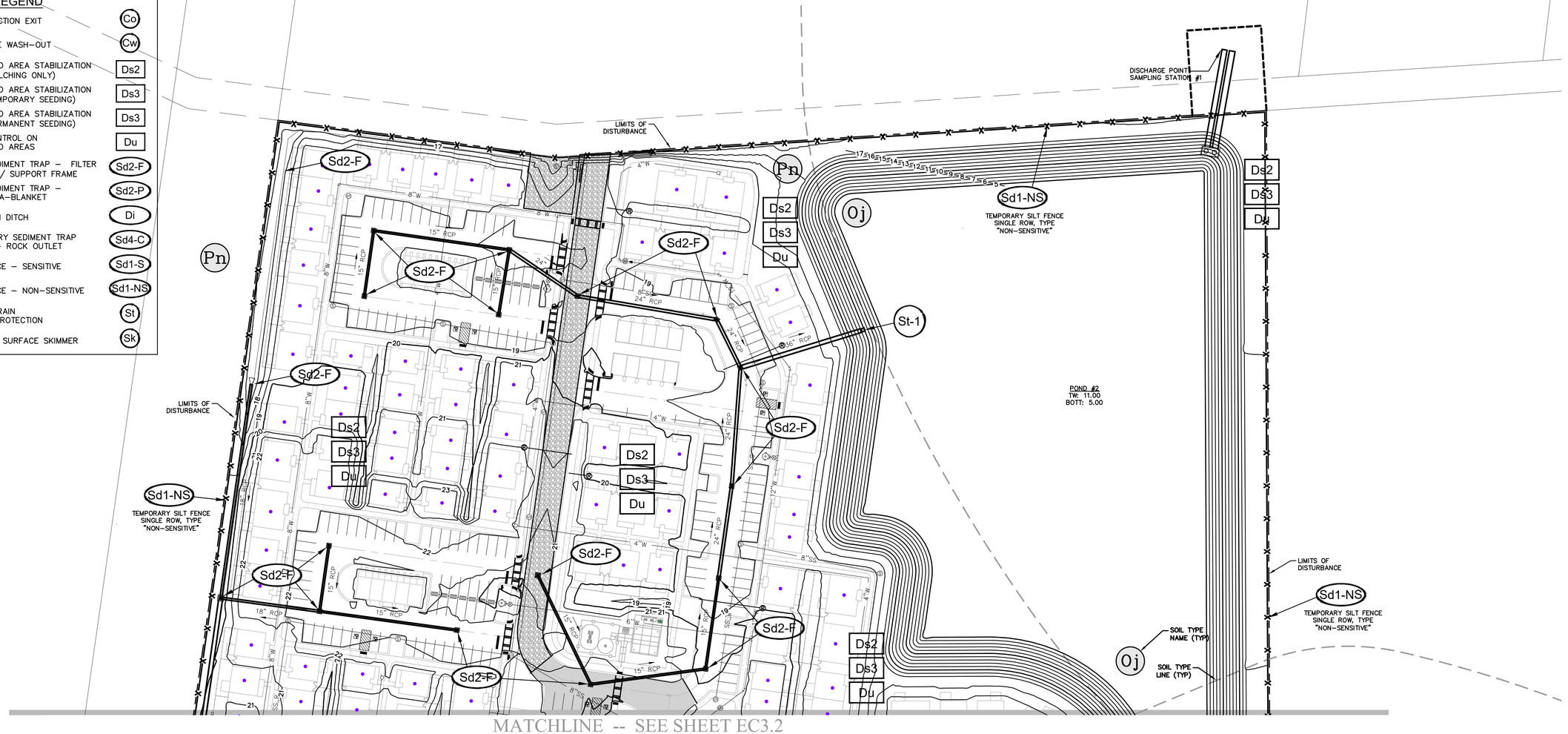
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EROSION CONTROL PLAN LEGEND

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STORM DRAIN OUTLET PROTECTION	St
FLOATING SURFACE SKIMMER	Sk



GRAPHIC SCALE: 1"=50'-0"

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

THE COTTAGES AT RICE HOPE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #7897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON J. BRYANT

Pittman Engineering Co., LLC
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EROSION CONTROL PLAN - FINAL

THE COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
Drawn By:	MKJ
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SHEET
EC3.3

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Wednesday, December 21, 2022 12:00:29 PM

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE DEVELOPMENT CONSTRUCTION PROJECTS

SWCD: COASTAL

Project Name: RAYDIENT PLACES + PROPERTIES Address: BELFAST KELLER RD.

City/County: RICHMOND HILL / BRYAN COUNTY Date on Plans: 03/25/2022

Provide name and email of the person filling out the checklist: Jason Bryant, jason@pittmanengineeringco.com

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC4.1–EC4.3	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.
EC1.1–EC5.3	YES	2. Level II certification number issued by the Commission, signature and seal of the certified design professional.
EC4.4	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 checklist.*
EC4.1	YES	4. The name and phone number of the 24–hour local contact responsible for erosion, sedimentation and pollution controls. MR. ROBERT HOGAN THIRD LAKE DEVELOPMENT, LLC 1600 E. 8th Ave., SUITE A132 TAMPA, FLORIDA 33605 Rhogan@thirdlakedevelopment.com
EC4.1	YES	5. Provide the name, address, email and phone number of the primary permittee. MR. ROBERT HOGAN THIRD LAKE DEVELOPMENT, LLC 1600 E. 8th Ave., SUITE A132 TAMPA, FLORIDA 33605 Rhogan@thirdlakedevelopment.com
EC4.1	YES	6. Note total and disturbed acreage of the project or phase under construction. TOTAL ACREAGE: 49.5 DISTURBED ACREAGE: 49.5
EC1.1–EC3.3	YES	7. Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
COVER–EC5.2	YES	8. Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
EC4.1	YES	9. Description of the nature of construction activity. CONSTRUCTION OF RESIDENTIAL DEVELOPMENT AND ALL ASSOCIATED INFRASTRUCTURE.
COVER	YES	10. Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
EC4.1	YES	11. Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, etc. which may be affected. RECEIVING WATERS = EAST CHANNEL MEDWAY RIVER
EC4.1	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 SUPERVISION." 01/31/22 JASON J. BRYANT, P.E. DATE GSWCC LEVEL II DESIGN PROFESSIONAL – CERTIFICATION #73897
EC4.1	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 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) OR THE SAMPLING OF THE STORMWATER 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." 01/31/22 JASON J. BRYANT, P.E. DATE GSWCC LEVEL II DESIGN PROFESSIONAL – CERTIFICATION #73897
EC4.1	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 PRIMARY PERMITTEE MUST RETAIN THE DESIGN PROFESSIONAL WHO PREPARED THE PLAN (EXCEPT WHEN THE PRIMARY PERMITTEE HAS REQUESTED IN WRITING AND EPD HAS AGREED TO AN ALTERNATE DESIGN PROFESSIONAL), TO INSPECT THE INSTALLATION OF THE INITIAL SEDIMENT STORAGE REQUIREMENTS AND PERIMETER CONTROL BMPS WHICH THE DESIGN PROFESSIONAL DESIGNED WITHIN SEVEN (7) DAYS AFTER INSTALLATION. THE DESIGN PROFESSIONAL SHALL DETERMINE IF THESE BMPS HAVE BEEN INSTALLED AND ARE BEING MAINTAINED AS DESIGNED. THE DESIGN PROFESSIONAL SHALL REPORT THE RESULTS OF THE INSPECTION TO THE PRIMARY PERMITTEE WITHIN SEVEN (7) DAYS AND THE PERMITTEE MUST CORRECT ALL DEFICIENCIES WITHIN TWO (2) BUSINESS DAYS OF RECEIPT OF THE INSPECTION REPORT FROM THE DESIGN PROFESSIONAL (UNLESS WEATHER RELATED SITE CONDITIONS ARE SUCH THAT ADDITIONAL TIME IS REQUIRED).

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC4.1	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.*

DESIGN PROFESSIONAL'S 7-DAY VISIT CERTIFICATION:

DATE OF INSPECTION: _____

I CERTIFY THE SITE WAS IN COMPLIANCE WITH THE ES&PC PLAN ON THE DATE OF INSPECTION.

_____ DATE
JASON J. BRYANT, P.E.
GSWCC LEVEL II DESIGN PROFESSIONAL – CERTIFICATION #73897

INSPECTION REVEALED THE FOLLOWING DISCREPANCIES FROM THE ES&PC PLAN:

_____

_____

_____

_____

_____

THE PERMITTEE MUST CORRECT ALL DEFICIENCIES WITHIN TWO (2) BUSINESS DAYS OF RECEIPT OF THE INSPECTION REPORT FROM THE DESIGN PROFESSIONAL UNLESS WEATHER RELATED SITE CONDITIONS ARE SUCH THAT ADDITIONAL TIME IS REQUIRED.

EC4.1	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 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	NO	16. Provide a description of any buffer encroachments and indicate whether a buffer variance is required. NO BUFFERS REQUIRED.
EC4.1	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 BMPS WITH A HYDRAULIC COMPONENT MUST BE CERTIFIED BY THE DESIGN PROFESSIONAL."
EC4.1	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. 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.
EC4.1	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."
EC4.1	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 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."
EC4.1	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 GREATER THAN 14 DAYS SHALL BE STABILIZED WITH MULCH OR TEMPORARY SEEDING."
N/A	NO	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.*
N/A	NO	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.*

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC1.1, 2.1, 3.1	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.* CONCRETE WASHDOWN FOR TOOLS, CONCRETE MIXER CHUTES, HOPPERS AND REAR OF THE VEHICLES PLACED NEXT TO CONSTRUCTION EXIT. WASHOUT OF THE DRUM AT THE CONSTRUCTION SITE IS PROHIBITED.
EC4.1	YES	25. Provide BMPs for the remediation of all petroleum spills and leaks. 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, gloves, goggles, cat litter, sand, sawdust and properly labeled plastic and metal waste container. • 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 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.
EC1.1–EC5.3	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.*

THE FOLLOWING PERMANENT MEASURES HAVE BEEN ESTABLISHED:

1. WET DETENTION PONDS FITTED WITH MULTI–STAGE WEIR CONTROL STRUCTURES WILL PROVIDE AN OPPORTUNITY FOR POLLUTANTS TO SETTLE OUT PRIOR TO DISCHARGING FROM THE SITE.
2. RIP–RAP APRONS WILL REDUCE EROSIVE VELOCITIES.
3. DISTURBED AREA STABILIZATION WITH PERMANENT GRASSING AND VEGETATION WILL HELP REDUCE SOIL EROSION.

CONTROLS:

EROSION AND SEDIMENT CONTROLS:

- ALL PERIMETER SILT FENCES AND CONSTRUCTION EXITS SHALL BE IN PLACE PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- EXISTING VEGETATION SHALL BE LEFT IN PLACE UNTIL SUCH TIME THAT LAND DISTURBING ACTIVITIES ARE TO TAKE PLACE UPON THAT PORTION OF THE SITE. WHEN CONSTRUCTION ACTIVITIES HAVE CEASED IN AN AREA, THAT AREA SHALL BE STABILIZED WITHIN 14 DAYS. IF THE AREA IS NOT TO FINAL GRADE, THE AREA SHALL BE MULCHED. AREAS BROUGHT TO FINAL GRADE THAT WILL REMAIN PERVIOUS ARE TO BE PERMANENTLY SEEDED. ALLOWABLE EXCEPTIONS FROM THE NPDES GENERAL PERMIT NO. GAR 100001, ARE NOTED BELOW.
- "WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 14th DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASES DUE TO SNOW COVER OR OTHER ADVERSE WEATHER CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE."
- "WHERE CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN 21 DAYS FROM WHEN ACTIVITIES CEASED, (e.g. THE TOTAL TIME PERIOD THAT CONSTRUCTION ACTIVITY IS TEMPORARILY CEASED IS LESS THAN 21 DAYS) THEN STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE 14th DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY CEASED."
- PLEASE REFER TO ATTACHED SHEETS FOR THE LAND DISTURBANCE CONSTRUCTION SCHEDULE (SHEET EC4.1) AND TEMPORARY AND PERMANENT GRASSING SCHEDULE (SHEET EC5.2). THE STORMWATER WILL BE DISCHARGED BY SHEET FLOW EVENTUALLY MAKING ITS WAY TO THE TIVOLI RIVER.

NON–STORMWATER DISCHARGE:

- ALL NON–STORMWATER DISCHARGES WILL BE ROUTED THROUGH ON–SITE BMP'S AND THE STORMWATER MANAGEMENT SYSTEM WHERE POSSIBLE. THESE DISCHARGES INCLUDE FLUSHING OF WATER AND FIRE LINES, IRRIGATION WATER, GROUND WATER, DEWATERING OF PITS OR DEPRESSIONS WITHIN THE CONSTRUCTION SITE AND RINSE–OFF WATER OF NON–MATERIALS.

OTHER CONTROLS:

- NO WASTE WILL BE DISPOSED INTO STORMWATER 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. THE DUMPSTER WILL BE EMPTIED A MINIMUM OF ONCE A WEEK OR MORE OFTEN IF NEEDED AND TRASH WILL BE HAULED AS REQUIRED BY LOCAL REGULATIONS. NO CONSTRUCTION WASTE WILL BE BURIED ON–SITE. ALL PERSONNEL WILL BE INSTRUCTED ON PROPER PROCEDURE 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.

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 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 THE ESPCP AND WILL TRAIN ALL PERSONNEL IN THE PROPER CLEANUP AND HANDLING OF SPILLED MATERIALS. NO SPILLED HAZARDOUS MATERIAL OR HAZARDOUS WASTES WILL BE ALLOWED TO COME IN CONTACT WITH STORM WATER DISCHARGES. IF SUCH CONTACT OCCURS, THE STORM WATER DISCHARGE WILL BE CONTAINED ON SITE UNTIL APPROPRIATE MEASURES (IN COMPLIANCE WITH STATE AND FEDERAL REGULATIONS) ARE TAKEN TO DISPOSE OF SUCH CONTAMINATED STORM WATER. 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 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 CONTRIBUTION TO STORM WATER DISCHARGE IS NEGLIGIBLE. ADDITIONAL CONTAINMENT BMP'S MUST BE IMPLEMENTED SUCH AS GRAVEL BAGS OR SPECIALTY DESIGNED PLASTIC SKID CONTAINERS AROUND THE BASES, TO PREVENT WASTE FROM CONTRIBUTING TO STORM WATER DISCHARGE. THE LOCATION OF SANITARY WASTE UNITS MUST BE IDENTIFIED IN THE EROSION CONTROL GRADING PLAN, BY THE CONTRACTOR ONCE THE LOCATIONS HAVE BEEN DETERMINED. SANITARY SEWER WILL BE PROVIDED BY BRYAN COUNTY AT THE COMPLETION OF THIS PROJECT.

OFF–SITE VEHICLE TRACKING:
A STABILIZED CONSTRUCTION EXIT HAS BEEN PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENT. SEE SHEETS EC1.1–EC3.1 FOR CONSTRUCTION EXIT LOCATIONS AND SHEET EC5.1 FOR DETAILS. THE PAVED STREET ADJACENT TO THE SITE EXIT WILL BE INSPECTED DAILY FOR TRACKING OF DIRT, MUD, OR ROCK. DUMP TRUCKS HAULING MATERIAL TO OR FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN.

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

JASON BRYANT
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

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EROSION CONTROL NOTES
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21–286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	NTS
Date:	5/25/21

SHEET
EC4.1

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Wednesday, December 21, 2022 12:00:32 PM

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE DEVELOPMENT CONSTRUCTION PROJECTS

Plan Page # | Included Y/N | TO BE SHOWN ON ES&PC PLAN

INVENTORY FOR POLLUTION PREVENTION PLAN:
THE FOLLOWING MATERIALS ARE EXPECTED ON-SITE DURING CONSTRUCTION: CONCRETE PRODUCTS, ASPHALT, PETROLEUM BASED FUEL AND LUBRICANTS FOR EQUIPMENT, TAR, METAL BUILDING MATERIALS, LUMBER, SHEET ROCK, FLOOR COVERINGS, ELECTRICAL WIRE AND FIXTURES, PAINT/STAINS/FINISHING TREATMENTS, PAINT, PAINT SOLVENTS, ADDITIVES FOR SOIL STABILIZATION, CLEANING SOLVENTS, PESTICIDES, FERTILIZERS, HERBICIDES, CRUSHED STONE, AND METAL PIPES.

SPILL PREVENTION:
PRACTICES SUCH AS GOOD HOUSEKEEPING, PROPER HANDLING OF HAZARDOUS PRODUCTS AND PROPER SPILL CONTROL PRACTICES WILL BE FOLLOWED TO REDUCE THE RISKS OF SPILLS AND SPILLS FROM DISCHARGING INTO STORMWATER RUNOFF.

GOOD HOUSEKEEPING:
1. QUANTITIES OF PRODUCTS STORED ON-SITE WILL BE LIMITED TO THE AMOUNT NEEDED FOR THE JOB.
2. PRODUCTS AND MATERIALS WILL BE STORED IN A NEAT, ORDERLY MANNER IN APPROPRIATE CONTAINERS PROTECTED FROM RAINFALL, WHERE POSSIBLE.
3. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH MANUFACTURER LABELS VISIBLE.
4. PRODUCTS MIXING, DISPOSAL AND DISPOSAL OF PRODUCT CONTAINERS WILL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
5. THE CONTRACTOR WILL INSPECT SUCH MATERIALS TO ENSURE PROPER USE, STORAGE, AND DISPOSAL.

MAINTENANCE & INSPECTION OF EROSION & SEDIMENT CONTROLS:

MAINTENANCE:

THE FOLLOWING BEST MANAGEMENT PRACTICE MAINTENANCE CRITERIA ARE TAKEN FROM THE "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA," LATEST EDITION.

CONSTRUCTION EXITS SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC DRESSING WITH 1.5-3.5 INCH STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEANING OF ANY STRUCTURES TO TRAP SEDIMENT. ALL MATERIAL SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES OR SITE ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.

RETROFIT STRUCTURES SHALL BE KEPT CLEAR OF TRASH AND DEBRIS. THIS WILL REQUIRE CONTINUOUS MONITORING AND MAINTENANCE, WHICH INCLUDES SEDIMENT REMOVAL WHEN ONE-THIRD OF THE SEDIMENT STORAGE CAPACITY HAS BEEN LOST.

SEDIMENT SHALL BE REMOVED FROM SILT FENCES ONCE IT HAS ACCUMULATED ONE-THIRD THE ORIGINAL HEIGHT OF THE BARRIER. FILTER FABRIC SHALL BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF THE FABRIC IS REDUCED (APPROXIMATELY SIX MONTHS).

SEDIMENT SHALL BE REMOVED FROM SEDIMENT TRAPS 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.

SEDIMENT SHALL NOT BE WASHED INTO THE INLET. IT SHALL BE REMOVED FROM THE SEDIMENT TRAP AND 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 TO PROPER GRADE, SMOOTHED AND COMPACTED.

APPROPRIATELY STABILIZE ALL DISTURBED AREAS AROUND THE INLET.

REPAIR ALL DAMAGES CAUSED TO TEMPORARY SEDIMENT BASINS BY SOIL EROSION OR CONSTRUCTION EQUIPMENT AT OR BEFORE THE END OF EACH WORKING DAY. SEDIMENT SHALL BE REMOVED FROM THE BASIN WHEN IT REACHES THE TOP OF THE RISER. SEDIMENT SHALL NOT ENTER ADJACENT STREAMS OR DRAINAGE WAYS DURING SEDIMENT REMOVAL OR DISPOSAL. THE SEDIMENT SHALL NOT BE DEPOSITED DOWNSTREAM FROM THE EMBANKMENT, ADJACENT TO A STREAM OR FLOODPLAIN.

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.

ROUGHENED AREAS SHALL BE SEEDED AND MULCHED AS SOON AS POSSIBLE TO OBTAIN OPTIMUM SEED GERMINATION AND SEEDING GROWTH.

MULCH OR TEMPORARY GRASSING SHALL BE APPLIED TO ALL EXPOSED AREAS WITHIN 14 DAYS OF DISTURBANCES. MULCH CAN BE USED AS A SINGULAR EROSION CONTROL DEVICE FOR UP TO 6 MONTHS, BUT IT SHALL BE APPLIED AT THE APPROPRIATE DEPTH (DEPENDING ON THE MATERIALS USED), ANCHORED, AND HAVE A CONTINUOUS 90% COVER. TEMPORARY VEGETATION MAY BE EMPLOYED INSTEAD OF MULCH IF THE AREA WILL REMAIN UNDISTURBED FOR LESS THAN 8 MONTHS. IF THE AREA WILL REMAIN UNDISTURBED FOR GREATER THAN 6 MONTHS, PERMANENT VEGETATIVE TECHNIQUES SHALL BE EMPLOYED.

PERMANENT VEGETATION SHALL BE APPLIED IMMEDIATELY TO ROUGH GRADED AREAS THAT WILL BE UNDISTURBED FOR LONGER THAN 6 MONTHS. THIS PRACTICE OF SODDING SHALL BE APPLIED IMMEDIATELY TO ALL AREAS AT FINAL GRADE. FINAL STABILIZATION MEANS THAT ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND THAT FOR THE UNPAVED AREAS AND AREAS NOT COVERED IN PERMANENT STRUCTURES AT LEAST 70% COVERAGE OF THE SOIL SURFACE IS UNIFORMLY COVERED IN PERMANENT VEGETATION OR EQUIVALENT PERMANENT STABILIZATION MEASURES (SUCH AS THE USE OF RIPRAP, GABIONS, PERMANENT MULCHES OR GEOTEXTILES) HAVE BEEN EMPLOYED. PERMANENT VEGETATION SHALL CONSIST OF PLANTED TREES, SHRUBS, PERENNIAL VINES, A CROP OF PERENNIAL VEGETATION APPROPRIATE FOR THE REGION, SUCH THAT WITHIN THE GROWING SEASON, A 70% COVERAGE BY PERENNIAL VEGETATION SHALL BE ACHIEVED. FINAL STABILIZATION APPLIES TO EACH PHASE OF CONSTRUCTION UNTIL THIS STANDARD IS SATISFIED AND PERMANENT CONTROL MEASURES AND FACILITIES ARE OPERATIONAL. INTERIM STABILIZATION MEASURES AND TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BE REMOVED.

EC4.2	YES	27. DESCRIPTION OF PRACTICES TO PROVIDE COVER FOR BUILDING MATERIALS AND BUILDING PRODUCTS ON SITE.*

FOR BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS PRESENT ON THE SITE, 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. MINIMIZATION OF EXPOSURE IS NOT REQUIRED IN CASES WHERE EXPOSURE TO PRECIPITATION AND TO STORMWATER WILL NOT RESULT IN A DISCHARGE OF POLLUTANTS, OR WHERE EXPOSURE OF A SPECIFIC MATERIAL OR PRODUCT POSES LITTLE RISK TO STORMWATER CONTAMINATION (SUCH AS FINAL PRODUCTS AND MATERIALS INTENDED FOR OUTDOOR USE).

EC4.2	YES	28. Description of the practices that will be used to reduce the pollutants in storm water discharges.*

Product Specific Practices

Petroleum Based Products – Containers for products such as fuel, 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 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 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/Herbicides – 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 using proper waste disposal procedures.

EC4.2	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 BMPs, clearing and grubbing activities, excavation activities, utility activities, temporary and final stabilization).

CONSIDERATIONS FOR CONSTRUCTION SCHEDULING

A SPECIFIED WORK SCHEDULE IS NEEDED TO COORDINATE THE TIMING OF LAND DISTURBING ACTIVITIES WITH THE INSTALLATION OF EROSION AND SEDIMENTATION CONTROL MEASURES.

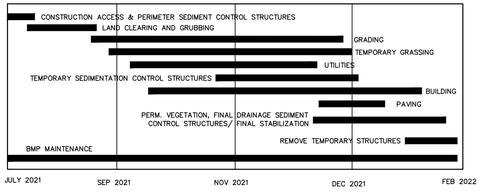
THE PURPOSE OF THE SCHEDULE IS TO REDUCE ON-SITE EROSION AND OFF-SITE SEDIMENTATION BY PERFORMING LAND DISTURBING ACTIVITIES AND INSTALLING EROSION AND SEDIMENTATION CONTROL PRACTICES IN ACCORDANCE WITH A PLANNED SCHEDULE.

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.

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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. CLEAR BORROW AND DISPOSAL AREAS ONLY AS NEEDED. 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. UTILITIES, PAVING, BUILDING	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.

PROPOSED CONSTRUCTION SCHEDULE:



EC4.2	YES	30. Provide complete requirements of inspections and record keeping by the primary permittee.*

INSPECTIONS

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.

Plan Page # | Included Y/N | TO BE SHOWN ON ES&PC PLAN

AN "EROSION & SEDIMENTATION INSPECTION AND MAINTENANCE REPORT" SHEET IS ATTACHED. SHOULD THE INSPECTION REVEAL ANY DEFICIENCIES, A COPY SHALL BE SENT TO:

ROBERT HOGAN – THIRD LAKE DEVELOPMENT, LLC
1600 E. 8th AVE., SUITE A132
TAMPA, FLORIDA 33605
704-201-1922
EMAIL: RHogan@thirdlakedevelopment.com

ATTN.:
PITTMAN ENGINEERING CO., LLC
2591 HWY 17 SUITE 303
RICHMOND HILL, GA 31324
912-445-0578
JASON@PITTMANENGINEERINGCO.COM

EC4.2	YES	31. Provide complete requirements of sampling frequency and reporting of sampling results.*

STORM WATER SAMPLING:

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 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 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.

GOVERNING AGENCY:
COASTAL DISTRICT – BRUNSWICK OFFICE
GEORGIA ENVIRONMENTAL PROTECTION DIVISION
400 COMMERCE CENTER DRIVE
BRUNSWICK, GA 31523-8251
(912) 264-7284

ROBERT HOGAN – THIRD LAKE DEVELOPMENT, LLC
1600 E. 8th AVE., SUITE A132
TAMPA, FLORIDA 33605
704-201-1922
EMAIL: RHogan@thirdlakedevelopment.com

ATTN.:
PITTMAN ENGINEERING CO., LLC
2591 HWY 17 SUITE 303
RICHMOND HILL, GA 31324
912-445-0578
JASON@PITTMANENGINEERINGCO.COM

EC4.2	YES	32. Provide complete details for retention of records as per Part IV.F. of the permit.*

RETENTION OF RECORDS:

1. THE PRIMARY PERMITTEE SHALL RETAIN THE FOLLOWING RECORDS AT THE CONSTRUCTION SITE (OR THE RECORDS SHALL BE READILY AVAILABLE AT THE DESIGNATED ALTERNATE LOCATION) FROM COMMENCEMENT OF CONSTRUCTION UNTIL SUCH TIME AS A NOTICE OF TERMINATION IS SUBMITTED IN ACCORDANCE WITH PART VI.
   a. A COPY OF 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 MONITORING 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 VIOLATION SUMMARIES AND VIOLATION SUMMARY REPORTS GENERATED IN ACCORDANCE WITH PART III.D.2 OF THIS PERMIT.
   g. DAILY RAINFALL INFORMATION COLLECTED IN ACCORDANCE WITH PART IV.D.4.(a).(1)(c) OF THIS PERMIT.
2. COPIES OF ALL NOTICES OF INTENT, NOTICE OF TERMINATION, REPORTS, PLANS, MONITORING INFORMATION (INCLUDING ALL CALIBRATION AND MAINTENANCE RECORDS AND ALL ORIGINAL STRIP CHART RECORDINGS FOR CONTINUOUS MONITORING INSTRUMENTATION), EROSION, SEDIMENTATION AND POLLUTION CONTROL PLAN RECORDS OF ALL

Wednesday, December 21, 2022 12:00:37 PM

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST
STAND ALONE DEVELOPMENT CONSTRUCTION PROJECTS

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC4.3	YES	33. DESCRIPTION OF ANALYTICAL METHODS TO BE USED TO COLLECT AND ANALYZE THE SAMPLES FROM EACH LOCATION.*

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
(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.

EC4.3	YES	34. Appendix B rationale for NTU values at all outfall sampling points where applicable.* FOR A SITE ACREAGE SIZE OF 60.2 AND WATERS SUPPORTING WARM WATER FISHERIES DRAINAGE AREA LESS THAN 5 SQUARE MILES, THE NTU VALUE TO USE IN PART III.D.4. IS 50 NTU.

APPENDIX B
Nephelometric Turbidity Unit (NTU) Table
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

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC2.1-EC3.3	YES	35. Delineate all sampling locations if applicable, perennial and intermittent streams and other water bodies into which storm water is discharged. *
EC1.1-EC3.3	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 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.* A temporary sediment trap(s) will accommodate the 67 cy of initial sediment storage. Silt fence will provide perimeter control. Intermediate grading and drainage BMPs include construction exit, detention ponds with outfall control structures with storm outlet protection, concrete wash down, dust control, mulching, temporary seeding and silt fence. Final phase BMPs include construction exit, concrete wash down, detention ponds with outfall control structures with storm outlet protection, dust control and permanent vegetation stabilization. Each phase of the plan includes the appropriate controls and measures, including the initial sediment storage requirements, intermediate grading and drainage BMPs and Final BMPs. Refer to Sheets EC1.1-1.2, EC2.1-2.2 and EC3.1-3.2.
EC1.1-EC3.3	YES	37. Graphic scale and North arrow.
EC1.1-EC3.3	YES	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% Rolling 2 - 8% Steep 8% +	0.5 or 1 1 or 2 2,5 or 10

N/A	NO	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.
N/A	NO	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.*
EC1.1-EC3.7	NO	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 NOT ANY STATE WATERS LOCATED ON OR WITHIN 200' OF THIS PROJECT SITE. BUFFERS ARE NOT REQUIRED SINCE THERE IS NOT ANY WRESTED VEGETATION.
N/A	NO	42. Delineation of on-site wetlands and all State waters located on and within 200 feet of the project site. THERE ARE NOT ANY ON-SITE WETLANDS OR STATE WATERS LOCATED ON OR WITHIN 200' OF THIS PROJECT SITE.
EC1.1-EC3.3 EC4.3	YES	43. Delineation and acreage of contributing drainage basins on the project site. LIMITS OF DISTURBANCE = 51.75 AC OFFSITE DRAINAGE = XX.X AC TOTAL CONTRIBUTING DRAINAGE = XX.XX AC
EC4.3	NO	44. Provide hydrology study and maps of drainage basins for both the pre- and post-developed conditions.* N/A
EC4.3	YES	45. An estimate of the Runoff Coefficient or Peak Discharge Flow of the site prior to and after construction activities are completed. RUNOFF CURVE NUMBER (SCS METHOD USED). PRE-DEVELOPMENT: CN=75 (WOODED, HSG TYPE C) POST-DEVELOPMENT: CN=83 (WOODED, HSG TYPE C)
NA	NO	46. Storm-Drain Pipe and Weir Velocities with appropriate Outlet Protection to accommodate discharges without erosion. Identify/Delineate all Storm Water Discharge Points.
EC1.1-EC3.3 EC4.3	YES	47. Soil series for the project site and their delineation.

SOILS LEGEND:

SYMBOL	NAME	RATING
OI	OCILLA COMPLEX	B/D
PI	PELHAM LOAMY SAND	B/D
Pn	POOLER FINE SANDY LOAM	C/D
As	ALBANY FINE SAND	A/D
Cc	CAPE FEAR SOILS	C/D
Cx	CRAVEN LOAMY FINE SAND	C

EC1.1-EC3.3	YES	48. The Limits of Disturbance for each phase of construction.
EC1.1-EC3.3 EC4.3, EC5.1-EC5.3	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 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.

67 CY SEDIMENT STORAGE PER DISTURBED ACRE REQUIREMENT

- TOTAL PROJECT ACREAGE = 60.2
- TOTAL DISTURBED ACREAGE = 60.2
- TOTAL REQUIRED SEDIMENT STORAGE: 60.2 X 67 c.y./Ac. = 4,033.4 c.y.
- THIS PROJECT WILL MEET THE SEDIMENT STORAGE REQUIREMENT UTILIZING 11 PROPOSED TEMPORARY SEDIMENT TRAPS DURING THE INITIAL AND INTERMEDIATE PHASES, AND REVERT BACK TO SHEET FLOW (OVER-LAND FLOW) THE REMAINING PHASE.
- THE PROPOSED LAND DISTURBING ACTIVITIES FOR THIS PROJECT INCLUDE GRADING THE SITE TO PROVIDE POSITIVE DRAINAGE FOR SPECIFIC AND LIMITED AREAS OF THE SITE.
- SEE SHEETS EC1.1-EC2.7 FOR SEDIMENT TRAP CALCULATIONS.

EC1.1-EC3.3 EC5.1-EC5.3	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.
EC5.1-EC5.3	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.

Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
EC4.3, EC1.1-EC5.3	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 the appropriate geographic region of Georgia.

LIME RATES AND ANALYSIS

* AGRICULTURAL LIME SHALL BE APPLIED 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.

MULCHING (MULCHING 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:

* 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 TWO TONS PER ACRE. DRY HAY SHALL BE APPLIED AT THE RATE OF 2-1/2 TONS PER ACRE.
* WOOD CELLULOSE MULCH OR WOOD PULP FIBER SHALL BE USED WITH HYDRAULIC SEEDING. IT SHALL BE APPLIED AT A RATE OF 500 POUNDS PER ACRE. DRY STRAW OR DRY HAY SHALL BE APPLIED (AT THE RATE INDICATED BELOW) AFTER HYDRAULIC SEEDING.
* ONE THOUSAND POUNDS OF WOOD CELLULOSE OR WOOD PULP FIBER, WHICH INCLUDES TACKIFIER, SHALL BE USED WITH HYDRAULIC SEEDING ON SLOPES 4:1 OR STEEPER.
* SERICEA LESPEDEZA HAY CONTAINING MATURE SEED SHALL BE APPLIED AT A RATE OF 3 TONS PER ACRE.
* 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.
* WHEN USING TEMPORARY EROSION CONTROL BLANKETS OR BLACK SOD, MULCH IS NOT REQUIRED.

FERTILIZER REQUIREMENTS

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. COOL SEASON GRASSES	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500lbs./ac. 1000lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 1/2/ - 30
2. COOL SEASON GRASSES AND LEGUMES	FIRST SECOND MAINTENANCE	6-12-12 0-10-10 0-10-10	1500lbs./ac. 1000lbs./ac. 400 lbs./ac.	0-50 lbs./ac. 1/ - -
3. GROUND COVERS	FIRST SECOND MAINTENANCE	10-10-10 10-10-10 10-10-10	1300lbs./ac. 3/ 1300lbs./ac. 3/ 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 MAINTENANCE	0-10-10 0-10-10	700lbs./ac. 700lbs./ac. 4/	- -
6. TEMPORARY COVER CROPS SEEDED ALONE	FIRST	10-10-10	500lbs./ac.	30 lbs./ac. 5/
7. WARM SEASON GRASSES	FIRST SECOND MAINTENANCE	6-12-12 6-12-12 10-10-10	1500lbs./ac. 800lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 2/6/ 50-100 lbs./ac. 2/ 30 lbs./ac.
8. WARM SEASON GRASSES AND LEGUMES	FIRST SECOND MAINTENANCE	6-12-12 0-10-10 0-10-10	1500lbs./ac. 1000lbs./ac. 400 lbs./ac.	50 lbs./ac. 6/

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.

*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

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

JASON BRYANT
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #13897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

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EROSION CONTROL NOTES
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No. 21-286
Drawn By: MKJ
Designed By: JJB
Checked By: RAP
Scale: NTS
Date: 5/25/21

SHEET
EC4.3

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APPENDIX 1
THE ES&PC PLAN MUST INCLUDE AT LEAST FOUR (4) OF THE FOLLOWING BMPS FOR THOSE AREAS OF THE SITE WHICH DISCHARGE TO A IMPAIRED STREAM SEGMENT AND FOR SITES WHICH EPD HAS APPROVED IN WRITING A REQUEST TO DISTURB 50 ACRES OR MORE AT ANY ONE TIME.
The four items chosen must be appropriate for the site conditions.

Plan Page #	Included Y/N	
N/A	NO	a. During construction activities, double the width of the 25 foot undisturbed vegetated buffer along all State waters requiring a buffer and the 50 foot undisturbed vegetated buffer along all State waters classified as "trout streams" requiring a buffer. During construction activities, EPD will not grant variances to any such buffers that are increased in width.
N/A	NO	b. Increase all temporary sediment basins and retrofitted storm water management basins to provide sediment storage of at least 3600 cubic feet (134 cubic yards) per acre drained.
N/A	NO	c. Use baffles in all temporary sediment basins and retrofitted storm water management basins to at least double the conventional flow path length to the outlet structure.
EC4.1–EC4.4	YES	d. A large sign (minimum 4 feet x 8 feet) must be posted on site by the actual start date of construction. The sign must be visible from a public roadway. The sign must identify the following: (1) construction site, (2) the permittee(s), (3) the contact person(s) and telephone number(s), and (4) the permittee–hosted website where the Plan can be viewed must be provided on the submitted NOI. The sign must remain on site and the Plan must be available on the provided website until a NOT has been submitted.
		A COPY OF THE PLANS CAN BE VIEWED AND DOWNLOADED FROM THE FOLLOWING URL: https://bit.ly/3mCFvlQ
N/A	NO	e. Use flocculants or coagulants and/or mulch to stabilize areas left disturbed for more than seven (7) calendar days in accordance with Section III. D.1. of the NPDES Permit.
EC4.1–EC4.4	YES	f. Conduct turbidity sampling after every rain event of 0.5 inch or greater within any 24 hour period, recognizing the exceptions specified in Section IV.D.6.d. of the NPDES Permits.
N/A	NO	g. Comply with the applicable end–of–pipe turbidity effluent limit, without the "BMP defense" as provided for in O.C.G.A. 12–7–6 (a)(1).
N/A	NO	h. Reduce the total planned site disturbance to less than 50% impervious surfaces (excluding any State–mandated buffer areas from such calculations). All calculations must be included on the Plan.
N/A	NO	i. Limit the amount of disturbed area at any one time to no greater than 25 acres or 50% of the total planned site, whichever is less. All calculations must be included on the Plan.
N/A	NO	j. Use "Dirt II" techniques available on the EPD website to model and manage construction storm water runoff (including sheet flow). All calculations must be included on the Plan. (https: //epd.georgia.gov/erosion–and–sedimentation)
N/A	NO	k. Add appropriate organic soil amendments (e.g., compost) and conduct pre– and post–construction soil sampling to a depth of six (6) inches to document improved levels of soil carbon after final stabilization of the construction site.
N/A	NO	l. Use mulch filter berms, in addition to a silt fence, on the site perimeter wherever construction storm water (including sheet flow) may be discharged. Mulch filter berms cannot be placed in waterways or areas of concentrated flow.
N/A	NO	m. Use appropriate erosion control slope stabilization instead of concrete in all construction storm water ditches and storm drainages designed for a 25 year, 24 hour rainfall event.
N/A	NO	n. Use flocculants or coagulants under a passive dosing method (e.g., flocculant blocks) within construction storm water ditches and storm drainages that feed into temporary sediment basins and retrofitted management basins.
N/A	NO	o. Install sod for a minimum 20 foot width (in lieu of seeding) after final grade has been achieved, along the site perimeter wherever storm water (including sheet flow) may be discharged.
EC4.1–EC4.4	YES	p. Conduct soil tests to identify and to implement site–specific fertilizer needs.
N/A	NO	q. Certified personnel for primary permittees shall conduct inspections at least twice every seven (7) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater in accordance with Section IV.D.4.a.(3)(a) –(c); secondary permittees, Section IV.D.4.b.(3)(a) –(c); and tertiary permittees Section IV.D.4.c.(3)(a) –(c) *
N/A	NO	r. Apply the appropriate compost blankets (minimum depth 1.5 inches) to protect soil surfaces until vegetation is established during the final stabilization phase of the construction activity.
N/A	NO	s. Use alternative BMPs whose performance has been documented to be superior to conventional BMPs as certified by a Design Professional (unless disapproved by EPD or the Georgia Soil and Water Conservation Commission). (If using this item please refer to the Alternative BMP guidance document found at www.gaswcc.georgia.gov)
N/A	NO	t. Limit the total planned site disturbance to less than 15% impervious surfaces (excluding any state mandated buffer areas from such calculations). All calculations must be included in the Plan.
EC4.1–EC4.4	YES	u. Conduct inspections during the intermediate grading and drainage BMP phase and during the final BMP phase of the project by the design professional who prepared the Plan in accordance with Section IV.A.5 of the permit. The Plan must include a statement that the primary permittee must retain the design professional who prepared the Plan to conduct inspections during the intermediate grading and drainage BMP phase and during the final BMP phase.
N/A	NO	v. Install Post Construction BMPs (e.g., runoff reduction BMPs) which remove 80% TSS as outlined in the Georgia Stormwater Management Manual known as the Blue Book or an equivalent or more stringent design manual.

* This requirement is different for infrastructure projects:
Certified personnel for primary permittees shall conduct inspections at least once every seven (7) calendar days and within 24 hours of the end of the storm that is 0.5 inches rainfall or greater in accordance with Section IV.D.4.a.(3)(a) –(c) of the permit.

NOTE:
THE PRIMARY PERMITTEE MUST RETAIN THE DESIGN PROFESSIONAL WHO PREPARED THE PLAN TO CONDUCT INSPECTIONS DURING THE INTERMEDIATE GRADING AND DRAINAGE BMP PHASE AND DURING THE FINAL BMP PHASE.

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

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EC4.4

Wednesday, December 21, 2022 12:00:42 PM

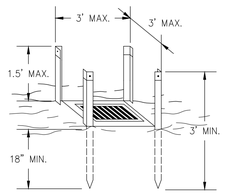
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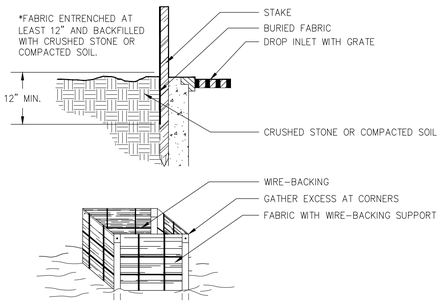
FABRIC AND SUPPORTING FRAME FOR INLET PROTECTION

Sd2-F

STEEL FRAME AND SILT FENCE INSTALLATION



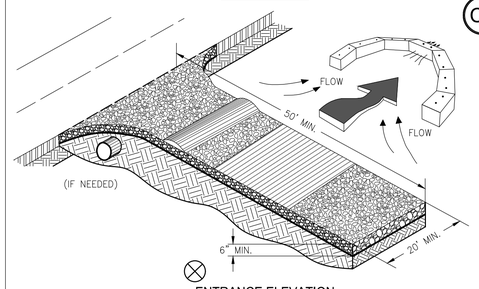
NOTES:
1. DESIGN IS FOR SLOPES NO GREATER THAN 5% (NOT DESIGNED FOR CONCENTRATED FLOWS).
2. THE STEEL POSTS SUPPORTING THE SILT FENCE MATERIAL SHOULD BE SPACED EVENLY AROUND THE PERIMETER OF THE INLET (MAXIMUM OF 3' APART).
3. THE STEEL POSTS SHOULD BE SECURELY DRIVEN AT LEAST 18" DEEP.
4. THE FABRIC SHOULD BE ENTRENCHED AT LEAST 12" AND THEN BACKFILLED WITH CRUSHED STONE OR COMPACTED SOIL.



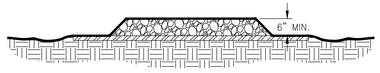
CRUSHED STONE CONSTRUCTION EXIT

EXIT DIAGRAM

Co



ENTRANCE ELEVATION

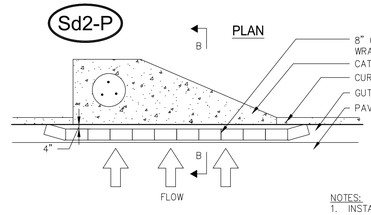


NOTES:
1. AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
2. REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
3. AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
4. GRAVEL PAD 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.

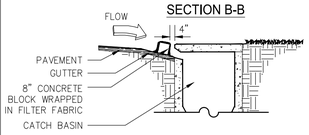
CURB INLET FILTER "PIGS IN BLANKET"

Sd2-P

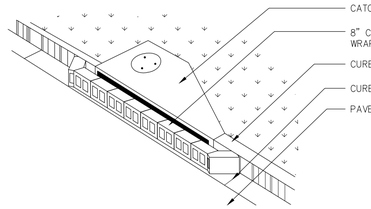
PLAN



SECTION B-B



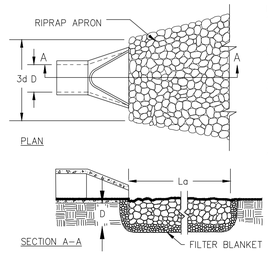
NOTES:
1. INSTALL FILTER AFTER ANY ASPHALT PAVEMENT INSTALLATION.
2. WRAP 8" CONCRETE BLOCKS IN FILTER FABRIC AND SPAN ACROSS CATCH BASIN INLET.
3. FACE OPENINGS IN BLOCKS OUTWARD.
4. LEAVE A GAP OF APPROXIMATELY 4 INCHES BETWEEN THE CURB AND THE FILTERS TO ALLOW FOR OVERFLOW TO PREVENT HAZARDOUS PONDING.
5. INSTALL OUTLET PROTECTION BELOW STORM DRAIN OUTLETS.



RIPRAP OUTLET PROTECTION

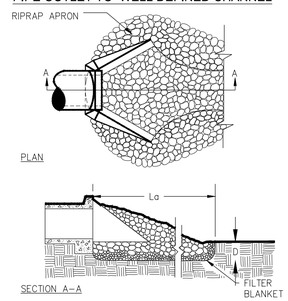
PIPE OUTLET TO FLAT AREA -- NO WELL DEFINED CHANNEL

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 BANK (WHICHEVER IS LESS).
4. A FILTER BLANKET OR FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND THE SOIL FOUNDATION.

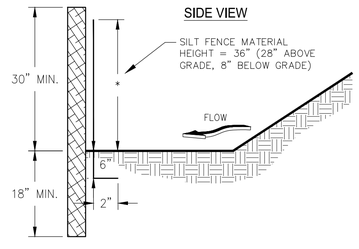
PIPE OUTLET TO WELL DEFINED CHANNEL



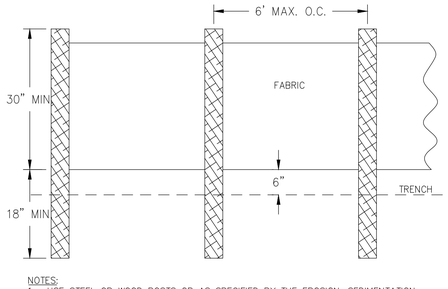
SILT FENCE - TYPE NON-SENSITIVE

Sd1-NS

SIDE VIEW



FRONT VIEW

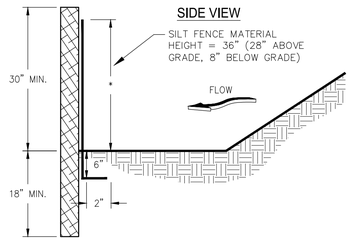


NOTES:
1. USE STEEL OR WOOD POSTS OR AS SPECIFIED BY THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.
2. HEIGHT (*) IS TO BE SHOWN ON THE EROSION, SEDIMENTATION, AND POLLUTION CONTROL PLAN.

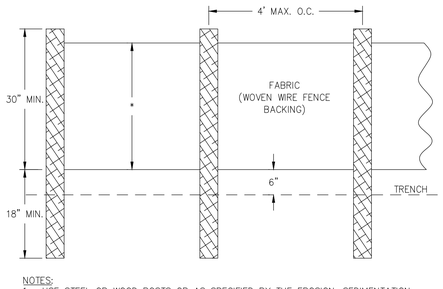
SILT FENCE - TYPE SENSITIVE

Sd1-NS

SIDE VIEW



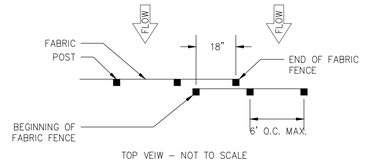
FRONT VIEW



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.

FASTENERS FOR SILT FENCES

OVERLAP AT FABRIC ENDS



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.

REV.	REVISIONS	BY	DATE
1	REVISED AS PER OWNER & CITY COMMENTS	MKJ	11/3/22

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EROSION CONTROL DETAILS

THE COTTAGES AT RICE HOPE
PHASE 1

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Project No.	21-286
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SHEET
EC5.1

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GEORGIA
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			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			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			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			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			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			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			A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
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.
Su	SURFACE ROUGHENING			A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN			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			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			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			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.

GaSWCC (Amended – 2013)

DISTURBED AREA STABILIZATION (WITH MULCH ONLY) Ds1

DEFINITION
Applying plant residues or other suitable materials not produced on the site to the soil surface.

PURPOSE
To reduce runoff and erosion; conserve moisture, prevent surface compaction or crusting; to control undersirable vegetation; to modify soil temperature; to increase biological activity in the soil.

SPECIFICATIONS
A. For temporary protection of critical areas without seeding.

This standard applies to graded or cleared areas which may be subjected to erosion for 6 months or less, where seedings may not have a suitable growing season to produce an erosion retardant cover, but which can be stabilized with a mulch cover.

Site Preparation
1. Grade, as needed and feasible, 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. As needed and feasible, loosen compact soil to a minimum depth of 3 inches.

Mulching Materials
1. Dry straw of hay - spread at a rate of 2 1/2 tons per acre.
2. Wood waste, chips, sawdust or bark-spread 2 to 3 inches deep (about 6 to 0 tons per acre).
3. Erosion control matting or netting, such as excelsior, jute, textile and plastic matting and netting - applied in accordance with manufac-tureres recommendations.
4. Cutback asphalt, slow curing - applied at 1200 gallons per acre (or 1/4 gallon per sq. yd.)
5. Polyethylene film - secured over banks or stockpiled soil material for temporary protection.

Applying and Anchoring Mulch
1. Apply straw or hay mulch uniformly by hand or mechanically. Anchor as appropriate and feasible. It may be pressed into the soil with a disk harrow with the disk set straight or with a special "packer disk". The disk 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 hay mulch spread with special blower-type equipment may be anchored with emulsi-fied asphalt (Grade AE-5 or SS-1). The asphalt emulsion must be sprayed onto the mulch as it is ejected from the machine. Use 100 gallons of water per ton of mulch.
2. Spread wood waste uniformly on slopes that are 3:1 and flatter. No anchoring is needed.
3. Commercial matting and netting. Follow manufacturer's specification included with the material.
4. Apply asphalt so area has uniform appear-ance. (Note: Use in areas of pedestrian traffic could cause problems of "tracking in" or dam-age to shoes, clothing, etc.)

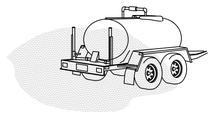
B. To conserve moisture and control weeds in nurseries, ornamental beds, around shrubs, and on bare areas on lawns.
   Mulching Materials
   Use one of the material given below and apply at thickness indicated.

Material	Depth
1. Grain straw or grass hay	6" to 10"
2. Pine Needles	4" to 6"
3. Wood waste (sawdust, bark, chips)	4" to 8"
4. Shredded residues (crop, leaves, etc.)	4" to 8"

5. Completely cover area with black polyethylene film and hold in place by placing soil on the outer edge.

When using organic mulches, apply 20-30 pounds of nitrogen in addition to the normal amount needed for plant growth to offset the tie up of N by decomposition of mulch.

DUST CONTROL ON DISTURBED AREAS Du



DEFINITION
Controlling surface and air movement of dust on construction sites, roads, and demolition sites.

PURPOSE
- To prevent surface and air movement of dust from exposed soil surfaces.
- To reduce the presence of airborne substances that may be harmful or to human health, welfare, or safety, or to animals or plant life.

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 specification Tac - Tackifiers Resins should be used according to manufacturer's recommendations.

Vegetative Cover. See specifications 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 specification Tac - Tackifiers.

Tillage. This practice is designed to roughen and bring clods to the surface. It is an emergency measure that 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 that 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 specification Ds3 -Disturbed Areas Stabilization (With Permanent Vegetation). Existing trees and large shrubs may afford valuable protection if left in place.

Topsoilling. This entails covering the surface with less erosive soil material . See specification Tp - Topsoilling.

Stone. Cover surface with crushed stone or coarse gravel. See specification Cr - Construction Road Stabilization.

DISTURBED AREA STABILIZATION (WITH TEMPORARY SEEDINGS) Ds2

PLANTS, PLANTING RATES, AND PLANTING DATES FOR TEMPORARY COVER OR COMPANION CORPS 1/

Species	Broadcast Rates 2/-PLS3/ Per Acre	Broadcast Rates 2/-PLS3/ Per 1000 sq. ft.	Resource Planting Dates by Resource Area — Area	Planting Dates (Solid lines indicate optimum dates dotted lines indicate permissible but marginal dates.) J F M A M J J A S O N D	Remarks
MILLET, PEARL (Pennesetum glaucum) alone	50 lbs.	1.1 lb.	M-L P C	J F M A M J J A S O N D	88,000 Seed per pound. Quick dense cover. May reach 5 feet in height. Not recommended for mixtures.
RYEGRASS, ANNUAL (Lolium Temulentum) alone	40 lbs.	0.9 lb.	M-L P C	J F M A M J J A S O N D	227,000 seed pound. Dense cover. Very competitive and is not to be used in mixtures.

1. Temporary cover crops are very competitive and will crowd perennials if seeded to heavily.
2. Reduce seeding rates by 50% when drilled.
3. PLS is an abbreviation for Pure Live Seed.
4. M-L 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

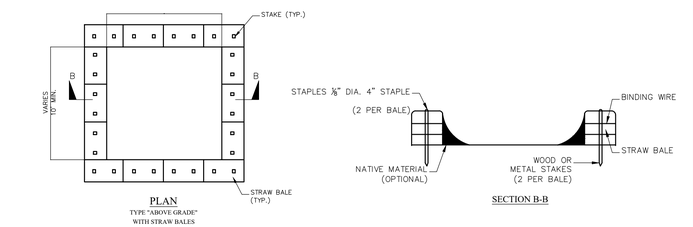
DISTURBED AREA STABILIZATION (WITH PERMANENT VEGETATION) Ds3

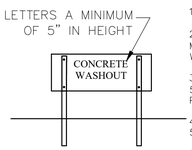
PLANTS, PLANTING RATES, AND PLANTING DATES FOR PERMANENT COVER

Species	Broadcast Rates 2/-PLS3/ Per Acre	Broadcast Rates 2/-PLS3/ Per 1000 sq. ft.	Resource Planting Dates by Resource Area — Area	Planting Dates (Solid lines indicate optimum dates dotted lines indicate permissible but marginal dates.) J F M A M J J A S O N D	Remarks
BERMUDA, COMMON (Cynodon dactylon) Hulled seed alone	10 lbs.	0.2 lb.	P C	J F M A M J J A S O N D	1,787,000 seed per pound. Quick cover. Low growing and sod forming. Full sun. Good for athletic fields.
with other perennials	6 lbs.	0.1 lb.			
BERMUDA, COMMON (Cynodon dactylon) Unhulled seed with temporary cover	10 lbs.	0.2 lb.	P C	J F M A M J J A S O N D	Plant with winter annuals.
with other perennials	6 lbs.	0.1 lb.			Plant with Tall fescue.
BERMUDA SPRIGS (Cynodon dactylon) Coastal, Common, Midland, or Tift 44	40 cu. ft. or sod pulgs 3'x 3'	0.9 cu. ft.	M-L P C	J F M A M J J A S O N D	A cubic foot contains approximately 650 sprigs. A bushel contains 1.25 cubic feet or approximately 800 srigs.
Coastal, Common, or Tift 44					Same as above
Tift 78			C		Southern costal Plain only.
CENTIPEDE (Eremochloa ophiuroides)	Block sod only		P C	J F M A M J J A S O N D	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 north as Athens and Atlanta.
LOVEGRASS, WEEPING (Eragrostis curvula) alone	4 lbs.	0.1 lb.	M-L P C	J F M A M J J A S O N D	1,500,000 Seed per pound. May last for several years. Mix with Sericea lespedeza.
in mixtures	2 lbs.	0.05 lb.			

1. Reduce seeding rates by 50% when drilled.
2. PLS is an abbreviation for Pure Live Seed. Refer to Section V.E. of these specification..
3. M-L 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

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.

CONCRETE WASHOUT
STRAW BALES OR ABOVE GROUND
NOT TO SCALE

REV.	DATE	BY
1	11/3/22	MKJ

REVISIONS
REVISED AS PER OWNER & CITY COMMENTS

JASON BRYANT
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #7839?

REGISTERED GEORGIA PROFESSIONAL ENGINEER No. 38245 JASON JOSEPH BRYANT

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EROSION CONTROL DETAILS
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	NTS
Date:	5/31/22

SHEET
EC5.2

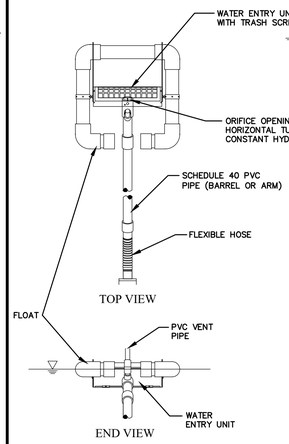
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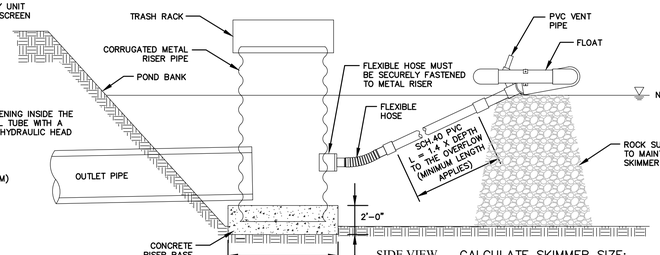
GENERAL NOTES:

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. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
4. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
5. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

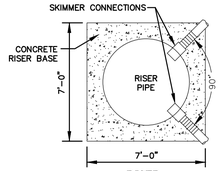


TOP VIEW

END VIEW



SIDE VIEW
(N.T.S.)



RISER
PLAN VIEW
(N.T.S.)

CALCULATE SKIMMER SIZE:
2 SKIMMERS REQUIRED – SIZES BELOW ARE PER SKIMMER
BASIN VOLUME: 370,589 CF
DAYS TO DRAIN: 3 DAYS
SKIMMER SIZE: 8.0 INCHES
ORIFICE RADIUS: 3.2 INCHES
ORIFICE DIAMETER: 6.5 INCHES

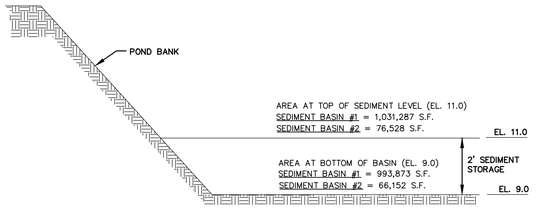
VOLUME ABOVE N.W.L.:
AREA OF BASINS AT ELEVATION 14.0: 377,367 SF
AREA OF BASINS AT ELEVATION 15.0: 403,811 SF
VOLUME OF STORAGE = (377,367 SF + 403,811 SF)/2 x (1.0' FT.)
= 370,589 CF (2 SKIMMERS WILL BE REQUIRED)

CALCULATE SKIMMER SIZE:
2 SKIMMERS REQUIRED – SIZES BELOW ARE PER SKIMMER
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VOLUME OF STORAGE = (377,367 SF + 403,811 SF)/2 x (1.0' FT.)
= 370,589 CF (2 SKIMMERS WILL BE REQUIRED)

Sk FAIRCLOTH SKIMMER DISCHARGE SYSTEM

SCALE: N.T.S.



SIDE VIEW
(N.T.S.)

- TOTAL PROJECT ACREAGE = 65
- TOTAL DISTURBED ACREAGE = 64.8
- TOTAL REQUIRED SEDIMENT STORAGE: 64.8 X 134 c.y./Ac. = 8,683.2 c.y.
  (134 CY/AC. WILL BE PROVIDED TO MEET REQUIREMENT FOR 50+ AC DISTURBANCE)
- THIS PROJECT WILL UTILIZE EXISTING DETENTION PONDS FOR THE SEDIMENT STORAGE REQUIREMENT. THE PROPOSED LAND DISTURBING ACTIVITIES FOR THIS PROJECT ARE TO GRADE TO PROVIDE POSITIVE DRAINAGE TO SPECIFIC AREAS OF THIS TRACT OF LAND.

SEDIMENT BASIN #1 (LARGER DETENTION POND):
AREA AT BOTTOM OF BASIN (EL. 9.0) = 993,873.4 S.F.
AREA AT TOP OF SEDIMENT LEVEL (EL. 11.0) = 1,031,287.4 S.F.
AVERAGE AREA: (993,873 + 1,031,287 S.F.)/2 = 1,012,580 S.F.
VOLUME OF SEDIMENT STORAGE: 1,012,580 S.F. X 2 FT. = 2,025,160 C.F./27 = 75,005 C.Y.
SEDIMENT BASIN #1 STORAGE = 75,005 C.Y.

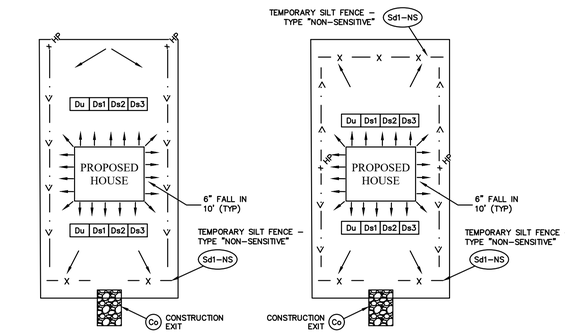
SEDIMENT BASIN #2 (DETENTION TO THE EAST):
AREA AT BOTTOM OF BASIN (EL. 9.0) = 66,152.5 S.F.
AREA AT TOP OF SEDIMENT LEVEL (EL. 11.0) = 76,528.7 S.F.
AVERAGE AREA: (66,152 + 76,528 S.F.)/2 = 71,340 S.F.
VOLUME OF SEDIMENT STORAGE: 71,340 S.F. X 2 FT. = 142,680 C.F./27 = 5,284 C.Y.
SEDIMENT BASIN #2 STORAGE = 5,284 C.Y.

SEDIMENT BASIN #1 STORAGE = 75,005 C.Y.
SEDIMENT BASIN #2 STORAGE = 5,284 C.Y.
TOTAL SEDIMENT BASIN STORAGE = 80,289 C.Y.

80,289 C.Y. EXCEEDS THE REQUIRED 8,683 CY OF SEDIMENT STORAGE

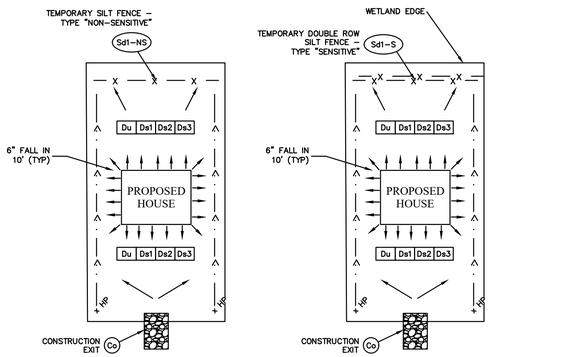
Sd3 TEMPORARY SEDIMENT BASIN

SCALE: N.T.S.



TYPE "A" LOT
TYPICAL DRAINAGE ALL TO FRONT (STREET)
(NOT TO SCALE)

TYPE "B" LOT
TYPICAL DRAINAGE TO BOTH FRONT (STREET) AND REAR (LOT LINE)
(NOT TO SCALE)



TYPE "C" LOT
TYPICAL DRAINAGE ALL TO REAR (LOT LINE)
(NOT TO SCALE)

TYPE "C" LOT DRAINING TO WETLAND
TYPICAL DRAINAGE ALL TO REAR (LOT LINE)
(NOT TO SCALE)

SITUATIONAL LOT EROSION CONTROL DETAILS

SCALE: N.T.S.

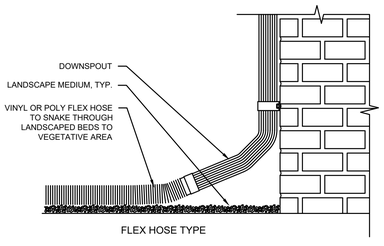
DESCRIPTION
WHERE SITE CHARACTERISTICS PERMIT, SIMPLE DOWNSPOUT DISCONNECTIONS CAN BE USED TO SPREAD ROOFTOP RUNOFF FROM INDIVIDUAL DOWNSPOUTS ACROSS LAWNS AND OTHER PERVIOUS AREAS, WHERE IT IS SLOWED, FILTERED AND ALLOWED TO INFILTRATE INTO NATIVE SOILS. THEY ARE TYPICALLY USED IN AREAS THAT HAVE BEEN DISTURBING ACTIVITIES AND ARE TYPICALLY VEGETATED WITH MANAGED TURF. IF PROPERLY DESIGNED, SIMPLE DOWNSPOUT DISCONNECTIONS CAN PROVIDE MEASURABLE REDUCTIONS IN POST-CONSTRUCTION STORMWATER RUNOFF RATES, VOLUMES AND POLLUTANT LOADS ON DEVELOPMENT SITES. CONSEQUENTLY, THEY CAN BE USED TO HELP SATISFY THE SWM CRITERIA PRESENTED IN THIS CSS.

KEY CONSIDERATIONS

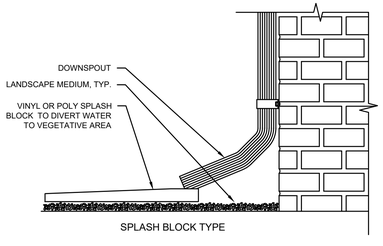
DESIGN CRITERIA:
- LENGTH OF FLOW PATH IN CONTRIBUTING DRAINAGE AREAS SHOULD BE 75 FEET OR LESS
- LENGTH OF FLOW PATH IN PERVIOUS AREAS BELOW SIMPLE DOWNSPOUT DISCONNECTIONS SHOULD BE AT LEAST 15 FEET LONG AND EQUAL TO OUR GREATER THAN THE LENGTH OF THE FLOW PATH IN THEIR CONTRIBUTING DRAINAGE AREAS
- DOWNSPOUT DISCONNECTIONS SHOULD BE DESIGNED TO CONVEY STORMWATER RUNOFF AWAY FROM BUILDINGS TO PREVENT DAMAGE TO BUILDING FOUNDATIONS

BENEFITS:
- HELPS RESTORE PRE-DEVELOPMENT HYDROLOGY ON DEVELOPMENT SITES AND REDUCES POST-CONSTRUCTION STORMWATER RUNOFF RATES, VOLUMES AND POLLUTANT LOADS
- RELATIVELY LOW CONSTRUCTION COST AND LONG-TERM MAINTENANCE BURDEN

LIMITATIONS:
- CAN ONLY BE USED TO "RECEIVE" RUNOFF FROM SMALL DRAINAGE AREAS OF 2,500 SQUARE FEET OR LESS
- PROVIDES GREATER STORMWATER MANAGEMENT BENEFITS ON SITES WITH PERMEABLE SOILS (I.E., HYDROLOGIC SOIL GROUP A AND B SOILS)



FLEX HOSE TYPE



SPLASH BLOCK TYPE

STORMWATER MANAGEMENT "CREDITS"

- ☑ RUNOFF REDUCTION
- ☑ WATER QUALITY PROTECTION
- ☑ AQUATIC RESOURCE PROTECTION
- ☑ OVERBANK FLOOD PROTECTION
- ☑ EXTREME FLOOD PROTECTION

☑ = PRACTICE HAS BEEN ASSIGNED QUANTIFIABLE STORMWATER MANAGEMENT "CREDITS" THAT CAN BE USED TO ADDRESS THIS SWM CRITERIA

STORMWATER MANAGEMENT PRACTICE PERFORMANCE

RUNOFF REDUCTION
25%-50% - ANNUAL RUNOFF VOLUME
30%-60% - RUNOFF REDUCTION VOLUME

POLLUTANT REMOVAL[1]
80% - TOTAL SUSPENDED SOLIDS
25% - TOTAL PHOSPHORUS
25% TOTAL NITROGEN
40% - METALS
N/A - PATHOGENS

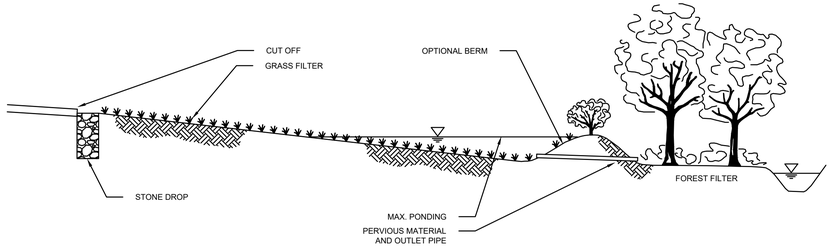
1 = EXPECTED ANNUAL POLLUTANT LOAD REMOVAL

SITE APPLICABILITY

- ☑ RURAL USE
- ☑ SUBURBAN USE
- ✳ URBAN USE
- L CONSTRUCTION COST
- L MAINTENANCE
- H AREA REQUIRED

DOWNSPOUT DISCONNECTIONS REQUIRED FOR ALL SINGLE-FAMILY HOMES WITHIN THE LAKESIDE DEVELOPMENT, UNLESS OTHERWISE NOTED.

TYPICAL DOWNSPOUT DETAIL
NOT TO SCALE



DESCRIPTION
VEGETATED FILTER STRIPS ARE UNIFORMLY GRADED, DENSELY VEGETATED AREAS OF LAND DESIGNED TO SLOW AND FILTER STORMWATER RUNOFF. THEY ARE TYPICALLY INSTALLED IN AREAS THAT HAVE BEEN DISTURBED BY CLEARING, GRADING AND OTHER LAND DISTURBING ACTIVITIES AND ARE TYPICALLY VEGETATED WITH MANAGED TURF. IF STORMWATER RUNOFF CAN BE EVENLY DISTRIBUTED OVER THEM AS OVERLAND SHEET FLOW, VEGETATED FILTER STRIPS CAN PROVIDE SIGNIFICANT REDUCTIONS IN POST-CONSTRUCTION STORMWATER RUNOFF RATES, VOLUMES AND POLLUTANT LOADS ON DEVELOPMENT SITES. CONSEQUENTLY VEGETATED FILTER STRIPS CAN BE USED TO HELP SATISFY THE SWM CRITERIA PRESENTED IN THIS CSS.

KEY CONSIDERATIONS

DESIGN CRITERIA:
- STORMWATER RUNOFF SHOULD ENTER VEGETATED FILTER STRIPS AS OVERLAND SHEET FLOW
- LENGTH OF FLOW PATH IN CONTRIBUTING DRAINAGE AREAS SHOULD BE 150 FEET OR LESS IN PERVIOUS DRAINAGE AREAS AND 75 FEET OR LESS IN IMPERVIOUS DRAINAGE AREAS
- LENGTH OF FLOW PATH IN VEGETATIVE FILTER STRIP SHOULD BE 25 FEET OR MORE
- VEGETATED FILTER STRIPS SHOULD HAVE A SLOPE OF AT LEAST 0.5% TO ENSURE ADEQUATE DRAINAGE

BENEFITS:
- HELPS RESTORE PRE-DEVELOPMENT HYDROLOGY ON DEVELOPMENT SITES AND REDUCES POST-CONSTRUCTION STORMWATER RUNOFF RATES, VOLUMES AND POLLUTANT LOADS
- RELATIVELY LOW CONSTRUCTION COST AND LONG-TERM MAINTENANCE BURDEN

LIMITATIONS:
- CAN BE DIFFICULT TO MAINTAIN OVERLAND SHEET FLOW WITHIN A VEGETATED FILTER STRIP, WHICH NEEDS TO BE PROVIDED TO PREVENT SOIL EROSION AND ENSURE PRACTICE PERFORMANCE

STORMWATER MANAGEMENT "CREDITS"

- ☑ RUNOFF REDUCTION
- ☑ WATER QUALITY PROTECTION
- ☑ AQUATIC RESOURCE PROTECTION
- ☑ OVERBANK FLOOD PROTECTION
- ☑ EXTREME FLOOD PROTECTION

☑ = PRACTICE HAS BEEN ASSIGNED QUANTIFIABLE STORMWATER MANAGEMENT "CREDITS" THAT CAN BE USED TO ADDRESS THIS SWM CRITERIA

STORMWATER MANAGEMENT PRACTICE PERFORMANCE

RUNOFF REDUCTION
25%-50% - ANNUAL RUNOFF VOLUME
30%-60% - RUNOFF REDUCTION VOLUME

POLLUTANT REMOVAL[1]
80% - TOTAL SUSPENDED SOLIDS
25% - TOTAL PHOSPHORUS
25% TOTAL NITROGEN
40% - METALS
N/A - PATHOGENS

1 = EXPECTED ANNUAL POLLUTANT LOAD REMOVAL

SITE APPLICABILITY

- ☑ RURAL USE
- ☑ SUBURBAN USE
- ✳ URBAN USE
- L CONSTRUCTION COST
- L MAINTENANCE
- H AREA REQUIRED

VEGETATED FILTER STRIPS ARE TYPICAL WITHIN ALL AREAS MARKED DS3 (DISTURBED AREA STABILIZATION WITH PERMANENT VEGETATION)

VEGETATIVE FILTER STRIPS DETAIL
NOT TO SCALE

REV.	DATE	BY	REVISIONS
1	11/3/22	MKJ	REVISED AS PER OWNER & CITY COMMENTS

JASON BRYANT
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #75897

REGISTERED GEORGIA No. 38245 PROFESSIONAL ENGINEER JASON BRYANT JOSEPH

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EROSION CONTROL DETAILS
THE COTTAGES AT RICE HOPE
PHASE 1
Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	MKJ
Designed By:	JJB
Checked By:	RAP
Scale:	NTS
Date:	5/31/22

SHEET
EC5.3

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LANDSCAPE CONSTRUCTION NOTES:

1. THE LANDSCAPE ARCHITECT SHALL APPROVE ALL PLANT SUBSTITUTIONS PRIOR TO PURCHASE OR INSTALLATION.
2. THE PLANT SCHEDULE INCLUDED IN THIS DRAWING WAS PREPARED FOR ESTIMATING PURPOSES & FOR THE CONTRACTORS CONVENIENCE ONLY, AND ITS ACCURACY IS NOT GUARANTEED. THE CONTRACTOR SHALL PERFORM HIS OR HER OWN QUANTITY TAKE-OFFS USING THE DRAWINGS TO DETERMINE THE QUANTITIES TO HIS OR HER SATISFACTION. THE CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT PRIOR TO SUBMITTING A FINAL BID.
3. **CONTRACTOR SHALL WARRANTY ALL EXTERIOR PLANTS FOR ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION, AGAINST DEFECTS INCLUDING BUT NOT LIMITED TO DEATH AND UNSATISFACTORY GROWTH.** DEFECTS ASSOCIATED WITH A LACK OF ADEQUATE MAINTENANCE, NEGLECT, OR ABUSE BY THE OWNER OR INCIDENTS THAT ARE BEYOND CONTRACTOR'S CONTROL WILL NOT BE COVERED BY THE ONE-YEAR WARRANTY.
4. THE CONTRACTOR SHALL VERIFY THAT ALL SELECTED PLANT SPECIES ARE DETERMINED AVAILABLE AT THEIR SPECIFIED SIZES WHEN THE TIME OF BIDDING. THE CONTRACTOR SHALL NOT MAKE PLANT SUBSTITUTIONS. IF THERE ARE DIFFICULTIES LOCATING PLANT MATERIAL AS SPECIFIED, CONTACT THE LANDSCAPE ARCHITECT PRIOR TO SUBMITTING THE BID.
5. ALL PLANT MATERIAL SHALL HAVE A WELL FORMED HEAD WITH THE MINIMUM CALIPER, HEIGHT, SPREAD AS SHOWN IN THE PLANT SCHEDULE. TRUNKS SHALL BE UNDAMAGED AND SHAPE SHALL BE TYPICAL OF THE SPECIES.
6. ALL PLANT MATERIAL SHALL BE SUBJECT TO APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE BEFORE, DURING AND AFTER INSTALLATION.
7. ALL PLANTING TECHNIQUES SHALL CONFORM TO APPROVED INDUSTRY STANDARDS.
8. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE TO ESTABLISH A PLANTING SCHEDULE THAT PRIORITIZES THE PLANTING OF ALL TREES AND LAWN AREAS.
9. ALL PLANT BEDS TO HAVE NO VISIBLE WEEDS BEFORE, DURING OR AFTER PLANTINGS ARE INSTALLED.
10. ALL PLANT BEDS SHALL RECEIVE A WEED INHIBITOR APPLICATION PRIOR TO PLANT INSTALLATION.
11. ALL PLANT BEDS SHALL BE COVERED WITH PINE STRAW AT A RATE OF 1 BALE PER 35 SF, EXCEPT INSIDE THE POOL PERIMETER FENCE WHERE ALL PLANT BEDS SHALL BE MULCHED WITH DOUBLE SHREDDED HARDWOOD MULCH TO A DEPTH OF 4".
12. ALL LANDSCAPE MATERIAL SHALL BE CORRECTLY LAID OUT AND INSTALLED PER THE PLANS. THE CONTRACTOR IS RESPONSIBLE BY ANY MEANS (SURVEY, STAKING, ETC.) TO INSURE THE CORRECT PLANT LAYOUT AND MAY SEEK THE LANDSCAPE ARCHITECTS APPROVAL FOR LANDSCAPE MATERIAL LAYOUTS PRIOR TO INSTALLATION. THE CONTRACTOR SHALL COORDINATE WITH THE LANDSCAPE ARCHITECT FOR THESE APPROVALS AND SHALL HAVE ALL REQUIRED PLANT MATERIAL PLACED IN THEIR PROPOSED LOCATIONS PRIOR TO THE LANDSCAPE ARCHITECTS ON-SITE APPROVAL. ALL PLANT MATERIAL PLACEMENT IS SUBJECT TO RE-PLACEMENT AND LAYOUT PER THE LANDSCAPE ARCHITECTS DISCRETION IF THE LAYOUT DOES NOT FOLLOW THE PLANS.
13. THE LANDSCAPE CONTRACTOR SHALL LEAVE ALL PLANT IDENTIFICATION HANGTAG'S ON EACH PLANT UNTIL FINAL APPROVAL HAS BEEN GRANTED PER THE LANDSCAPE ARCHITECTS FINAL PUNCH / FIELD REPORT. ONCE THE FINAL APPROVAL IS OBTAINED, THE HANGTAG'S MAY BE REMOVED.

IRRIGATION NOTES:

1. CONTRACTOR TO SUPPLY AUTOMATIC IRRIGATION SYSTEM, COMPLETE AND INSTALLED. SYSTEM SHALL INCLUDE ALL VALVES, PIPES, HEADS, FITTINGS, BACK-FLOW, & CONTROLLERS. THE INSTALLED SYSTEM SHALL PROVIDE 100% COVERAGE OF ALL SOD, HYDRO-SEED AND PLANTING BEDS.
2. CONTRACTOR TO ADJUST ALL IRRIGATION HEADS TO ENSURE THEY DO NOT SPRAY ON ANY STRUCTURES.

GRADING NOTES:

1. CONTRACTOR TO PERFORM FINE GRADING WITHIN ALL TURF AND PLANT BEDS. FINE GRADING SHALL CONSIST OF A HAND RAKED, SMOOTH SOIL FREE OF ROCKS, ROOTS, AND DEBRIS.

GENERAL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR LOCATING EXISTING UTILITIES AND IS RESPONSIBLE FOR ANY DAMAGE THAT MAY OCCUR TO EXISTING UTILITIES.
2. CONTRACTOR IS RESPONSIBLE FOR INSPECTION OF EXISTING CONDITIONS AND PROMPTLY REPORTING ANY DISCREPANCIES. CONTRACTOR TO PERFORM SOIL TESTS AS SPECIFIED.
3. NOTIFY LANDSCAPE ARCHITECT OF ANY SITE CONDITIONS WHICH MAY NECESSITATE A MODIFICATION TO THE PLANS. LANDSCAPE ARCHITECT SHALL, IF NECESSARY, MAKE "IN-FIELD MODIFICATIONS".
4. ANY DEVIATION FROM THESE PLANS MUST BE SPECIFICALLY APPROVED BY THE LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE.

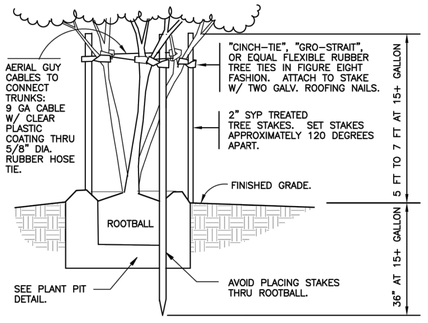
PLANT SCHEDULE

TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HEIGHT
ACE RBR	41	Acer rubrum	Red Maple	B&B or Cont.	2" Cal	
CAL RIG	2	Callistemon rigidus 'Red Cluster'	Red Cluster Bottlebrush Tree	30 gal		
FAT JPN	1	Fatsia japonica	Japanese Fatsia	15 Gal.		
LAG N40	37	Lagerstroemia indica x fauriei 'Natchez' STD Single Trunk	Natchez Crape Myrtle on Standard	30 gal		
LAG T32	4	Lagerstroemia indica x fauriei 'Tonto' STD Single Trunk	Tonto Crape Myrtle on Standard	30 gal		
LAG IN2	13	Lagerstroemia indica x fauriei 'Tuscarora'	Tuscarora Crape Myrtle Multi-Trunk	30 gal		
MAG STE	2	Magnolia stellata 'Royal Star'	Royal Star Magnolia	30 gal		
PIS CHI	61	Pistacia chinensis 'Keith Davey'	Keith Davey Chinese Pistache	B&B or Cont.	2" Cal	
QUE HEM	9	Quercus hemisphaerica	Laurel Oak	B&B or Cont.	2" Cal	
QUE VIR	61	Quercus virginiana	Southern Live Oak	B&B or Cont.	2" Cal	
SAB PAL	15	Sabal palmetto	Cabbage Palmetto	FG B&B		14`
VIT AGN	1	Vitex agnus-castus	Chaste Tree	30 gal		

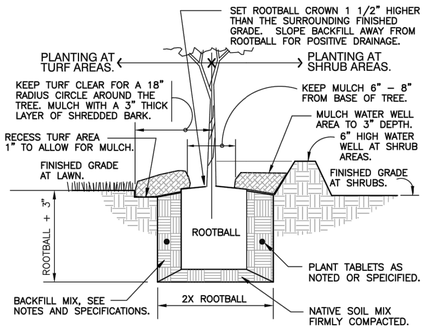
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT
AGA AFR	38	Agapanthus africanus 'Queen Anne'	Queen Anne African Lily	3 gal	
ALO MAC	2	Alocasia macrorrhizos	Giant Elephant's Ear	7 gal	
AZA ENC	10	Azalea encore 'Autumn Chiffon' TM	Autumn Chiffon Encore Azalea	3 gal	
AZA EN2	5	Azalea encore 'Autumn Embers' TM	Autumn Embers Encore Azalea	3 gal	
AZA ZTC	9	Azalea encore 'Autumn Embers' TM	Autumn Embers Encore Azalea	3 gal	
AZA TEM	11	Azalea encore 'Autumn Sundance' TM	Autumn Sundance Encore Azalea	3 gal	
AZA FOR	6	Azalea indica 'Formosa'	Formosa Indica Azalea	7 gal	
CAM SAS	3	Camellia sasanqua 'Shishi Gashira'	Shishi Gashira Camellia	15 gal	
CAM SA2	2	Camellia sasanqua 'Shishi Gashira' STD Standard clear trunk 48"	Shishi Gashira Camellia on Standard	B&B or Cont.	
DIE VEG	3	Dietes vegeta	African Iris	3 gal	
GAR FRO	4	Gardenia jasminoides 'Frostproof'	Frostproof Gardenia	3 gal	
GAR R17	19	Gardenia jasminoides 'Radicans'	Radicans Gardenia	3 gal	
HYD QUE	5	Hydrangea quercifolia 'Ruby Slippers'	Ruby Slippers Oakleaf Hydrangea	7 gal	
ILE DWA	17	Ilex cornuta 'Dwarf Burford'	Dwarf Burford Holly	7 gal	
ILE ST2	1,594	Ilex vomitoria 'Stokes Dwarf'	Stokes Dwarf Yaupon Holly	3 gal	
ILL PU2	1,184	Illicium floridanum Located along unit foundations	Florida Anise	3 gal	
ILL FLO	23	Illicium floridanum Located in amenity areas	Florida Anise	3 gal	
JUN PAR	7	Juniperus chinensis 'Parsonii'	Parsoni Juniper	3 gal	
JUN CHI	1	Juniperus chinensis 'Torulosa'	Hollywood Juniper	30 gal	
JUN X M	7	Juniperus x media 'Hetzii'	Hetzii Juniper	B&B or Cont.	8` FTG
LAN MOU	12	Lantana camara 'Gold Mound'	Gold Mound Lantana	3 gal	
LIR SBL	46	Liriope muscari 'Super Blue'	Super Blue Lilyturf	1 gal	
POD MAC	69	Podocarpus macrophyllus 'Dwarf Pringles'	Dwarf Podocarpus	7 gal	
POD MA2	52	Podocarpus macrophyllus 'Maki'	Maki Podocarpus	7 gal	
TUL VIO	9	Tulbaghia violacea	Society Garlic	1 gal	
VIB ODO	52	Viburnum odoratissimum	Sweet Viburnum	7 gal	
VIB SU2	44	Viburnum suspensum	Sandankwa Viburnum	7 gal	

SHRUB AREAS	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT
LAN CHA	147	Lantana x 'Chapel Hill Yellow'	Chapel Hill Yellow Lantana	3 gal	
MUH CAP	134	Muhlenbergia capillaris	Pink Muhly Grass	1 gal	

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	CONT	HEIGHT
ERE OP2	86,818 sf	Eremochloa ophiuroides	Centipede	Seed	
ERE OPH	541,773 sf	Eremochloa ophiuroides	Centipede	Sod	
OPH JAP	270	Ophiopogon japonicus	Mondo Grass	1 gal	
TRA ASI	31	Trachelospermum asiaticum	Asiatic Jasmine	1 gal	

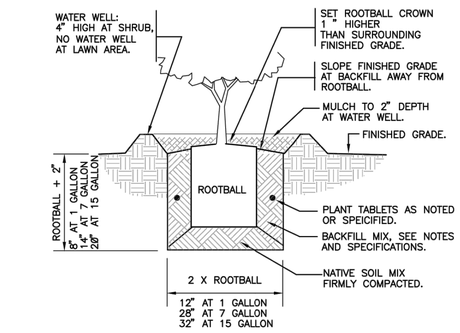


STAKING DETAIL

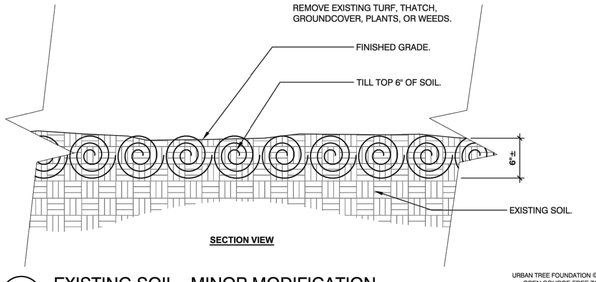


PLANT PIT DETAIL

1 TREE PLANTING MULTI-STAKE
1" = 1'-0"



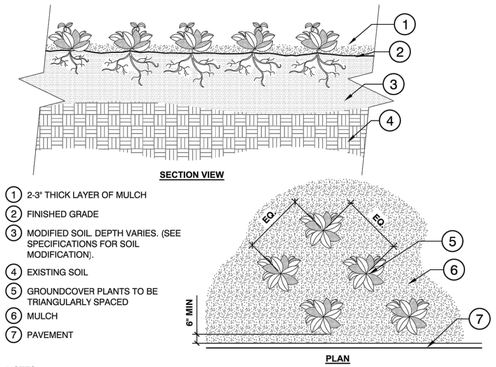
2 SHRUB PLANTING
1" = 1'-0"



SECTION VIEW

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4 EXISTING SOIL - MINOR MODIFICATION
3/4" = 1'-0"



NOTES:
1- SEE PLANTING LEGEND FOR GROUNDCOVER SPECIES, SIZE, AND SPACING DIMENSION.
2- SMALL ROOTS (1/4" OR LESS) THAT GROW AROUND, UP, OR DOWN THE ROOT BALL PERIPHERY ARE CONSIDERED A NORMAL CONDITION IN CONTAINER PRODUCTION AND ARE ACCEPTABLE HOWEVER THEY SHOULD BE ELIMINATED AT THE TIME OF PLANTING. ROOTS ON THE PERIPHERY CAN BE REMOVED AT THE TIME OF PLANTING. (SEE ROOT BALL SHAVING CONTAINER DETAIL).
3- SETTLE SOIL AROUND ROOT BALL OF EACH GROUNDCOVER PRIOR TO MULCHING.

3 GROUNDCOVER
3/4" = 1'-0"

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COTTAGES AT RICE HOPE

Port Wentworth, GA

PROFESSIONAL SEAL:

DRAWN BY:
EW,BH

CHECKED BY:
EW

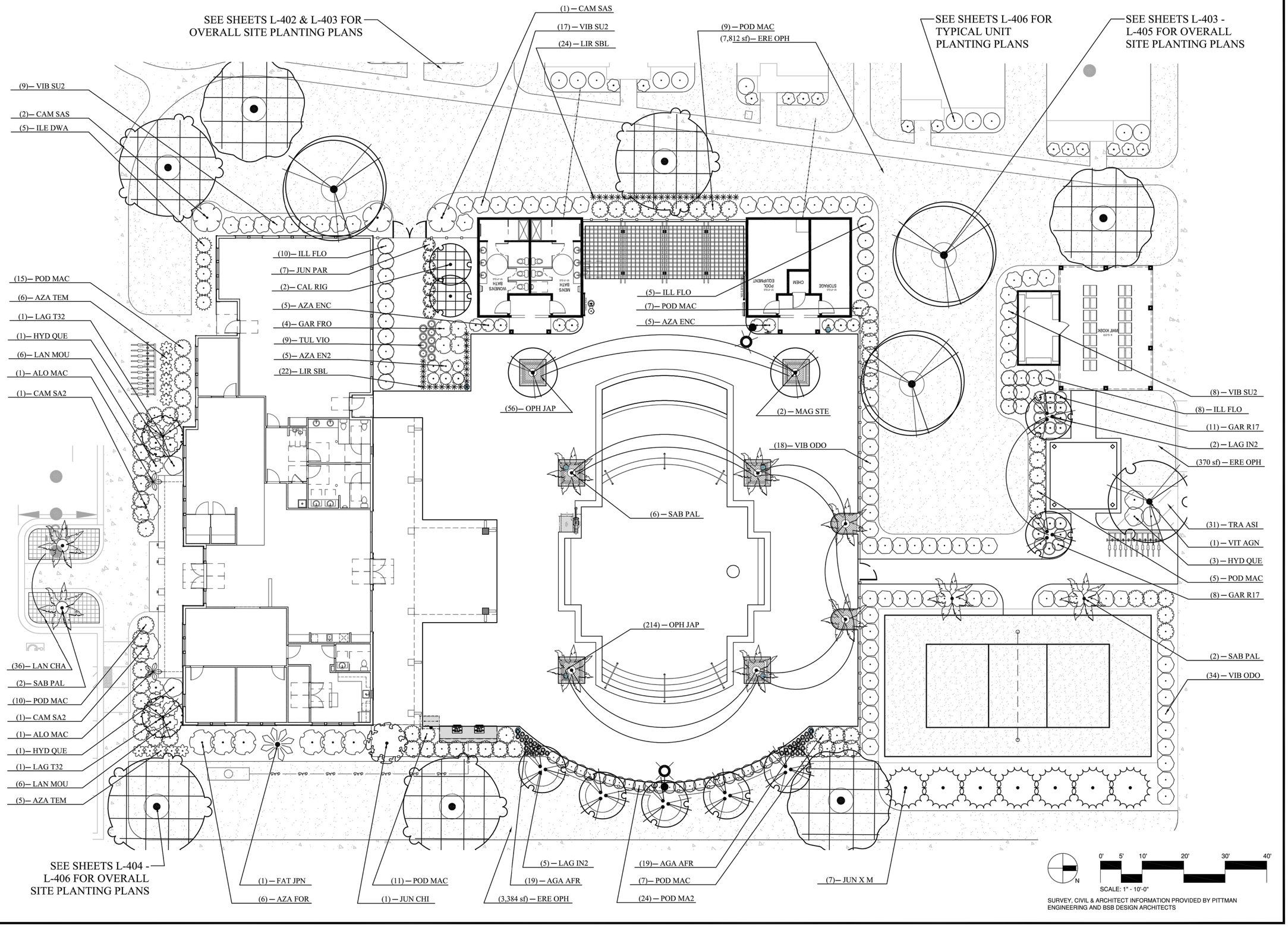
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#	REVISION	DATE	BY
1	AHJ PERMITTING COMMENT	12-21-22	EW

DATE
11-15-2022
PROJECT NUMBER
01-22023
SHEET TITLE
Planting Schedule, Notes & Details

SHEET NUMBER
L-400

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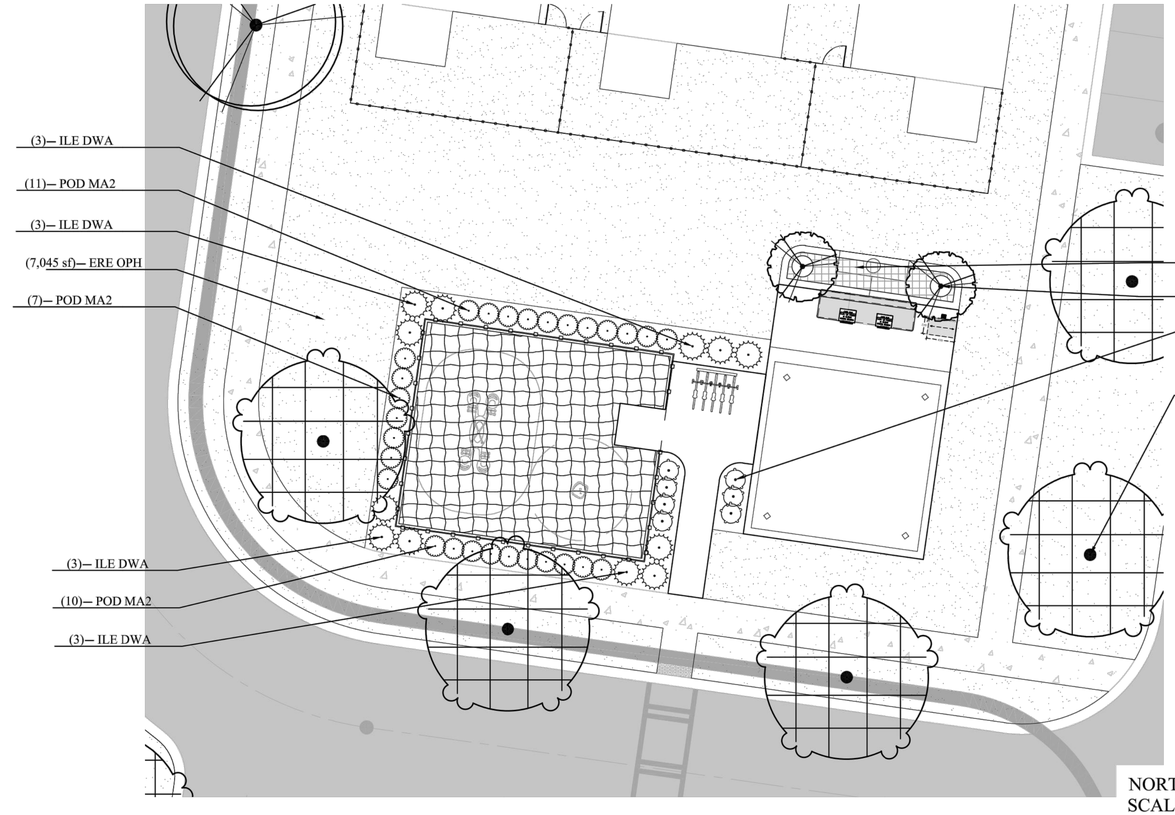
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DATE
11-15-2022
PROJECT NUMBER
01-22023
SHEET TITLE
Planting Plan
Pool Amenity

SHEET NUMBER
L-401

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NORTH PARK
SCALE: 1'=20'

N

0' 5' 10' 20' 30' 40'

SCALE: 1" - 10'-0"

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DATE
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PROJECT NUMBER
01-22023
SHEET TITLE
Planting Plan
North Park

SHEET NUMBER
L-402

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MATCHLINE

MATCHLINE

(3) QUE HEM
B&B or Cont.

(14) ACE RBR
B&B or Cont.

(16) PIS CHI
B&B or Cont.

(26) QUE VIR
B&B or Cont.

(11) LAG N40
30 gal

(11) ILL PU2
3 gal

(10) VIB SU2
7 gal

(3) DIE VEG
3 gal

SEDDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

SEE SHEET L-401 FOR PLANTING INFORMATION AT POOL AMENITY AREA

(33) LAN CHA
3 gal

(134) MUH CAP
1 gal

(5) SAB PAL
FG B&B

(4) LAG IN2
30 gal

(62) LAN CHA
3 gal

SODDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

SEEDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

N

0' 20' 40' 80' 120' 160'

SCALE: 1" - 40'-0"

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DATE
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PROJECT NUMBER
01-22023
SHEET TITLE
Planting Plan
Overall Site

SHEET NUMBER
L-403

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MATCHLINE

MATCHLINE

SEEDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

SODDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

SEEDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

SODDED AREAS, TYP. - SEE PLANT SCHEDULE FOR TOTAL QUANTITIES

(16) LAG N40
30 gal

(19) ACE RBR
B&B or Cont.

(25) PIS CHI
B&B or Cont.

(20) QUE VIR
B&B or Cont.

(6) QUE HEM
B&B or Cont.

(2) LAG IN2
30 gal

ZONE AE (EL 13)

MATCHLINE

MATCHLINE

N

0' 20' 40' 80' 120' 160'

SCALE: 1" - 40'-0"

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SHEET TITLE
Planting Plan
Overall Site

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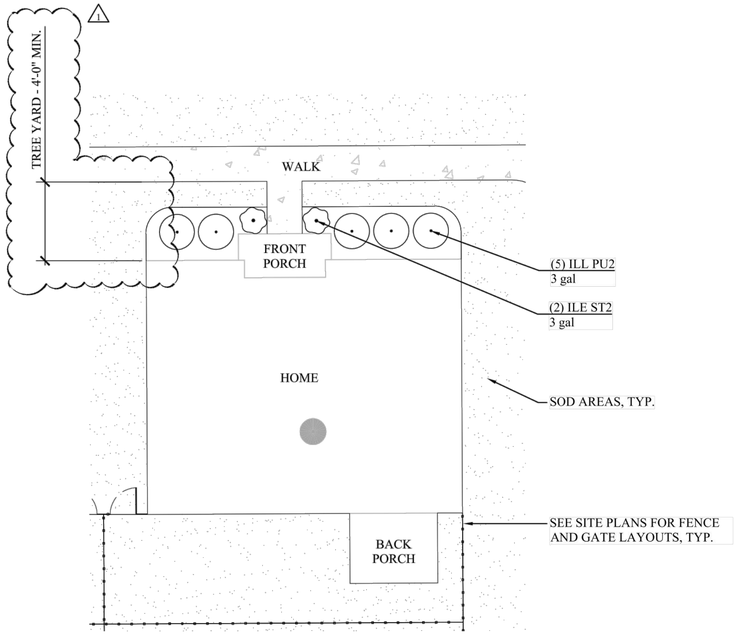
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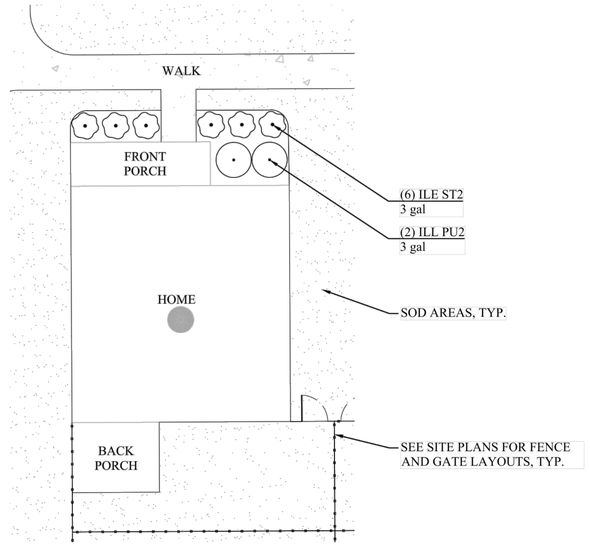
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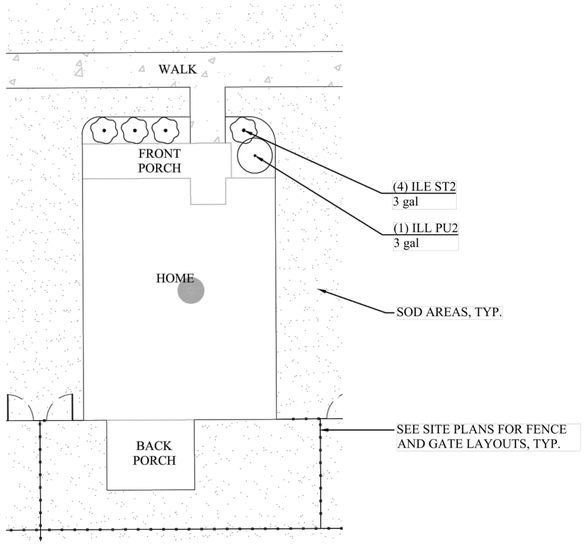
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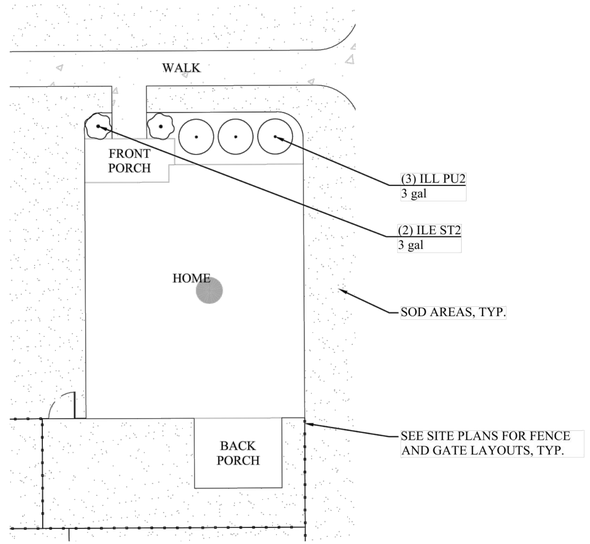
UNIT TYPE A - TWO BEDROOM UNIT



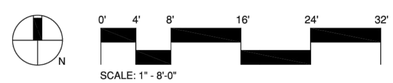
UNIT TYPE B - THREE BEDROOM 2 STORY



UNIT TYPE C - TWO BEDROOM 2 STORY



UNIT TYPE D - ONE BEDROOM



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COTTAGES AT RICE HOPE

Port Wentworth, GA

PROFESSIONAL SEAL:

DRAWN BY:
EW,BH

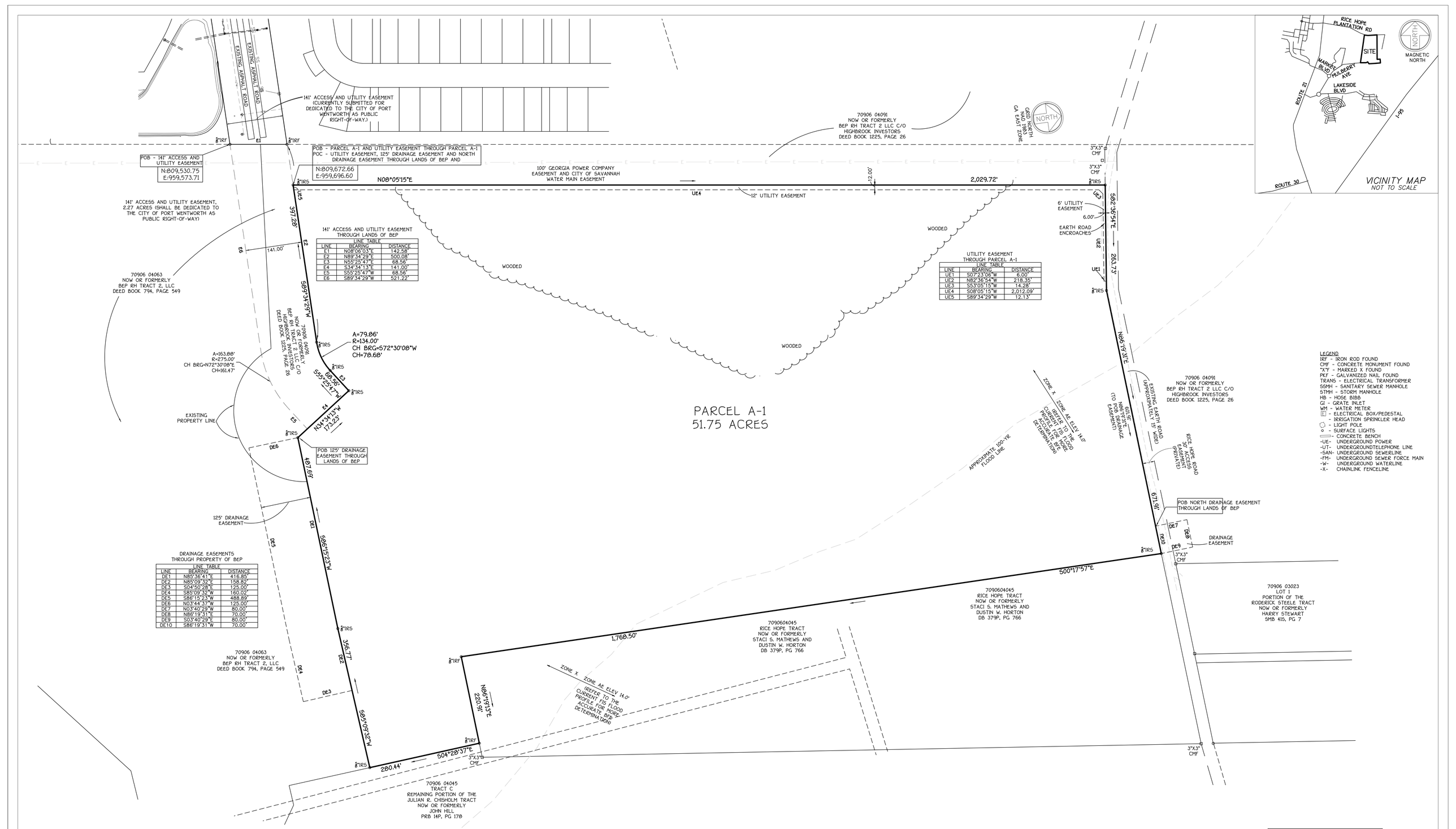
CHECKED BY:
EW

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#	REVISION	DATE	BY
1	AHJ PERMITTING COMMENT	12-21-22	EW

DATE
11-15-2022
PROJECT NUMBER
01-22023
SHEET TITLE
Planting Plan per Unit Type

SHEET NUMBER
L-406



SEE SHEET 2 OF 2 FOR GENERAL NOTES, TITLE EXCEPTIONS AND LEGAL DESCRIPTIONS

GEORGIA REGISTERED No. 2509 LAND SURVEYOR MICHAEL A. HUSSEY

MICHAEL A. HUSSEY
Ga. Reg. No. 2509

SURVEYOR'S CERTIFICATION
This survey is made for the benefit of: (a) Third Lake Development, LLC (b): TLV RE SFR 1 Savannah Owner, LLC, a Delaware limited liability company; (c): Westcor Land Title Insurance Company; and (d): Citizens Bank N.A.and its successors and assigns: This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1, 2, 3, 4, 8, 13, 16, 17, 18 and 19 of Table A thereof.

Michael A. Hussey
Professional Land Surveyor GA No.2509

Total Area: 51.75 Acres
Field Survey Date: 01-25-21, 06-18-2021 and 05-25-22
Error Of Closure (Plat): 1/532,563
Error Of Closure (Field): 1/32,550
Angular Error: 2" Per Point
Equipment Used: Sokkia Set 5 2" Total Station

SUNDIAL LAND SURVEYING, PC
LSF000957
1410 WEST US HIGHWAY 80, SUITE 2
BLOOMINGDALE, GA 31302
912-235-2477
mhussey@sundiallandsurveying.com
sundiallandsurveying.com

LEGEND
IRF - IRON ROD FOUND
CMF - CONCRETE MONUMENT FOUND
IRS - IRON ROD SET
-E- OVERHEAD POWER
-X- TREE LINE

0 100 200
SCALE: 1"=100'

ALTA/NSPS LAND TITLE SURVEY

BEING A 51.75 ACRE PORTION OF PARCEL "A" OF THE FORMER JULIAN R. CHISHOM TRACT, 8TH G.M. DISTRICT, PORT WENTWORTH, CHATHAM COUNTY, GEORGIA

REVISED 12-29-2022
REVISED 12-12-2022
REVISED 6-01-2022
DATE: 09-21-2021

GENERAL NOTES:

1. Said described property is located within an area having a Zone AE and "X" by the Federal Emergency Management Agency (FEMA), on Flood Insurance Rate Map NO. 13051C0035G, with a date of identification of AUGUST 18, 2018, for Community Panel No. 135162, in Port Wentworth, Chatham County, State of Georgia, which is the current Flood Insurance Rate Map for the community in which said premises, is situated.
2. Water and sewer shall be connected to City of Port Wentworth System.
3. The property is currently Zoned M-P-O.
4. The property has direct physical access to Mulberry Drive a public street or highway, via an Access and Utility Easement.
5. The property described hereon is the same as the property described in Westcor Land Title Insurance Company Commitment No. HVSEH-21-21112 with an effective date of 11/29/2022 at 8:00 AM and that all easements, covenants and restrictions referenced in said title commitment or Apparent from a physical inspection of the site or otherwise known to have been plotted hereon or otherwise noted as to their effect on the subject property.
6. The accompanying survey was made on the ground and correctly shows the location of all buildings, structures and other improvements situated on the above premises; there are no visible encroachments on the subject property or upon adjacent land abutting said property except as shown hereon and was made in accordance with laws and/or Minimum Standards of the State of Georgia.
7. The physical address for the Parcel is 0 Rice Hope Road.
8. The Port Wentworth City Council Approved the General Development Site Plan for this Parcel to allow a Multifamily Development (The Cottages at Rice Hope Plantation) in a M-P-O (Master Plan Overlay) Zoning District at the September 23, 2021 City Council Meeting.

LEGAL DESCRIPTION PARCEL A-1

BEGINNING AT AN IRON ROD SET AT THE SOUTHWEST CORNER OF THE HEREIN AFTER DESCRIBED PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60; EXTEND THENCE NORTH 08 DEGREES 05 MINUTES 15 SECONDS EAST A DISTANCE OF 2,029.72 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 82 DEGREES 36 MINUTES 54 SECONDS EAST A DISTANCE OF 263.73 FEET TO AN IRON ROD SET; EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 31 SECONDS EAST A DISTANCE OF 671.91 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 00 DEGREES 17 MINUTES 57 SECONDS EAST A DISTANCE OF 1,768.50 FEET TO AN IRON ROD FOUND; EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 13 SECONDS EAST A DISTANCE OF 220.91 FEET TO AN IRON ROD FOUND; EXTEND THENCE SOUTH 04 DEGREES 28 MINUTES 37 SECONDS EAST A DISTANCE OF 280.44 FEET TO AN IRON ROD FOUND; EXTEND THENCE SOUTH 85 DEGREES 09 MINUTES 32 SECONDS WEST A DISTANCE OF 356.77 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 86 DEGREES 15 MINUTES 23 SECONDS WEST A DISTANCE OF 487.69 FEET TO AN IRON ROD SET; EXTEND THENCE NORTH 34 DEGREES 34 MINUTES 13 SECONDS WEST A DISTANCE OF 173.23 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 55 DEGREES 25 MINUTES 47 SECONDS WEST A DISTANCE OF 68.56 FEET TO AN IRON ROD SET; THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 134.00 FEET, (AND BEING SUBTENDED BY A CHORD BERING SOUTH 72 DEGREES 30 MINUTES 08 SECONDS WEST, A CHORD DISTANCE OF 78.68 FEET), A DISTANCE OF 79.86 FEET; ALONG SAID CURVE TO AN IRON ROD SET; EXTEND THENCE SOUTH 89 DEGREES 34 MINUTES 29 SECONDS WEST A DISTANCE OF 397.28 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED PARCEL CONTAINS 51.75 ACRES.

125' DRAINAGE EASEMENT THROUGH LANDS OF BEP

COMMENCING AT AN IRON ROD FOUND AT THE SOUTHWEST CORNER OF THE PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60; EXTEND THENCE NORTH 89 DEGREES 34 MINUTES 29 SECONDS EAST A DISTANCE OF 397.28 FEET TO AN IRON ROD SET; THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 134.00', (AND BEING SUBTENDED BY A CHORD BERING NORTH 72 DEGREES 30 MINUTES 08 SECONDS EAST, A CHORD DISTANCE OF 78.68 FEET), A DISTANCE OF 79.86 FEET, ALONG SAID CURVE TO AN IRON ROD SET; EXTEND THENCE NORTH 55 DEGREES 25 MINUTES 47 SECONDS EAST A DISTANCE OF 68.56 FEET TO AN IRON SET; EXTEND THENCE SOUTH 34 DEGREES 34 MINUTES 13 SECONDS EAST A DISTANCE OF 173.23 FEET TO AN IRON ROD SET, WHICH IS THE POINT OF BEGINNING;
EXTEND THENCE NORTH 86 DEGREES 15 MINUTES 23 SECONDS EAST A DISTANCE OF 487.69 FEET TO A POINT;
EXTEND THENCE NORTH 85 DEGREES 09 MINUTES 32 SECONDS EAST A DISTANCE OF 158.82 FEET TO A POINT;
EXTEND THENCE SOUTH 04 DEGREES 50 MINUTES 28 SECONDS EAST A DISTANCE OF 125.00 FEET TO A POINT;
EXTEND THENCE SOUTH 85 DEGREES 09 MINUTES 32 SECONDS WEST A DISTANCE OF 160.02 FEET TO A POINT;
EXTEND THENCE SOUTH 86 DEGREES 15 MINUTES 23 SECONDS WEST A DISTANCE OF 488.89 FEET TO A POINT;
EXTEND THENCE NORTH 03 DEGREES 44 MINUTES 37 SECONDS WEST A DISTANCE OF 125.00 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED DRAINAGE EASEMENT CONTAINS 1.86 ACRES.

141' ACCESS AND UTILITY EASEMENT

BEGINNING AT AN IRON ROD SET AT THE SOUTHWEST CORNER OF THE HEREIN AFTER DESCRIBED PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60; EXTEND THENCE NORTH 08 DEGREES 05 MINUTES 15 SECONDS EAST A DISTANCE OF 2,029.72 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 82 DEGREES 36 MINUTES 54 SECONDS EAST A DISTANCE OF 263.73 FEET TO AN IRON ROD SET; EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 31 SECONDS EAST A DISTANCE OF 671.91 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 00 DEGREES 17 MINUTES 57 SECONDS EAST A DISTANCE OF 1,768.50 FEET TO AN IRON ROD FOUND; EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 13 SECONDS EAST A DISTANCE OF 220.91 FEET TO AN IRON ROD FOUND; EXTEND THENCE SOUTH 04 DEGREES 28 MINUTES 37 SECONDS EAST A DISTANCE OF 280.44 FEET TO AN IRON ROD FOUND; EXTEND THENCE SOUTH 85 DEGREES 09 MINUTES 32 SECONDS WEST A DISTANCE OF 356.77 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 86 DEGREES 15 MINUTES 23 SECONDS WEST A DISTANCE OF 487.69 FEET TO AN IRON ROD SET; EXTEND THENCE NORTH 34 DEGREES 34 MINUTES 13 SECONDS WEST A DISTANCE OF 173.23 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 55 DEGREES 25 MINUTES 47 SECONDS WEST A DISTANCE OF 68.56 FEET TO AN IRON ROD SET; THENCE ALONG A CURVE CONCAVE NORTHERLY HAVING A RADIUS OF 134.00 FEET, (AND BEING SUBTENDED BY A CHORD BERING SOUTH 72 DEGREES 30 MINUTES 08 SECONDS WEST, A CHORD DISTANCE OF 78.68 FEET), A DISTANCE OF 79.86 FEET, ALONG SAID CURVE TO AN IRON ROD SET; EXTEND THENCE SOUTH 89 DEGREES 34 MINUTES 29 SECONDS WEST A DISTANCE OF 397.28 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED PARCEL CONTAINS 51.75 ACRES.

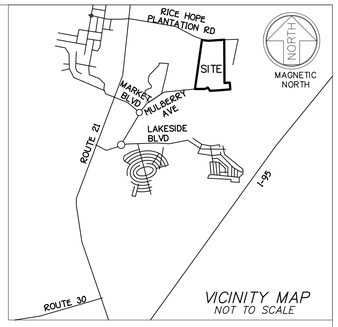
DRAINAGE EASEMENT THROUGH LANDS OF BEP

COMMENCING AT AN IRON ROD FOUND AT THE SOUTHWEST CORNER OF THE PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60; EXTEND THENCE NORTH 08 DEGREES 05 MINUTES 15 SECONDS EAST A DISTANCE OF 2,029.72 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 82 DEGREES 36 MINUTES 54 SECONDS EAST A DISTANCE OF 267.72 FEET TO AN IRON ROD SET; EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 31 SECONDS EAST A DISTANCE OF 601.91FEET TO A POINT, WHICH IS THE POINT OF BEGINNING;
EXTEND THENCE NORTH 03 DEGREES 40 MINUTES 29 SECONDS WEST A DISTANCE OF 80.00 FEET TO A POINT;
EXTEND THENCE NORTH 86 DEGREES 19 MINUTES 31 SECONDS EAST A DISTANCE OF 70.00 FEET TO A POINT;
EXTEND THENCE SOUTH 03 DEGREES 40 MINUTES 29 SECONDS EAST A DISTANCE OF 80.00 FEET TO A POINT;
EXTEND THENCE SOUTH 86 DEGREES 19 MINUTES 31 SECONDS WEST A DISTANCE OF 70.00 FEET TO THE POINT OF BEGINNING.

UTILITY EASEMENT THROUGH PARCEL A-1

BEGINNING AT AN IRON ROD SET AT THE SOUTHWEST CORNER OF PARCEL A-1, HAVING GEORGIA STATE PLANE EAST ZONE COORDINATES, NORTH 809,672.66 AND EAST 959,696.60; EXTEND THENCE NORTH 08 DEGREES 05 MINUTES 15 SECONDS EAST A DISTANCE OF 2,029.72 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 82 DEGREES 36 MINUTES 54 SECONDS EAST A DISTANCE OF 247.37 FEET TO AN IRON ROD SET; EXTEND THENCE SOUTH 07 DEGREES 23 MINUTES 06 SECONDS WEST A DISTANCE OF 6.00 FEET TO A POINT;
EXTEND THENCE NORTH 82 DEGREES 36 MINUTES 54 SECONDS EAST A DISTANCE OF 218.35 FEET TO A POINT;
EXTEND THENCE SOUTH 53 DEGREES 05 MINUTES 15 SECONDS WEST A DISTANCE OF 14.28 FEET TO A POINT;
EXTEND THENCE SOUTH 08 DEGREES 05 MINUTES 15 SECONDS WEST A DISTANCE OF 2,012.09 FEET TO A POINT;
EXTEND THENCE SOUTH 89 DEGREES 34 MINUTES 29 SECONDS WEST A DISTANCE OF 12.13 FEET TO THE POINT OF BEGINNING.

THE ABOVE-DESCRIBED UTILITY EASEMENT CONTAINS 0.59 ACRE.



VICINITY MAP
NOT TO SCALE

EXCEPTIONS:
The following are special exceptions as listed in Part II, Schedule B of the commitment for title insurance prepared by WESTCOR LAND TITLE INSURANCE COMPANY, Commitment No. HVSEH-21-21112, Commitment Date: November 29, 2022 at 8:00 A.M.

1. Rights or claims of parties in possession not shown by the public records.
2. Easements, or claims of easements, not shown by the public records.
3. Encroachments, overlaps, boundary line disputes, or other matters which would be disclosed by an accurate survey and inspection of the premises.
4. Any lien, or right to a lien, for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.
5. Taxes or special assessments which are not shown as existing liens by the public records.
6. Minerals of whatsoever kind, subsurface and surface substances, including but not limited to kaolin, coal, lignite, oil, gas, uranium, clay, rock, sand and gravel in, on, under and that may be produced from the Land, together with all rights, privileges, and immunities relating thereto whether or not listed herein. The Company makes no representation as to the present ownership of any such interests.
7. Taxes for the current year and subsequent years a lien not yet due and payable and any additional taxes, interest and/or penalties which may be assessed for prior tax years by virtue of adjustment, re-appraisal, re-assessment, appeal or other amendment to the tax records of the city or county in which the insured property is located.
8. Taxes for the year 2023 and subsequent years, a lien not yet due nor payable.
9. Intentionally Deleted.
10. Ingress and egress for pedestrian and vehicular access is neither guaranteed nor insured (This exception will not appear on the final policy an Access Easement over and across Mulberry Blvd. will be recorded on or before Closing)
11. Affidavits confirming ownership interests in the Steele Tract and Chisolm Tract as set forth in the following documents: NOT PLOTABLE
    a. Affidavit made by Richard J. Youngblood, dated January 8, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 170, Chatham County, Georgia Records;
    b. Affidavit made by Jesse William Exley, dated January 15, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 168, Chatham County, Georgia Records;
    c. Affidavit made by Harold R. Johnson, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 162, Chatham County, Georgia Records;
    d. Affidavit made by William M. Exley, dated January 18, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 166, Chatham County, Georgia Records;
    e. Affidavit Affecting Title to Land made by William G. Glass, dated December 21, 2015, filed for record January 21, 2016, recorded at Deed Book 716, Page 737, Chatham County, Georgia Records;
    f. Affidavit made by Murray A. Galin, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 124, Chatham County, Georgia Records;
    g. Affidavit made by Murray A. Galin, dated January 28, 1982, filed for record February 4, 1982, recorded at Deed Book 118-A, Page 124, Chatham County, Georgia Records.
12. Intentionally Deleted.
13. Intentionally Deleted.
14. Intentionally Deleted.
15. Intentionally Deleted.
16. Non-exclusive access easements and reservation of hunting rights set out in warranty deed from William W. Chisholm, et al. to John Hancock Mutual Live Insurance Company, dated February 4, 1982 and recorded in Deed Book 118-A, Page 101, aforesaid records.
17. Master Communications Easement for Rice Hope made by and between Rice Hope Development, Inc., a Georgia corporation, and Wentworth Land Investors, LLC, a Georgia limited liability Company, and Rice Hope Infrastructure Management, Inc., a Georgia Corporation, dated December 1, 2005, filed for record January 17, 2006, recorded at Deed Book 300-O, Page 41, and that certain Master Communications Easement for Rice Hope by and between BLS Development, Inc., and Rice Hope Infrastructure Management, Inc., dated December 1, 2005, recorded January 17, 2006, in Book 300-O, Page 53, Chatham County records (together, the "Master Communications Easements"), as amended by Second Amendment to Easement and Memorandum of Agreement dated December 23, 2014, filed for record March 16, 2015, recorded at Deed Book 483, Page 379, aforesaid records; as amended by Amendment to Master Communications Easement for Rice Hope, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 55, aforesaid records; as amended by Third Amendment to Easement and Memorandum of Agreement, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 62, aforesaid records.
18. Access Easement set forth in Quitclaim Deed from BEP Rice Hope, LLC, and BEP RH Tract 2, LLC, to Rice Hope Plantation Community Association, Inc., dated November 20, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 26, aforesaid records. (AS SHOWN ON SURVEY)
19. Easement for Construction and Maintenance of Berms made by and between Rice Hope Plantation Community Association, Inc., BEP RH Tract 2, LLC, and Ardmore Port Wentworth, LLC, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 98, aforesaid records. (AS SHOWN ON SURVEY)
20. Temporary Access and Construction Easement made by and between Rice Hope Plantation Community Association, Inc., BEP RH Tract 2, LLC, and Ardmore Port Wentworth, LLC, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 71, aforesaid records. (AS SHOWN ON SURVEY)
21. Terms and Provisions of Declaration of Covenants and Restrictions (wetlands) dated October 7, 2004 and recorded October 11, 2004 in Deed Book 277-I at Page 138, aforesaid records, as may be amended, supplemented or modified from time to time by documents recorded in the Office of the Superior Court for Chatham County, Georgia. NOT A SURVEY MATTER, NOT PLOTABLE
22. Terms and Provisions of Declaration of Covenants, Conditions and Restrictions for Rice Hope made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated July 12, 2004, filed for record July 14, 2004, recorded at Deed Book 272-W, Page 434, Chatham County, Georgia Records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Black Creek), dated July 12, 2004, filed for record July 14, 2004, recorded at Deed Book 272-W, Page 507, aforesaid records; as supplemented by Second Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated July 14, 2005, filed for record July 26, 2005, recorded at Deed Book 291-O, Page 335, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside 1), made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated March 31, 2006, filed for record April 3, 2006, recorded at Deed Book 304-O, Page 1, aforesaid records; as amended by Amendment to Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Black Creek) made by BLS Development, Inc., a Georgia corporation, dated May 31, 2007, filed for record June 5, 2007, recorded at Deed Book 326-T, Page 230, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope, dated July 19, 2007, filed for record July 20, 2007, recorded at Deed Book 329-B, Page 392 (which amendment was subsequently declared invalid pursuant to Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859); as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope, made by BLS Development, Inc., a Georgia corporation, dated July 19, 2007, filed for record July 20, 2007, recorded at Deed Book 329-B, Page 395 (which amendment was subsequently declared invalid pursuant to Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859); as affected by Third Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Commercial Property) made by Wentworth Land Investments, LLC, a Georgia limited liability company, and Rice Hope Partners, LLC, a Georgia limited liability company, dated September 7, 2007, filed for record September 13, 2007, recorded at Deed Book 331-R, Page 659, aforesaid records; as affected by Notice of Invalidity of Amendments to the Declaration of Covenants, Conditions and Restrictions for Rice Hope, dated June 7, 2011, filed for record June 22, 2011, recorded at Deed Book 370-L, Page 859, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope to Withdraw Property, made by Wentworth Land Investments, LLC, a Georgia limited liability company, dated February 28, 2013, filed for record March 6, 2013, recorded at Deed Book 385-K, Page 705, aforesaid records; as affected by Assignment of Declarant's Rights, made by Wentworth Land Investors, LLC, a Georgia limited liability company, and BEP Rice Hope, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 834, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions, Restrictions for Rice Hope to Withdraw Property, made by Wentworth Land Investors, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 2, 2013, recorded at Deed Book 389-U, Page 971 (releasing billboard parcel); as affected by Assignment of Communications Easements and Other Rights made by Rice Hope Infrastructure Management, Inc., a Georgia corporation, Rice Hope Development, Inc., a Georgia corporation, Wentworth Land Investors, LLC, a Georgia limited liability company, and BEP Rice Hope, LLC, a Georgia limited liability company, dated July 31, 2013, filed for record August 6, 2013, recorded at Deed Book 389-X, Page 844, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions and Restrictions for Rice Hope – Village at Rice Hope Apartment Tract, dated July 15, 2015, filed for record July 17, 2015, recorded at Deed Book 584, Page 391, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Parkside at Rice Hope Neighborhood) dated November 7, 2017, filed for record November 20, 2017 recorded at Deed Book 1222, Page 113, aforesaid records; as amended by Amendment to Declaration of Covenants, Conditions and Restrictions for Rice Hope – Ardmore at Rice Hope Apartment Tract, dated November 21, 2017, filed for record November 22, 2017, recorded at Deed Book 1225, Page 36, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Addition of Property to Parkside at Rice Hope Neighborhood), dated October 9, 2018, filed for record October 16, 2018, recorded at Deed Book 1469, Page 700, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside I at Rice Hope Neighborhood), dated June, 2019, filed for record June 28, 2019, recorded at Deed Book 1657, Page 119, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Mulberry Subdivision, Phase 1), dated November 6,2019, filed for record December 12, 2019, recorded at Deed Book 1795, Page 731, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Addition to Parkside at Rice Hope Neighborhood), dated December 23, 2019, filed for record December 31, 2019, recorded at Deed Book 1812, Page 602, aforesaid records; as supplemented by Supplemental Declaration of Covenants, Conditions and Restrictions for Rice Hope (Lakeside Phase 1C-1 at Rice Hope Plantation), dated October 6, 2020, filed for record October 6, 2020, recorded at Deed Book 2090, Page 666, as may be further amended, supplemented or modified from time to time, by documents of record in the Office of the Superior Court for Chatham County, Georgia. NOT PLOTABLE.
23. Easements, setbacks, rights of way and other matters of title as shown on a plat entitled "Plat of the Remaining Portion of the Julian F. Chisholm Tract, 8th G.M. District, Port Wentworth, Chatham County, Georgia" surveyed for East Coast Trading Company, Inc., by Vincent Helmley, Registered Land Surveyor, dated March 28, 1997 and recorded in Plat Book 14P at Page 178 in the Office of the Clerk of the Superior Court of Chatham County, Georgia, including, but not limited to the following:
    a) Intentionally Deleted.
    b) Intentionally Deleted.
24. Easements, setbacks, rights of way and other matters of title as shown on a plat entitled "A minor subdivision of a portion of Tract A-2 and Lot 12 being a portion of the Julian R. Chisolm Tract and being a portion of Rice Hope Plantation, 8th B.M. District City of Port Wentworth, Chatham County, Georgia, prepared by Terry Mack Coleman, Registered Land Surveyor, dated November 16, 2017 and recorded in the Office of the Clerk of the Superior Court of Chatham County, Georgia, in Plat Book 51 at Page 213, including, but not limited to the following:
    a) Intentionally Deleted;
    b) Intentionally Deleted.
    c) Approximate Location of Flood Hazard Zone (AS SHOWN ON SURVEY); and
    d) Rice Hope Road (Private Road) 30' access easement.
25. Easements, setbacks, rights of way and other matters of title as shown on that certain plat entitled "ALTA/NSPS LAND TITLE SURVEY BEING A 51.75 ACRE PORTION OF PARCEL "A" OF THE FORMER JULIAN R. CHISHOM TRACT, 8TH G.M DISTRICT, PORT WENTWORTH, CHATHAM COUNTY, GERORGIA" prepared by Michael A. Hussey, RLS No. 2509, of Sundial Land Surveying, PC, dated September 21, 2021, last revised December 12, 2022, including but not limited to the following:
    a) Temporary Construction Ditch;
    b) Zone AE Elev. 14.0';
    c) Approximate 100 - Yr. Flood Line;
    d) 12' Utility Easement;
    e) 6' Utility Easement; and
    f) Earth Road Encroaches.
26. As to the loan policy only: Pending disbursement of the full proceeds of the loan secured by the Insured Mortgage, this Policy insures only to the extent of the amount actually disbursed, but increases as each disbursement is made in good faith and without knowledge of any defects, liens or encumbrances on the Title, up to the face amount of the Policy
27. Terms and provisions as set forth in that certain Access Easement Agreement between Buck Island, LLC and BEP Land Investors, LLC, as grantor, and TLV RE SFR I Savannah Owner, LLC, as grantee, dated December , 2022, and recorded in Book at Page , in in the Office of the Clerk of Superior Court of Chatham County, Georgia.
28. Terms and provisions as set forth in that certain Drainage Easement Agreement between Buck Island, LLC and BEP Land Investors, LLC, as grantor, and TLV RE SFR I Savannah Owner, LLC, as grantee, dated December , 2022, and recorded in Book at Page , in in the Office of the Clerk of Superior Court of Chatham County, Georgia .
29. Amendment to Declaration of Covenants, Conditions and Restrictions for Rice Hope dated and recorded in Book at Page , in in the Office of the Clerk of Superior Court of Chatham County, Georgia.

SEE SHEET 2 OF 2 FOR GENERAL NOTES, TITLE EXCEPTIONS AND LEGAL DESCRIPTIONS

GEORGIA REGISTERED No. 2509 LAND SURVEYOR MICHAEL A. HUSSEY

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Ga. Reg. No. 2509

SURVEYOR'S CERTIFICATION
This survey is made for the benefit of: (a) Third Lake Development, LLC (b): TLV RE SFR I Savannah Owner, LLC, a Delaware limited liability company; (c): Westcor Land Title Insurance Company; and (d): Citizens Bank N.A.and its successors and assigns. This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS and includes Items 1, 2, 3, 4, 8, 13, 16, 17, 18 and 19 of Table A thereof.

Michael A. Hussey
Professional Land Surveyor GA No.2509

Total Area: 51.75 Acres
Field Survey Date: 01-25-21, 06-18-2021 and 05-25-22
Error Of Closure (Plat): 1/532,563
Error Of Closure (Field): 1/32,550
Angular Error: 2" Per Point
Equipment Used: Sokkia Set 5 2" Total Station

SUNDIAL LAND SURVEYING, PC
LSF000957
1410 WEST US HIGHWAY 80, SUITE 2
BLOOMINGDALE, GA 31302
912-235-2477
mhussey@sundiallandsurveying.com
sundiallandsurveying.com

LEGEND
IRF - IRON ROD FOUND
CMF - CONCRETE MONUMENT FOUND
IRS - IRON ROD SET
-E- OVERHEAD POWER
-X- TREE LINE

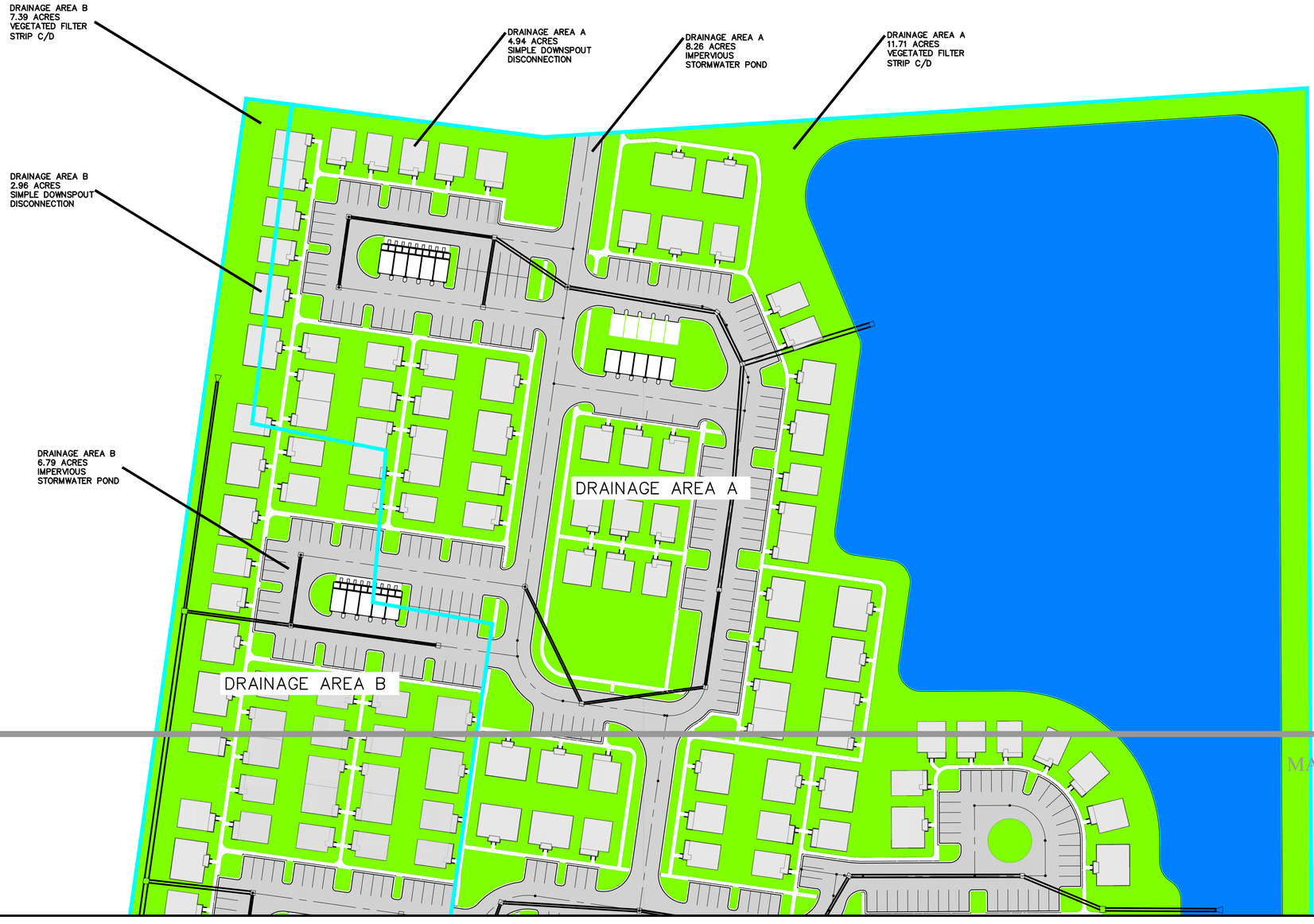
0 100 200
SCALE: 1"=100'

ALTA/NSPS LAND TITLE SURVEY

BEING A 51.75 ACRE PORTION OF PARCEL "A" OF THE FORMER JULIAN R. CHISHOM TRACT, 8TH G.M. DISTRICT, PORT WENTWORTH, CHATHAM COUNTY, GEORGIA

REVISED 12-29-2022
REVISED 12-12-2022
REVISED 6-01-2022
DATE: 09-21-2021

Friday, January 20, 2023 4:42:57 PM



MATCHLINE -- SEE SHEET 2 OF 3

REV.	REVISIONS	BY	DATE

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

GEORGIA REGISTERED No. 38245 PROFESSIONAL ENGINEER JASON JOSEPH BRYANT

Pittman Engineering Co., LLC
2591 Hwy 17S Suite 303
Richmond Hill, GA 31324
912-445-0578
www.PittmanEngineeringCo.com

CSS EXHIBIT

COTTAGES AT RICE HOPE
PHASE 1

Prepared For
THIRD LAKE DEVELOPMENT, LLC

Project No.	21-286
Drawn By:	LRD
Designed By:	JJB
Checked By:	RAP
Scale:	1"=50'
Date:	6/14/22

SHEET
1 OF 3

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Friday, January 20, 2023 4:41:18 PM

DRAINAGE AREA B

MATCHLINE -- SEE SHEET 1 OF 3

DRAINAGE AREA B
2.96 ACRES
SIMPLE DOWNSPOUT DISCONNECTION

DRAINAGE AREA B

DRAINAGE AREA A

DRAINAGE AREA B
6.79 ACRES
IMPERVIOUS
STORMWATER POND

DRAINAGE AREA B
7.39 ACRES
VEGETATED FILTER
STRIP C/D

DRAINAGE AREA A
8.26 ACRES
IMPERVIOUS
STORMWATER POND

DRAINAGE AREA A
4.94 ACRES
SIMPLE DOWNSPOUT
DISCONNECTION

DRAINAGE AREA A
11.71 ACRES
VEGETATED FILTER
STRIP C/D

MATCHLINE -- SEE SHEET 3 OF 3

DRAINAGE AREA A
8.26 ACRES
IMPERVIOUS
STORMWATER POND

REV.	REVISIONS	BY	DATE
			####

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

REGISTERED GEORGIA PROFESSIONAL ENGINEER No. 38245 JASON JOSEPH BRYANT

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Scale:	1"=50'
Date:	6/14/22

SHEET
2 OF 3

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Friday, January 20, 2023 4:38:30 PM

MATCHLINE -- SEE SHEET 2 OF 3

DRAINAGE AREA B

DRAINAGE AREA A

DRAINAGE AREA A
8.26 ACRES
IMPERVIOUS
STORMWATER POND

DRAINAGE AREA A
4.94 ACRES
SIMPLE DOWNSPOUT
DISCONNECTION

DRAINAGE AREA A
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DRAINAGE AREA B
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DRAINAGE AREA B
2.96 ACRES
SIMPLE DOWNSPOUT
DISCONNECTION

REV.	DATE	BY	REVISIONS
	####		

JASON J. BRYANT, P.E.
GSWCC LEVEL II
DESIGN PROFESSIONAL
CERTIFICATION #73897

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SHEET
3 OF 3

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Pittman Engineering Co., LLC
Post Office Box 822
Richmond Hill, Georgia 31324
912-445-0578

May , 2022

EPD-Construction Land Disturbance Fees
PO Box 932858
Atlanta, GA 31193-2858

Re: Rice Hope – Third Lake Development
Third Lake Development-Attn: Grant Barnes
NOI Submittal Fee
Port Wentworth, Chatham County, Georgia

To Whom it May Concern:

On behalf of our client, Third Lake Development, please find enclosed the submittal fee in the amount of $3,960.00 ($80 per disturbed acre 49.5 disturbed acres). A copy of the GEOS submittal receipt is also enclosed for reference.

If you have any questions or comments, or require any additional information, please do not hesitate to contact me at 912-445-0578 or jason@pittmanengineeringco.com .

Sincerely,

PITTMAN ENGINEERING CO. LLC

Jason J. Bryant, P.E.

Coastal Soil and Water Conservation District
C/O – Jerry Holcomb
415 Willow Oak Lane
Hinesville, Georgia 31313
912-271-0133

TO: Applicants for Land Disturbing Activity Permits

FROM: Coastal Soil and Water Conservation District

DATE: **April 20, 2022**

SUBJECT: Erosion and Sediment Control Plan Review

A conservation education contribution of $50.00 per Erosion and Sediment Control Plan is requested by the Coastal Soil and Water Conservation District. This is in addition to any charges by the local issuing authorities.

Please complete the following and attach a check in the amount of $50.00 payable to:
Coastal Soil and Water Conservation District

RICE HOPE - THIRD LAKE DEVELOPMENT
Project Name

CHATHAM
County

THIRD LAKE DEVELOPMENT Attn: Grant Barnes
Applicant Name

1600 E. 8th Avenue, Suite A132, Tampa, FL 33605
Address

(727) 349-9100
Phone Number

To help us in processing your application mail check and this form within five (5) days to:

Coastal Soil and Water Conservation District
C/O: Jerry Holcomb
415 Willow Oak Lane
Hinesville, Georgia 31313
Phone: 912-271-0133

SANITARY SEWER EXTENSION SUBMITTAL FORM

Submitted for review pursuant Georgia Rules for Water Quality Control Chapter 391-3-6-.02(3)(a) are this form and attachments (as applicable):

[X] Project Description, design data
[X] **Funding Source** PRIVATE
[X] General map of proposed sewer extensions, outlined proposed service area, connection to the existing system, and flood plain contours and elevations if applicable
[X] Downstream Flow Schematic
[X] Plans (**one copy**)
[X] Specifications (**one copy**)

Part I- General Information

a. Name of local government CITY OF PORT WENTWORTH

b. Local government official BRIAN HARVEY

c. Mailing Address 7306 HIGHWAY 21, SUITE 301

City, County, State, Zip Code PORT WENTWORTH, GEORGIA, 31407

d. Project name or identification RICE HOPE LAKESIDE PHASES 20-23 & 29A

e. Designing engineer(s) PITTMAN ENGINEERING CO, LLC - JASON BRYANT, P.E.,

f. GA P.E. # 38245 Expiration Date 12/31/22

g. Mailing Address PO BOX 822

City, County, State, Zip Code RICHMOND HILL, BRYAN COUNTY, GA 31324

Part II. – Treatment System Information

a. Wastewater treatment plant to which extensions are tributary

Name CITY OF PORT WENTWORTH WASTEWATER TREATMENT FACILITY

Permit flow 2.0 MGD Current Peak Flow 1.0 MGD

Permit # GA0038814

b. In the table below list the average daily flow (MGD) and effluent concentrations (mg/l) for biochemical oxygen demand (BOD_5), suspended solids (SS), Nitrogen (as NH3), and phosphorus (P) for the last 12 months (preceding the sewer extension submittal) for the wastewater (from discharge monitoring reports).

Month	Flow	BOD_5	SS	NH_3	P	Month	Flow	BOD_5	NH_3	P	SS
January	0.74	1.26	1.42	0.32	0.29	July	1.12	2.76	0.62	0.32	2.55
February	1.02	1.43	1.72	0.13	0.43	August	1.02	2.85	0.42	0.42	4.61
March	1.01	1.60	1.87	0.19	0.55	September	0.92	2.58	0.60	0.43	4.89
April	0.83	1.39	1.35	0.05	0.54	October	0.88	1.97	0.39	0.48	4.79
May	0.76	1.23	1.11	0.06	0.79	November	0.87	1.28	0.03	0.78	0.84
June	0.57	1.74	2.10	0.32	0.49	December	0.79	1.23	0.22	0.37	0.86

SANITARY SEWER EXTENSION SUBMITTAL FORM

Part III- Project Information

a. Name and address of the Developer. If not a local government please include a certified statement (as indicated in Section IV of this form).

THIRD LAKE DEVELOPMENT ATTN: GRANT BARNES

Name

1600 E. 8TH AVENUE, SUITE A132

Mailing Address

TAMPA, FLORIDA, 33605

City, County, State, Zip Code

b. Proposed service area for this project.

Immediate 49.5 ACRES acres Ultimate 49.5 ACRES acres

c. Type of developments: (check as applicable)

Industrial _____ Residential ✓ Commercial _____

Other_____ (explain)_____

d. Population to be served

Population 2.7 People/REU x 446 REU = 1,204 Density/acre 24.3 People/acre

e. Per capita wastewater contribution

Average 300 GPD/REU GPD Peak 300 GPD/REU x 3.5 PEAK FACTOR = 1,050 PEAK/REU GPD

f. If receiving industrial wastewater, describe industrial waste characteristics.

N/A

Quantity N/A GPD. Describe pretreatment received (if any)

(use extra sheet if needed)

g. Average Design Flow (this project) 300 GPD/REU x 446 REUs=133,800 GPD Peak 133,800 GPD x 3.5 Peaking Factor = 468,300 GPD

or max. pipe capacity n/a

h. Design BOD (this project)

Average .1338 MGD X 200 MG/L x 8.34 = 223.2 lbs/day

SANITARY SEWER EXTENSION SUBMITTAL FORM

i. List nominal pipe diameter(s) and length

8-Inch diameter = 2,172 LF

12-Inch diameter = 2,872 LF

j. List number, size and type of pump stations (if any)

n/a

Please submit design calculations with this form. Include system head calculations; pump curves, system curves, and buoyancies calculations, etc.

Part IV- Certification

a. Provide the name of the Georgia P.E. that the project inspector will report to:

PITTMAN ENGINEERING CO - JASON BRYANT, P.E. Georgia P.E. # 38245

b. Provide the name of the local government who will own and maintain the proposed sewers if it is different from the authority responsible for treatment of wastewater from this project.

SAME

c. As the authority responsible for the treatment of wastewater from this project, I certify that: a) this project has been reviewed, b) the existing system has adequate transport and treatment capacity to treat wastewater generated from this project, c) we are willing to accept the project wastewater for treatment; d) that the sewers are not constructed on or serving structures constructed or proposed to be constructed on solid waste landfills; and e) we are willing to accept ownership and maintain the proposed sewers.

To the best of my knowledge, I certify that the above information is true and correct.

Signature_____
Responsible Local Official

Name (Print)_____

Title or Position _____

Date _____

Please provide any additional comments on a separate sheet of paper.

Submit completed form to: **DEPARTMENT OF NATURAL RESOURCES**
ENVIRONMENTAL PROTECTION DIVISION
WASTEWATER REGULATORY PROGRAM
2 MARTIN LUTHER KING, JR. DRIVE, SUITE 1152 EAST
ATLANTA, GEORGIA 30334

Rice Hope Third Lake
WASTEWATER EXTENSION CALCULATIONS
March 15, 2022
Third Lake
Pittman Engineering Co., LLC

The proposed Lift Station to be designed and installed by Bald Eagle Partners shall serve the master planned 446 units Third Lake Development.

The sewer is to consists of installing 8-Inch diameter sewer mains extending from the on-site manhole.

The maximum expected domestic flow through the 8 diameter mains is approximately 192 gpm, based on a peaking factor of 3.5.

- (446 residences x 300 gpd per residence x 3.5 peak) / 1440 min/day = 325 gpm

The capacity of an 8-Inch diameter main at minimum slope is approximately 313 gpm. The capacity of an 8-inch diameter main at 0.5% slope = 350 gpm. Therefore, the last sections of the 8 mains shall be installed with minimum slope of 0.5% to have adequate capacity to serve this project.

RICE HOPE - THIRD LAKE DEVELOPMENT
SANITARY SEWER SPECIFICATIONS

City of Port Wentworth

Georgia

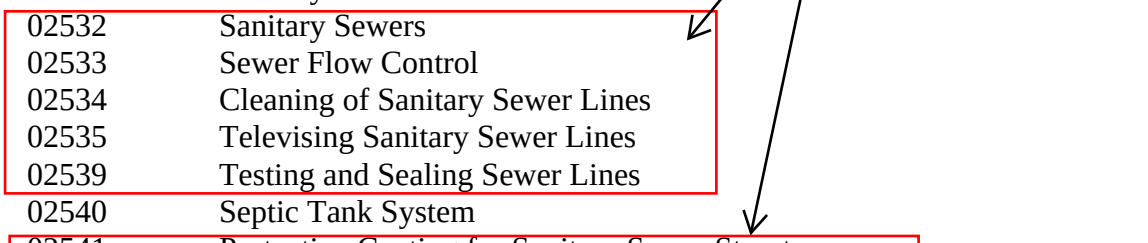
Comprehensive Development Manual

Section 2: **TECHNICAL SPECIFICATIONS**

TECHNICAL SPECIFICATIONS - TABLE OF CONTENTS

DIVISION 2

02200	Site Preparation
02220	Demolition
02230	Topsoil
02300	Earthwork
02317	Trench Excavation and Backfill
02360	Soil Treatment for Termite Control
02370	Erosion and Sedimentation Control
02441	Horizontal Directional Drilling
02445	Jack and Bore Crossings
02510	Water Pipe and Fittings
02511	Valves Meters and Accessories
02531	Sanitary Sewer Force Main
02532	Sanitary Sewers
02533	Sewer Flow Control
02534	Cleaning of Sanitary Sewer Lines
02535	Televising Sanitary Sewer Lines
02539	Testing and Sealing Sewer Lines
02540	Septic Tank System
02541	Protective Coating for Sanitary Sewer Structures
02542	Protective Coating for Wetwell and Receiving Manhole
02543	Fiberglass Liner
02544	HDPE Liner
02545	Submersible Wastewater Pumps
02546	Plug Valves
02547	Lift Station Wetwell
02550	Reuse Water Distribution
02635	Storm Drainage Piping
02720	Graded Aggregate Base Course
02740	Bituminous Concrete Paving
02765	Pavement Markings
02775	Concrete Sidewalks, Curbs and Gutters
02780	Unit Pavers
02820	Galvanized Chain-Link Fences and Gates
02821	Polyolefin Coated Chain Link Fence Gates and Operator
02822	Ornamental Metal Fencing System
02870	Site and Street Furnishings
02890	Traffic Signs
02920	Lawns and Grassing
02921	Sodding
02930	Trees, Shrubs and Ground Cover



SECTION 02532
SANITARY SEWERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

A. General:

Extent of sanitary sewer work is indicated on drawings and schedules, and by requirements of this section.

B. Damage to Existing Utility Lines:

Any damage done to existing utility lines, services, poles and structures of every nature shall be repaired or replaced by the Contractor at his own expense. The approximate position of certain known underground lines are shown on the Plans for information. Existing small lines may not be shown. The Contractor shall locate these and other possible unknown utility lines and shall excavate and expose all existing underground lines in advance of trenching operations.

Removing and relaying of such lines and appurtenances which constitute an obstruction to the completed lines and grade of the new work will be made at the expense of the Owner, unless otherwise shown on Plans to be altered by the Contractor.

At locations where the sewer is to be constructed in roadways, the Contractor shall take all precautions, and comply with all requirements, as may be necessary to protect the improvements, including installation and maintenance of lights and barricades for protection of traffic.

1.03 RELATED WORK:

Section 02317 - Excavation, Trenching and Backfilling for Utility Systems

1.04 QUALITY ASSURANCE:

A. Manufacturer's Qualifications:

Firms regularly engaged in manufacture of sanitary sewer system's products of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installers Qualifications:

Firm with at least 3 years of successful installation experience on projects with sanitary sewage work similar to that required for project.

1.05 SUBMITTALS:

A. Product Data:

Submit manufacturer's technical product data and installation instructions for sewage system materials and products.

B. Certification:

Each length of pipe shall be marked with the following information: Manufacturer, Size, PVC Cell Classification, Type PSM, SDR, PVC Gravity Sewer Pipe, ASTM D3033, D3034, F679 or F789 and Code Number.

At the time of shipment, the manufacturer shall submit 3 copies of written certification and test results to the Engineer that the pipe was manufactured and tested in accordance with the specifications.

C. Shop Drawings:

Submit shop drawings in accordance with Section 01800 for sanitary sewage systems, showing piping materials, size, locations, and inverts. Include details of underground structures, connections, and cleanouts. Show interface and spatial relationship between piping and proximate structures.

D. Maintenance Data:

Submit maintenance data and parts lists for sanitary sewage system materials and products. Include this data, product data, shop drawings, and record drawings in maintenance manual.

PART 2 - PRODUCTS

2.01 IDENTIFICATION:

A. Underground-Type Plastic Line Markers

Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 5.0 MIL overall thickness. Tape shall be a minimum of 3" wide. Tape shall be buried continuously over the pipeline no more than 18" below the ground surface. For sanitary sewer lines provide green tape with black printing reading "CAUTION SEWER LINE BURIED BELOW".

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering identification markers which may be incorporated in the work include, but are not limited to, the following:

Allen Systems, Inc.
Emed Co., Inc.
Seton Name Plate Corp.

2.02 PIPES AND PIPE FITTINGS:

A. General:

Provide pipes of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

B. Ductile Iron Pipe:

ANSI A21.51. Ductile iron pipe shall be of the thickness in accordance with ANSI A21.50 for Laying Condition 2, Class 50 minimum. The pipe shall be coated on the interior with with Protecto 401 Ceramic Epoxy interior lining thickness according to AWWA C150, Laying Condition 2, Class 50 minimum unless otherwise indicated. Ductile Iron Pipe designed and manufactured in accordance with ANSI A21.51 centrifugally cast in metal or sand lined molds. Exterior surface shall be seal coated with 1 mil thick approved asphaltic coating in accordance with ANSI/AWWA C151/A21.51. Joints shall conform to AWWA C111, push-on-type unless otherwise indicated.

1. Fittings: ANSI A21.10, push-on type unless otherwise shown; Ductile-iron, exterior one mil petroleum asphaltic seal coat AWWA C110 or 153; mechanical joint type, 40 mils nominal dry film thickness of Protecto 401 Ceramic Epoxy interior lining.

2. Joints: ANSI A21.11, push-on type unless otherwise shown.

3. Exterior Coating: Exterior coating shall be an approved bituminous coating 1 mil thick unless otherwise shown and/or specified.

C. Polyvinyl Chloride (PVC) Sewer Pipe:

ASTM D 3033, Type PSP, SDR 26; or ASTM D 3034, Type PSM, SDR 26.

1. Fittings: PVC, ASTM D3033 or ASTM D 3034, elastomeric joints complying with ASTM D 3212 using elastomeric seals complying with ASTM F 477.

2.04 CLEANOUTS:

A. General:

Provide as indicated, pipe extension to grade with furrule and countersunk cleanout plug. Provide round cast-iron access frame over cleanout, with heavy-duty secured scoriated cover with lifting device.

PART 3 - EXECUTION

3.01 INSTALLATION OF IDENTIFICATION:

A. General:

During back-filling/top-soiling of sanitary sewage systems, install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade.

3.02 INSTALLATION OF PIPE AND FITTINGS:

A. General:

Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.

B. Inspect Piping:

Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

C. Lay Pipe:

Lay piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert.

D. Bell Ends:

Place bell ends or groove ends of piping facing upstream.

E Gaskets:

Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.

F. Ductile Iron Pipe:

Install in accordance with 1994 DIPRA, “Installation Guide to Ductile Iron Pipe”.

G. PVC or ABS Pipe:

Install in accordance with manufacturer's installation recommendations, and in accordance with ASTM D 2321.

H. Cleaning Piping:

Clear interior of piping of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.

In large, accessible piping, brushes and brooms may be used for cleaning.

Place plugs in ends of uncompleted conduit at end of day or whenever work stops.

Flush lines between manholes if required to remove collected debris.

I. Joint Adapters:

Make joints between different types of pipe with standard manufactured adapters and fittings intended for that purpose.

J. Interior Inspection:

All sewer pipes, manholes and appurtenances shall be inspected by the Engineer and the Contractor. Inspection shall include lamping each sewer segment from manhole to manhole. If inspection indicates poor alignment, debris, displaced pipe, infiltration, or other defects, correct such defects, and reinspect.

3.03 SANITARY MANHOLES:

A. General:

Place precast concrete sections as indicated. Where manholes occur in pavements, set tops of frames and covers flush with finish surface. Elsewhere, set tops 3" above finish surface, unless otherwise indicated.

B. Installation:

Install in accordance with ASTM C 891.

C. Rubber Joint Gasket:

Provide rubber joint gasket complying with ASTM C 443 at joints of sections.

D. Stone Bedding:

Precast manholes shall be bedded on not less than 6 inches of compacted crushed stone. The crushed stone shall extend not less than 6 inches outside the walls of the manhole and under the entire length of pipe within the excavation for the manhole.

E. Drop Manholes:

Drop manholes shall be built at the locations and in conformance with the details shown where the difference in invert elevation between incoming pipe and manhole invert is more that 2 feet. The drop pipe shall be the same size as the influent sewer. Payment for drop manholes will be made at the unit prices for the various depths stated in the Proposal, and shall include all necessary pipe, pipe fittings, concrete encasement of drop pipe, extension of manhole base slab and compacted crushed stone under sewer spanning the manhole excavation.

F. Interior Coating
Coating requires 2 coats of 100% solids, coal tar epoxy resin, for a final thickness of 21 mils.

G. Ring and 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 ½ "-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.

3.04 SERVICE CONNECTIONS:

Service connections shall be provided at locations shown on the Plans. The connection shall be made as shown on the Drawings, or shall be a pipe stubbed out from a manhole, and shall extend to the street right of-way line at an elevation at least 2 feet below the finished floor elevation of the building being served or deeper if necessary to provide service to a building or to the property line as shown on the Plans. Service connections shall be inspected and approved prior to any backfill being placed.

Service pipe shall be extra strength cast iron soil pipe or PVC Sewer Pipe conforming to ASTM D3034 SDR 35. Mylar detectable tape shall be installed where PVC pipe is used.

A 2" x 4" 30 inch long pressure treated flag stake painted red shall be located at the end of each sewer lateral.

3.05 CONCRETE ENCASEMENT OF PIPE:

Where called for on the Plans sewer pipe shall be completely encased with concrete. The trench shall first be excavated not less than 6 inches below the bell of the pipe and the pipe laid to the line and grade on concrete blocking. Concrete shall then be placed to the full width of the trench, but in no case less than 6 inches from the pipe bell on either side of the trench, and to a height of not less than 6 inches above the top of the pipe bell. No backfill material shall be placed in the trench for a period of at least 24 hours after the concrete encasement has been placed. Payment for concrete encasement will be according to the unit price bid in the Proposal and in accordance with Section 01200.

3.06 FIELD QUALITY CONTROL:

A. Testing and Cleaning:

Before acceptance of the sewer lines, they shall be tested and cleaned. Where obstruction is met, the Contractor shall be required to clean the sewers by means of rods or swabs or other instruments. The pipe line shall be straight and show a uniform grade between manholes.

The Contractor shall notify the Engineer when the sewer lines have been cleaned and are ready for inspection. The Engineer in cooperation with the Contractor and the Owner will agree upon a date when all parties will be present and make the inspection and perform the tests specified hereinafter.

B. Test for Deflection:

When PVC Sewer Pipe is used, the Contractor will be required to perform a deflection test. The deflection may be checked by one of two techniques. One of these is through the use of a specially designed deflectometer which when pulled through a sewer section automatically measures and records at frequent intervals the pipe's vertical and horizontal diameters.

The other technique is to use a "go, no-go" mandrel which is sized to such dimension that it will not "go" when encountering a deflection greater than 5 percent. This type of mandrel, as well as a deflectometer, must be of such design as to minimize the possibility of its being hung up in the pipe by silt or other residues.

If a deflection of 5 percent or greater is encountered, the Contractor shall repair the pipe as necessary, wait 30 days, and retest that portion of the pipe repaired. The cost of the deflection tests and any required repairs shall be included in the appropriate bid item and no separate payment will be made for them.

C. Infiltration and Exfiltration Tests:

Test all sewers for infiltration by one of the following methods. The Contractor shall furnish, install and maintain a V-notch sharp crested weir in a wood frame tightly secured in a manhole at the low end of each sewer lateral and at locations on the main sewers designated by the Engineer. Maximum allowable infiltration shall be 25 gallons per mile per inch of diameter of sewer per 24 hour day at any time. All joints shall be tight and any visible leakage in the joints or leakage in excess of that specified above shall be repaired at the Contractor's expense. When infiltration is demonstrated to be within the allowable limits, the Contractor shall remove the weirs. Prior to making an infiltration test, all groundwater drainage shall be stopped to permit the groundwater to return to its normal level.

In areas where groundwater is not encountered, exfiltration tests shall be run to determine the acceptance of the sewer. The Contractor shall furnish and install all necessary materials, equipment, water supply, etc. for the tests. The maximum allowable exfiltration shall be 25 gallons per mile per inch of diameter of sewer per 24 hour day at any time, based on a 2 foot minimum internal head. An allowance of 10 percent of gallonage shall be permitted for each additional 2 foot head over the basic head. The joints shall be tight and leakage in excess of that specified above shall be repaired at the Contractor's expense. Precaution shall be taken to prevent forcing of stoppers from house service laterals.

Infiltration and exfiltration tests will be made as soon as possible after construction of sufficient lines to warrant a test. The Contractor shall notify the Engineer when he is ready to conduct the tests. The cost of these tests shall be included in the appropriate bid item and no separate payment will be made for them.

D. Air Testing:

Air test shall be conducted in strict accordance with testing equipment manufacturer's instructions, including all recommended safety precautions. No one will be allowed in manholes while testing. Equipment used for air testing shall be specifically designed for this type of test and is subject to the approval of the Engineer. The Contractor shall furnish an air compressor, which will provide at least three hundred cubic feet per minute of air at one hundred pounds per square inch along with all necessary plugs, valves, air hoses, connections and other equipment necessary to conduct air test. Pressure gauges on test apparatus shall be a minimum of 4-inch diameter with a minimum of 1-psi graduations and a maximum range of 0-10 psi. Plugs in sewer eighteen inches (18") in size and larger shall be connected by cable for thrust protection.

The sewer section shall be plugged at both ends and air pressure shall be applied until the pressure inside the pipe reaches 4 psig. When a stable condition has been reached, the pressure shall be bled back to 3.5 psig above the average backpressure of any ground water above the pipe's invert. At this starting pressure, the time shall be observed and recorded. If there has been no leakage (zero pressure drop) after one hour of testing, the test section shall be accepted and the test complete.

If the time for the air pressure to decrease from the starting pressure (3.5 psig) to 3.0 psig is equal to that shown in the following table, the pipe shall be presumed to be free of defects. When designated times are not attained, pipe breakage, joint leakage, or leaking plugs are indicated the cause must be determined and corrected. After repairs have been made, the sewer sections shall be retested. This process shall be repeated until all sewer sections pass the air test.

AIR TEST LEAKAGE ALLOWANCE TIMETABLE (PER 100 FEET OF PIPE)

PIPE SIZE (INCHES)	MINUTES	SECONDS
4	1	53
6	2	50
8	3	47
10	4	43
12	5	40
15	7	05
18	8	30
21	9	55
24	11	24
27	14	25
30	17	48
36	25	39
42	34	54
48	45	35

3.07 MEASUREMENT AND PAYMENT:

RESERVED

END OF SECTION

SECTION 02533
SEWER FLOW CONTROL

PART 1 GENERAL

1.01 SCOPE

It is the intent of these specifications to provide a basis by which the sewage flow in a sanitary sewer line may be controlled or by-passed for the purpose of making renovations to the existing pump station and/or sewer line. It shall be the responsibility of the Contractor to make provisions to meet all requirements of these specifications and to correct any problems, which may arise as a result of the flow control operations.

A. The contractor shall use all procedures and equipment necessary for controlling or by-passing (the pumping of raw sewage from one manhole to another to eliminate flow through a section of pipe) flow at no additional costs to the owner.

B. The contractor is solely responsible for ensuring coordination with the owner and/or appropriate officials in re-routing flows.

PART 2 PRODUCTS

2.01 MATERIALS: Furnish as required.

PART 3 EXECUTION

3.01 PROCEDURES AND METHODS

A. Plugging or Blocking

A sewer line plug shall be inserted into the line at a manhole upstream from the section being inspected and/or sealed. The plug shall be so designed that all or any portion of the sewage flows can be released. After the work tasks have been completed, flow shall be restored to normal.

B. Pumping and Bypassing

When pumping/bypassing is required, the Contractor shall supply the necessary pumps, conduits and other equipment to divert the flow of sewage around the manhole section in which work is to be performed and to supply the necessary labor and supervision to set up and operate the pumping and bypassing system. The bypass system shall be of sufficient capacity to handle existing flows plus additional flow that may occur during periods of rain. If pumping is required on a 24-hour basis, all engines shall be equipped in a manner to keep the pump noise at a minimum.

C. Discharge Pumping

Pumping or bypassing of raw wastewater onto the ground, or to areas not intended for sewage (i.e.: ditches, creeks and storm sewers), or into receiving streams is prohibited.

END OF SECTION

SECTION 02534
CLEANING OF SANITARY SEWER LINES

PART 1 GENERAL

1.01 SCOPE

It is the intent of these specifications to provide a basis by which a sanitary sewer line can be cleaned of all excess debris so that further work can carried out. This basis shall include methods, equipment, and payment of work.

PART 2 EXECUTION

2.01 CLEANING

A. Cleaning of sanitary sewer lines shall be conducted on lines as specified in line and manhole repair specifications.

B. Cleaning of sewer lines shall be accomplished by trapping and collecting all sand, debris, and grease at the next manhole, upstream or downstream of the line being cleaned, and removal and proper disposal of said materials.

C. All data pertinent to the line cleaned shall be duly recorded on an adequate cleaning log form as supplied by the Contractors. This form shall be turned over to and remain in the possession of the Engineer after a section of line has been completed.

D. The cleaning of an entire section cannot be successfully performed from one manhole, the equipment shall be re-setup on the other manhole and cleaning again attempted. If successful cleaning still cannot be performed or the equipment fails to traverse the entire manhole section, the cleaning effort will be abandoned at Owner's or Engineer's approval. Sewer line repairs shall then be made at the discretion of the Engineer.

2.02 METHODS

A. The methods of cleaning a sanitary sewer line, which are acceptable for use, are outlined below. Approval from the Engineer for the method chosen shall be obtained prior to any cleaning work.

B. Bucket Machine Method: This method shall consist of:

1. Rodding the sewer line with a power-driven continuous steel rod of sufficient length and gauge and with the proper cleaning beads or augers, so as to loosen all solid materials. It shall also provide a means to tread a cable for the power winch.

2. Removal of all solids, materials and other debris by means of a claw-shell type bucket and/or other appliances dragged through the sewer line with power winches of suitable size and horsepower.
3. Brushing of the sewer line with a brush large enough to assure that the line has been cleaned sufficiently. This brush shall be mechanically driven, with the power mechanism properly sized.

C. Hydraulic Cleaning Method - The equipment used shall be of a movable dam type and be constructed in such a way that a portion of the dam may be collapsed at any time during the cleaning operation to protect against flooding of the sewer. The movable dam shall be equal diameter as the pipe being cleaned and shall provide a flexible scraper around the outer periphery to ensure total removal of grease. If sewer cleaning balls or other such equipment, which cannot be collapsed instantly, are used, special precautions against flooding of the sewers and public or private property, shall be taken.

D. High Velocity Hydro-Cleaning Equipment - All high velocity sewer cleaning equipment shall be constructed for ease and safety of operation. The equipment shall have a selection of two or more high velocity nozzles. The nozzles shall be capable of producing a scouring action from 15 degrees to 45 degrees in all size lines designated to be cleaned. Equipment shall also include a high velocity gun for washing and scouring manhole walls and floors. The gun shall be capable of producing flows from a fine spray to a long distance solid stream. The equipment shall carry its own water tank, auxiliary engines, pumps, and hydraulically driven hose reel. All controls shall be located so that the equipment can be operated above ground.

2.03 EQUIPMENT

All equipment used for cleaning operations, either method, shall be equipment designed to do that type of work which is specified. When at all possible, the equipment shall be a self-contained unit to handle all operations.

A. The equipment used shall be the product of a manufacturer actively engaged in the research, development and manufacturing of said equipment.

B. If any equipment becomes "hung up" in the sewer line it is the responsibility of the Contractor to retrieve the equipment. If in freeing the equipment the Contractor has to make an excavation, he does so at his own expense, and any pipe, equipment, it shall be replaced to original condition following required specification. No equipment shall be left in the sewer line unattended or overnight.

2.04 DISPOSAL OF DEBRIS AND CLEAN-UP

After removal of all debris out of a manhole, then the contractor shall dispose of all debris at a sanitary landfill or other approved place.

A. Clean-up operations shall consist of cleaning all debris out of a manhole, and then

the contractor shall dispose of all debris at a sanitary landfill or other approved place.

B. All materials shall be removed from the site no less often than at the end of each workday unless they are stored in totally enclosed containers as approved by the Owner and Engineer.

2.05 CLEANING PRECAUTIONS

During all sewer-cleaning operations, satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically improper use of cleaning tools, which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property being served by the manhole section involved. The flow of sewage in the sewer lines shall be utilized to provide necessary pressures for hydraulic cleaning devices whenever possible. When additional quantities of water from fire hydrants are necessary to avoid delay in normal working procedures, the water shall be conserved and not used unnecessarily. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant nor shall a hydrant be used for the purpose described unless a vacuum break is provided. Contractor shall be responsible for any damage caused by the cleaning operation.

2.06 ROOT REMOVAL

Roots shall be removed in the sections where root intrusion is a problem. Special precautions should be exercised during the cleaning operation to assure almost complete removal of visible roots from the joint area. Any extensive visible roots, which could prevent the sealing of the packer or could prevent the proper application of chemical sealants, shall be removed. Procedures may include the use of mechanical devices such as rodding machines, expanding root cutters and porcupines, and hydraulic procedures such as high pressure jet cleaners. A method of chemical root treatment to insure root removal may be used at the option of the Contractor.

2.07 CHEMICAL TREATMENT OF ROOTS

To aid in the removal of roots and at the option of the Contractor, manhole sections that have root intrusion may be treated with an approved label herbicide. The application of the herbicide to the roots shall be done in strict accordance with the manufacturer's recommendations and specifications in such a manner to preclude any damage to surrounding vegetation. The Contractor at no additional cost to the Owner shall replace any damaged vegetation so designated by the Engineer. All safety precautions as recommended by the manufacturer shall be strictly adhered to concerning handling and application of the herbicide.

2.08 FINAL ACCEPTANCE:

Inspection of all cleaning operations shall be made on a daily basis by the Engineer and/or his daily authorized representative. A daily log shall be kept by the inspector and

acknowledged by the Contractor of his superintendent at the end of each day.

1. Acceptance of this portion of the work shall be made upon the successful completion of the television inspection and shall be to the satisfaction of the Engineer's representative. In areas where television inspection is not performed, or where a double squeegee with each squeegee the same size as the sewer, shall be pulled through each manhole section as evidence of being adequately cleaned. If internal sealing is to follow the television inspection phase of the work, then particular attention should be given to the adequacy of the cleaning to insure that proper seating of the sealing packers can be achieved.

2. If upon starting the sealing operation, a portion of the sewer line is encountered that is not satisfactorily cleaned, the sealing equipment shall be removed and the line recleaned at no additional cost to the Owner.

END OF SECTION

SECTION 02535
TELEVISING SANITARY SEWER LINES

PART 1 GENERAL

1.01 SCOPE

It is the intent of these specifications to provide a basis for which a sanitary sewer line can be internally inspected by means of a closed circuit television camera. This basis shall include all aspects of televising including method, equipment, and payment for work.

A. Televising of sanitary sewer lines shall be defined as television inspection by the insertion of a closed circuit television camera into a sanitary sewer line for the purpose of visual inspection of the interior portion of the sewer line.

B. The sewer lines for which televising are required is as specified shall be as shown on the construction drawings and as directed by the Engineer in the field.

C. All visual observations shall be duly recorded on a "Television Inspection Report Form" as supplied by the Contractor. A report form shall be made for each line inspected and shall be turned over to the Engineer after inspection is made.

D. It shall be the Contractor's responsibility to provide for the televising of sewer lines.

E. If there is an interference in the sewer line that will not allow the television camera to pass, then the camera shall be backed out of the line and an attempt shall be made to televise the line from the manhole at the other end. If the entire length of the sewer line cannot be televised because of two or more obstructions, then the Engineer shall be notified and a determination of how to proceed shall be made by the Engineer.

PART 2 PRODUCTS

2.01 The method by which televising sewer lines shall take place shall follow the procedure listed below and shall conform to all standard practices used.

The television camera shall be pulled through the sewer line by use of a mechanical or power-driven winch. It shall be pulled at a rate which will allow the inspector at the monitor to completely and thoroughly inspect the sewer line.

2.02 Video tapes shall be made upon the request of the Engineer. When requested, the videotape shall be made continuously as the camera is pulled through the line. Each tape shall be of the grade and quality best adapted to show the sewer in sharp detail. Each tape shall be numbered, dated and identified with sewer line number and location. The tape shall become the property of the Owner.

2.03 Black and white or colored Polaroid photographs shall be taken at the discretion of the Engineer to show bad joints, cracks, and any other problem spots.

2.04 A sewer line shall be cleaned prior to insertion of the television camera.

2.05 Any electrical service required by the Contractor for televising sewer lines shall be provided for by the Contractor.

2.06 Visual inspection shall be done one manhole section at a time and the flow in the section being inspected shall be controlled as specified in Section 02533-Sewer Flow Control.

2.07 If any equipment becomes "hung up" in the sewer line it is the responsibility of the Contractor to retrieve the equipment. If in freeing the equipment the Contractor has to make an excavation, he does so at his own expense, and any pipe, pavement or other existing structure has to be broken to retrieve equipment, it shall be replaced to original condition of following required specifications. No equipment shall be left in the sewer line unattended or overnight.

2.08 EQUIPMENT

The television camera used for the inspection shall be one specifically designed and constructed for such inspection. Lighting for the camera shall be suitable to allow a clear picture for the entire periphery of the pipe. The camera shall be operative in 100% humidity conditions. The camera, television monitor and other components of the video system shall be capable of producing a minimum 500 line resolution video satisfaction of the Owner's representative and if unsatisfactory, equipment shall be removed and no payment made for unsatisfactory inspections.

The television system shall be a contained system complete with winches, (power and mechanical), cable, closed circuit television camera, monitor, video tape recorder, Polaroid camera, film, suitable measuring device to accurately determine the position of the camera in the line being televised at all times, and all necessary equipment for the successful completion of television inspection.

2.09 INSPECTION

All televising of sewer lines shall be inspected daily by the Engineer or his duly authorized representative. A daily log of work accomplished shall be duly recorded and acknowledged by the Engineer and/or inspector and the Contractor's superintendent. Printed location records shall be kept by the Contractor and will clearly show the location, in relation to adjacent manholes, of each infiltration point discovered by the television camera. In addition, other points of significance such as locations of building sewer, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion and other discernible features will be recorded and a copy of such records will be supplied to the Engineer.

END OF SECTION

SECTION 02539
TESTING AND SEALING SEWER LINES

PART 1 TESTING SEWER LINES

1.01 GENERAL

1. Scope: This section consists of furnishing all labor, equipment and material to complete testing and sealing of sewer lines as shown on the drawings and specified in the following paragraphs.

2. Provide equipment such as pumps, gauges, regulators, and hoses necessary to perform air tests of each joint in all gravity sewer mains during final inspection. Equipment configuration shall be such that there are no valves on or along airline between measuring point at joint and pressure transducer or sensing device located in control unit on surface. Amount of pressure being exerted on joints shall be readable above ground on pressure gauge.

3. A reliable testing firm shall have certified the accuracy and calibration of the pressure sensing/monitoring system within a one-month period preceding use of equipment. Proof of certification shall be submitted.

PART 2 PRODUCTS/EQUIPMENT

2.01 TESTING EQUIPMENT

1. Equipment consists of a television camera and joint testing device that can be pulled through sewer lines. Construct testing device so one joint can be tested at a time.

2. Maintain continuous monitoring of void pressure at all times by means of an electronic pressure measuring system and pressure meter read-out on control panel.

3. Pressure meter device shall accurately show PSIG to nearest tenth (1/10) of one pound and shall respond and record any change in void pressure instantly. Make pressure measurements at void area.

4. Systems which incorporate bladders, hoses or the like for monitoring the pressures and which have questionable accuracy will not be allowed.

2.02 SEALING PRODUCTS & EQUIPMENT

1. Equipment used for mixing and pumping of chemical solutions shall consist of two approved, separate pumping and proportioning systems capable of supplying an uninterrupted flow of sealing material to completely fill point of infiltration and providing seal which will withstand specified joint air testing.

2. Sealing equipment shall not damage, break, move or cause settlement, assuming lines are structurally sound.

3. Repairs shall take place at joints, cracks, holes or similar points of infiltration as identified.

4. Method of repair shall be such that original cross-sectional area and shape of interior of sewer pipe shall not be permanently reduced or changed.

5. Materials; 3M 5610 polyurethane gel is the preferred material. Alternates will be evaluated upon request and must be approved by the engineer prior to installation.

PART 3 EXECUTION

3.01 TESTING

1. Clearing of Testing Device

2. Prior to performing pressure test and subsequent to sealing joint or crack, clear pressure-testing device.

3. This will normally require that sealing packer be deflated and the testing system purged to assure that hoses, check valves or other assemblies are free of the grouting material or other restrictions.

4. Pipe Test Criteria

5. Some pipe materials are porous. To confirm that joint testing is not a more severe test than the pipe itself can pass, perform an on-job barrel test between joints in each pipe line to be tested to determine that pipe barrel can pass test criteria.

6. If pipe barrel will not pass decay rate limits, it may be necessary to adjust maximum test pressure applied.

7. Adjustment of maximum pressure levels will be evaluated jointly between CONTRACTOR, ENGINEER and OWNER. OWNER will render final decision on each situation.

8. Barrel test shall be performed for each line segment and results documented.

9. Testing Procedures

10. Test by isolating area to be tested within testing device and applying positive pressure into created void area.

11. Apply positive air pressure to each pipe joint.

12. Introduce pressurized air into isolated void created by testing device.

a) Apply until:

It is determined pressure cannot be built in void.

Until test pressure of one-half (1/2) PSI per foot of depth plus four (4) PSI to maximum of ten (10) PSI is reached as recorded by void pressure monitor.

b) When either of these conditions is reached, shut off air supply.

13. If required pressure cannot be developed, joint shall have failed test. If required test pressure in void was built to one-half (1/2) PSI per foot of depth plus four (4) PSI, rate of decay of this pressure should not exceed ½ PSI in 30 seconds. Joint being tested will also have failed if pressure drops more than ½ PSI in 30 seconds.

14. Failure of joint indicates need for sealing. Sealing shall be as specified in this section.

15. Testing of ductile iron pipe joints is not required except at points where a transition from ductile iron to another pipe material occurs.

16. Where joints show obvious evidence of past leakage, testing of the joint is not required, unless directed by the Engineer.

17. Test Records

18. During joint testing, records shall be kept which includes:

a) Identification of sewer line section tested.

b) Test pressure used.

c) Location (footage) of each joint tested and location of joints not tested due to close proximity to building service connections and sanitary sewer manholes.

d) Statement indicating test results (passed or failed) for each joint tested.

e) Test pressure achieved and maintained for each joint passing air test.

f) Weekly equipment pressure test results.

g) Sewer line section barrel test results.

h) Daily gel check results.

i) Air temperature at time of testing joints.

j) VHS tape of televised testing and sealing procedures. Recorder may be turned off in between joints, or left running, at the direction of the Engineer.

19. SEALING

1. Do not inject chemical sealant at an excessive pressure to damage existing pipe. Repair damage to existing pipe, which may result due to excessive chemical sealant injection pressures. Sealing shall be performed in accordance with the latest National Association of Sewer Service Companies Specification Guidelines.

2. Handling of Materials

3. Mixing and handling of chemical grout may be toxic by passing through unbroken skin, by inhalation of dust or droplets of materials, by swallowing or by ingestion. Safe mixing, handling and pumping of chemicals shall be the responsibility of the Contractor and shall be done by personnel thoroughly familiar with handling of chemicals involved.

4. Furnish appropriate safety equipment.

5. Placement of Chemical Grout

6. Position sealing packer over area of infiltration by means of metering device at surface and closed circuit television camera in line. Accurate measurement of location of defect to be sealed shall be made using portion sealing packer as "Datum" or measurement point or target. Such measurement, target or joint shall also be used to obtain necessary measurement for positioning injection area of sealing packer over area to be sealed.

7. Expand sealing packer sleeves using controlled pressures. Expanded sleeve shall seal against inside periphery of pipe to form void area at point of infiltration, completely isolated from remainder of pipeline. Pump sealant materials into this isolated area through hose systems at controlled pressures, which are in excess of groundwater pressures.

8. Integrate pumping, metering and scaling packer device so that proportions and quantities of materials and pressures for material and sealing can be instantly regulated in accordance with type and size of leak, percentage of voids be filled, type of soil surrounding pipe, and rate of flow of sealing solution in relation to back pressures.

9. Upon completion of injection, retest point of repair. If retesting shows seal was not completely effective, process shall be repeated until defect successfully passes pressure test.

10. After sealing entire sewer line section, remove surplus grouting material from section at immediate downstream manhole. Removal shall not be permitted at succeeding downstream manholes except where immediate manhole is located within private property. If surplus-grouting materials left in sewer line section by Contractor result in surcharging and subsequent damage to public or private property, Contractor shall be responsible for damage to property and expenses incurred by Owner and shall hold Owner harmless.

11. Volume of sealant per joint shall be recorded. Sealant shall be pumped "to resist." Sealant volume shall not exceed 1 gallon per inch diameter of sewer line without authorization from Engineer.

12. Sealing of sewers may require grouting to occur against the flow of sewage in a number of locations due to access and bypassing pumping may be required.

13. Gel Checks

14. Make gel checks daily for each sealing vehicle to monitor both induction period and gel characteristics.

15. Make checks for every mixed batch or at least twice a day if only one batch is used.

16. Owner reserves the right to request adjustment of gel times or reject entire batch if acceptable gel characteristics do not exist.

17. Periodic gel checks shall also be made in pipe (at the request of Owner) by seating sealing packer on pipe barrel and filling packer void with grout solutions. Pressure will then be monitored until rise in pressure is observed, indicating that grout has gelled in packer void.

18. Field Records

19. Keep field records for each sewer line section prior to, during and after completion of chemical grouting operation.

20. Records shall include information such as accurate locations, gel times, grout volumes, grout pressure, air temperatures and joint not sealed due to close proximity to building service connections and sanitary sewer manholes.

21. VHS tapes of the sealing shall be furnished to the Owner.

22. Retesting

23. After a period of time equal to two times gel set time has elapsed, each point of repair shall be subjected to pressure of one-half (1/2) PSI per foot of depth plus 4 PSI. Rate of decay of this pressure shall not exceed ½ PSI in 30 seconds, except as otherwise approved by the Owner.

24. Repairs failing to meet this condition shall be resealed and retested until an acceptable result is obtained.

25. Final Acceptance Test

26. Upon completion of testing and sealing of all joints in the project the Owner shall select approximately 10% of the line for final acceptance testing.

27. Final acceptance testing shall consist of a low-pressure air test of entire line segments. Contractor shall plug line segments at upstream and downstream manholes and have entire line segment pressurized to 3 ½ PSI.

28. Pressure drop of 1 PSI in the time period as defined in ASTM C828 shall constitute a failure of the final acceptance testing.

29. If the line segment fails, Contractor shall retest each joint along this line segment and seal individual joints at no additional cost to the Owner.

30. Field Quality Assurance

31. The work of the Contractor shall be warranted for a period of 24 months following substantial completion.

32. At the time agreed by the Owner (approximately 24 months after initial sealing) an initial retest area consisting of specific sewer line sections shall be conducted. Sewer line sections to be retested will be randomly selected throughout Project Area by the Owner and shall be representative of majority of sealing work performed. Initial retest area shall consist of approximately 10% of linear feet contained in Work.

33. Within initial retest area, retest pipe joints and cracks designated. Joints and cracks, which were sealed previously and fail retest, shall be resealed.

    a) If failure rate of these retested joints and cracks is less than 5% of joints and cracks retested, work shall be considered satisfactory and no further retesting will be required.

    b) If failure rate of retested joints and cracks exceeds 5% of joints and cracks retested, an additional retest area of equivalent size shall be selected and all pipe joints and cracks shall be retested. Additional testing and sealing, if necessary, will continue until failure rate of less than 5% of total retested joints or cracks is met.

34. Grout joints, which were tested previously and passed air test but retest, failed. These joints will not be included in determining if initial work was completed satisfactorily.

35. Should as much as 25% of work be retested and fail to meet 5% requirement, Contractor shall provide same number of crews as utilized in original project so that retesting will proceed at a rapid rate.

36. Field Personnel: Personnel as named in the information submitted with the bid shall not be replaced without approval of the Owner.

END OF SECTION

SECTION 02541
PROTECTIVE COATING FOR SANITARY SEWER STRUCTURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS:

A. Section 02531 – Sewer Force Mains

B. Section 02532 - Sanitary Sewers.

C. Section 02547 - Lift Station Wetwell.

1.02 DESCRIPTION OF WORK:

Lift station wetwell and receiving manhole rehabilitation to prevent/stop inflow, infiltration, and exfiltration; repair voids; restore structural integrity; and provide protection against corrosion. A monolithic, fiber-reinforced, structurally enhanced, cementitious-based liner material is spray applied to the wall, bench surfaces of the manhole and the underside of the top slab.

1.03 DESCRIPTION OF WORK:

REFERENCES

A. ASTM C 78 - Flexural Strength of Concrete (Using Simple Beam With Third-Point Loading).

B. ASTM C 94 - Ready-Mixed Concrete.

C. ASTM C 109 - Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens).

D. ASTM C 234 - Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel.

E. ASTM C 267 - Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings.

F. ASTM C 321 - Bond Strength of Chemical-Resistant Mortars.

G. ASTM C 496 - Splitting Tensile Strength of Cylindrical Concrete Specimens.

H. ASTM C 596 - Drying Shrinkage of Mortar Containing Portland Cement.

I. ASTM C 666 - Resistance of Concrete to Rapid Freezing and Thawing.

J. ASTM C 827 - Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.

K. ASTM C 952 - Bond Strength of Mortar to Masonry Units.

L. ASTM C 1244 - Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test.

1.04. SUBMITTALS

A. Product Data: Submit manufacturer's product data, including physical properties, surface preparation, repair, application, curing, and field quality control.

B. Manufacturer Qualifications: Submit list of a minimum of 10 manhole rehabilitation projects completed during past 3 years.

C. Applicator Qualifications: Submit qualifications of applicator.

1. Certification stating applicator is factory trained and approved by manufacturer in application of the specified products.
2. List of recently completed manhole rehabilitation projects, including project name and location, names of owner and engineer, and description of products used, substrates, and application procedures.

1.05. QUALITY ASSURANCE

A. Material Qualifications: Minimum of 9 year history of being used for rehabilitation of sanitary system manholes.

B. Applicator Qualifications:

1. Factory trained and approved by manufacturer in application of the specified products.
2. Employs persons trained for the application of the specified products.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage:

1. Store materials in accordance with manufacturer's instructions.
2. Keep containers sealed until ready for use.
3. 3. Store materials in a cool dry environment. c) Handling: Protect materials during handling and application to prevent damage.

1.07. ENVIRONMENTAL CONDITIONS

A. Do not apply materials if ambient temperature is below 40 degrees F.
B. Do not apply materials to frozen surfaces or if freezing is expected within substrate within 24 hours after application.
C. Keep mix temperature at time of application below 90 degrees F.
D. Do not exceed water temperature of 80 degrees F.

1.08. PRODUCTS

A. MANUFACTURER

Strong-Seal Systems Corporation, PO Box 9209, Pine Bluff, Arkansas 71611. Toll Free (800) 982-8009. Fax (870) 850-6933. Web Site www.strongseal.com. or approved equal.

1.09. MATERIALS

A. General:

1. Materials from single manufacturer.
2. Materials compatible with substrate and with each other.
3. Materials approved by manufacturer.

B. Patching Material: Strong-Seal QSR. Rapid-setting, fiber-reinforced, high-early-strength, corrosion-resistant, hand-mixed and hand-applied, calcium aluminate based cementitious material.

1. Cement: Calcium aluminate cement.
2. Minimum Compressive Strength, ASTM C 109: 1,400 psi at 6 hours.
3. Minimum Bond, ASTM C 321: 145 psi at 28 days.
4. Applied Density: 105 plus or minus 5 pounds per cubic foot. Shrinkage, ASTM C 596: 0 percent at 90 percent relative humidity.

C. Infiltration Control Material: Strong-Seal Strong-Plug. Rapid-setting, high-early-strength, hand-applied, cementitious material.

1. Compressive Strength, ASTM C 109: 400 to 600 psi at 1 hour; 1,800

to 2,400 psi at 24 hours.
2. Expansion, ASTM C 827: 0.10 percent.
3. Sulfate Resistance, ASTM C 267: No weight loss after 15 cycles; 2,000 ppm; test continuing.
4. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles.
5. Pull-Out Strength, ASTM C 234: 14,000 pounds.
6. Placement Time: Less than 1 minute.

D. Cementitious Grout: Strong-Seal Grout 1000. Cementitious grout, volume stable.

1. Minimum Compressive Strength, ASTM C 109: 1,000 psi at 28 days.

E. Liner Material: Strong-Seal MS-2C. Fiber-reinforced, spray-applied, cementitious mortar. (Apply as skim coat.)

1. Cement: Calcium aluminate cement.
2. Minimum Compressive Strength, ASTM C109: 5,000 psi at 28 days.
3. Minimum Tensile Strength, ASTM C 496: 580 psi at 28 days.
4. .Minimum Flexural Strength, ASTM C 78: 780 psi at 28 days.
5. Shrinkage, ASTM C596: 0 percent at 28 days, 90 percent relative humidity.
6. Minimum Bond, ASTM C952: 2000 psi at 28 days.
7. Applied Density: 115 plus or minus 5 pounds per cubic foot.
8. Freeze/Thaw Resistance, ASTM C666, Method A: 100 cycles, no visible damage.
9. Factory Blended: Requires only addition of water at site.
10. Minimum Cement Content: 40 percent of total bag weight.
11. Dry Bulk Density: 65 to 67 pounds per cubic foot
12. Fiber Reinforcement: 2 to 5/8 inch alkaline-resistant fiberglass rods

F. Liner Material: Strong-Seal High Performance Mix. Fiber-reinforced, spray-applied, cementitious mortar.

1. Cement: 100 percent pure fused calcium aluminate clinker and calcium aluminate cement.
2. Minimum Compressive Strength, ASTM C 109: 8,000 psi at 28 days.
3. Minimum Tensile Strength, ASTM C 496: 800 psi at 28 days.
4. Minimum Flexural Strength, ASTM C 78: 1,200 psi at 28 days.

5. Shrinkage, ASTM C 596: 0 percent at 28 days, 90 percent relative humidity.
6. Minimum Bond, ASTM C 952: 2000 psi at 28 days.
7. Applied Density: 150 plus or minus 5 pounds per cubic foot.
8. Freeze/Thaw Resistance, ASTM C 666, Method A: 100 cycles, no visible damage.
9. Factory Blended: Requires only addition of water at site.
10. Dry Bulk Density: 88 to 92 pounds per cubic foot.
11. Fiber Reinforcement: 1/2 to 5/8 inch alkaline-resistant fiberglass rods.

G. Water: Clean and potable. Test nonpotable water in accordance with ASTM C 94.

1.10. EXAMINATION

Examine surfaces to receive protective coating. Notify the Engineer in writing if surfaces are not acceptable. Do not begin surface preparation, repair, or application until unacceptable conditions have been corrected.

1.11. SURFACE PREPARATION

A. Prepare surfaces in accordance with manufacturer's instructions.

B. Protection: Place covers over invert to prevent extraneous material from entering sewer lines.

C. Cleaning: Clean manhole walls and bench by using a minimum of 1,500 psi water spray to remove contaminants, dirt, debris, and other foreign materials.

D. Remove loose, unsound, and protruding brick, mortar, and concrete.

E. Inspection by Engineer: Before application of each material, surfaces to be sprayed or coated will be inspected by the Engineer. Correct defects or deficiencies identified by the Engineer before application of subsequent material.

F. Voids: Repair and fill voids greater than 2 inches in depth with patching material. Apply patching material in accordance with manufacturer's instructions.

G. Active Leaks:

1. Stop active leaks with patching material or infiltration control material. Apply material in accordance with manufacturer's instructions.
2. Install weep holes as required to localize infiltration during application of patching material or infiltration control material.
3. Plug weep holes after application with infiltration control material before application of liner material.
4. Severe Infiltration: Drill as required to pressure grout using a cementitious grout. Apply grout in accordance with manufacturer's instructions.

H. Advance Notice: Give the Engineer a minimum of 3 days advance notice of start of application.

1.12. INVERT REPAIR

A. Remove loose and unsound materials and wash walls, after surface preparation is complete.

B. Repair bench, invert, or service line using patching material. Apply in accordance with manufacturer's instructions.

C. Repair inverts with visible damage, where infiltration is present, or when vacuum testing is specified.

D. Apply patching material to invert, after blocking flow through manhole and thoroughly cleaning invert.

E. Uniformly trowel patching material onto damaged invert at a minimum thickness of 1/2 inch at invert. Extend out onto bench of manhole sufficiently to tie into liner material.

F. Ensure finished invert surfaces are smooth and free of ridges.

G. Reestablish flow in manhole after a minimum of 30 minutes after application of patching material.

1.13. APPLICATION OF LINER MATERIAL

A. Apply liner material in accordance with manufacturer's instructions.

B. Equipment: Spray apply liner material using approved equipment designed and manufactured by material manufacturer for the specific application.

C. Mixing:

1. Mix liner material with water in accordance with manufacturer's
2. instructions.
3. Discharge prepared mix into hopper.
4. Continue mixing as liner material is continuously sprayed.

D. Cleaning: Ensure surface is clean and free of foreign material.

E. Saturated Surface: Ensure surface is damp and totally saturated with water without noticeable free water droplets or running water, just before application of liner material.

F. Apply skim coat.

G. Spraying: Spray apply liner material in 1 or more passes from bottom of wall to bottom of frame to form a structurally enhanced monolithic liner. The underside of the top slab is included.

1. Minimum Total Thickness: 1 inch.

H. Finishing:

1. Trowel surface of sprayed liner material to relatively smooth finish. Do not over trowel.
2. Apply brush finish to trowel finished surface.

I. Follow manufacturer's instructions whenever more than 24 hours have elapsed between applications.

J. Application to Bench:

1. Remove wood covers.
2. Spray bench with liner material mixed in accordance with manufacturer's instructions.
3. Spray apply liner material to produce a gradual slope from walls to invert to form a structurally enhanced monolithic liner. Minimum thickness at invert of 1/2 inch.
4. Round full circumference of intersection of wall and bench to a uniform radius.

K. Application to New Cast-In-Place or Precast Concrete Wetwells:

1. Prepare surface with bonding agent in accordance with manufacturer's instructions.
2. Apply skim coat.
3. Spray application of Strong-Seal High Performance Mix liner material in one or more coats.
4. Walls, bottom slab and underside of top slab are included.
5. Minimum Total Thickness: 1 inch.

1.14. CURING

A. Cure materials in accordance with manufacturer's instructions.

B. Exposure:

1. Minimize exposure of applied materials to sunlight and air movement.
2. Cover structure if time between application of additional coats is to be longer than 15 minutes.
3. Do not expose finished materials to sunlight or air movement for longer than 15 minutes before covering or closing access.
4. Shade manhole while rehabilitation is in process in hot and arid climates.

C. Concrete Curing Compound:

1. Apply concrete curing compound if relative humidity is less than 70 percent within manhole.

2. Apply curing compound in accordance with manufacturer's instructions.

D. Cure Time: Allow a minimum of 6 hours cure time before subjecting wetwells or manholes to flows.

1.15. FIELD QUALITY CONTROL

A. Inspection by the Engineer or the waiver of inspection of any portion of the work shall not relieve the Contractor of responsibility to perform the work as specified.

B. Field Quality Control Testing: Performed by the Engineer at Contractor's expense.

C. Compressive Strength Test:

1. Cast four 2 inch cubes each day or from each pallet of material.
2. Label, package, and mail cubes to manufacturer.
3. Manufacturer shall test cubes for compressive strength in accordance with ASTM C 109 and submit test results to the Contractor and Engineer.

D. Leaks: Visually verify absence of leaks.

E. Exfiltration Test: Perform exfiltration test. Wetwells and receiving manholes

F. Over 6 Feet Deep: New protective liner and manhole rehabilitation is acceptable if water loss is a maximum of 1 inch plus 1/8 inch for each additional foot of depth in five minutes.

END OF SECTION

Georgia Department of Natural Resources
Environmental Protection Division
205 Butler Street, S.E., Suite 1362 East Tower, Atlanta, Georgia 30334-4100
Drinking Water Program
(404) 656-2750
FAX: (404) 651-9590

DRINKING WATER PROJECT SUBMITTAL FORM

Water System Name: CITY OF PORT WENTWORTH WSID Number: 0510002

General Project Information

Project Name: RICE HOPE THIRD LAKE DEVELOPMENT

Project Description: HORIZONTAL MULTIFAMILY CONSISTING OF 446 DETACHED UNITS

Project Location: End of Mulberry Blvd accessible via from Georgia Hwy 21 County: CHATHAM

Type of Development: HORIZONTAL MULTIFAMILY RESIDENTIAL

Maximum Elevation in Development: 25 (feet)

Number of Service Connections Proposed: 446

Size(s) of Water Main in Project: 8 & 12 (inches)

Length of Water Main to be Installed: 1,500 (feet) Water Main Material: PVC - C900

Wastewater for this Project will be handled by: Septic Tank: ☐ or Sewer System: ☑ (check one)

Is this project an addition to an existing water system? Y ☑ N ☐ If YES, please indicate: CITY OF PORT WENTWORTH

a) Static Pressure (point of tie-in): 50 (psi) at 20 feet elevation

b) Elevation at the point of tie-in: 20 feet

c) Flow Available: 1,270 (gpm) at 40 (psi) residual, at the point of tie-in.

d) Size of Water Main at Point of Tie-in to Project: 12 (inches)

e) ***Include 24-hour pressure test results for projects connecting to existing systems*.**

General Existing Water Supply Information

Number of Sources: _____ Total Production Capacity: _____ (gpm)

Number of Existing Service Connections: _____

Finished Water Storage Type(s): _____ Total Storage Volume: _____ (gallons)

PLEASE NOTE: ALL APPLICABLE APPROVALS AND/OR PERMITS RELATING TO THE CONSTRUCTION OF THE PROJECT MUST BE OBTAINED PRIOR TO THE START OF ANY CONSTRUCTION, AS REQUIRED.

To the best of my knowledge, the above named project conforms with all applicable state and local government requirements for the approval of public drinking water supply construction projects.

Name	Signature	Title	Date

City Officials Name: Robert

Time of Test: 7:00 am

Champion Fire Protection, Inc.

825 WHEATON STREET · SAVANNAH, GEORGIA 31401 · PHONE: (912) 234-0111 · FAX: (912) 236-1303

HYDRANT FLOW TEST SHEET

MULBERRY BLVD

PORT WENTWORTH, GA



Hydrant	Static/Residual	Color	GPM Flow	PSI	Size	Date
A	NA	Orange	1270	11	4.5	04/21/2022
B	50/40	Orange	NA	NA		

Inspector Name: Joseph Madden

Inspector Signature:

Rice Hope Third Lake
WATER DISTRIBUTION CALCULATIONS
March 15, 2022
Third Lake Development
Pittman Engineering Co., LLC

Third Lake Development is master planned for 446 units. The Water System is served by a 12-Inch diameter water main extension of Mulberry Blvd. The proposed 12-Inch diameter water main will extend approximately 750 linear feet to the Third Lake Entrance. Thereafter a proposed 12-inch water main will extend approximately 2,100 linear feet. The tie-ins will occur at Mulberry Blvd. The proposed mains will create a loop with the existing system. The Fire Hydrants will all be connected to a 12" main and the looped line will be 8".

The City of Port Wentworth requirement for fire flow at the most distant point within the project is 1,000 gpm.

The maximum peak instantaneous (peak) demand for residential communities with 446 connections expected through the proposed water mains is 315 gpm. (Refer page 38 from the "Minimum Standards For Public Water Systems")

Number of Connections	Gallons Per Minute
400	295
446	**315**
500	335

The total flow demand for the project = 1,000 gpm + 315 gpm = 1,315 gpm

The total head loss using the Hazen-Williams formula with C=120 is:

Head Loss = 0.2083 x (100/C)^1.852 x Q^1.852 / D^4.8655

Head Loss = friction head loss in feet of water per 100 feet of pipe,
C = coefficient for roughness of the interior pipe surface
Q = flow rate in gallons per minute
D = inside diameter of pipe in inches

For the 8-Inch diameter water main,
If C=120, Q=1,335 gpm and D=8-Inches, then Head Loss = 5.08 ft/100 ft

For the 10-Inch diameter water main,
If C=120, Q=1,335 gpm and D=10-Inches, then Head Loss = 1.71 ft/100 ft

For the 12-Inch diameter water main,
If C=120, Q=1,335 gpm and D=12-Inches, then Head Loss = 0.0385 ft/100 ft

Determine the head loss for an 8-Inch diameter water main,

Head Loss = 5.08 ft/100 ft x 2850= ft = 144.78 ft
Converting ft to psi = 144.78 ft x 1 psi/2.31 ft = 62.6 psi pressure drop

Determine the head loss for a 10-Inch diameter water main,

Head Loss = 1.71 ft/100 ft x 2850= ft = 48.7 ft
Converting ft to psi = 48.7 ft x 1 psi/2.31 ft = 21.1 psi pressure drop

Determine the head loss for a 12-Inch diameter water main,

Selected Pipe Size

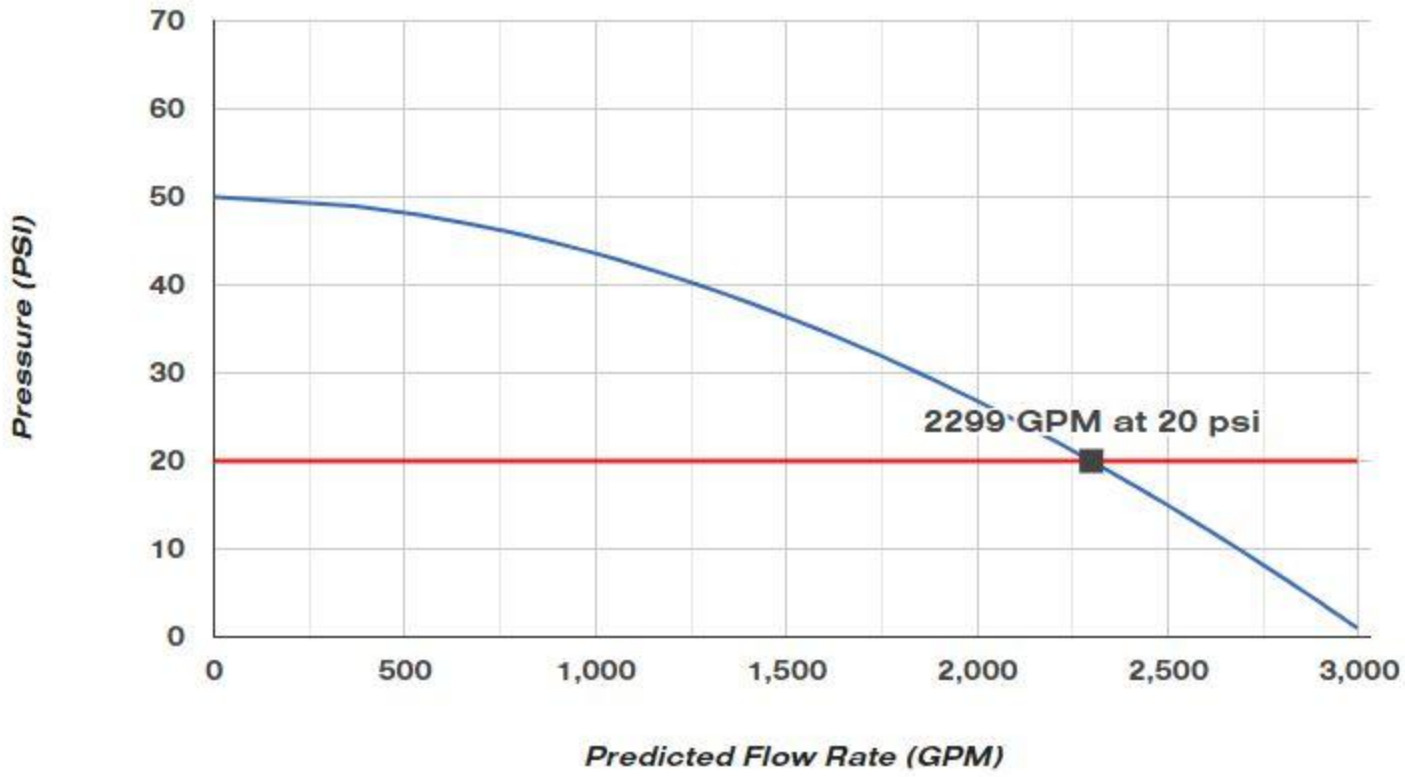
Head Loss = .0385 ft/100 ft x 2850= ft = 1.1 ft
Converting ft to psi = 4.8 ft x 1 psi/2.31 ft = 2.1 psi pressure drop

Minimum residual starting pressure at tie-in location must be sufficient to account for the 16.2 psi drop, while providing 20 psi minimum at the farthest hydrant from the tie-in location.

Minimal residual starting pressure at tie-in,
= 20 psi minimum + 16.2 psi pressure drop = 36.2 psi

GPM at 20 psi: 2299
Class: AA
Marking color: Light Blue
% Pressure Drop: 20%

Static = 50 psi
Residual = 40 psi
Flow = 1270 gpm



RICE HOPE - THIRD LAKE DEVELOPMENT
WATER SPECIFICATIONS

City of Port Wentworth

Georgia

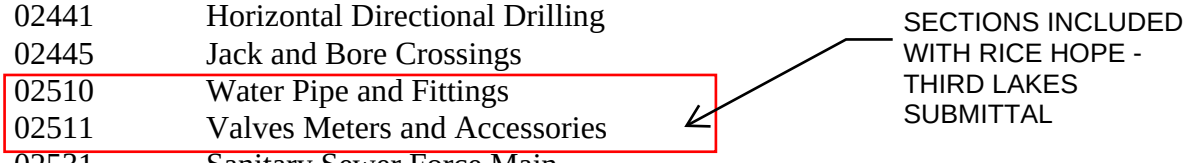
Comprehensive Development Manual

Section 2: **TECHNICAL SPECIFICATIONS**

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SECTION 02510
WATER PIPE AND FITTINGS

PART 1 GENERAL

1.01 SCOPE

A. Provide all labor, materials, equipment and incidentals necessary to construct, pressure test and disinfect all potable water piping, fittings and appurtenances as shown on the Construction Drawings and as specified herein.

B. Site piping covered under this Section shall begin at the outside face of structures and buildings, except where there is no joint at the outside face, then site piping shall begin not more than two feet beyond the face of the structure or building. Piping covered under this section shall also include piping within miscellaneous vaults such as meter and backflow prevention vaults.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02317 - Trench Excavation and Backfill.

B. Section 02445 - Jack and Bore Crossings.

C. Section 02511 - Valves, Meters, and Accessories.

D. Section 02532 – Sanitary Sewers

E. Section 03305 – Cast-In-Place Concrete.

1.03. SUBMITTALS

Complete product data and engineering data, including shop drawings, shall be submitted.

1.04 TRANSPORTATION AND HANDLING

A. Unloading: Furnish equipment and facilities for unloading, handling, distributing and storing pipe, fittings and accessories. Make equipment available at all times for use in unloading. Do not drop or dump materials. Any materials dropped or dumped will be subject to rejection without additional justification. Pipe handled on skids shall not be rolled or skidded against the pipe on the ground.

B. Handling: Handle pipe, fittings, valves and accessories carefully to prevent shock or damage. Handle pipe by rolling on skids, forklift, or front end loader. Do not use material damaged in handling. Slings, hooks or pipe tongs shall be padded and used in such a manner as to prevent damage to the exterior coatings or internal lining of the pipe. Do not use chains in handling pipe, fittings and appurtenances.

1.05 STORAGE AND PROTECTION

A. Store all pipe which cannot be distributed along the route. Make arrangements for the use of suitable storage areas.

B. Stored materials shall be kept safe from damage. The interior of all pipe, fittings and other appurtenances shall be kept free from dirt or foreign matter at all times. Valves and hydrants shall be drained and stored in a manner that will protect them from damage by freezing.

C. Pipe shall not be stacked higher than the limits recommended by the manufacturer. The bottom tier shall be kept off the ground on timbers, rails or concrete. Pipe in tiers shall be alternated: bell, plain end; bell, plain end. At least two rows of timbers shall be placed between tiers and chocks, affixed to each other in order to prevent movement. The timbers shall be large enough to prevent contact between the pipe in adjacent tiers.

D. Stored mechanical and push-on joint gaskets shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

E. Mechanical-joint bolts shall be handled and stored in such a manner that will ensure proper use with respect to types and sizes.

PART 2 PRODUCTS

2.01 PIPE

A. DUCTILE IRON PIPE

Shall be Pressure Class 350 from 4” to 24” diameter unless otherwise shown on the plans and shall conform to AWWA C151/ANSI A21.51, latest revision.

Ductile iron pipe, specials, and fittings shall have an approved exterior asphaltic coating ANSI/AWWA C151/A21.51 and an approved interior coating of standard cement lining with an asphaltic seal coating, 1 mil in accordance with AWWA C104/ANSI A21.4.

The seal coat shall not impair the potability or impart color, taste, odor, phenols, toxicity, caustic alkalinity, or have deleterious effect to the water shall be certified to meet the requirements of ANSI/NSF Standard 61. Each pipe shall bear a mark denoting its class. All pipe shall be manufactured within the limits of the continental United States.

B. POLYVINYL CHLORIDE PIPE (C900)

PVC pipe shall be Underwriters' Laboratories approved and listed and must meet all requirements of ASTM D2241 and bear the seal of conformance to NSF61. PVC pipe used for water mains shall be blue in color only. It shall meet or exceed AWWA C900 with the following supplemental specifications:

PVC pressure pipe 4" to 12" shall be DR 18, Class 150 unless otherwise shown on the plans and shall conform to AWWA C900, latest designation, made from compounds meeting standard code designation PVC 1120 and shall meet or exceed all requirements of ASTM D2241. Couplings, bells, gaskets and lubricants to be used with PVC pipe shall also conform to AWWA C900 requirements. Pipe shall have ductile iron pipe equivalent outside diameters. Each joint of pipe shall be marked with the nominal size and OD Base, material code designation, dimension ratio number, AWWA pressure class, AWWA designation number, manufacturer's name or trademark and production record code, and seal of the National Sanitation Foundation verifying the suitability of the pipe material for potable water service. Gaskets and lubricants shall be of proper size and shape and suitable for potable water and shall be furnished as required by the pipe manufacturer.

Pressure pipe 24" and larger shall be ductile iron see Section 02510-2.

Pressure pipe less than 4" shall be Polyethylene Pipe, 200 psi, DISR-7CTS. Pipe 4" to 12" shall be Class 150 with Dimension Ratio 18 or lower (thicker).

PVC Pressure Pipe 14" and larger shall be Class 235 C905 DR18.

PVC Pressure Pipe 6" to 12" shall be Class 150 C-900 DR18
The contractor shall furnish manufacturer's affidavit certifying that the pipe meets AWWA C900 latest designation standards. Size and class shall be as called for in the Bid Form or plans.

C. HIGH DENSITY POLYETHYLENE PIPE (C906)

This specification covers the requirements of high density polyethylene water transmission and distribution pipe in sizes 4" to 36" joined by means of zero leak-rate heat-fusion, and approved mechanical joints, meeting the specifications and requirements of American Water Works Association Standard C906.

The polyethylene pipe and fittings shall be made from virgin resins exhibiting a cell classification of PE 345464C as defined in ASTM D3350-Type III, Grade PE34 with an established hydrostatic-design-basis of 1600 psi for water at 73 Degrees F. The resin shall be listed by the PPI (Plastic Pipe Institute) in its pipe-grade registry Technical Report (TR) 4, "*Listing of Plastic Pipe Compounds*".

Pipe and fittings must be marked as prescribed by AWWA C906 and NSF 14 & 16. Pipe markings will include nominal size, OD base (i.e. 12" ductile iron pipe

sizing, DIPS), dimension ration, pressure class, WPR, AWWA C906, manufacturers name, manufacturer's production code including day, month, year extruded, and manufacturer's plant and extrusion line; and NSF logo.

The wall thickness shall follow the Dimension Ration (DR) system prescribed in AWWA C906. Laying lengths are 40 ft standard. The pipe is to be joined by heat fusion, flanges or other mechanical joint systems proven for HDPE pipes. Both pipe and fittings must be NSF listed by the manufacturer with the pipe bearing the "NSF" logo or mark. HDPE shall be the DR as shown on plans and/or in the bid form. The DIPS longitudinal color stripe pattern shall have three equally spaced pairs of **BLUE** color stripes extruded in to the pipe OD. The pipe shall be Driscoplex 4000 or approved equal. Size and class shall be as called for in the Bid Form or plans.

E. COPPER TUBING

Type K copper 3 inches and smaller shall conform to AWWA Specification 7S-CR, ASTM Specifications B-88, and Federal Specification WW-T-799. All service lines from the main to the meter up to 1" shall be copper tubing. Service lines from 1-1/4" up to 3" can be copper tubing or HDPE water service tubing as defined below.

F. PLASTIC SDR 9 HDPE WATER SERVICE TUBING (C901)

Polyethylene Copper Tube Size Water Service Tubing - 3 inches and Smaller may be used in lieu of copper tubing except as defined above. Pipe shall be manufactured from a PE 3408 resin listed with the Plastic Pipe Institute (PPI) as TR-4. The resin material will meet the specifications of ASTM D3350-02 with a cell classification of PE:345464C. Pipe shall have a manufacturing standard of ASTM D2737 (CTS). Pipe shall be DR 9 (200psi WPR) @ 73.4 degrees F unless otherwise specified on the plans. The pipe shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. All pipes shall be suitable for use as pressure conduits, and per AWWA C901, have nominal burst values of three times the Working Pressure Rating (WPR) of the pipe. Pipe shall also have the following agency listing of NSF 61. The pipe shall be Driscoplex 5100 Ultra-Line or approved equal.

G. WATER SYSTEM MATERIALS

All materials utilized in the construction of the water system shall be new. Used water mains that meet these standards may be used again after the pipe has been thoroughly cleaned and restored practically to its original condition.

2.02 JOINTS AND GASKETS

A. PUSH-ON JOINTS

1. DIP Push-on joints shall conform to AWWA C111/ANSI A21.11 (latest revision) - Rubber Gasket Joints for Cast Iron Pressure Pipe and Fittings. Details of the joint design shall be in accordance with the manufacturer's standard practice such as "Fastite", "Bell-Tite," "Tyton," or equal joints. Gasket material shall be standard styrene butadiene copolymer (SBR).

   Whenever the pipe is cut in the field, the cut end shall be conditioned so it can be used in making up a joint by filing or grinding the cut end to remove burrs or sharp edges that might damage the gasket.
2. PVC Push-on joints shall be an elastomeric gasketed joint. Insertion and lubrication of the elastomeric gasket in the annular groove must be as recommended by the manufacturer.

B. RESTRAINED JOINTS

Restrained joints for DIP shall be obtained by the installation of “Field Lok”, “TR Flex”, “Fast-Grip”, “Flex-Ring”, MEGALUG by EBAA Iron, Inc. or approved equal. These restraint glands shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1.

Tyton Joint Pipe with “Field Lok Gaskets”, Fastite Pipe with “Fast-Grip Gaskets” or DIP or PVC Pipe with EBAA Iron, Inc. pipe restraints or approved equal.

All underground creek crossings and jack and bores with steel casing shall use “Field Lok” or “Fast-Grip” restrained joints.

C. FLEXIBLE JOINTS

Flexible joints shall be American Pipe "Flex-Lok", Clow "Ball and Socket", U.S. Pipe "Usiflex", EBAA Iron Inc. FLEX-900 or approved equal. Piping shall have a minimum working pressure rating of 250 PSI and a minimum allowable joint deflection of 15^{o}.

D. MECHANICAL JOINTS

Mechanical joints for DIP and PVC shall consist of a bolt joint of the stuffing box type as detailed in AWWA C110/ANSI A21.10 (latest revision) and described in AWWA C111/ANSI A21.11 (latest revision) - Rubber Gasket Joints shall be SBR rubber and conform to AWWA C111/ANSI A21.11 (latest revision).

E. FLANGED JOINTS

Flanged joints shall conform to AWWA C110/ANSI A21.10 (latest revision). Gaskets shall be SBR rubber per ANSI/AWWA C111/A21.11. This rubber compound is NSF 61 certified for contact with potable water or other approved quality shall be used in all flanged joints. The bolts and nuts shall conform in dimensions to the American Standard heavy series.

"KWIK" or Uni-Flange adaptors for plain and pipe shall be used only when authorized by the Engineer. Set screws shall be self-torquing or be properly torqued during installation with a torque wrench.

F. FUSION JOINTS

1. Sections of polyethylene pipe should be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements of 400 degrees Fahrenheit, alignment, and an interfacial fusion pressure of 75 PSI. The butt fusion joining will produce a joint weld strength equal to or greater than the tensile strength of the pipe itself. All welds will be made using a Data Logger to record temperature, fusion pressure, with a graphic representation of the fusion cycle shall be part of the Quality Control records.
2. Sidewall fusions for connections to outlet piping shall be performed in accordance with HDPE pipe and fitting manufacturer’s specifications. The heating irons used for sidewall fusion shall have an inside diameter equal to the outside diameter of the HDPE pipe being fused. The size of the heating iron shall be ¼ inch larger than the size of the outlet branch being fused.
3. Mechanical joining will be used where the butt fusion method can not be used. Mechanical joining will be accomplished by either using a HDPE flange adapter with a Ductile Iron back-up ring or HDPE Mechanical Joint adapter with a Ductile Iron back-up ring.
4. Socket fusion, hot gas fusion, threading, solvents, and epoxies will not be used to join HDPE pipe.

G. THREADED FLANGE JOINTS

These joints shall be in accordance with AWWA C115/ANSI A21.15. All flanges shall have a taper pipe thread (NPT) in accordance with ANSI B2.1, Pipe Threads (except dryseal), adapted to DIP and CIP outside diameters.

H. COPPER AND HDPE SERVICE PIPE

Use brass flare fittings or compression joints for copper and “Double ‘O’ Seal” Central Plastics Co. transition fittings for HDPE.

2.03 PIPE FITTINGS AND SPECIALS

A. DIP FITTINGS AND SPECIALS

Shall be manufactured in the USA. Mechanical joint fittings 4 inches through 24 inches shall conform to either AWWA C110 or AWWA C153 (Compact Fittings). Minimum pressure rating for fittings shall be 350 psi. All other fittings shall conform to AWWA C110. Unless otherwise noted on the plans, fittings for underground installation shall be mechanical joint conforming to AWWA C111, and fittings for above ground installation shall be flanged conforming to ANSI B16.1 Class 125. Minimum pressure rating for fittings shall be 250 psi. Fittings and specials shall be completed with rings, bolts, gaskets, etc., for joints.

B. POLYVINYL CHLORIDE PIPE

Fittings used on 4" thru 16" PVC Pipe transitions shall be mechanical or restrained joints as manufactured by American Pipe, U.S. Pipe, Clow or EBAA Iron Inc.

C. POLYETHYLENE PIPE (HDPE)

1. Butt Fusion Fittings - Fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-02, and approved for AWWA use. Butt Fusion Fittings shall have a manufacturing standard of ASTM D3261. Molded & fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. Fabricated fittings are to be manufactured using Data Loggers. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the quality control records. All fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the Working Pressure Rating (WPR) of the fitting.
2. Electrofusion Fittings - Fittings shall be PE3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-02. Electrofusion Fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All electrofusion fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the Working Pressure Rating (WPR) of the fitting.
3. Flanged and Mechanical Joint Adapters - Flanged and Mechanical Joint Adapters shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-02. Flanged and Mechanical Joint Adapters shall have a manufacturing standard of ASTM D3261. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans.

D. BRASS NIPPLES AND BRASS PIPE FITTINGS (DOMESTIC MADE):

Threads shall be cleanly cut with sharp tools and the jointing procedure shall conform to the best practice. Before jointing, all scale shall be removed from pipe by some suitable means. After cutting, all pipe shall be screwed together with an application for graphite and engine oil, Teflon tape, or other sealing compound applied to all threads and once a joint has been screwed on it shall not be backed

off unless the threads are re-cleaned and new compound or Teflon tape applied. Unions shall be installed at every connection to the supply line.

E. VALVES:

All 8-inch or larger gate valves that are installed on the reclaimed transmission line(s) and /or tie into a major transmission line shall be installed in a manhole. All Gate Valves that are located at the entrance of subdivision or other development that tie into a transmission line shall be installed in a manhole. All other Gate Valves can be installed in a cast iron valve box with a concrete collar and concrete valve marker post.

PART 3 EXECUTION

3.01 EXISTING UNDERGROUND UTILITIES AND OBSTRUCTIONS

A. The plans indicate utilities and obstructions that are known to exist according to the best information available to the Owner.

B. Existing Utility Location: The following steps shall be exercised to avoid interruption of existing utility service.

1. Expose the facility, for a distance of at least 100 feet in advance of pipeline construction, to verify its true location and grade. Repair, or have repaired, any damage to utilities resulting from locating or exposing their true location.
2. Avoid utility damage and interruption by protection with means or methods recommended by the utility owner.

C. Conflict with Existing Utilities:

1. Horizontal Conflict: Horizontal conflict shall be defined as when the actual horizontal separation between a utility, main, or service and the proposed piping does not permit safe installation of the piping by the use of sheeting, shoring, tying-back, supporting, or temporarily suspending service of the parallel or crossing facility. The Contractor may change the proposed alignment of the piping to avoid horizontal conflicts if the new alignment complies with regulatory agency requirements and after a written request to and subsequent approval by the Engineer. Where such relocation of the piping is denied by the Engineer, the Contractor shall arrange to have the utility, main, or service relocated.
2. Vertical Conflict: Vertical conflict shall be defined as when the actual vertical separation between a utility, main, or service and the proposed piping does not permit the crossing without immediate or potential future damage to the utility, main, service, or the piping. The Contractor may change the proposed grade of the piping to avoid vertical conflicts if the changed grade maintains adequate cover and complies with regulatory

agencies requirements after written request to and subsequent approval by the Engineer.

D. Electronic Locator: Have available at all times an electronic pipe locator and a magnetic locator, in good working order, to aid in locating existing pipe lines or other obstructions.

E. Water and Sewer Separation:

1. Water mains shall be laid at least ten (10) feet horizontally from any existing or proposed sanitary sewer, storm sewer or sewer manhole. The distance shall be measured edge-to-edge. When local conditions prevent a horizontal separation of 10 feet, the water main may be laid closer to a sewer (on a case-by-case basis) provided the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer. It is advised that the sewer be constructed of materials and with joints that are equivalent to water main standards of construction and be pressure tested to assure water-tightness prior to backfilling.
2. 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 (bisected at the point of crossing). Special structural support for the water and sewer pipes may be required.
3. When local conditions prevent a vertical separation of 18 inches and/or less than 10 feet of horizontal separation, 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. 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 (bisected at the point of crossing).
4. When water mains cross under sewers, additional measures shall be taken by providing:
    a. a vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main;
    b. adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking the water mains;
    c. 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,
    d. 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.
5. No water main shall pass through, or come in contact with, any part of a sanitary sewer manhole.

F. Surface Water Crossings:

Surface water crossings, both over and under water, may present special concerns and should be discussed with the Division before the final plans are prepared.

1. At above water crossings, the pipe shall be adequately supported and anchored, protected from damage and freezing, and accessible for repairs or replacement.
2. At underwater crossings, a minimum of two (2) feet of cover shall be provided over the pipe.
3. The installation of ductile iron pipe with restrained push-on joints and encased in concrete, may be considered with the prior approval of the Engineer. Otherwise, when crossing water courses which are greater than 15 feet in width, only pipes of special construction, having flexible, watertight joints shall be installed.
4. Valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair (valves shall be easily accessible and not subject to flooding); the valve closest to the supply source shall be in a manhole.

5. Sampling taps shall be installed at each end of the crossing, and permanent taps shall be made for testing and determining leaks.

3.02 INSTALLATION IN TRENCH

A. Proper and suitable tools and appliances for safe and convenient handling and installing of pipe and fittings shall be used. Great care shall be taken to prevent pipe coatings from being damaged, particularly cement linings on the inside of D.I.P. pipes and fittings. Any damage shall be remedied as directed. All pipe and fittings shall be carefully examined by the Contractor for defects just before installing and no pipe or fitting shall be installed which is defective.

B. If any defective pipe or fitting is discovered after having been installed, it shall be removed and replaced in a satisfactory manner with a sound pipe or fitting by the Contractor at his own expense. All pipes and fittings shall be thoroughly cleaned before they are installed and shall be kept clean until they are used in the completed work. Open ends of pipe shall be kept plugged with a bulkhead during construction.

C. Water mains shall be installed on a 4” Class II or III select natural material bedding as specified in Section 02317 Trench Excavation and Backfill with O.D./2 haunching. The compaction for bedding and haunching shall be 90% of Standard Proctor Density as determined by (ASTM D698). Pipe shall not be installed within 6 inches of rock. In trench rock conditions, a minimum of 6 inches of sand or approved suitable soil shall be placed on rock prior to pipe installation. Trenches shall be kept free of water.

D. Where bends and tees occur in pressure mains, the Contractor will pour a block of concrete at the bend or tee as detailed on the Plans. The block shall consist of 3000 psi concrete, and shall be of size and shape as shown on the plans or as

directed by the Engineer. The Contractor may use forms or either walls to mold the "thrust block;" however, if earth walls are used they shall be cut true to shape with all excess earth removed and the work shall be done in such a manner that no loose earth will become mixed with the fresh concrete. Thrust restraint shall be provided at all points where hydraulic thrust may develop. This will include providing reaction blocking, tie rods or joints designed to prevent movement to all bends, tees, valves, plugs, hydrants and other points where thrust may develop. The Engineer shall inspect all thrust blocks prior to them being covered.

E. All ductile iron pipe laid underground shall be mechanical joint pipe and fittings or "push-on" type joint unless otherwise shown on the plans or directed by the Engineer.

F. All water mains laid underground shall have a minimum of 42 inches of cover above the top of the pipe unless otherwise shown on the plans, or unless otherwise directed by the Engineer.

G. All water mains laid under existing sewers, storm drains, culverts, structures, etc., shall have a minimum clearance of 18 inches between the outside wall of the water pipe and the outside surface of the existing pipe or structure.

3.03 PIPE JOINTING

A. MECHANICAL AND RESTRAINED JOINTS

Clean spigot and bell of foreign material and apply soapy water containing chlorine solution before slipping gasket and gland over spigot end of pipe. Small side of gasket and lip of gland must face the socket. Paint gasket with soapy solution and place spigot end of pipe securely home in socket. Push gasket evenly into position in socket, slide gland into position and tighten bolts with fingers.

Tighten bolts to uniform tightness with ratchet wrench by tightening bottom bolt and then top bolt. Thereafter, all bolts shall be tightened in sequence of 180 degrees apart until all bolts are within the range of torque recommended by the manufacturer.

B. PUSH-ON JOINTS

Jointing shall be made with rubber gaskets and lubricant furnished by the manufacturer in strict accordance with the manufacturer's recommendations. Prepare field cut pipe by filing 1/8 inch 30 degree bevel on pipe end to avoid injuring gasket.

C. THREADED FLANGE JOINTS

Insert recommended manufacturer’s gasket and tighten bolts to uniform tightness with ratchet wrench by tightening bottom bolt and then top bolt. Thereafter, all

bolts shall be tightened in sequence of 180 degrees apart until all bolts are within the range of torque recommended by the manufacturer.

D. POLYVINYL CHLORIDE PIPE

Do not thread PVC pipe. When threads are necessary, adaptors will be used. Use strap wrenches to couple threaded PVC pipe fittings and use lubricant recommended by pipe manufacturer.

Avoid excessive torque and do not score pipe. Use couplings furnished with pipe for fittings and install in strict accordance with the manufacturer's recommendations.

E. POLYETHYLENE PIPE (HDPE)

Sections of polyethylene pipe should be joined into continuous lengths on the jobsite above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements of 400 degrees Fahrenheit, alignment, and an interfacial fusion pressure of 75 PSI. The butt fusion joining will produce a joint weld strength equal to or greater than the tensile strength of the pipe itself. All welds will be made using a Data Logger to record temperature, fusion pressure, with a graphic representation of the fusion cycle shall be part of the Quality Control records.

3.04 MISCELLANEOUS CONSTRUCTION

A. CONNECTIONS TO EXISTING MAINS

These shall be made at the locations shown on the plans or as directed by the Engineer.

When existing gate valves on the distribution system must be shut off in order to make connections, this work will be done by the Contractor with approval of the Owner. Whenever the Contractor elects to proceed with a connection without a complete shut-off, this work will be done without additional cost to the Owner.

When an existing main has been cut or a plug removed for a connection, the work of making a connection shall proceed without interruption until complete at no increase in contract price.

Connections to existing mains shall be governed by all applicable provisions of these specifications. The contractor shall locate, excavate and cut the existing main, remove the section of old pipe, rework the trench, connect the new pipe with the old and set necessary specials and valves as shown on the plans or as directed by the Engineer. Tapping sleeves, crosses and valves may be used at the option of the Contractor at no addition to the contract price. All necessary

precautions shall be taken to brace valves and mains under pressure to prevent blowouts.

B. CONCRETE VALVE MARKER POSTS

A concrete valve marker post shall be furnished and installed as directed, with each gate valve (excluding fire hydrant valves). The concrete marker post shall have a four inch minimum square section and a minimum length of 42 inches with beveled edges and containing at least one three-eighths inch diameter bar of reinforcing steel. Markers shall be placed as directed by the Engineer and set so as to leave 18 inches exposed above grade. The exposed portion of the valve markers shall be engraved with the word "WATER". The concrete valve marker shall be painted BLUE.

C. SERVICE CONNECTIONS

Corporation stops and service saddles shall be used for all service connections. They shall have tapered threads for iron or steel pipe and pipe threads for plastic pipe saddles. Use approved tapping machine to make all ductile or cast iron taps.

D. EXPANSION COUPLINGS

Expansion couplings shall be installed where shown on the plans, required or directed. Unless otherwise shown or specified, the pipe couplings shall be of a gasketed short sleeve type, with a diameter to fit the pipe properly.

E. PIPE SLEEVES

Contractor shall furnish and install cast iron wall sleeves or wall pipe as indicated on the plans where cast iron and ductile iron piping connects with or passes through concrete walls or floors and in locations where small piping and electric wiring and conduits connect with or pass through concrete walls or floors. Wall pipe or sleeves shall be accurately located and securely fastened in place before concrete is poured. All wall sleeves and wall pipes shall have wall collars properly located to be in the center of the wall where the respective pipes are to be installed.

F. BUILT-IN PIPE AND FITTINGS

Where shown on the plans or where directed, pipe and fittings shall be carefully built into or supported on concrete or brick masonry. Where pipe or fittings are shown through concrete or brick walls, the pipe or fittings shall be carefully supported and the masonry work poured or built against them. Under no circumstances will blocking out of walls be permitted for pipe insertion later.

G. INSTALLATION OR REPAIR

Any pipe, solder or flux which is used in the installation or repair of the public water distribution system shall be lead free with not more than 8.0% lead in pipes

and fittings and not more than 0.2% lead in solders and flux.

3.05 DRILLING AND TAPPING

A. Wherever required, cast iron and ductile iron pipes and fittings shall be drilled and tapped to other piping. All holes shall be drilled accurately at right angles to the axis of any pipe or fitting. Where plugs are drilled, holes shall be at right angles to the face of the plug.

B. All tapping shall be carefully and neatly done by skilled workmen with suitable tools.

C. Where connections are made between new and old water piping the connections shall be made in a thorough and workmanlike manner using proper fittings and specials to suit actual conditions.

D. Under the direction, supervision and observation of the City of Port Wentworth or approved representative.

3.06 PIPELINE DETECTION MARKING

A. All water mains shall be protected by a plastic marking tape placed a minimum of 12 inches above the top of pipe for its full length. The tape shall be similar to Reef Industries Terra Tape Standard. It will have sufficient thickness; tensile strength; elongation and resistance to alkalis, acids and other destructive agents to remain a permanent marker of the line buried below. A message shall be printed on the tape at least every 30 inches "**CAUTION WATER LINE BURIED BELOW**".

B. All non-metallic water mains shall be protected by a metalized foil tape buried a minimum of 12 inches above the top of the pipe for its full length. The foil shall be protected by plastic film laminated on each side. The lamination shall be strong enough to prevent the separation of foil and plastic film. The tape should be similar to Reef Industries' Terra Type Detectable. It shall be inductively locatable and conductively traceable using a standard pipe and cable-locating device. A message shall be printed on the tape every 30 inches "**CAUTION WATER LINE BURIED BELOW**".

C. Tracing Wire shall be single strand #12 AWG, Vinylon – A THWN or THHN or gasoline and oil resistant II VW 600V or AWM.

No. 12 AWG solid plastic-coated copper wire shall be installed on top of all water mains where non-metallic pipe is used and attached by means of securing the wire on top of the water main with a 12-inch long by 2-inch wide piece of duct tape. Attach the wire to the main every ten (10) feet.

Wire shall be bonded at splices with 3M DBY-6 Direct Bury Splice Kit at every connection

The wire shall be laid the entire length of the trench and shall be continuous. The Contractor shall demonstrate continuity in wire through the entire length of the project. At every valve manhole the wire shall be run through the pipe opening, up to the ring and cover, secured at the ring by means of grouting the ring to the top of the manhole. The wire shall continue in the same loop back to the opposite pipe opening, through it and continuing in one continuous loop along the main.

At every fire and post hydrant, the wire shall be run from the main to the hydrant tee, to the gate valve, wrapped around the gate valve once, then run to the bottom of the hydrant flange, up the hydrant, wrapped around it once at the finish grade, then back to the main in one continuous loop, and continuing along the water main.

At every water service lateral, the wire shall be run from the main and corporation stop to the curb stop and attached to the polyethylene pipe by a piece of duct tape wrapped around the wire and tubing. The wire shall be connected to the tracer wire at the main with a single strand from the water main to the curb stop or into the meter box.

The City of Port Wentworth will test all tracer wire prior to acceptance.

3.07 PRESSURE TESTING

A. Hydrostatic testing shall be performed on lines after pipe has been laid and backfilled between joints, all newly laid pipe, or any valved section thereof. The pipe shall be subjected to a hydrostatic gauge pressure of at least (150%) of the rated working pressure of the pipe for two hours and not less than (125%) at the high point per AWWA C600 (DIP) and AWWA C605 (PVC). Working pressure is defined as maximum anticipated sustained operating pressure. In no case shall the test pressure be allowed to exceed the design pressure for pipe, appurtenances, or thrust restraints.

1. The Contractor shall have the responsibility to ensure that all outlets are closed by valves or plugged and braced to prevent blowouts. Pressurizing equipment shall be constantly monitored or include a regulator or relief valve to avoid over pressurizing and damaging an otherwise acceptable line. No one shall be allowed in manholes, wet wells, valve pits, etc. during testing.
2. To prepare the line for testing, the contractor shall backfill all pipe and provide all reaction blocking before hydrostatic testing. The Engineer may direct the Contractor to leave certain joints and connections uncovered until testing has been completed. All pipe outlets shall be secured to resist the test pressure. Clean out all debris in the pipe.
   The section of pipe under test shall be slowly filled with water and all air shall be expelled from the pipe. If blow-offs are not available at high places, taps at points of highest elevation shall be made before the test and plugged during and after test.
3. Procedure; the specified test pressure, based on the elevation of the lowest point of the line or lowest point of the section under test and corrected to the elevation of the test gauge, shall be applied by means of a gasoline driven test pump connected to the pipe in a manner satisfactory to the Engineer. The Contractor shall meter the amount

of water used during the test. The duration of the test shall be at least two consecutive hours.
The Contractor shall locate and repair any and all leaks that may develop. All exposed pipe, fittings, valves, hydrants, and joints will be carefully examined during the test. Any cracked or defective pipe, fittings or valves A>discovered as a result of this test shall be removed and replaced with sound material, and the test shall be repeated until satisfactory to the Engineer.

B. Allowable leakage. The contractor shall furnish the gauges and measuring device or the leakage test, pump, pipe, connections, and all other necessary apparatus, unless otherwise specified, and shall furnish the necessary assistance to conduct the test. The duration of each leakage test shall be 2 hours, unless otherwise specified. During the test, the pipeline shall be subjected to the pressure stated above. Leakage shall be defined as the quantity of water that must be supplied into the pipe section being tested to maintain a pressure within 5 psi of the specified leakage-test pressure after the pipe has been filled with water and the air in the pipeline has been expelled. No installation will be accepted if the leakage is greater than that determined by the formula per AWWA C600 (DIP) and AWWA C605:

1) For DIP use:

$$L = \frac{SD\sqrt{P}}{133{,}200}$$

Where:
L = allowable leakage, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of the pipe, in inches
P = average test pressure during the leakage test, in pounds per square inch (gauge)

This formula is based on an allowable leakage of 11.65 gpd/mi/in. of nominal diameter at a pressure of 150 psi.

2) For PVC use:

$$L = \frac{ND\sqrt{P}}{7{,}400}$$

Where:
L = allowable leakage, in gallons per hour
N = number of joints in the length of pipeline tested
D = nominal diameter of the pipe, in inches

P = average test pressure during the leakage test, in pounds per square inch (gauge)

This formula is based on an allowable leakage of 10.50 gpd/mi/in. of nominal diameter at a pressure of 150 psi.

3) Hydrostatic Leak Testing for HDPE:

This hydrostatic leak test procedure consists of filling, an initial expansion phase, a test phase, and depressurizing in accordance with **Chevron Phillips Chemical Co. Publication – Technical Note 802 – Leak Testing.**

a) Filling: Fill the restrained test section completely with a test liquid acceptable to the Owner.

WARNING – Ensure that there is no air trapped in the test section. Failure with entrapped air can result in explosive release and result in death or serious bodily injury. Use equipment vents at high points to remove air.

b) Initial Expansion Phase:
Gradually pressurize the test section to test pressure, and maintain test pressure for three (3) hours. During the initial expansion phase, polyethylene pipe will expand slightly. Additional test liquid will be required to maintain pressure. It is not necessary to monitor the amount of water added during the initial expansion phase.

c) Test Phase:
This alternative is applicable when the test pressure is 150% of the system design pressure.
Immediately following the initial expansion phase, monitor the amount of make-up water required to maintain test
pressure for one (1), or two (2), or three (3) hours. If the amount of make-up water needed to maintain test pressure does not exceed the amount in Table 2, no leakage is indicated.

Table 2 Test Phase – Make-Up Water Allowance:

Make-Up Water Allowance for Test Phase – (U.S. Gal/100 ft of pipe)			
Nominal Pipe size (in.)	1-Hour Test	2-Hour Test	3-Hour Test
4	0.13	0.25	0.40
6	0.3	0.6	0.9
8	0.5	1.0	1.5
10	0.8	1.3	2.1
12	1.1	2.3	3.4
14	1.4	2.8	4.2
16	1.7	3.3	5.0
18	2.0	4.3	6.5
20	2.8	5.5	8.0
22	3.5	7.0	10.5
24	4.5	8.9	13.3

d) Depressurizing:

At the conclusion of the test, carefully depressurize the test section by the controlled release of test liquid. The test liquid may need to be drained and its disposal may be subject to regulations.

3.08 STERILIZATION OF POTABLE WATER MAINS

Precaution should be taken when installing pipes, valves, and hydrants to keep them as clean as possible to minimize contamination. After each line between valves has been tested and all necessary repairs made, and the lines flushed clean, water containing not less than 25 parts per million of chlorine shall be fed in the line and allowed to stand 24 hours, after which the lines shall be flushed and samples taken at various points. Water mains shall be disinfected by the continuous feet method. The chlorine solution shall be slowly fed through a suitable device within 10 feet of the point of filling the new main. Care should be taken in filling the mains so that all air pockets are eliminated so as to permit intimate contact of the disinfection agent with the entire inside diameter of the pipe. The water and chlorine solution should be slowly fed until 25 mg/l free chlorine is throughout the main. An acceptable method is by preparing a 1% chlorine solution using sodium hypochlorite or calcium hypochlorite. For example, one pound of calcium hypochlorite to 8 gallons of water will produce a 1% solution. The required amount of chlorine to produce a 25 mg/l concentration per 100 feet of pipe is as follows:

Pipe Diameter	**1% Chlorine Solution (gal.)**
4”	0.16
6”	0.36
8”	0.65
10”	1.02
12”	1.44
16”	2.60

The disinfection solution shall be allowed to remain in the lines for not less than 24 hours. At the end of the 24-hour period, all portions of the main shall show a chlorine residual of not less than 10 mg/l. The highly chlorinated water shall be drained to a sanitary sewer or neutralized with an approved chemical prior to draining to other than a sanitary sewer.

Disinfection of the new mains and the disposal of the heavily chlorinated water, following the disinfection, shall be accomplished in accordance with the latest edition of AWWA Standard C651. There shall be no physical connection between the distribution system and any pipes, pumps, hydrants, or tanks whereby unsafe water and other contaminating materials may be discharged or drawn into the system.

Following chlorination all water shall be flushed from the lines until the replacement water has a chlorine content not more than 0.1 p.p.m. in excess of the residual in the water from the supplying main. Water samples shall be taken by the Contractor and sent to an approved laboratory for bacteriological examination. The lines shall not be placed into service until a satisfactory bacteriological report is received.

The "**tablet method**" of disinfection which consists of placing calcium hypochlorite granules or tablets in the water main as it is being installed and then filling the main with potable water when installation is complete **is not allowed**.

3.09 CLEANUP

Remove all surplus materials, tools, excess dirt, rubbish, and debris from the site as installation progresses. Clean as directed by the Engineer. Obtain letter of approval from the State Highway Department covering work installed in areas of State Highway jurisdiction. Contractor to maintain surface of ditches, unpaved streets, road shoulders, sod, grass, and other disturbed surfaces for a period of thirty (30) days thereafter.

END OF SECTION

SECTION 02511
VALVES, METERS AND ACCESSORIES

PART 1 GENERAL

1.01 SCOPE

Furnish all materials, labor, and equipment to properly install all valves, valve boxes, hydrants, and related accessories at the locations shown on the plans or as directed by the Engineer for the proper completion of the work included under this contract whether shown expressly on the plans or implied by other requirements.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02510 - Water Pipe and Fittings.

B. Section 02531 - Sanitary Sewer Force Main

1.03 SUBMITTALS

Complete product data and engineering data, including shop drawings, shall be submitted to the Engineer in accordance with the requirements of Section 01330 of the Contract Documents.

PART 2 PRODUCTS

2.01 GENERAL

A. All valves shall have the name of the manufacturer, pressure, and size of the valve cast upon the body or bonnet in raised letters.

B. Valves and operating mechanisms shall be of the proper size and dimensions to fit the pipe connections thereto and shall be installed in the position and within the space shown on the plans.

C. All castings, whether bronze, iron or steel, shall be sound and smooth, without swells, lumps, blisters, sand holes or other imperfections and shall be made in accordance with best foundry practice. All materials, unless specifically noted otherwise, shall be of the grade and qualities as established by the specifications of the ASTM listed as follows:

Iron Castings	A126, Grade B
Steel Castings	A216
Stem, Bolts, & Nuts	B21, Grade A, Half Hard
Stem Nut & Yoke Nut	B132, Grade B
Stuffing Box Gland	B62, with some modifications
Bushings	B62, Permissible as approved

2.02 GATE VALVES/BALL VALVES

A. Ball valves 1 inch and smaller shall be designed for a working pressure of not less than 300 psi, domestic made brass, and shall conform to AWWA Standard C 800-89.

B. 2 inch through 3 inch valves: Shall be resilient wedge type rated for 250 psig cold water working pressure. All ferrous components shall be ductile iron or cast iron.

C. Valves 4"-12" shall be in full compliance with AWWA C509 and be UL listed, FM approved. The words "Ductile Iron" or "Cast Iron" shall be cast on the valve or stamped on a permanently attached corrosion resistant metal tag. The wedge shall be ductile iron encapsulated with nitrile rubber or SBR rubber and be symmetrical and seal equally well with flow in either direction. There shall be no exposed metal seams, edges or screws within the waterway.

1. The stem shall be bronze in full compliance with section 4.7 of AWWA C509.
2. Valves shall be NSF Standard 61 certified.
3. Bolting materials shall develop the physical strength requirements of ASTM A307 and may have either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1. Metric size socket head cap screws therefore are not allowed.
4. Operating nut shall be constructed of ductile iron and shall have four flats at stem connection to assure even input torque to the stem.
5. All gaskets shall be pressure energized O-rings.
6. Stem shall be sealed by three O-rings. The top two O-rings shall be replaceable with valve fully open and while subject to full rated working pressure. O-rings set in a cartridge shall not be allowed.
7. Valve shall have thrust washers located with (1) above and (1) below the thrust collar to assure trouble-free operation of the valve.
8. All internal and external surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating, complying with ANSI/AWWA C550, applied electrostatically prior to assembly, 250# raised face flanges shall be provided when required.
9. Valves shall be American Flow Control, Mueller, Clow, M&H, or approved equal.

D. Joints: Below ground valves shall be mechanical joint, above ground valves shall be flanged, unless otherwise shown on the plans. Flanged joints shall meet the requirements of ANSI B16.1, Class 125.

E. Opening: The direction of opening in all cases shall be counterclockwise, or to the left. The direction of opening shall be clearly marked with the word "OPEN" and an arrow at least two inches long pointing in the direction of "OPEN". The markings shall appear on the wrench nut base for valves installed below ground and on the handwheel of all valves having handwheels.

F. Position Indicators: All gate valves for above ground service shall be equipped with needle and slot type position indicators with a bronze pointer mounted on a threaded collar moving through the valve range and indicating on a marked plate attached to the valve.

G. Handwheels: Handwheels shall be furnished for all gate valves installed above ground or in valve pits below ground where access to handwheels is provided.

2.03 CHECK VALVES

A. Air cushioned check valves shall prevent backflow and be watertight. Valves shall be designed for the operating head indicated and shall not slam shut on pump shutdown. Valves shall be hinged disc type with cast iron body and cover conforming to ASTM A126, Class B and cast or ductile iron disc. The valve shall have a resilient Buna-N rubber disc seat held in place by a stainless steel follower ring and screws. The body seat shall be stainless steel and replaceable. The flow area shall be greater than or equal to the nominal inlet size. The shaft shall continuous and stainless steel, extending both sides of the body be and be sealed where it passes through the body to prevent leakage. A lever and an easily moved counterweight shall initiate closure and shall be steel or ductile iron. The external, side mounted, adjustable, air cushion cylinder shall cushion closure of the valve and be corrosion resistant. Valves shall be equipped with a 1/2-inch tap at the high point of the valve for bleeding air from the line.

B. Oil cushioned check valves shall prevent backflow and be watertight. Valves shall be designed for the operating head indicated and shall not slam shut on pump shutdown. Valves shall be hinged disc type with cast iron body and cover conforming to ASTM A126, Class B and cast or ductile iron disc. The valve shall have a resilient Buna-N rubber disc seat held in place by a stainless steel follower ring and screws. The body seat shall be stainless steel and replaceable. The flow area shall be greater than or equal to the nominal inlet size. The shaft shall continuous and stainless steel, extending both sides of the body be and be sealed where it passes through the body to prevent leakage. A lever and an easily moved counterweight shall initiate closure and shall be steel or ductile iron. An oil controlled, side mounted cylinder shall provide two speed control closing for the prevention of surge control and water hammer. Each stage shall be independently adjustable and the oil system will be self-contained and separate from the main line media. Valves shall be equipped with a 1/2-inch tap at the high point of the valve for bleeding air from the line.

C. Valve ends shall be flanged, meeting the requirements of ANSI B16.1, Class 125.

D. Valves shall be manufactured by APCO, GA Industries, Crispin or approved equal.

2.04 "DUCKBILL" ELASTOMERIC CHECK VALVES

A. Check Valves are to be all rubber of the flow operated check type with a slip-on connection. The Check Valve is designed to slip over the specified pipe outside

diameter and attached by means of vendor furnished stainless steel clamps. The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The valve shall be one-piece rubber construction with nylon reinforcement. In sizes 20" and larger, the bill portion shall be thinner and more flexible than the valve body, and formed into a curve of 180°.

B. Company name, plant location, valve size and serial number shall be bonded to the check valve. Elastomeric duckbill check valve shall be manufactured in the United States of America. A single manufacturer shall provide all elastomer duckbill check valves.

C. All valves shall be "Tideflex" of the Series TF-2 as manufactured by the Red Valve Co., Inc. or approved equal.

2.05 FLAP VALVES

A. Flap valves 8 inches and larger shall have a resilient seat. Valve body and flap shall be cast iron in accordance with ASTM A 126, Class B. The flange shall be drilled for mounting to ASME/ANSI B16.1, Class 125 flange. The valve shall operate without leakage with seating and unseating heads as indicated on the Drawings. Resilient seat shall be wide seating Buna-N or neoprene, bonded in a groove machined into the valve body. Hinge links shall be 304 stainless steel. Each hinge arm shall have two pivot points. A lubrication fitting shall be provided for each pivot. Valves shall be manufactured by Rodney Hunt, Waterman, Hydro Gate or approved equal.

B. Flap valves 6 inches and smaller shall have a bronze seat and brass hinge pins. Valve body and flap shall be cast iron in accordance with ASTM A 126, Class B. Valves shall be manufactured by Troy, Clow or approved equal.

2.06 BUTTERFLY VALVES

A. Butterfly Valves for Liquid Service – 14" and Larger

1. Butterfly valves shall be resilient seated, short body design, and shall be designed, manufactured, and tested in accordance with all requirements of AWWA C504 for Class 150B. Valves shall be rated for 150 psi working pressure unless otherwise specified or shown.
2. Valve bodies shall be ductile iron conforming to ASTM A 536, Grade 65-45-12 or ASTM A 126, Grade B cast iron. Shafts shall be ASTM A 276, Type 304 stainless steel, machined and polished. Valve discs shall be ductile iron, ASTM A 536, Grade 65-45-12, ASTM A48 cast iron or ASTM A 126, Grade B cast iron. The resilient valve seat shall be located in the valve body and for valves 30-inch and greater, shall be fully field adjustable and field replaceable.
3. Actuators

    a. Valves for non-buried service, 3 through 8-inches in diameter, shall

be lever operated. The lever shall be capable of being locked in 10 positions. Valves for non-buried service, 10-inches in diameter and larger, shall be handwheel operated.

b. Valves for buried service or non-buried service, 10-inches or greater in diameter shall be equipped with traveling nut or worm gear type, self-locking type manual actuators designed, manufactured and tested in accordance with AWWA C504. Actuators shall be capable of holding the disc in any position between full open and full closed without any movement or fluttering of the disc. Actuators shall be furnished with fully adjustable mechanical stop-limiting devices. Actuators that utilize the sides of the actuator housing to limit disc travel are unacceptable.

c. Valves shall be equipped with motorized actuators where shown on the Drawings.

4. Operators

a. Valves for non-buried service, six feet or more above the operating floor shall be furnished with a chainwheel operator and chain for operation from floor level.

b. Valves for buried service shall be equipped with a valve box and stem extension required to bring the operation nut within 6-inches of finished grade. Valve boxes and extension stems shall be as specified in this Section. Three inch and larger valves shall have two-inch square operating nuts.

c. Valves shall be equipped with pedestal type operators where shown on the Drawings and as specified in this Section.

5. Valves shall be installed with disc shaft horizontal, except where extended bonnets or levers are used. Valves and actuators shall have seals on all shafts and gaskets on valve actuator covers to prevent the entry of water.

6. Valve ends shall be mechanical joint type and meet the requirements of AWWA C111/ANSI 21.11, except where flanged or restrained joint ends are shown. Flange joints shall meet the requirements of ANSI B16.1, Class 125. At the contractor's option, grooved mechanical fittings meeting the requirements of AWWA C606 may be used in lieu of flanged connections in all interior ductile iron piping.

7. Butterfly valves shall be manufactured by Mueller, SPX/DeZurik, Pratt or approved equal.

2.07 PLUG VALVES

A. Valves shall be 90-degree turn, non-lubricated, eccentric type with resilient faced plugs. Design of the valve shall provide that contact between the seat and the plug shall only occur in the final degrees of plug movement. Valves shall be suitable for minimal throttling service and service where valve operation is infrequent.

B. Valves shall be capable of providing drip-tight shut-off up to the full pressure rating

with pressure in flow direction. Pressure ratings shall be established by hydrostatic tests conducted in accordance with ANSI B16.1. Valves shall be rated at a minimum of 150 psi.

C. Valves shall have a port area equal to at least 80 percent of the full pipe area for valves 24-inches and less. Valves 30-inches and greater shall have a port area equal to at least 70 percent of the full pipe area.

D. Bodies shall be cast-iron, conforming to ASTM A 126, Class B

E. Valve ends shall be a mechanical joint type, except where flanged or restrained joint ends are shown on the Drawings. Mechanical joint valves shall have bell ends conforming to applicable requirements of AWWA C111/ANSI A21.11. Flanged joints shall meet the requirements of ANSI B16.1, Class 125. Flanged valves with flange-to-MJ adapters shall not be acceptable in lieu of MJ valves. At the contractor's option, grooved mechanical fittings meeting the requirements of AWWA C606 may be used in lieu of flanged connections in all interior ductile iron piping.

F. Valve seats shall be a raised, welded-in overlay of not less than 90 percent pure nickel, machined to mate with the resilient faced plug. Overlay shall be minimum of 1/8-inch thick.

G. The plug shall be of semi-steel, conforming to ASTM A 126, Class B. The plug facing shall be a synthetic rubber compound of approximately 70 durometer hardness bonded to the plug. Facing material shall be abrasion resistant and suitable for service in sewage and sludge applications.

H. Valves shall be furnished with replaceable, sleeve-type bearings in the upper and lower journals. Bearings shall comply with applicable requirements of AWWA C507. Bearing materials shall have a proven record of service of not less than five years.

I. The valve body shall be fitted with a bolted bonnet incorporating a stuffing box and pull-down packing gland. Packing shall be the split chevron type. Design of exposed valves shall allow visible inspection of the shaft seal, adjustment of the packing, and replacement of the packing, all without disturbing the bonnet or valve operator. The shaft seal shall comply with the requirements of AWWA C504.

J. Actuators

1. Valves for exposed service, 3 through 8-inches in diameter, shall be lever operated.
2. Actuators for buried service and valves 10-inches and larger, shall be equipped with manual operated geared actuators. Geared actuators shall be totally enclosed, oil or grease lubricated, worm and gear type. Shaft seals shall be provided to prevent entry of dirt and water into the actuator. All shaft bearings shall be permanently lubricated bronze bushings. Actuators

shall clearly indicate valve position and an adjustable stop shall be provided to set closing torque. Construction of actuator housing shall be semi-steel. Gear actuators shall comply with requirements of AWWA C504.

3. Valves for buried service shall be equipped with a valve box and stem extension required to bring the operation nut within 6-inches of finished grade. Valve boxes and extension stems shall be as specified in this Section.
4. Motorized actuators shall be provided where shown on the Drawings.
5. Valves and operators for submerged or buried service shall have seals on all shafts and gaskets on valve operator covers to prevent the entry of water. Operator mounting brackets for submerged service shall be totally enclosed and shall have gasket seals.
6. Valves for non-buried service, six feet or more above the operating floor shall be furnished with a chainwheel operator and chain for operation from floor level.
7. Valves shall be equipped with pedestal type operators where shown on the Drawings and as specified in this Section.
8. Where shown on the Drawings, provide an extended bonnet and mount the gear actuator on top of the extended bonnet.

K. Plug valves shall be manufactured by SPX/DeZurik, Pratt, Clow, Val-matic or approved equal.

2.08 PRESSURE GAUGES

A. For installation on pump discharge as shown on the plans shall be of Bourdon tube design with brass tube and polished steel case, equal to Ashcroft general service gauge, Type 1009. The size shall be 3-1/2 inches with a range of 0 - 160 psi.

B. For installation on the base of elevated water tank riser use Ashcroft: Model No. 35-1032S-20L. The size shall be 3-1/2 inches with a range of 0 - 100 psi.

2.09 VALVE MANHOLE

A. General.
Manholes shall be constructed at such points as designated on the Drawings. Riser and top sections shall be installed level and plumb, such that all manhole steps are in alignment. The top of manholes outside of roads, streets and highways shall be built to grades 2 inches above ground surface, unless otherwise shown. Manholes in roads, streets and highways shall be built to grades shown on the Drawings.

B. Precast Concrete Manholes.
Precast Concrete manholes shall be constructed of reinforced Class "A" Concrete. Walls shall be not thinner than 5 inches, or 1/12 of the inside diameter, which ever is greater. Precast manholes shall meet all requirement of ASTM C478, "Specification for Precast Reinforced Concrete Manhole Sections."

Rings shall be custom made with openings to meet the necessary pipe alignment conditions and invert elevations. All inlets and outlets shall be cast in or core drilled.

Joints and gaskets shall conform to the applicable provisions of ASTM C443, "Joints for Circular Concrete Sewer and Culvert Pipe using Rubber Gasket" or Ram-Nek Pre-molded Plastic Joint Sealer. The sealing compound shall not leak at the joints (while being tested, if required, at 10 psi) for a period of 24 hours. Bell and spigot surfaces shall be smooth, accurately formed, and provide a loose, sliding fit, with a clearance between the bell and spigot of not more than 1/6 inch. Precast manholes shall be bedded on not less than 6 inches of compacted crushed stone at the Contractor's expense. The crushed stone shall extend not less than 6 inches outside the walls of the manhole and under the entire length of pipe within the excavation for the manhole.

C. Manhole Castings.

Provide covers with the inscription "RECLAIMED WATER" cast into the cover in lettering at least 2 inches high. Covers shall be 25-3/4 inches in diameter and shall be 2-inches thick at the bearing surface. Frame shall provide a 24-inch clear opening. Manhole covers and frames shall be USF 227, or equal.

2.10 AIR RELEASE VALVES (WATER)

A. Air Release Valves: The air release valve shall automatically release air accumulations from the pipeline due to the action of the float. When the air valve body fills with air, the float falls freely from the orifice to allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up to seat against the orifice and prevent water from being exhausted from the valve. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. A synthetic orifice button shall be affixed to the valve cover to provide a non-corrosive seat for the float. The float shall be constructed of stainless steel. A resilient, Buna-N seat shall be attached to the float for drop-tight closure. The float shall be free floating within the valve body.

B. Air/Vacuum Valve: The air/vacuum valve shall discharge large amounts of air as the pipeline fills and allow air to enter the pipeline as it drains or in the event of vacuum conditions. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. The valve shall operate by means of a non-collapsible stainless steel float and Buna-N seat, which seals an orifice. As air enters the valve the float shall drop from the orifice and allow the air to escape. As water rises in the valve, the float will again seal the orifice. The valve will be of such design that the float cannot blow shut at any air velocity including sonic velocity. All working parts shall be of stainless steel. A surge check shall be installed on the inlet to reduce the flow of extremely high velocity water during closing to minimize slam and shock. The rate of closure shall be adjustable. The surge check shall have an ASTM A126, Class B cast iron body and bronze internals.

C. Combination Air Valves: Combination air valves shall combine the features of an air release valve and an air/vacuum valve and shall be of one of the following types:

1. Combination air valves 3 inches and larger shall consist of an air/vacuum valve described in paragraph B. above, with an air release valve described in A. above tapped into its body. The valve shall be of two-piece body design with an isolation gate valve separating the two valves.
2. Combination air valves smaller than 3 inches shall be single body, double orifice, allowing large volumes of air to escape out the larger diameter air and vacuum orifice when filling a pipeline and closes watertight when the liquid enters the valve. During large orifice closure, the smaller diameter air release orifice will open to allow small pockets of air to escape automatically and independently of the large orifice. The large air/vacuum orifice shall also allow large volumes of air to enter through the orifice during pipeline drainage to break the vacuum. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. The Buna-N seats must be fastened to the valve, without distortion, for drop-tight shut-off. The float shall be stainless steel. The valve will be of such design that the float cannot blow shut at any air velocity including sonic velocity. A surge check shall be installed on the inlet to reduce the flow of extremely high velocity water during closing to minimize slam and shock.

D. Potable Water Systems: All air valves and accessories shall be supplied by a single manufacturer and shall be GA Industries, APCO Valve Corporation, Crispin, Val-Matic or approved equal.

2.11 AIR RELEASE AND VACUUM VALVES (SEWAGE)

A. Air Release Valves: The air release valve shall automatically release air accumulations from the pipeline due to the action of the float and lever mechanism. When the air valve body fills with air, the float falls. Through the leverage mechanism, this causes the resilient seat to open the orifice and allow the air to escape to the atmosphere. When all the air has been exhausted from the valve body, the float will be buoyed up. Through the leverage mechanism, this will cause the resilient seat to close the orifice, preventing water from being exhausted from the valve. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. The float shall be constructed of stainless steel and attached to a stainless steel lever mechanism. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure. The valve shall be equipped with the necessary attachments, including valves, quick disconnect couplings and hose, to permit back flushing after installation without diverting the valve.

B. Air/Vacuum Valve: The air/vacuum valve shall discharge large amounts of air as the pipeline fills and allow air to enter the pipeline as it drains or in the event of vacuum conditions. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. The valve shall operate by means of a non-collapsible stainless steel float which seals an orifice. As air enters the valve the float shall drop from the orifice and allow the air to escape. As water rises in the valve, the float will again seal the orifice. The valve will be of such design that the float cannot blow shut at any air velocity. All working parts shall be of stainless steel. The valve shall be equipped with the necessary attachments, including valves, quick disconnect

couplings and hose, to permit back flushing after installation without diverting the valve.

C. Combination Air Valves: Combination air valves shall combine the features of an air release valve and an air/vacuum valve and shall be of one of the following types:

1. Combination air valves 3 inches and larger shall consist of an air/vacuum valve described in B. above, with an air release valve described in A. above tapped into its body. The valve shall be of two-piece body design with an isolation gate valve separating the two valves.
2. Combination air valves less than 3 inches shall be single body, double orifice, allowing large volumes of air to escape out the larger diameter air and vacuum orifice when filling a pipeline and closes watertight when the liquid enters the valve. During large orifice closure, the smaller diameter air release orifice will open to allow small pockets of air to escape automatically and independently of the large orifice. The large air/vacuum orifice shall also allow large volumes of air to enter through the orifice during pipeline drainage to break the vacuum. The valve body and cover shall be constructed of cast iron conforming to ASTM A 126, Class B. The Buna-N seats must be fastened to the valve, without distortion, for drop-tight shut-off. The float and other internal metal components shall be stainless steel. The valve shall be equipped with the necessary attachments, including valves, quick disconnect couplings and hose, to permit back flushing after installation without diverting the valve.

D. All air and/or vacuum valves and accessories shall be supplied by a single manufacturer and shall be GA Industries, APCO Valve Corporation, Crispin, Val-Matic or approved equal.

2.12 REDUCED PRESSURE ZONE, DOUBLE CHECK & DOUBLE CHECK DETECTOR VALVE TYPE, BACKFLOW PREVENTER

A. The device shall consist of a pressure differential relief valve located in a zone between two positive seating check valves. The relief valve shall contain a separate means whereby free air will enter the zone, and contained water will be discharged to the atmosphere when the valve is fully open. The assembly shall include two tightly closing shut-off valves before and after the device, test cocks, and a strainer. The device shall meet the requirements of AWWA C511, latest revision, UL EX3185, and the SBCCI Plumbing Code. The device shall be Watts Regulator Co. Series 909 or approved equal.

B. The size shall be as shown on the plans. Size 3 inch and smaller shall have ball valves for shut-off. Size 4 inch and larger shall have OS & Y4 gate valves for shut-off. A 2-inch diameter bypass line with shut off valve shall be provided for size 4 inches and larger.

C. If intended for below grade service, the backflow preventer shall be installed in a precast or cast-in-place concrete enclosure. The bottom shall have a minimum of 4-

three inch diameter weep holes. The enclosure shall be installed on a minimum of 6 inches of No. 57 stone. An aluminum watertight lid of non-traffic design and a clear opening exceeding the length of the backflow preventer shall be provided.

2.13 WATER PRESSURE REGULATOR/REDUCING VALVES

A. The reducing valve shall maintain a uniform downstream pressure as preadjusted on the control pilot handwheel or adjusting screw. The control pilot shall be capable of field adjustments from near 25 psi to 10 percent above the factory-preset pressure. The valve shall be completely piped and ready for installation.

B. The main valve shall operate on the differential piston principle, such that the area on the underside of the piston is no less than the pipe area, and the area on the upper surface of the piston is of a greater area than the underside of the piston. The valve piston shall be guided on its outside diameter by ports that minimize the effects of throttling. Throttling shall be done by the ports and not by the valve seating surfaces.

C. Valves shall be of a cast iron body per the requirements of ATSM A126 with ANSI flanges. The valve interior shall be bronze.

D. The valve shall be capable of operating in any position and shall incorporate only one flanged cover at the valve top from which all internal valve parts shall be accessible. There shall be no stems, stem guides or spokes within the waterway, or springs to assist in valve operation.

E. Valve seals shall be easily renewable. All controls and piping shall be of non-corrosive construction.

F. Valve and control system shall lower line pressure to a predetermined set point and shall maintain that set point, regardless of variations in flow or inlet pressure. Valve shall be capable of operating with inlet pressure up to 300 psi and an adjustable outlet pressure of 25 to 75 psi. Valve shall be as manufactured by Watts Regulator, Series 25AUBZ3 (1/2” to 2”) for standard capacity water or approved equal.

2.14 DUAL CHECK BACKFLOW PREVENTER

The dual check backflow preventer shall meet the domestic requirements of ANSI/ASSE Standard 1024, and bear the seal of approval. It shall be bronzed bodied and include not less than one union, with the union nut drilled to accept a tamper-proofing lock wire. A brass identification tag shall be securely attached to the valve body by corrosion-resistant mechanical fasteners. The dual check valve shall be as manufactured by Watts Regulator Co., Series 7, or approved equal.

2.15 VALVE BOXES AND COVERS

All valves below ground level shall be furnished with a valve box and cover. Each shall be of the roadway extension type, or proper length and base size with suitable detachable cover, bituminous coated inside and out. Boxes shall be 5 1/4 inch inside diameter, "Standard Telescopic Valve Box" as manufactured by American Cast Iron Pipe Co. or approved equal.

2.16 FIRE HYDRANTS

A. All fire hydrants shall conform to the requirements of AWWA C502, latest revision for 250 psi working pressure. Hydrants shall be the compression type, closing with line pressure. The valve opening shall not be less than 4 1/2 -inches. Hydrants shall meet Georgia Fire Insurance Commission Standards, and Local Fire Department requirements and be furnished in accordance with owner's standards.

B. In the event of a traffic accident, the hydrant barrel shall break away from the standpipe at a point above grade and in a manner which will prevent damage to the barrel and stem, preclude opening of the valve, and permit rapid and inexpensive restoration without digging or cutting off the water.

C. The means for attaching the barrel to the standpipe shall permit facing the hydrant a minimum of eight different directions.

D. Hydrants shall be fully bronze mounted with all working parts of bronze. Valve seat ring shall be bronze and shall screw into a bronze retainer.

E. All working parts, including the seat ring shall be removable through the top without disturbing the barrel of the hydrant.

F. The operating nut and direction of operation shall match the current Owner standard. The operating threads shall be totally enclosed in an operating chamber, separated from the hydrant barrel by a rubber O-ring stem seal and lubricated by a grease or an oil reservoir.

G. Hydrant shall be a non-freezing design and be provided with a simple, positive, and automatic drain which shall be fully closed whenever the main valve is opened.

H. Hose and pumper connections shall be breech-locked, pinned, or threaded and pinned to seal them into the hydrant barrel. Each hydrant shall have two 2-1/2-inch hose connections and one 4-1/2-inch pumper connection, all with National Standard threads and each equipped with cap and non-kinking chain.

I. Hydrants shall be furnished with a mechanical joint connection to the spigot of the 6-inch hydrant lead.

J. The minimum bury depth shall be 42 inches (48 inches in State Highway right-of-way) with 30 to 36 inches above grade. Provide extension section where necessary for proper vertical installation and in accordance with manufacturer's recommendations.

K. All outside surfaces of the barrel above grade shall be painted with enamel equal to Koppers Glamortex 501 in a color to be selected by the Owner.

L. Hydrants shall be traffic model and shall be American-Darling B-84-B, Mueller Super Centurion, M & H Valve 129.

2.17 WATER METERS

A. 1 (one) inch and Smaller Water Meters: Shall conform to AWWA C700, latest revision. The water meter shall be the positive displacement type with frost-protection bottom covers that are enamel coated. The meter shall also be tamper resistant. Residential size shall be Invesus(Sensus) T-10 Full 3/4" and 1" meters with ProRead AutoDetect Register, magnetic drive reading cubic feet. Two-inch meters shall be Invesus(Sensus) compound meter and shall conform to AWWA C702, latest revision with encoder registers and R900 RF Pit MIUs. All meters shall be approved by the City prior to ordering.

B. 12 inch to 3 inch Water Meters: Shall conform to AWWA C701, latest revision, Class II. All meters shall be approved by the City prior to ordering.

C. 14 inch and Larger Water Meters: Shall conform to AWWA C704, latest revision. All meters shall be approved by the City prior to ordering.

2.18 METER BOXES

A. 1 inch and Smaller:

- Ford Long Yokebox For 5/8”X3/4” Meter (Potable Residential Use Only)
  Number LYLV141-243-TR
- Ford Long Yokebox For 5/8”X3/4” Meter (Potable Commercial Use Only) Testable Backflow Preventer Supplied By Water Customer
  Number LYLV141-242-SP-TR
- Ford Long Yokebox For 1” Meter (Potable Residential Use Only)
  Number LYLBB141-444-TR
- Ford Long Yokebox For 1” Meter (Potable Commercial Use Only) Testable Backflow Preventer Supplied By Water Customer
  Number LYLBB141-SP-TR

B. 1-1/2” or 2”: Refer to City of Port Wentworth’s Technical Detail W-19

2.19 SERVICE PIPE COUPLINGS

A. 3 inch and smaller shall use CTS compression fittings or approved equal by City.

B. 4” or greater shall use M.J. (mechanical joint) D.I. (ductile iron) sleeves or approved equal by the City.

2.20 SERVICE SADDLES

Tapping saddles shall be used for making service connections on PVC and/or Ductile Iron Pipe. A JCM 406 coated service saddle with double stainless steel strap or approved equal.

2.21 CORPORATION STOPS

Corporation Stops shall be of bronze alloy, size 1” inch or as shown on the plans, with compression joint for copper or polyethylene pipe, and with ground key. Shall be Mueller H-15008, Ford F1000 or approved equal.

2.22 CURB STOPS

Curb Stops shall have a body of heavy cast bronze construction, bronze tie head and stem, spherical brass ball valve seated in molded Buna N rubber. The meter valve shall be provided with a female meter connection and a compression joint for connection to both 3/4" plastic or copper tube. Shall be Mueller H-14350, Ford B43-232W or approved equal.

2.23 VALVE MARKERS

A concrete valve marker post shall be furnished and installed as directed, with each gate valve (excluding fire hydrant valves). The concrete marker post shall have a four-inch minimum square section and a minimum length of 42 inches with beveled edges and containing at least one three-eighths inch diameter bar of reinforcing steel. Markers shall be placed as directed by the Engineer and set so as to leave 18 inches exposed above grade. The exposed portion of the valve markers shall be stamped "WATER".

2.24 ELECTRONICALLY DETECTABLE LINE MARKING TAPE

Reef Industries Terra Tape Standard or approved equal.

2.25 VALVE VAULTS

Precast Manufacturing shall be in conformance with ASTM C913.

Furnish and install for each valve vault an aluminum access assembly as shown on plans, complete with hinged and hasp-equipped cover. Frame shall be securely mounted. The door shall have a safety locking handle in the open position. Designed to withstand vehicular traffic in off-street locations. Single or Double leaf covers are constructed of ¼" diamond pattern plate and reinforced for AASHTO H-20 wheel loading.

2.26 YARD HYDRANTS

Shall be the non-freezing, compression type with 1 inch threaded inlet and 1 inch hose thread on the nozzle discharge. It shall be a high capacity 1-inch "Any Flow" frost proof yard hydrant made by Merrill Manufacturing Co. or approved equal. Vacuum breakers shall be provided with each one.

2.27 T-HANDLE OPERATING WRENCH

The contractor shall furnish two wrenches, 30 inches long, standard waterworks type with socket for square operating nuts of gates or other valves. All below grade valves shall be adapted with an extension stem and fittings so that they can be operated with a 30-inch long wrench.

2.28 CUTTING IN SLEEVES AND VALVES

Shall be Clow Class 150 meeting latest AWWA Specifications.

2.29 TAPPING SLEEVES

Tapping sleeves and valves shall be used for making branch connections to an existing water main. Tapping sleeves shall be provided at the locations indicated on the drawings and shall be mechanical joint type, Mueller No. H-615, Clow F-5205 or approved equal. Tapping valves shall be mechanical joint type gate valves, Mueller No. 667, Clow F-5093 or approved equal.

2.30 JOINT RESTRAINTS:

All restraints shall be used in accordance with engineering and manufacturer=s specifications. Thrust block is not allowed. Joint restraints shall be:
Ford 1390 Series, Mega-Lug, EBBA Series 1100 for Ductile Iron 4" and larger, EBBA Series 2000 PV for PVC Pipe 4" and larger, Flexlock, T-lock, Uni-Flange, or approved equal.

2.31 BRASS NIPPLES AND BRASS PIPE FITTINGS (DOMESTIC MADE):

Threads shall be cleanly cut with sharp tools and the jointing procedure shall conform to the best practice. Before jointing, all scale shall be removed from pipe by some suitable means. After cutting, all pipe shall be screwed together with an application for graphite and engine oil, Teflon tape, or other sealing compound applied to all threads and once a joint has been screwed on it shall not be backed off unless the threads are re-cleaned and new compound or Teflon tape applied. Unions shall be installed at every connection to the supply line.

PART 3 EXECUTION

3.01 All items specified under this section shall be installed in conjunction with piping that is specified under the appropriate section. Locations are to be as shown on the plans or as otherwise specified.

3.02 Valves, brackets, and fittings where not constructed of brass, aluminum, bronze, or finished steel, shall be factory finished in accordance with approved manufacturer's standards. Machined surfaces shall be given a suitable coating of grease or other protective material. After installation, exposed items shall be field painted as specified elsewhere.

3.03 All valves shall be tested at point of manufacture. After the valves are installed, the contractor shall test them under the working pressure, and any valves found to leak shall be satisfactorily repaired or replaced.

END OF SECTION

Appendix A Water/Wastewater Availability

WATER/WASTEWATER AVAILABILITY REQUEST FORM

Date: 4//20/2022

A. Owner/Developer BEP Rice Hope, LLC Phone# (301) 915-0460

Address 4800 Hampden Lane, Suite 200 Bethesda, Maryland 20814

Contact Person Scott Decain Phone # (843) 473-5200

Address 2591 U.S, GA-17 SUITE 303, Richmond Hill, GA 31324

Engineer Pittman Engineering Co. Phone # (912) 445-0578

Development Name Rice Hope - Third Lake

B. Development Location 0 Rice Hope Road, Port Wentworth, Georgia 31407

Township, Map & Parcel # (Attach Plat) 70906 04091

C. Type of Development (Circle appropriate choice)

Residential Multi-Family Commercial Industrial Institutional

Number of lots/single family units 446 Building Square Footage _____

Number of multi/family units N/A

Type of Business(es) N/A

Rezoning Required: **Yes** **No** **Subdivision Required:** **Yes** **No**

D. Maximum number of employees in 24 hour period N/A

If restaurant, seating capacity N/A

If car wash, number of bays N/A

If Laundromat, number of washers N/A If church, number of seats N/A

E. **SITE PLANS AND WATER/WASTEWATER USE CALCULATIONS ARE NEEDED FOR FEE QUOTES**

3.5.3 Exhibit 1 - Wastewater Collection System Check List

Typical Wastewater System Plan shall include:	Check Off
1) Layout and legend	✓
2) Exhibit 2 completed (load data)	✓
3) For effluents with process water, comply with the City's Pretreatment Ordinance.	N/A
4) Show sewer easement (if applicable)	N/A
5) Manholes numbered and placed at 350' (max.) spacing	✓
6) Manholes placed at line directional changes	✓
7) Manhole frame and invert elevations shown	✓
8) Invert elevations shown for all pipe inside manholes	✓
9) Minimum gradient of 0.4% used for 8" pipes	✓
10) Maximum height of 2' between invert of pipes and invert of discharge manholes	✓
11) Minimum angle of 90 degrees for influent lines	✓
12) All sanitary sewers profiled	✓
13) Oil/grease traps and details provided for service station and food service preparers	N/A
14) Grading, paving, drainage, erosion control plans attached	✓
15) Attach certification that water and/or sewer lines are not in, nor do they serve, structures built upon solid waste landfills	✓
16) For pump station design:	
a. Attach design calculations with pump curves	N/A
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	✓
18) Proposed water/sewer agreement attached	N/A
19) Georgia Registered Professional Engineer stamp and signature	✓

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Watershed Protection Branch
Coastal District Office
1050 Canal Road
Brunswick, Georgia 31525-6856
Phone: 912-264-7284; Fax: (912) 262-3160

June 27, 2022

Third Lake Development
James Barnes
jbarnes@thirdlakedevelopment.com

Re: Proposed Land Disturbing Activity
Third Lake (The Cottages at Rice Hope) Phase 1
Chatham County, Georgia
File: SW-025-04-171

Dear Mr. Barnes:

In accordance with the General NPDES Permit No. GAR100003 for Storm Water Discharges Associated with Construction Activities for Common Developments, issued by the Georgia Environmental Protection Division (EPD) in August 2018, this Project has been reviewed for deficiencies in the identification of waters of the state and potential encroachment of land disturbing activities within 25 foot immediately adjacent and upland of the identifiable point from which the State mandated buffer is measured.

Based upon this review, the EPD has determined the following:

(1) The project does **not** have deficiencies in the identification of waters of the state.

(2) The project will **not** require a buffer variance from the EPD.

However, the EPD reserves the right to change this determination if information that conflicts with the original submittal is obtained during a later site inspection.

Additionally, in accordance with the General NPDES Permit No. GAR100003, each Erosion, Sedimentation and Pollution Control Plan (ESPCP) submittal shall include a completed and applicable ESPCP Checklist established by the Georgia Soil and Water Conservation as of January 1 of the year in which the land-disturbing activity was permitted.

A deficient ESPCP is a violation of the NPDES Permit. If violations occur on the proposed project site and enforcement actions become necessary, a deficient ESPCP may increase the fines incurred. The applicable Checklist as well as a guidance document are available on the Georgia EPD website @ http://epd.georgia.gov.

Based upon this review, EPD has determined the following:

(1) The ESPCP for this Project has adequately addressed all items of the applicable checklist.

If additional information is required, please contact me at 912-230-4880.

Sincerely,



Shannon K. Winsness
Environmental Specialist

cc: Pittman Engineering
c/o Jason Bryant, P.E.
jason@pittmanengineeringco.com

Alice Vick
EPD Coastal District Office
1050 Canal Road
Brunswick, GA 31525-6856

File: SW-025-04-171

jason@pittmanengineeringco.com

From: Adam Cagle <ACagle@thirdlakedevelopment.com>
Sent: Thursday, January 12, 2023 12:44 PM
To: Jason Bryant
Cc: Grant Barnes; Robert Hogan
Subject: Fwd: Lighting agreement for The Cottages at Rice Hope
Signed By: ACagle@thirdlakedevelopment.com

Jason,

Below is the documentation that Ga. Power is working on the site lighting.

ADAM CAGLE
MANAGER OF CONSTRUCTION
THIRD LAKE DEVELOPMENT

Office: (727) 349-9100
Direct: (727) 349-9141
Mobile: (727) 506-5725
Address: 1600 E. 8th Avenue, Suite A132 | Tampa, FL 33605
E-mail: ACagle@thirdlakedevelopment.com

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Begin forwarded message:

> **From:** "Rose, Brian Keith" <BKROSE@southernco.com>
> **Date:** January 9, 2023 at 12:14:29 PM EST
> **To:** Adam Cagle <ACagle@thirdlakedevelopment.com>, Robert Hogan <RHogan@thirdlakedevelopment.com>
> **Cc:** Grant Barnes <JBarnes@thirdlakedevelopment.com>
> **Subject: RE: Lighting agreement for The Cottages at Rice Hope**
>
> [EXTERNAL]
>
> I found the requested changes, I am working on those now.
>
> -----Original Message-----
> From: Adam Cagle <ACagle@thirdlakedevelopment.com>
> Sent: Wednesday, December 28, 2022 9:22 AM

To: Rose, Brian Keith <BKROSE@southernco.com>; Robert Hogan <RHogan@thirdlakedevelopment.com>
Cc: Grant Barnes <JBarnes@thirdlakedevelopment.com>
Subject: RE: Lighting agreement for The Cottages at Rice Hope

EXTERNAL MAIL: Caution Opening Links or Files

_____

COTTAGES AT RICE HOPE DRAINAGE STUDY

PREPARED FOR:

THIRD LAKE DEVELOPMENT, LLC

CHATHAM COUNTY, GEORGIA

PREPARED BY:

PITTMAN ENGINEERING

May 26, 2022

REVISED: October 26, 2022

December 19, 2022

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METHODOLOGY FOR STORMWATER ATTENUATION
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BASIN EXHIBIT
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ICPR NODE MAX RESULTS

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POST DEVELOPMENT ICPR OUTFALL MAP
DEM MAP
POST-DEVELOPMENT ICPR NODE MAP

PROJECT DESCRIPTION

The Cottages at Rice Hope are located in Rice Hope Plantation, east of the existing I&D line, and north of Mulberry Blvd. The Cottages at Rice Hope proposes the construction of the road, sanitary sewer, domestic water, storm drainage and other associated infrastructure to support the residential and amenity site within Rice Hope Plantation. Access will be from the existing Mulberry Blvd. The property is currently undeveloped and is included as part of the larger Rice Hope Plantation Composite Stormwater Drainage Study.

METHODOLOGY FOR STORMWATER ATTENUATION

Stormwater collection for the site will consist primarily of pipes which will outfall to a pipe network with an ultimate outfall into two proposed detention lagoons. These lagoons will then discharge into an existing channel north of the Cottages at Rice Hope as shown in the master plan. Water quality will be controlled by allowing solids to settle in the onsite detention ponds before being released from the site. Water quantity will be maintained by sizing the outlets from on-site detention ponds in a manner such that post-development runoff rates do not exceed the pre-development max stages for applicable design storms. Port Wentworth, State, and Federal stormwater ordinances will be followed in the design of the stormwater system.

DESIGN TAIL WATER

The max water elevation for each lagoon was determined in the Rice Hope Comprehensive Stormwater Drainage Study. These 25-year max stages were used for each lagoon as the downstream tailwater elevation for the pipe sizing analysis. Each inlet has a frame elevation higher than the Post-Development ICPR model max stage for the 100-year storm.

DESIGN STORM

DESIGN STORM SUMMARY (INCHES OVER 24 HOURS)						
1-YEAR	**2-YEAR**	**5-YEAR**	**10-YEAR**	**25-YEAR**	**50-YEAR**	**100-YEAR**
3.79	4.51	5.79	6.96	8.73	10.20	11.80

SECTION 2: POST-DEVELOPMENT

POST-DEVELOPMENT SUMMARY

The post development model is a comprehensive model consisting of several future development sites. This report is concentrated on the L4, L2-Third Lake, and Pipe Xing nodes in the Rice Hope Comprehensive Stormwater Drainage Model. This pipe network is designed to drain on-site runoff from the proposed Cottages at Rice Hope basin areas. The site ultimately outfalls to the north into a temporary channel that outfalls into Riceboro Creek and into the Savannah River. Below are the Post Development basins zoomed in to the area of interest. A minimum travel time of 10 minutes was used for all basins in the proposed area. Curve numbers were based on a build out Land Use grid and soils calculated in ICPR for each basin.

WATER QUALITY

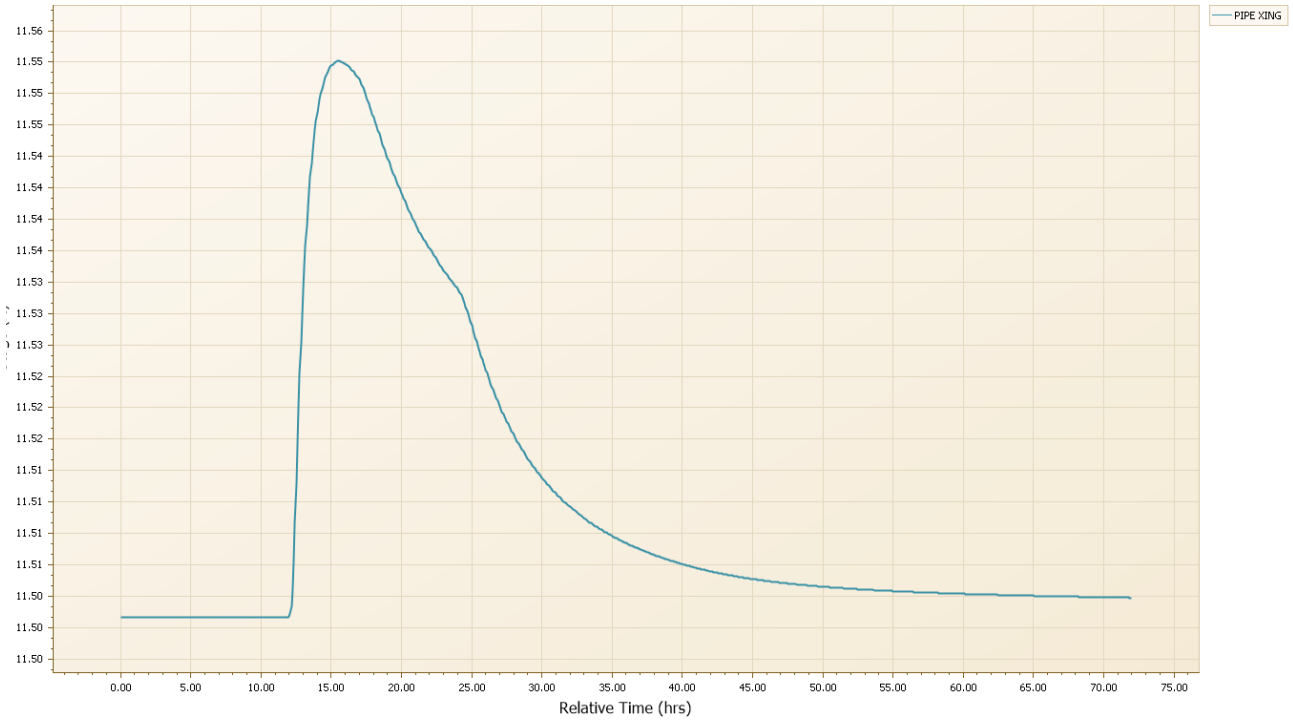
The ICPR program was used to model 1-year, 24-Hour rain event over a 72-Hour period to determine the corresponding lagoon maximum water surface elevations and the drawdown time. The upstream connections (Lakeside-ThirdLake) was turned off in the Rice Hope Composite Stormwater Model so that the drawdown times would correspond to the Cottages at Rice Hope only. Based on the results, the maximum water surface elevations of the lagoons are:

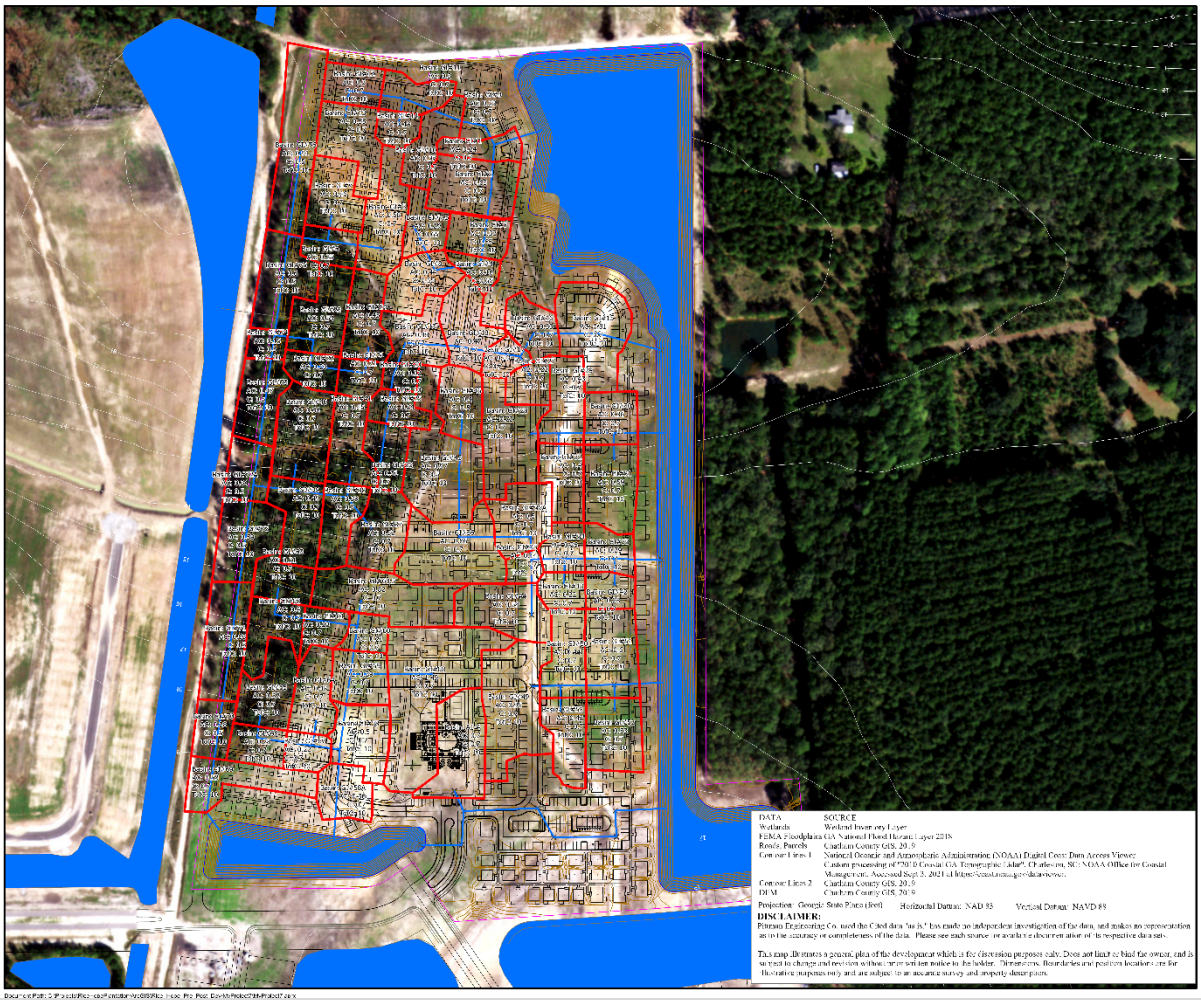
1.2-INCH 24-HOUR STORM

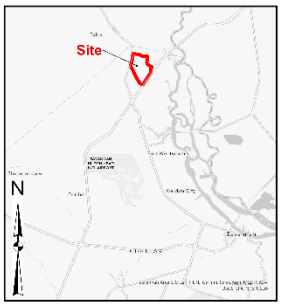
LAGOON NODE	CONTROL ELEVATION (FT)	MAX SURFACE ELEVATION (FT)
L4	11.56	11.50
L2-3RD LAKE	11.55	11.50
PIPE X-ING	11.55	11.50

The drawdown times of PIPE X-ING, occurs within the recommended 72-hour timeframe. A graph of the discharge versus time, table of maximum water surface elevations, and node time series table begins on the next page.

Sim: 1.2" WQ







Rice Hope
Third Lake
Inlet Basins

Chatham County,
Georgia

December 2022

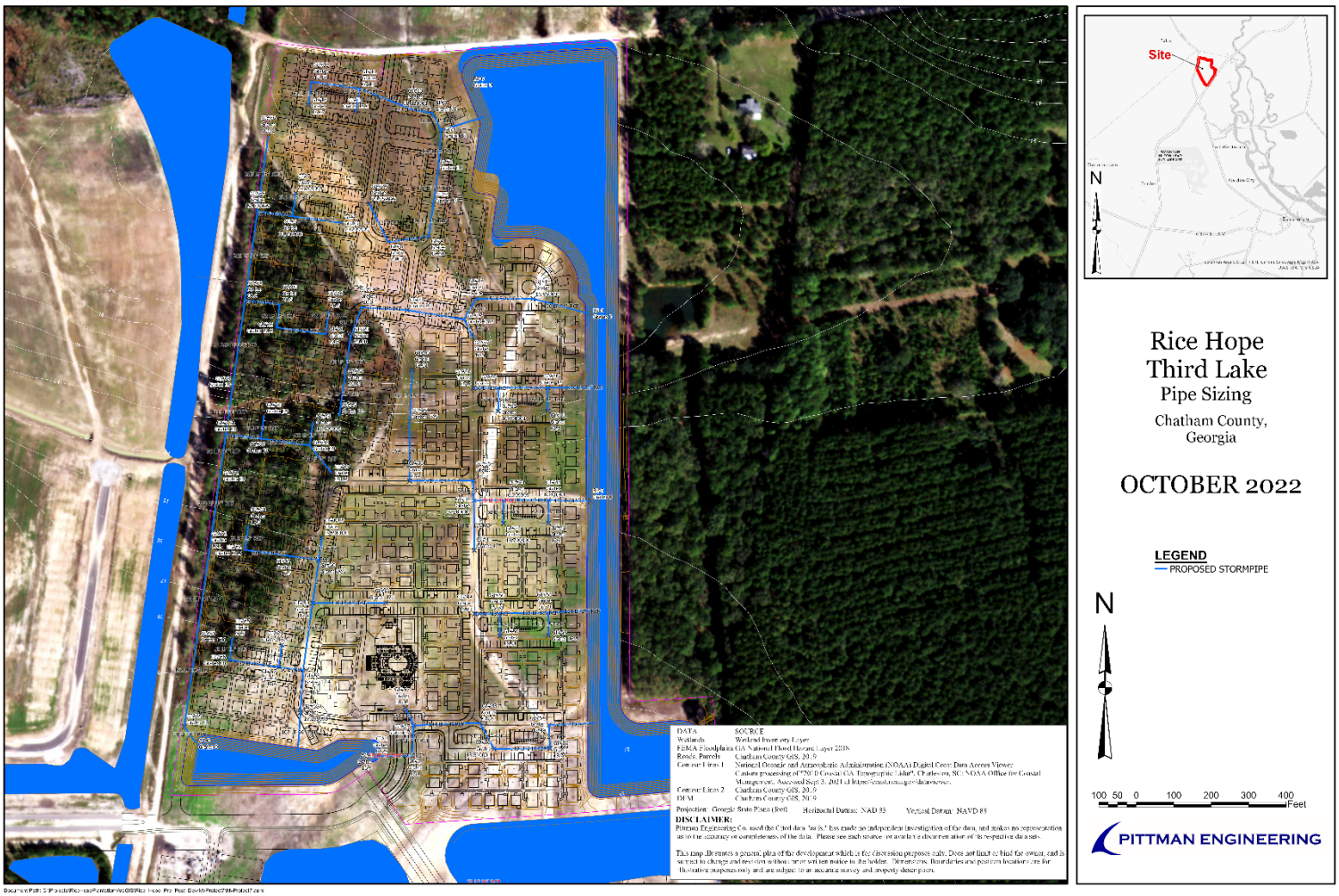
LEGEND
INLET BASINS

N

100 50 0 100 200 300 400
Feet

PITTMAN ENGINEERING

The proposed pipe sizing map and spreadsheet is shown below.



Results:

The hydrology for the Cottages at Rice Hope Drainage Study was performed by means of the TR-55 method. The Post-development conditions were designed to accommodate the 100-year frequency, twenty-four (24) hour storm event in the onsite lagoons and the 25-year frequency, twenty-four (24) hour storm event in the pipe system. The design tail water for the pipe network outfalls was calculated using the 25-year max elevation for on-site lagoons as shown in the Rice Hope Comprehensive Drainage Study. In addition, watersheds have been delineated for each inlet to generally reflect the proposed grading and routed to lagoons represented in the stormwater master plan. The times of concentration were calculated using the TR-55 method, based on the travel times for overland and shallow concentrated flows. The overland flow lengths were limited to fifty (50) feet and the remaining flow lengths consisted of shallow concentrated flow.

The Rice Hope Comprehensive Drainage Study ICPR model was created from 2010 LIDAR, aerial photography, the Wetland Inventory, Landuse maps, the Chatham County Parcel and road layout, field reconnaissance, and existing and proposed site plans where available. Cross Sections at each of the road and intermediate locations were created from the LIDAR and survey information and input into the ICPR computer model. In addition, cross sections upstream and downstream of each of the crossing were created from LIDAR topography and input into the computer model. Please note LiDAR does NOT penetrate water and thus in some cases the topographic elevation shown in the cross sections is the top of water and not the actual ground elevation. This report was previously submitted "Rice Hope Comprehensive Drainage Study (dated 10/3/22)"

Summary of Results:

The 100-Year flood elevation has been calculated utilizing the SCS Methodology to calculate the respective Peak Discharge Rates. These Peak Discharge Parameters inputted into the ICPR Model resulted in a respective flood elevation for The Cottages at Rice Hope of varying elevations shown in the Rice Hope Comprehensive Drainage Study Post development max stage elevations are equal or below the pre-development master plan max stage elevations due to the use of storm drainage ponds.

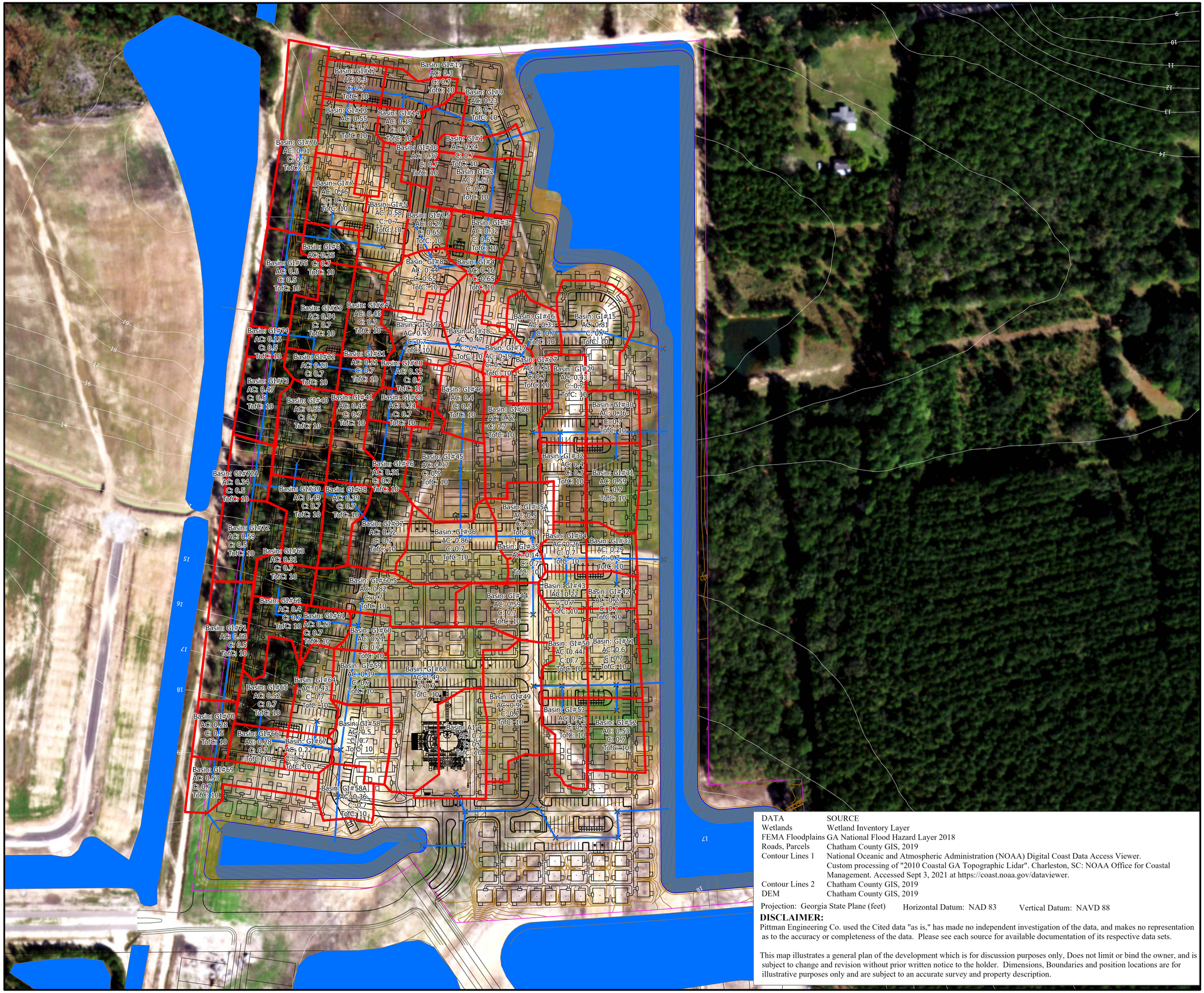
POST-DEVELOPMENT

Appendix A

BASIN MAP AND PIPE NETWORK MAP

PROJECT

COTTAGES AT RICE HOPE DRAINAGE STUDY CHATHAM COUNTY, GEORGIA



Rice Hope Third Lake
Inlet Basins

Chatham County, Georgia

December 2022

LEGEND

INLET BASINS

N

100 50 0 100 200 300 400 Feet

DATA	SOURCE
Wetlands	Wetland Inventory Layer
FEMA Floodplains	GA National Flood Hazard Layer 2018
Roads, Parcels	Chatham County GIS, 2019
Contour Lines 1	National Oceanic and Atmospheric Administration (NOAA) Digital Coast Data Access Viewer. Custom processing of "2010 Coastal GA Topographic Lidar". Charleston, SC: NOAA Office for Coastal Management. Accessed Sept 3, 2021 at https://coast.noaa.gov/dataviewer.
Contour Lines 2	Chatham County GIS, 2019
DEM	Chatham County GIS, 2019

Projection: Georgia State Plane (feet) Horizontal Datum: NAD 83 Vertical Datum: NAVD 88

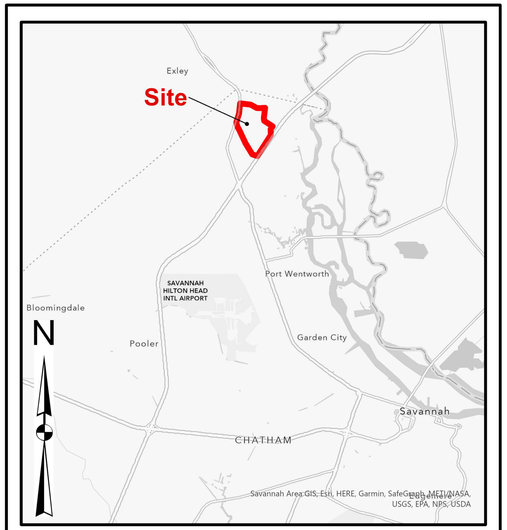
DISCLAIMER:

Pittman Engineering Co. used the Cited data "as is," has made no independent investigation of the data, and makes no representation as to the accuracy or completeness of the data. Please see each source for available documentation of its respective data sets.

This map illustrates a general plan of the development which is for discussion purposes only, Does not limit or bind the owner, and is subject to change and revision without prior written notice to the holder. Dimensions, Boundaries and position locations are for illustrative purposes only and are subject to an accurate survey and property description.

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Document Path: C:\Projects\RiceHopePlantation\ArcGIS\Rice Hope Pre Post Dev\MyProject7\MyProject7.aprx



Rice Hope Third Lake

Pipe Sizing

Chatham County, Georgia

OCTOBER 2022

LEGEND

— PROPOSED STORMPIPE

N

100 50 0 100 200 300 400 Feet

DATA	SOURCE
Wetlands	Wetland Inventory Layer
FEMA Floodplains	GA National Flood Hazard Layer 2018
Roads, Parcels	Chatham County GIS, 2019
Contour Lines 1	National Oceanic and Atmospheric Administration (NOAA) Digital Coast Data Access Viewer. Custom processing of "2010 Coastal GA Topographic Lidar". Charleston, SC: NOAA Office for Coastal Management. Accessed Sept 3, 2021 at https://coast.noaa.gov/dataviewer.
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Projection: Georgia State Plane (feet) Horizontal Datum: NAD 83 Vertical Datum: NAVD 88

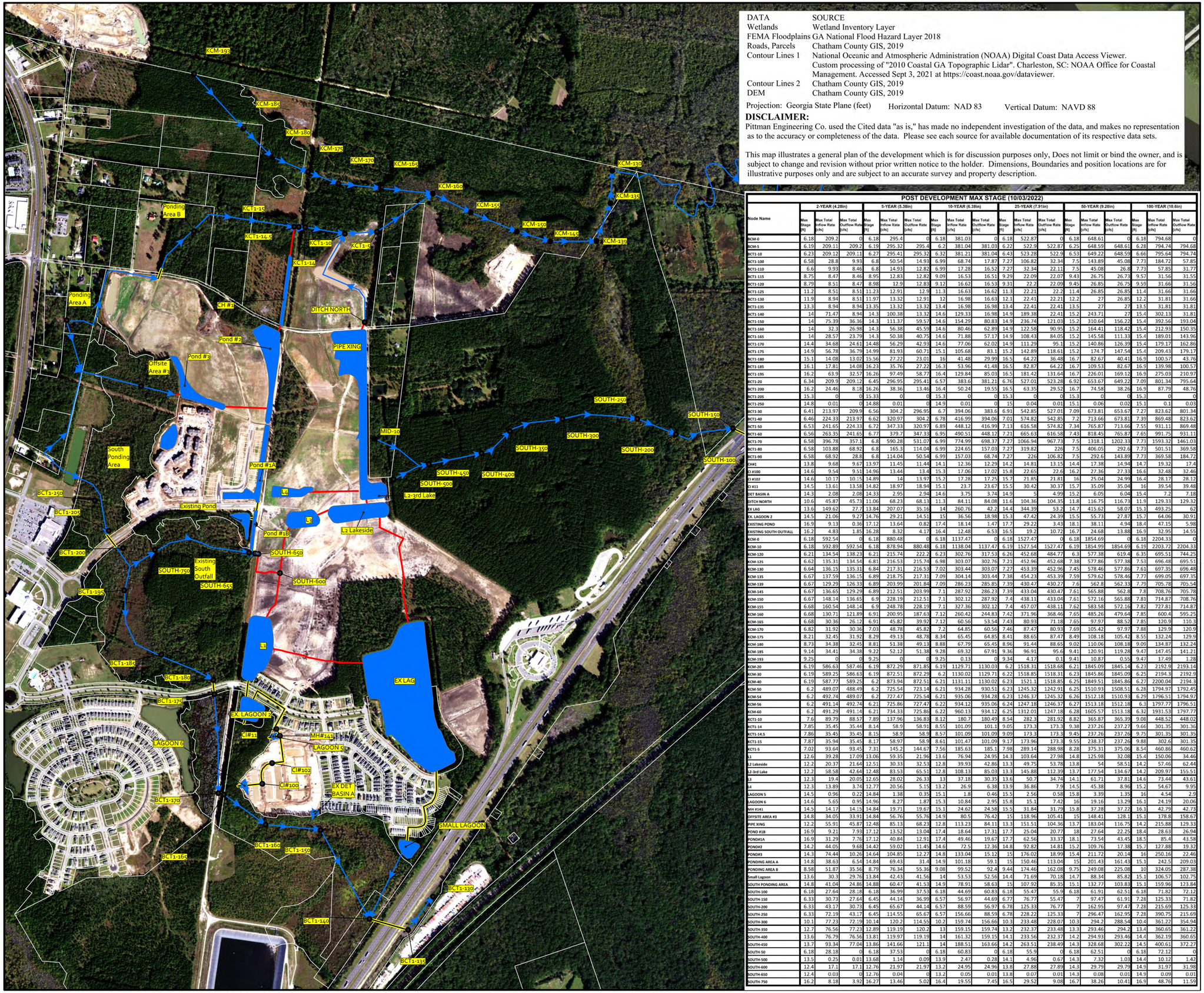
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Document Path: C:\Projects\RiceHopePlantation\ArcGIS\Rice Hope Pre Post Dev\MyProject7\MyProject7.aprx



DATA	SOURCE
Wetlands	Wetland Inventory Layer
FEMA Floodplains	GA National Flood Hazard Layer 2018
Roads, Parcels	Chatham County GIS, 2019
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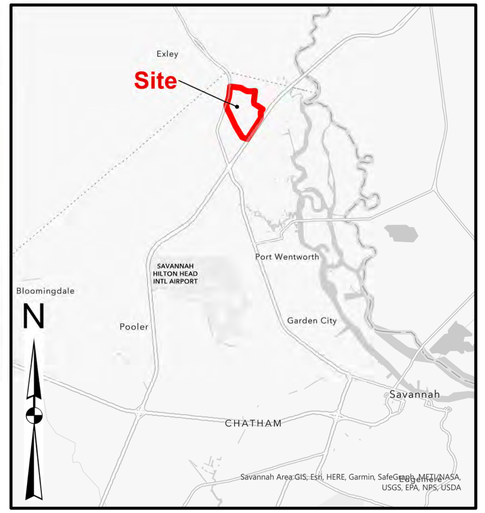
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POST DEVELOPMENT MAX STAGE (10/03/2022)

Node Name	2-YEAR (4.28in)			5-YEAR (5.38in)			10-YEAR (6.38in)			25-YEAR (7.91in)			50-YEAR (9.20in)			100-YEAR (10.6in)		
	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]	Max Stage [ft]	Max Total Inflow Rate [cfs]	Max Total Outflow Rate [cfs]
BCM-0	6.18	209.2	0	6.18	295.4	0	6.18	381.03	0	6.18	522.87	0	6.18	648.61	0	6.18	794.68	0
BCM-5	6.19	209.11	209.2	6.19	295.32	295.4	6.2	381.04	381.03	6.22	522.9	522.87	6.25	648.59	648.61	6.28	794.74	794.68
BCT1-10	6.23	209.12	209.11	6.27	295.41	295.32	6.32	381.21	381.04	6.43	523.28	522.9	6.53	649.22	648.59	6.66	795.64	794.74
BCT1-100	6.58	28.8	9.93	6.8	50.54	14.93	6.99	68.74	17.87	7.27	106.82	32.34	7.5	143.89	45.08	7.73	184.72	57.85
BCT1-110	6.6	9.93	8.46	6.8	14.93	12.82	6.99	17.28	16.52	7.27	32.34	22.11	7.5	45.08	26.8	7.73	57.85	31.77
BCT1-115	8.75	8.47	8.46	8.95	12.83	12.82	9.09	16.53	16.51	9.29	22.09	22.07	9.43	26.75	26.73	9.57	31.56	31.55
BCT1-120	8.79	8.51	8.47	8.98	12.9	12.83	9.12	16.62	16.53	9.31	22.2	22.09	9.45	26.85	26.75	9.59	31.66	31.56
BCT1-125	11.2	8.51	8.51	11.23	12.91	12.9	11.3	16.63	16.62	11.3	22.21	22.2	11.4	26.85	26.85	11.4	31.66	31.66
BCT1-130	11.9	8.94	8.51	11.97	13.32	12.91	12	16.98	16.63	12.1	22.41	22.21	12.2	27	26.85	12.2	31.81	31.66
BCT1-135	13.3	8.94	8.94	13.35	13.32	13.32	13.4	16.98	16.98	13.4	22.41	22.41	13.5	27	27	13.5	31.81	31.81
BCT1-140	14	71.47	8.94	14.3	100.38	13.32	14.6	129.33	16.98	14.9	189.38	22.41	15.2	243.71	27	15.4	302.13	31.81
BCT1-150	14	75.39	36.36	14.3	111.37	59.57	14.6	154.29	80.83	14.9	236.74	121.03	15.2	310.64	156.22	15.4	392.56	193.04
BCT1-160	14	32.3	26.98	14.3	56.38	45.59	14.6	80.46	62.89	14.9	122.58	90.95	15.2	164.41	118.42	15.4	212.93	150.35
BCT1-165	14	28.57	23.79	14.3	50.38	40.75	14.6	71.88	57.17	14.9	108.43	84.05	15.2	145.58	111.33	15.4	189.01	143.96
BCT1-170	14.4	34.68	24.61	14.48	56.29	42.93	14.6	77.06	62.02	14.9	111.29	95.1	15.2	140.86	126.39	15.4	179.17	162.86
BCT1-175	14.9	56.78	36.79	14.99	81.93	60.71	15.1	105.68	83.1	15.2	142.89	118.61	15.2	174.7	147.54	15.4	209.43	179.17
BCT1-180	15.1	14.08	13.02	15.56	27.22	23.01	16	41.48	29.99	16.5	64.22	36.48	16.7	82.67	40.41	16.9	100.57	43.76
BCT1-185	16.1	17.81	14.08	16.23	35.76	27.22	16.3	53.96	41.48	16.5	82.87	64.22	16.7	109.53	82.67	16.9	139.98	100.57
BCT1-195	16.2	63.9	32.57	16.26	97.49	58.77	16.4	129.84	85.03	16.5	181.42	131.64	16.7	226.01	169.12	16.9	275.03	210.97
BCT1-20	6.34	209.9	209.12	6.45	296.95	295.41	6.57	383.6	381.21	6.76	527.01	523.28	6.92	653.67	649.22	7.09	801.34	795.64
BCT1-200	16.2	24.46	8.18	16.26	38.36	13.46	16.4	50.24	19.55	16.5	63.35	29.52	16.7	74.58	38.26	16.9	87.79	48.76
BCT1-205	15.3	0	0	15.33	0	0	15.3	0	0	15.3	0	0	15.3	0	0	15.3	0	0
BCT1-250	14.8	0.01	0	14.88	0.01	0	14.9	0.01	0	15	0.04	0.01	15.1	0.06	0.02	15.1	0.1	0.03
BCT1-30	6.41	213.97	209.9	6.56	304.2	296.95	6.7	394.06	383.6	6.91	542.85	527.01	7.09	673.81	653.67	7.27	823.62	801.34
BCT1-40	6.46	224.33	213.97	6.62	320.97	304.2	6.78	416.99	394.06	7.01	574.82	542.85	7.2	713.66	673.81	7.39	869.48	823.62
BCT1-50	6.53	241.65	224.33	6.72	347.33	320.97	6.89	448.12	416.99	7.13	616.58	574.82	7.34	765.87	713.66	7.55	931.11	869.48
BCT1-60	6.56	263.35	241.65	6.77	379.7	347.33	6.95	490.51	448.12	7.21	665.63	616.58	7.43	818.45	765.87	7.65	991.75	931.11
BCT1-70	6.58	396.78	357.1	6.8	590.28	531.07	6.99	774.99	698.37	7.27	1066.94	967.73	7.5	1318.1	1202.33	7.73	1593.32	1461.03
BCT1-80	6.58	103.88	68.92	6.8	165.3	114.04	6.99	224.65	157.03	7.27	319.82	226	7.5	406.05	292.6	7.73	501.51	369.58
BCT1-90	6.58	68.92	28.8	6.8	114.04	50.54	6.99	157.03	68.74	7.27	226	106.82	7.5	292.6	143.89	7.73	369.58	184.72
CH#1	13.8	9.68	9.67	13.97	11.45	11.44	14.1	12.36	12.29	14.2	14.81	13.15	14.4	17.38	14.94	14.7	19.32	17.4
CI #100	14.6	9.54	9.51	14.96	13.44	13.4	15.3	17.06	17.02	15.8	22.65	22.6	16.2	27.36	27.33	16.6	32.48	32.46
CI #102	14.6	10.17	10.15	14.89	14	13.97	15.2	17.28	17.25	15.7	21.85	21.81	16	25.04	24.99	16.4	28.17	28.12
CI #11	14.5	13.61	13.58	14.82	18.97	18.94	15.1	23.7	23.67	15.5	30.42	30.37	15.7	35.09	35.04	16	39.54	39.48
DET BASIN A	14.3	2.08	2.08	14.33	2.95	2.94	14.6	3.75	3.74	14.9	5	4.99	15.2	6.05	6.04	15.4	7.2	7.18
DITCH NORTH	10.6	45.87	45.73	11.06	68.23	68.13	11.3	84.11	84.08	11.6	104.36	104.35	11.8	116.75	116.73	11.9	129.33	129.32
EX LAG	13.6	149.62	27.7	13.84	207.07	35.16	14	260.76	42.2	14.4	344.39	53.2	14.7	415.62	58.07	15.1	493.25	62
EX. LAGOON 2	14.5	21.06	9.27	14.76	29.21	14.51	15	36.56	18.98	15.3	47.42	24.39	15.5	55.73	27.87	15.7	64.06	30.91
EXISTING POND	16.9	9.13	0.36	17.12	13.64	0.82	17.4	18.14	1.47	17.7	29.22	3.43	18.1	38.11	4.94	18.4	47.15	5.98
EXISTING SOUTH OUTFALL	16.2	4.83	1.85	16.28	8.32	4.17	16.4	12.48	6.53	16.5	19.2	10.72	16.7	24.68	13.88	16.9	32.95	14.55
KCM-0	6.18	592.54	0	6.18	880.48	0	6.18	1137.47	0	6.18	1527.47	0	6.18	1854.69	0	6.18	2204.33	0
KCM-10	6.18	592.89	592.54	6.18	878.94	880.48	6.18	1138.04	1137.47	6.19	1527.54	1527.47	6.19	1854.99	1854.69	6.19	2203.72	2204.33
KCM-120	6.21	134.54	138.23	6.21	215.74	222.2	6.23	302.76	317.53	6.26	452.68	484.77	6.3	577.38	619.4	6.35	695.51	744.25
KCM-125	6.62	135.31	134.54	6.81	216.53	215.74	6.98	303.07	302.76	7.21	452.96	452.68	7.38	577.86	577.38	7.53	696.48	695.51
KCM-130	6.64	136.11	135.31	6.84	217.31	216.53	7.02	303.44	303.07	7.27	453.39	452.96	7.45	578.46	577.86	7.61	697.16	696.48
KCM-135	6.67	137.59	136.15	6.89	218.75	217.31	7.09	304.14	303.44	7.38	454.23	453.39	7.59	579.62	578.46	7.77	699.05	697.35
KCM-139	6.67	129.29	126.33	6.89	203.99	201.84	7.09	286.23	285.85	7.39	430.47	430.27	7.6	562.8	562.33	7.79	705.78	705.54
KCM-145	6.67	136.65	129.29	6.89	212.51	203.99	7.1	287.92	286.23	7.39	433.04	430.47	7.61	565.88	562.8	7.8	708.76	705.78
KCM-150	6.67	148.14	136.65	6.9	228.19	212.51	7.1	302.12	287.92	7.4	438.11	433.04	7.61	572.16	565.88	7.81	714.87	708.76
KCM-155	6.68	160.54	148.14	6.9	248.78	228.19	7.1	327.36	302.12	7.4	457.07	438.11	7.62	583.58	572.16	7.82	727.81	714.87
KCM-160	6.68	130.71	121.89	6.91	200.95	187.63	7.12	260.42	244.83	7.42	371.96	368.46	7.65	485.26	479.64	7.85	600.4	595.25
KCM-165	6.68	30.36	26.12	6.91	45.82	39.92	7.12	60.56	53.54	7.43	80.93	71.18	7.65	97.97	88.52	7.85	120.9	110.3
KCM-170	6.82	31.92	30.36	7.03	48.78	45.82	7.2	64.85	60.56	7.46	87.47	80.93	7.69	105.42	97.97	7.88	129.9	120.9
KCM-175	8.21	32.45	31.92	8.29	49.13	48.78	8.34	65.45	64.85	8.41	88.65	87.47	8.49	108.18	105.42	8.55	132.24	129.9
KCM-180	8.73	34.38	32.45	8.81	51.38	49.13	8.88	67.79	65.45	8.96	91.44	88.65	9.02	110.06	108.18	9.09	134.87	132.24
KCM-185	9.14	34.41	34.38	9.22	52.12	51.38	9.28	69.32	67.91	9.36	96.91	95.6	9.41	120.91	119.28	9.47	147.45	141.21
KCM-193	9.25	0	0	9.25	0	0	9.25	0.13	0	9.34	4.17	0.1	9.41	10.87	0.55	9.47	17.49	1.28
KCM-20	6.19	586.63	587.46	6.19	872.29	871.85	6.19	1129.71	1130.03	6.2	1518.31	1518.68	6.21	1845.09	1845.14	6.23	2192.9	2193.14
KCM-30	6.19	589.25	586.63	6.19	872.51	872.29	6.2	1130.02	1129.71	6.22	1518.85	1518.31	6.23	1845.86	1845.09	6.25	2194.3	2192.9
KCM-40	6.19	587.77	589.25	6.2	873.94	872.51	6.21	1131.11	1130.02	6.23	1521.1	1518.85	6.25	1849.51	1845.86	6.27	2200.04	2194.3
KCM-50	6.2	489.07	488.49	6.2	725.54	723.14	6.21	934.28	930.51	6.23	1245.32	1242.91	6.25	1510.93	1508.51	6.28	1794.97	1792.45
KCM-54	6.2	492.74	489.07	6.2	727.47	725.54	6.21	935.06	934.28	6.23	1246.37	1245.32	6.26	1512.18	1510.93	6.29	1796.51	1794.97
KCM-56	6.2	491.14	492.74	6.21	725.86	727.47	6.22	934.12	935.06	6.24	1247.18	1246.37	6.27	1513.18	1512.18	6.3	1797.77	1796.51
KCM-60	6.2	491.29	491.14	6.21	734.33	725.86	6.22	960.13	934.12	6.25	1312.01	1247.18	6.28	1605.57	1513.18	6.32	1931.53	1797.77
KCT1-10	7.6	89.79	88.57	7.89	137.96	136.83	8.12	180.7	180.49	8.54	282.3	281.92	8.82	365.87	365.39	9.08	448.52	448.02
KCT1-14	7.85	35.45	35.44	8.14	58.9	58.91	8.55	101.09	101.1	9.05	173.3	173.3	9.38	237.26	237.27	9.66	301.35	301.36
KCT1-14.5	7.86	35.45	35.45	8.15	58.9	58.9	8.57	101.09	101.09	9.09	173.3	173.3	9.45	237.26	237.26	9.75	301.35	301.35
KCT1-15	7.87	35.94	35.45	8.17	58.97	58.9	8.61	101.47	101.09	9.17	173.96	173.3	9.55	238.37	237.26	9.88	302.6	301.35
KCT1-5	7.02	93.64	93.45	7.31	145.2	144.67	7.56	185.63	185.1	7.98	289.14	288.98	8.28	375.31	375.06	8.54	460.86	460.62
L1	12.6	39.28	17.09	13.06	59.35	21.96	13.6	76.94	24.95	14.3	103.64	27.98	14.8	125.98	32.08	15.4	150.06	34.46
L2 Lakeside	12.2	20.37	21.64	12.51	30.33	32.53	12.8	39.93	42.86	13.3	49.75	53.78	13.8	54	58.51	14.2	57.46	62.44
L2-3rd Lake	12.2	58.58	42.64	12.48	83.53	65.51	12.8	108.13	85.03	13.3	145.88	112.39	13.7	177.54	134.67	14.2	209.97	155.51
L3	12.3	19.4	20.05	12.65	28.02	26.33	13	37.18	30.35	13.6	50.7	34.74	14.1	61.71	37.81	14.6	73.44	43.61
L4	12.3	13.89	3.74	12.77	20.56	5.15	13.2	26.9	6.38	13.9	36.86	7.9	14.5	45.38	8.96	15.2	54.67	9.95
LAGOON 5	14.5	0.96	0.22	14.84	1.38	0.35	15.1	1.8	0.46	15.5	2.56	0.58	15.8	3.39	1.35	16	4.54	2.9
LAGOON 6	14.6	5.65	0.95	14.96	8.27	1.87	15.3	10.84	2.95	15.8	15.1	7.42	16	19.16	13.29	16.1	24.19	20.06
MH #141	14.5	14.17	14.15	14.84	19.71	19.67	15.1	24.62	24.58	15.5	31.84	31.79	15.8	37.28	37.22	16.1	42.79	42.73
OFFSITE AREA #3	14.8	34.05	33.91	14.84	56.76	55.76	14.9	80.5	76.42	15	118.96	105.41	15	148.41	128.1	15.1	178.8	158.67
POND #1B	12.2	55.91	45.87	12.48	85.13	68.23	12.8	113.23	84.11	13.1	151.51	104.36	13.7	183.04	116.75	14.2	215.88	129.33
POND #1B	16.9	9.21	7.93	17.12	13.52	13.04	17.4	18.64	17.31	17.7	25.04	20.77	18	27.64	22.25	18.4	28.63	26.94
POND#1A	16.9	31.29	7.76	17.12	40.84	12.91	17.4	49.46	19.67	17.7	62.56	33.37	18.1	73.54	43.45	18.5	85.4	43.58
POND#2	14.2	44.05	9.68	14.42	59.02	11.45	14.6	72.5	12.36	14.8	92.82	14.81	15.2	109.76	17.38	15.7	127.88	19.32
POND#3	14.3	74.44	10.26	14.64	104.85	12.27	14.8	133.04	15.12	15	176.02	18.99	15.4	211.72	20.14	16	250.16	22.46
PONDING AREA A	14.8	38.63	6.54	14.84	69.43	31.4	14.9	101.18	59.1	15	150.46	113.04	15	201.43	161.43	15.1	242.5	209.03
PONDING AREA B	8.58	51.87	35.56	8.79	76.34	55.36	9.08	99.52	92.4	9.44	174.46	162.08	9.75	249.08	225.08	10	324.05	287.38
Small Lagoon	13.6	30.3	29.76	13.84	42.43	41.56	14	53.53	52.56	14.4	71.69	70.18	14.7	88.34	85.82	15.1	106.57	102.75
SOUTH PONDING AREA	14.8	41.04	24.86	14.88	60.47	41.53	14.9	78.91	58.63	15	107.92	85.35	15.1	132.77	103.83	15.1	159.96	123.84
SOUTH-100	6.18	27.64	28.18	6.18	36.99	37.53	6.18	44.69	60.83	6.18	55.47	55.9	6.18	61.91	62.51	6.18	71.82	72.12
SOUTH-150	6.33	30.73	27.64	6.45	44.14	36.99	6.57	56.97	44.69	6.77	76.77	55.47	7	97.47	61.91	7.28	125.33	71.82
SOUTH-200	6.33	43.17	30.73	6.45	65.67	44.14	6.57	88.59	56.97	6.78	125.33	76.77	7	162.95	97.47	7.28	215.69	125.33
SOUTH-250	6.33	72.19	43.17	6.45	114.55	65.67	6.57	156.66	88.59	6.78	228.22	125.33	7	296.47	162.95	7.28	390.75	215.69
SOUTH-300	10.1	77.23	72.19	10.14	120.2	114.55	10.2	159.74	156.66	10.3	233.48	228.07	10.3	294.2	288.54	10.4	361.22	354.94
SOUTH-350	12.7	76.56	77.23	12.89	119.19	120.2	13	159.15	159.74	13.2	232.37	233.48	13.3	293.46	294.2	13.4	360.65	361.22
SOUTH-400	13.6	76.79	76.56	13.81	119.97	119.19	14	161.32	159.15	14.1	233.56	232.37	14.2	294.93	293.46	14.4	362.19	360.65
SOUTH-450	13.7	93.34	77.04	13.86	141.66	121.1	14	188.51	163.66	14.2	263.51	238.49	14.3	328.68	302.22	14.5	400.61	372.27
SOUTH-50	6.18	28.18	0	6.18	37.53	0	6.18	60.83	0	6.18	55.9	0	6.18	62.51	0	6.18	72.12	0
SOUTH-500	13.5	0.25	0.01	13.68	1.14	0.09	13.9	2.47	0.28	14.1	4.96	0.67	14.3	7.32	1.03	14.4	10.12	1.42
SOUTH-600	12.4	17.1	17.1	12.76	21.97	21.97	13.2	24.95	24.96	13.8	27.88	27.89	14.3	29.79	29.79	14.9	31.97	31.98
SOUTH-650	12.4	0.03	0	12.76	0.04	0	13.2	0.05	0.01	13.8	0.07	0.01	14.3	0.08	0.01	14.9	0.09	0.01
SOUTH-750	16.2	8.18	3.92	16.27	13.46	5.02	16.4	19.55	7.45	16.5	29.52	9.08	16.7	38.26	10.41	16.9	48.76	11.59



Rice Hope Comprehensive Drainage Study

ICPR Post Development Max Node Map

Chatham County, Georgia

October 2022

Legend
- POST_LAGOONS_10032022
- Post_Node
- Channel
- Proposed Pipe
- Existing Pipe

N

GEORGIA REGISTERED No. 017550 PROFESSIONAL 10/3/2022 ENGINEER RAYMOND A. PITTMAN

0 500 1,000 2,000 Feet

PITTMAN ENGINEERING

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POST-DEVELOPMENT

Appendix B

PIPE SIZING SPREADSHEET

PROJECT

COTTAGES AT RICE HOPE DRAINAGE STUDY CHATHAM COUNTY, GEORGIA

Project:	**ThirdLake (12/19/2022)**																						
				A	**n**	**Tc**	**C**	**Cc**	**Ii**	**Ic**	**Qi**	**Qc**	**S**		**Dm**	**L**		**hf**	**hm**				
									INLET	COMPOSITE										DOWNSTREAM	INLET	FREEBOARD	Manning's
FROM	TO	DS I.E.	INLET	TOTAL	MANNING'S	TIME OF	RUNOFF	COMPOSITE	RAINFALL	RAINFALL	INLET	CUMULATIVE		MANNING'S	MANNING'S	SEGMENT	FRAME	FRICTION	MINOR	MAX. STAGE	PONDING	(FT)	n
INLET	INLET		AREA	AREA	COEFF.	CONC.	COEFF.	RUNOFF	INTENSITY	INTENSITY	DISCHARGE	DISCHARGE	SLOPE	Dtheo	SIZE	LENGTH	ELEV	LOSSES	LOSSES	ELEV	ELEV	(FRAME-INLET	Velocity
			(ACRES)	(ACRES)		(MIN)		COEFF.	(IN./HR.)	(IN./HR.)	(CFS)	(CFS)	(FT/FT)	(IN)	(IN)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	ONDING-0.5 FT)	
																						(FT)	
GI#13	GI#12	11.51	0.55	0.55	0.013	10	0.70	0.70	8.49	8.49	3.27	3.27	0.003	15	**15**	68	18.17	0.1736	0.06	15.19	15.42	2.25	2.89
GI#12	GI#11	11.12	0.30	0.85	0.013	10	0.70	0.70	8.49	8.49	1.78	5.05	0.003	18	**15**	129	18.17	0.7854	0.13	14.27	15.19	2.48	2.89
GI#14	GI#11	10.91	0.19	0.19	0.013	10	0.70	0.70	8.49	8.49	1.13	1.13	0.003	10	**15**	62	15.10	0.0189	0.01	14.27	14.30	0.30	2.89
GI#11	GI#10	10.39	0.30	1.34	0.013	10	0.70	0.70	8.49	8.49	1.78	7.96	0.003	21	**24**	78	17.43	0.0962	0.05	14.12	14.27	2.66	3.95
GI#10	GI#9	9.99	0.37	1.71	0.013	10	0.70	0.70	8.49	8.49	2.20	10.16	0.003	23	**24**	133	18.12	0.2672	0.08	13.77	14.12	3.50	3.95
GI#9	GI#1	9.84	0.23	1.94	0.013	10	0.70	0.70	8.49	8.49	1.37	11.53	0.003	24	**24**	51	18.00	0.1319	0.10	13.54	13.77	3.73	3.95
GI#7.5	GI#8	13.96	0.29	0.29	0.013	10	0.65	0.65	8.49	8.49	1.60	1.60	0.003	12	**15**	114	20.56	0.0697	0.01	15.13	15.21	4.85	2.89
GI#8	GI#4	11.81	0.44	0.73	0.013	10	0.65	0.65	8.49	8.49	2.43	4.03	0.019	12	**15**	109	20.07	0.4226	0.08	14.63	15.13	4.44	7.28
GI#4	GI#3	11.55	0.16	0.89	0.013	10	0.65	0.65	8.49	8.49	0.88	4.91	0.003	17	**15**	86	19.68	0.4950	0.12	14.01	14.63	4.55	2.89
GI#3	GI#2	10.79	0.32	1.21	0.013	10	0.65	0.65	8.49	8.49	1.77	6.68	0.003	20	**24**	88	18.00	0.0764	0.04	13.89	14.01	3.49	3.95
GI#2	GI#1	10.3	0.63	1.84	0.013	10	0.70	0.70	8.49	8.49	3.74	10.94	0.003	23	**24**	112	18.00	0.2609	0.09	13.54	13.89	3.61	3.95
GI#1	POND A	7.17	0.24	4.02	0.013	10	0.70	0.70	8.49	8.49	1.43	23.89	0.017	23	**36**	119	18.00	0.1520	0.09	13.30	13.54	3.96	12.34
GI#26	GI#25	14.25	0.31	0.31	0.013	10	0.70	0.70	8.49	8.49	1.84	1.84	0.003	12	**15**	117	20.00	0.0946	-0.02	18.85	18.92	0.58	2.89
GI#25	GI#20	13.97	0.24	0.55	0.013	10	0.70	0.70	8.49	8.49	1.43	3.27	0.003	15	**15**	95	20.09	0.2425	0.06	18.55	18.85	0.74	2.89
GI#20	GI#19	13.71	0.12	0.67	0.013	10	0.70	0.70	8.49	8.49	0.71	3.98	0.003	16	**15**	86	20.18	0.3252	0.08	18.14	18.55	1.13	2.89
GI#19	GI#18	13.34	0.43	1.10	0.013	10	0.70	0.70	8.49	8.49	2.56	6.54	0.003	19	**18**	122	20.90	0.4711	0.11	17.56	18.14	2.26	3.26
GI#18	GI#17	12.88	0.47	1.57	0.013	10	0.70	0.70	8.49	8.49	2.79	9.33	0.003	22	**18**	154	20.00	1.2102	0.22	16.13	17.56	1.94	3.26
GI#27	GI#17	13.44	0.23	0.23	0.013	10	0.70	0.70	8.49	8.49	1.37	1.37	0.003	11	**15**	53	17.60	0.0237	0.01	16.13	16.16	0.94	2.89
GI#17	GI#16	11.4	0.19	1.76	0.013	10	0.70	0.70	8.49	8.49	1.13	10.46	0.003	23	**18**	64	18.50	0.6322	0.27	15.23	16.13	1.87	3.26
GI#16	GI#15	10.44	0.33	2.32	0.013	10	0.70	0.70	8.49	8.49	1.96	13.79	0.003	25	**24**	152	17.16	0.5625	0.15	14.52	15.23	1.43	3.95
GI#15	POND A	7.69	0.81	3.13	0.013	10	0.70	0.70	8.49	8.49	4.81	18.60	0.014	21	**24**	156	16.95	1.0503	0.27	13.20	14.52	2.13	8.54
GI#28	GI#29	11.1	0.72	0.72	0.013	10	0.70	0.70	8.49	8.49	4.28	4.28	0.036	11	**15**	66	17.50	0.2886	0.09	14.06	14.44	2.76	10.01
GI#32	GI#29	11.1	0.40	0.40	0.013	10	0.70	0.70	8.49	8.49	2.38	2.38	0.026	9	**15**	62	16.70	0.0838	0.03	14.06	14.17	2.23	8.51
GI#29	GI#30	10.7	0.43	1.55	0.013	10	0.70	0.70	8.49	8.49	2.56	9.21	0.006	19	**24**	62	15.00	0.1023	0.07	13.89	14.06	0.64	5.59
GI#31	GI#30	11.1	0.59	0.59	0.013	10	0.70	0.70	8.49	8.49	3.51	3.51	0.003	15	**15**	62	15.40	0.1824	0.06	13.89	14.13	0.97	2.89
GI#30	POND A	8.78	0.36	2.50	0.013	10	0.70	0.70	8.49	8.49	2.14	14.86	0.014	20	**24**	120	15.00	0.5157	0.17	13.20	13.89	0.81	8.54
GI#46	GI#45	13.09	0.40	0.40	0.013	10	0.50	0.50	8.49	8.49	1.70	1.70	0.003	12	**15**	138	19.01	0.0952	0.01	16.78	16.89	1.82	2.89
GI#45	GI#36	12.61	0.97	1.37	0.013	10	0.50	0.50	8.49	8.49	4.12	5.82	0.003	19	24	159	17.50	0.1048	0.03	16.65	16.78	0.42	3.95
GI#36	GI#35A	11.6	0.86	2.23	0.013	10	0.70	0.70	8.49	8.49	5.11	13.25	0.003	25	**24**	171	18.50	0.5842	0.14	15.93	16.65	1.55	3.95
GI#35A	GI#35	11.44	0.50	2.73	0.013	10	0.70	0.70	8.49	8.49	2.97	16.22	0.003	27	**24**	53	17.57	0.2714	0.21	15.45	15.93	1.34	3.95
GI#44	GI#35	12.6	0.59	0.59	0.013	10	0.70	0.70	8.49	8.49	3.51	3.51	0.003	15	**15**	133	17.00	0.3912	0.06	15.45	15.90	0.80	2.89
GI#35	GI#34	10.7	0.14	3.46	0.013	10	0.70	0.70	8.49	8.49	0.83	20.56	0.003	29	**24**	79	17.20	0.6499	0.33	14.47	15.45	1.45	3.95
GI#43	GI#34	12.3	0.22	0.22	0.013	10	0.70	0.70	8.49	8.49	1.31	1.31	0.003	11	**15**	62	16.80	0.0254	0.01	14.47	14.51	1.99	2.89
GI#34	GI#33	10.34	0.26	3.94	0.013	10	0.70	0.70	8.49	8.49	1.55	23.42	0.003	31	**30**	120	16.30	0.3896	0.18	13.90	14.47	1.53	4.59
GI#42	GI#33	11.9	0.23	0.23	0.013	10	0.70	0.70	8.49	8.49	1.37	1.37	0.003	11	**15**	62	16.10	0.0278	0.01	13.90	13.94	1.86	2.89
GI#33	POND A	7.17	0.29	4.46	0.013	10	0.70	0.70	8.49	8.49	1.72	26.51	0.024	22	**30**	112	16.20	0.4659	0.23	13.20	13.90	2.00	12.98

				A	n	Tc	C	Cc	Ii	Ic	Qi	Qc	S		Dm	L		hf	hm				
									INLET	COMPOSITE										DOWNSTREAM	INLET	FREEBOARD	Manning's
FROM	TO	DS I.E.	INLET	TOTAL	MANNING'S	TIME OF	RUNOFF	COMPOSITE	RAINFALL	RAINFALL	INLET	CUMULATIVE		MANNING'S	MANNING'S	SEGMENT	FRAME	FRICTION	MINOR	MAX. STAGE	PONDING	(FT)	n
INLET	INLET		AREA	AREA	COEFF.	CONC.	COEFF.	RUNOFF	INTENSITY	INTENSITY	DISCHARGE	DISCHARGE	SLOPE	Dtheo	SIZE	LENGTH	ELEV	LOSSES	LOSSES	ELEV	ELEV	(FRAME-INLET	Velocity
			(ACRES)	(ACRES)		(MIN)		COEFF.	(IN./HR.)	(IN./HR.)	(CFS)	(CFS)	(FT/FT)	(IN)	(IN)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	ONDING-0.5 FT)	
																						(FT)	
GI#13	GI#12	11.51	0.55	0.55	0.013	10	0.70	0.70	8.49	8.49	3.27	3.27	0.003	15	**15**	68	18.17	0.1736	0.06	15.19	15.42	2.25	2.89
GI#49	GI#50	12.63	0.96	0.96	0.013	10	0.70	0.70	8.49	8.49	5.71	5.71	0.003	18	**18**	67	16.83	0.1972	0.08	15.87	16.15	0.38	3.26
GI#53	GI#50	12.73	0.42	0.42	0.013	10	0.70	0.70	8.49	8.49	2.50	2.50	0.003	14	**15**	61	16.91	0.0910	0.03	15.87	15.99	0.62	2.89
GI#50	GI#51	11.74	0.44	1.82	0.013	10	0.70	0.70	8.49	8.49	2.61	10.82	0.007	20	**18**	129	16.73	1.3634	0.29	14.22	15.87	0.56	4.99
GI#52	GI#51	12.72	0.53	0.53	0.013	10	0.70	0.70	8.49	8.49	3.15	3.15	0.003	15	**15**	61	16.90	0.1445	0.05	14.22	14.41	2.19	2.89
GI#51	POND A	8.26	0.60	2.95	0.013	10	0.70	0.70	8.49	8.49	3.57	17.53	0.031	18	**24**	114	16.73	0.6818	0.24	13.30	14.22	2.21	12.71
GI#57	CONNECTO	12.44	0.70	0.70	0.013	10	0.70	0.70	8.49	8.49	4.16	4.16	0.003	16	**15**	55	18.98	0.2272	0.09	13.30	13.62	5.06	2.89
GI#63	GI #62	13.41	0.31	0.31	0.013	10	0.70	0.70	8.49	8.49	1.84	1.84	0.003	12	**15**	62	17.60	0.0501	0.02	15.45	15.52	1.78	2.89
GI #62	GI#61	13.02	0.40	0.71	0.013	10	0.70	0.70	8.49	8.49	2.38	4.22	0.003	17	**18**	131	17.50	0.2106	0.04	15.20	15.45	1.75	3.26
GI#61	GI#60	12.82	0.23	0.94	0.013	10	0.70	0.70	8.49	8.49	1.37	5.59	0.003	18	**18**	68	17.60	0.1918	0.08	14.93	15.20	2.10	3.26
GI#60.5	GI#60	13.02	0.82	0.82	0.013	10	0.70	0.70	8.49	8.49	4.87	4.87	0.003	17	**18**	61	17.20	0.1306	0.06	14.93	15.12	1.78	3.26
GI#60	GI#59	11.97	0.21	1.97	0.013	10	0.70	0.70	8.49	8.49	1.25	11.71	0.007	21	**24**	116	17.50	0.3095	0.11	14.51	14.93	2.27	6.04
GI#68	GI#59	12.51	1.49	1.49	0.013	10	0.70	0.70	8.49	8.49	8.86	8.86	0.003	22	**18**	195	17.10	1.3819	0.20	14.51	16.09	0.71	3.26
GI#59	GI#58	8.22	0.39	3.85	0.013	10	0.70	0.70	8.49	8.49	2.32	22.88	0.026	21	**30**	122	17.40	0.3780	0.17	13.96	14.51	2.59	13.51
GI#65	GI#66	13.82	0.52	0.52	0.013	10	0.70	0.70	8.49	8.49	3.09	3.09	0.003	15	**15**	59	17.50	0.1345	0.05	14.91	15.09	2.11	2.89
GI#66	GI#67	13.32	0.28	0.80	0.013	10	0.70	0.70	8.49	8.49	1.66	4.75	0.004	16	**18**	133	18.00	0.2709	0.06	14.58	14.91	2.79	3.77
GI#64	GI#67	13.42	0.43	0.43	0.013	10	0.70	0.70	8.49	8.49	2.56	2.56	0.003	14	**15**	59	16.90	0.0923	0.03	14.58	14.70	1.90	2.89
GI#67	GI#58	13.02	0.22	1.45	0.013	10	0.70	0.70	8.49	8.49	1.31	8.62	0.005	20	**18**	66	17.60	0.4427	0.18	13.96	14.58	2.72	4.21
GI#58	GI#58A	7.11	0.50	5.80	0.013	10	0.70	0.70	8.49	8.49	2.97	34.47	0.003	36	**36**	170	17.40	0.4521	0.18	13.33	13.96	3.14	5.18
GI#58A	POND B	6.69	0.36	6.16	0.013	10	0.70	0.70	8.49	8.49	2.14	36.61	0.003	36	**36**	107	17.30	0.3210	0.21	12.80	13.33	3.67	5.18
GI#5	GI#6	16.21	0.58	0.58	0.013	10	0.70	0.70	8.49	8.49	3.45	3.45	0.003	15	**15**	131	21.30	0.3723	0.06	18.34	18.77	2.23	2.89
GI#7	GI#6	16.11	0.46	0.46	0.013	10	0.70	0.70	8.49	8.49	2.73	2.73	0.003	14	**15**	62	21.21	0.1103	0.04	18.34	18.49	2.42	2.89
GI#6	GI#75	15.43	0.25	1.29	0.013	10	0.70	0.70	8.49	8.49	1.49	7.67	0.003	21	**18**	94	21.21	0.4992	0.15	17.69	18.34	2.57	3.26
GI#76	GI#75	15.39	0.91	0.91	0.013	10	0.50	0.50	8.49	8.49	3.86	3.86	0.003	16	**18**	203	20.42	0.2731	0.04	17.69	18.00	2.12	3.26
GI#75	GI#74	14.17	0.60	2.80	0.013	10	0.50	0.50	8.49	8.49	2.55	11.89	0.003	24	**30**	240	19.14	0.2008	0.05	17.44	17.69	1.15	4.59
GI#24	GI#21	15.31	0.45	0.45	0.013	10	0.70	0.70	8.49	8.49	2.67	2.67	0.003	14	**15**	62	20.60	0.1055	0.04	18.74	18.89	1.41	2.89
GI#21	GI#22	14.41	0.21	0.66	0.013	10	0.70	0.70	8.49	8.49	1.25	3.92	0.003	16	**15**	132	20.60	0.4843	0.08	18.18	18.74	1.56	2.89
GI#22	GI#23	14.22	0.23	0.89	0.013	10	0.70	0.70	8.49	8.49	1.37	5.29	0.003	18	**15**	62	20.60	0.4142	0.14	17.63	18.18	2.12	2.89
GI#23	GI#74	13.44	0.54	1.43	0.013	10	0.70	0.70	8.49	8.49	3.21	8.50	0.003	21	**24**	94	20.60	0.1322	0.06	17.44	17.63	2.67	3.95
GI#74	GI#73	12.72	0.23	4.46	0.013	10	0.50	0.50	8.49	8.49	0.98	18.93	0.003	29	**36**	241	19.90	0.1933	0.06	17.19	17.44	2.16	5.18
GI#73	GI#72A	11.86	0.47	4.93	0.013	10	0.50	0.50	8.49	8.49	2.00	20.93	0.003	30	**36**	121	19.00	0.1186	0.07	17.00	17.19	1.51	5.18
GI#37	GI#38	13.92	0.52	0.52	0.013	10	0.70	0.70	8.49	8.49	3.09	3.09	0.003	15	**15**	93	19.15	0.2120	0.05	17.81	18.07	0.78	2.89
GI#41	GI#38	14.61	0.45	0.45	0.013	10	0.70	0.70	8.49	8.49	2.67	2.67	0.003	14	**15**	62	18.80	0.1055	0.04	17.81	17.96	0.54	2.89
GI#38	GI#39	12.52	0.39	1.36	0.013	10	0.70	0.70	8.49	8.49	2.32	8.08	0.003	21	**24**	132	19.00	0.1677	0.05	17.59	17.81	0.89	3.95
GI#40	GI#39	14.61	0.66	0.66	0.013	10	0.70	0.70	8.49	8.49	3.92	3.92	0.003	16	**15**	62	19.00	0.2275	0.08	17.59	17.90	0.80	2.89
GI#39	GI#72A	11.86	0.49	2.51	0.013	10	0.70	0.70	8.49	8.49	2.91	14.92	0.002	28	**24**	94	19.00	0.4072	0.18	17.00	17.59	1.11	3.23
GI#72A	GI#72	11.59	0.34	7.78	0.013	10	0.50	0.50	8.49	8.49	1.44	33.03	0.002	38	**36**	91	18.00	0.2222	0.17	16.61	17.00	0.70	4.23

				A	n	Tc	C	Cc	Ii	Ic	Qi	Qc	S		Dm	L		hf	hm				
									INLET	COMPOSITE										DOWNSTREAM	INLET	FREEBOARD	Manning's
FROM	TO	DS I.E.	INLET	TOTAL	MANNING'S	TIME OF	RUNOFF	COMPOSITE	RAINFALL	RAINFALL	INLET	CUMULATIVE		MANNING'S	MANNING'S	SEGMENT	FRAME	FRICTION	MINOR	MAX. STAGE	PONDING	(FT)	n
INLET	INLET		AREA	AREA	COEFF.	CONC.	COEFF.	RUNOFF	INTENSITY	INTENSITY	DISCHARGE	DISCHARGE	SLOPE	Dtheo	SIZE	LENGTH	ELEV	LOSSES	LOSSES	ELEV	ELEV	(FRAME-INLET	Velocity
			(ACRES)	(ACRES)		(MIN)		COEFF.	(IN./HR.)	(IN./HR.)	(CFS)	(CFS)	(FT/FT)	(IN)	(IN)	(FT)	(FT)	(FT)	(FT)	(FT)	(FT)	ONDING-0.5 FT)	
																						(FT)	
GI#13	GI#12	11.51	0.55	0.55	0.013	10	0.70	0.70	8.49	8.49	3.27	3.27	0.003	15	**15**	68	18.17	0.1736	0.06	15.19	15.42	2.25	2.89
GI#72	GI#71	10.92	0.59	8.37	0.013	10	0.50	0.50	8.49	8.49	2.50	35.53	0.003	36	**36**	222	18.00	0.6272	0.20	15.78	16.61	1.09	5.18
GI#71	GI#70	10.22	0.63	9.00	0.013	10	0.50	0.50	8.49	8.49	2.67	38.21	0.003	37	**36**	233	17.10	0.7614	0.23	14.79	15.78	1.02	5.18
GI#70	GI#69	9.49	0.28	9.28	0.013	10	0.50	0.50	8.49	8.49	1.19	39.39	0.003	37	**36**	242	17.10	0.8404	0.24	13.71	14.79	2.01	5.18
GI#69	POND B	7.13	0.53	9.81	0.013	10	0.70	0.70	8.49	8.49	3.15	58.30	0.047	26	**36**	50	18.00	0.3804	0.53	12.80	13.71	3.99	20.51

POST-DEVELOPMENT

Appendix C

WATER QUALITY TIME SERIES DATA

PROJECT

COTTAGES AT RICE HOPE DRAINAGE STUDY CHATHAM COUNTY, GEORGIA

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.2507
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.3348
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.4186
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.5869
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.6684
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.7545
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.8399
3rd-Lake_WQ	1.2" WQ	PIPE XING	0.9206
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.0039
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.0872
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.1706
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.2539
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.3372
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.4206
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.5039
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.5872
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.6706
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.7539
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.8372
3rd-Lake_WQ	1.2" WQ	PIPE XING	1.9206
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.0039
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.0872
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.1706
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.2539
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.3372
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.4206
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.5039
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.5872
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.6706
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.7539
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.8372
3rd-Lake_WQ	1.2" WQ	PIPE XING	2.9206
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.0039
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.0872
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.1706
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.2539
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.3372
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.4206

Total Outflow Rate [cfs]
0.000
0.000
0.000

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.5039
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.5872
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.6706
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.7539
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.8372
3rd-Lake_WQ	1.2" WQ	PIPE XING	3.9206
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.0022
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.0877
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.1698
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.2511
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.3347
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.4174
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.5010
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.5848
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.6672
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.8346
3rd-Lake_WQ	1.2" WQ	PIPE XING	4.9177
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.0011
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.0840
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.3338
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.4178
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.5009
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.5841
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.6675
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.8365
3rd-Lake_WQ	1.2" WQ	PIPE XING	5.9185
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.0039
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.0841
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.3342
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.4184
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.5024
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.6672
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.7518
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.8348
3rd-Lake_WQ	1.2" WQ	PIPE XING	6.9172

Total Outflow Rate [cfs]
0.000
0.000
0.000

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.0837
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.1680
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.2505
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.5009
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.5841
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.7505
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.8339
3rd-Lake_WQ	1.2" WQ	PIPE XING	7.9172
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.0008
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.0841
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.1676
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.5006
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.7507
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	8.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.0006
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.0837
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.1674
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.5006
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.7505
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.8338
3rd-Lake_WQ	1.2" WQ	PIPE XING	9.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.3338
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.4169

Total Outflow Rate [cfs]
0.000
0.000
0.000

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	10.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	11.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	12.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	13.9167

Total Outflow Rate [cfs]
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.000
0.007
0.030
0.064
0.109
0.161
0.214
0.267
0.318
0.368
0.415
0.460
0.503
0.543
0.580
0.615
0.648
0.678
0.705
0.730
0.753
0.774

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	14.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	15.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	16.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.4168

Total Outflow Rate [cfs]
0.793
0.810
0.825
0.838
0.850
0.861
0.870
0.879
0.887
0.894
0.899
0.904
0.907
0.910
0.913
0.915
0.916
0.918
0.918
0.918
0.917
0.915
0.914
0.913
0.911
0.909
0.907
0.904
0.902
0.899
0.895
0.892
0.888
0.885
0.881
0.877
0.873
0.868
0.861
0.854
0.846
0.839

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	17.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	18.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	19.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	20.9168

Total Outflow Rate [cfs]
0.831
0.822
0.814
0.806
0.798
0.790
0.782
0.775
0.767
0.759
0.752
0.744
0.736
0.728
0.719
0.711
0.703
0.696
0.688
0.681
0.675
0.668
0.661
0.654
0.648
0.641
0.635
0.629
0.623
0.617
0.611
0.605
0.599
0.594
0.588
0.582
0.576
0.571
0.565
0.560
0.555
0.549

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	21.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.8333
3rd-Lake_WQ	1.2" WQ	PIPE XING	22.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	23.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.4167

Total Outflow Rate [cfs]
0.545
0.540
0.535
0.531
0.527
0.522
0.518
0.514
0.511
0.507
0.503
0.500
0.496
0.493
0.489
0.486
0.482
0.478
0.474
0.470
0.467
0.463
0.459
0.456
0.452
0.449
0.446
0.443
0.440
0.436
0.433
0.430
0.428
0.425
0.422
0.419
0.416
0.413
0.409
0.405
0.401
0.395

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	24.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.3346
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.4175
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.5008
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.6677
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.7506
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.8342
3rd-Lake_WQ	1.2" WQ	PIPE XING	25.9175
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.0007
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.5008
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.6674
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	26.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.0006
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.0839
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.5837
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.6672
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	27.9168

Total Outflow Rate [cfs]
0.389
0.383
0.376
0.369
0.362
0.355
0.348
0.341
0.334
0.328
0.321
0.314
0.308
0.302
0.295
0.289
0.283
0.278
0.272
0.266
0.261
0.256
0.251
0.246
0.241
0.236
0.231
0.227
0.223
0.218
0.214
0.210
0.206
0.202
0.199
0.195
0.191
0.188
0.184
0.181
0.178
0.175

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.5838
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.7502
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	28.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.0837
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.8337
3rd-Lake_WQ	1.2" WQ	PIPE XING	29.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.1672
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.5837
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	30.9172
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.4170

Total Outflow Rate [cfs]
0.172
0.169
0.166
0.163
0.160
0.157
0.155
0.152
0.149
0.147
0.144
0.142
0.140
0.137
0.135
0.133
0.131
0.129
0.127
0.125
0.123
0.121
0.119
0.117
0.115
0.113
0.112
0.110
0.108
0.107
0.105
0.103
0.102
0.100
0.099
0.097
0.096
0.095
0.093
0.092
0.091
0.089

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.6672
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	31.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	32.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.0005
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.7502
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	33.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.0837
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.7502
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	34.9169

Total Outflow Rate [cfs]
0.088
0.087
0.086
0.084
0.083
0.082
0.081
0.080
0.079
0.078
0.077
0.076
0.075
0.074
0.073
0.072
0.071
0.070
0.069
0.068
0.067
0.066
0.065
0.065
0.064
0.063
0.062
0.061
0.061
0.060
0.059
0.058
0.058
0.057
0.056
0.056
0.055
0.054
0.054
0.053
0.052
0.052

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.7504
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	35.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.5837
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.8338
3rd-Lake_WQ	1.2" WQ	PIPE XING	36.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	37.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.4169

Total Outflow Rate [cfs]
0.051
0.050
0.050
0.049
0.049
0.048
0.048
0.047
0.047
0.046
0.045
0.045
0.044
0.044
0.043
0.043
0.042
0.042
0.042
0.041
0.041
0.040
0.040
0.039
0.039
0.039
0.038
0.038
0.037
0.037
0.037
0.036
0.036
0.035
0.035
0.035
0.034
0.034
0.034
0.033
0.033
0.033

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.7505
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	38.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.7504
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	39.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.4170
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.8333
3rd-Lake_WQ	1.2" WQ	PIPE XING	40.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.7505
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	41.9169

Total Outflow Rate [cfs]
0.032
0.032
0.032
0.031
0.031
0.031
0.030
0.030
0.030
0.029
0.029
0.029
0.029
0.028
0.028
0.028
0.028
0.027
0.027
0.027
0.026
0.026
0.026
0.026
0.025
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0.023
0.023
0.022
0.022
0.022
0.022
0.021
0.021

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.4170
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	42.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.4170
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.8333
3rd-Lake_WQ	1.2" WQ	PIPE XING	43.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.4170
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	44.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.4168

Total Outflow Rate [cfs]
0.021
0.021
0.021
0.020
0.020
0.020
0.020
0.019
0.019
0.019
0.019
0.019
0.018
0.018
0.018
0.018
0.018
0.017
0.017
0.017
0.017
0.017
0.016
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0.016
0.016
0.016
0.015
0.015
0.015
0.015
0.015
0.015
0.014
0.014
0.014
0.014
0.014
0.014
0.014
0.013
0.013

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.8338
3rd-Lake_WQ	1.2" WQ	PIPE XING	45.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	46.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	47.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.7504
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.8337
3rd-Lake_WQ	1.2" WQ	PIPE XING	48.9167

Total Outflow Rate [cfs]
0.013
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Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.3338
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.5839
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.8339
3rd-Lake_WQ	1.2" WQ	PIPE XING	49.9171
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.0836
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.1671
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	50.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	51.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.4168

Total Outflow Rate [cfs]
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Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.8333
3rd-Lake_WQ	1.2" WQ	PIPE XING	52.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.7502
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	53.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	54.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	55.9168

Total Outflow Rate [cfs]
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Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.0833
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	56.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	57.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	58.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.4167

Total Outflow Rate [cfs]
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Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	59.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.1669
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.2503
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	60.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.0001
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.3333
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	61.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.7502
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	62.9169

Total Outflow Rate [cfs]
0.003
0.003
0.003

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.0003
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	63.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.1670
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.5003
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	64.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.4171
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.5004
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	65.9168
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.0838
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.2501
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.4170

Total Outflow Rate [cfs]
0.003
0.003
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0.002

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.5836
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	66.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.0835
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.2504
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.5833
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.6669
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.7503
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.8335
3rd-Lake_WQ	1.2" WQ	PIPE XING	67.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.3335
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.5000
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.6668
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	68.9167
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.0002
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.3336
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.4168
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.6667
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	69.9167

Total Outflow Rate [cfs]
0.002
0.002
0.002

Scenario	Sim	Node Name	Relative Time [hrs]
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.0000
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.1668
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.2500
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.3334
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.4169
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.5001
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.5835
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.6671
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.7501
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.8336
3rd-Lake_WQ	1.2" WQ	PIPE XING	70.9169
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.0004
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.0834
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.1667
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.2502
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.3337
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.4167
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.5002
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.5834
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.6670
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.7500
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.8334
3rd-Lake_WQ	1.2" WQ	PIPE XING	71.9170
3rd-Lake_WQ	1.2" WQ	PIPE XING	72.0001

Total Outflow Rate [cfs]
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