

# TOWN OF SEABROOK ISLAND

Planning Commission Special Called Meeting

August 15, 2018 – 2:30 PM

Town Hall, Council Chambers

2001 Seabrook Island Road



## AGENDA

### CALL TO ORDER

### OLD BUSINESS ITEMS

*There are no Old Business Items*

### NEW BUSINESS ITEMS

1. **Rezoning Request: 2460 Seabrook Island Road**

*[Pages 2–8]*

An ordinance amending the Zoning Map of the Town of Seabrook Island so as to change the zoning designation for Charleston County Tax Map Number 147-02-00-020, containing approximately 0.54 +/- acres located at 2460 Seabrook Island Road, from the SR Single-Family Residential District to the AGC Agricultural-Conservation District

2. **Encroachment Permit Request: Kiawah Senior Living Facility**

*[Pages 9–109]*

Request from Atlantic Partners II, LLC, to approve an encroachment permit on Seabrook Island Road for access to and from a proposed 200-unit senior living facility

### ITEMS FOR INFORMATION / DISCUSSION

1. **Upcoming Meeting Dates**

### ADJOURN



## MEMORANDUM

**TO:** Planning Commission Members  
**FROM:** Joseph M. Cronin, Town Administrator  
**SUBJECT:** Rezoning Request for 2460 Seabrook Island Road  
**MEETING DATE:** August 15, 2018

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The Planning Commission is asked to review and provide a recommendation on a request from the Seabrook Island Property Owners Association (SIPOA) to rezone Charleston County Tax Map Number 147-02-00-020, containing approximately 0.54 +/- acres located at 2460 Seabrook Island Road (Block 1, Lot 4), from the SR Single-Family Residential District to the AGC Agricultural-Conservation District.

The property is surrounded on three sides by parcels zoned SR Single-Family Residential; however, the parcel on the opposite side of Seabrook Island Road – Block 3, Lot 1 – is similarly zoned AGC.

Subject to rezoning approval, this property is intended to remain as an undeveloped “open space” lot. Uses permitted within the AGC district are limited to the following:

- (a) Open air recreation uses including swimming areas, fishing, beaches, boat ramp, dock, pier, lifeguard station, restrooms, boardwalks and natural preserve.
- (b) Bulkhead and erosion control devices.

A copy of the draft rezoning ordinance is attached for review.

### **Staff Recommendation**

Staff recommends in favor of **APPROVAL** of the rezoning request.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. Cronin".

Joseph M. Cronin  
Town Administrator

TOWN OF SEABROOK ISLAND  
2001 SEABROOK ISLAND ROAD  
SEABROOK ISLAND, SC 29455  
Phone (843) 768-9121 Fax (843) 768-9830

REZONING APPLICATION NO. \_\_\_\_\_

DATE 8/6/18 75

**PROPERTY INFORMATION:**

1. Present Zoning SFR
2. Proposed Zoning Conservation
3. Tax Map Number (s) 14702 00020
4. Address 2460 Seabrook Island Rd.
5. Lot Dimensions 0.54 acres
6. Deed Recorded: Book 0736 Page 484 Date 7/30/18
7. Plat Recorded: Book AD Page 118 Date 9/18/74

**APPLICANT/OWNER/REPRESENTATIVE:**

8. Applicant SIPA  
Address 1202 Landfall Way  
Phone No. (Home) \_\_\_\_\_ (Business) 843-768-0061
9. Owner(s) (if different from applicant) \_\_\_\_\_  
Address \_\_\_\_\_  
Phone No. (Home) \_\_\_\_\_ (Business) \_\_\_\_\_
10. Representative (if different from applicant) Heather Patra
11. I (We) certify that \_\_\_\_\_ is my (our) authorized representative for this zoning change.

Heather Patra  
Signature of Owner(s)/Date

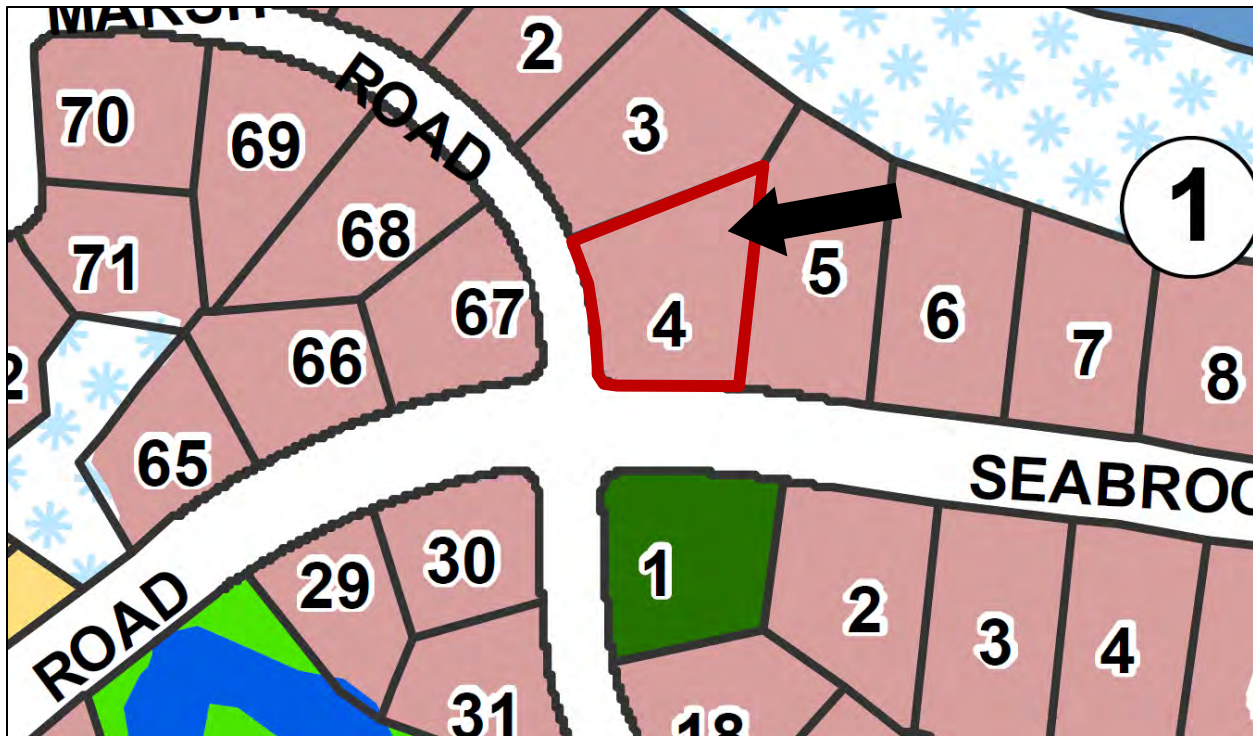
\_\_\_\_\_  
Signature of Applicant/Date  
and/or representative if different from owner

\*\*A copy of an approved recorded plat showing present boundaries of the property to be rezoned and the appropriate fee is required upon application.

### Aerial Image

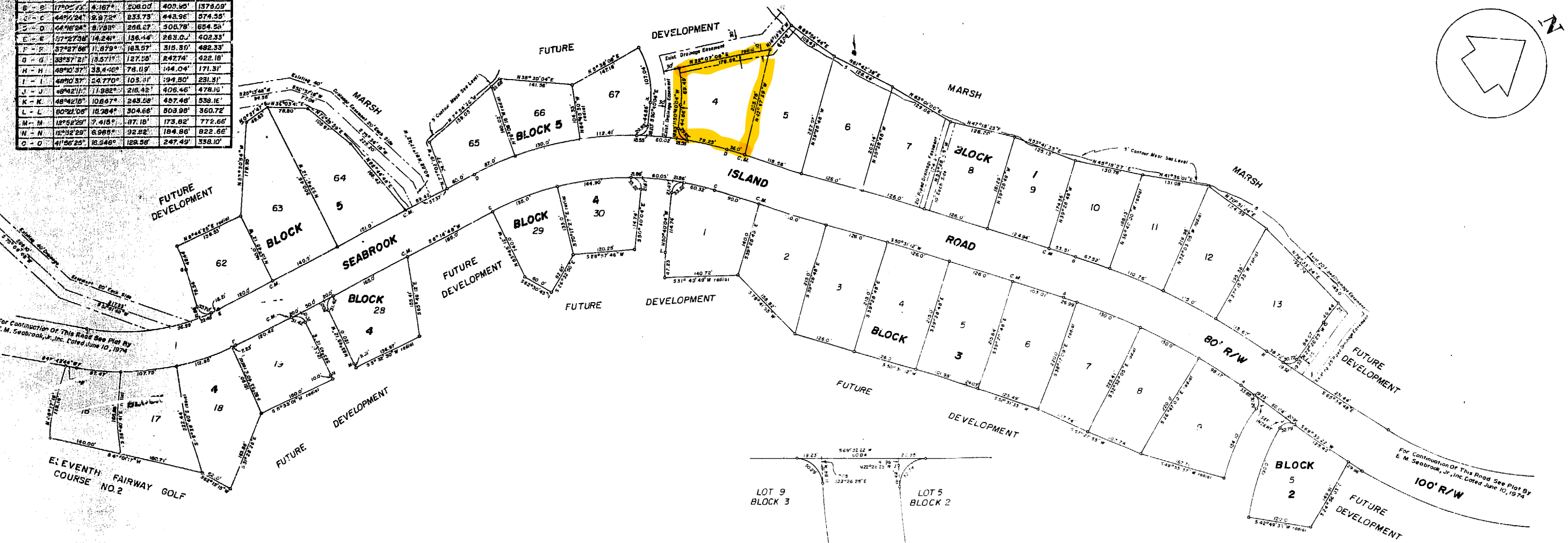
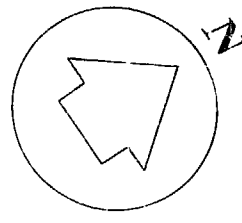


### Zoning Map





CURVE	Δ	D	T	L	R
A - A	172°23'	2.424'	194.01'	383.16'	1293.09'
B - B	172°23'	4.167'	308.00'	403.95'	1378.09'
C - C	44°16'24"	9.972'	233.73'	443.96'	374.35'
D - D	44°16'24"	8.783'	268.07'	308.78'	654.25'
E - E	57°27'38"	14.241'	136.44'	263.04'	402.33'
F - F	57°27'38"	11.879'	163.57'	318.39'	482.33'
G - G	33°37'21"	19.571'	127.55'	247.74'	422.18'
H - H	48°40'37"	33.446'	78.19'	144.04'	171.31'
I - I	48°40'37"	24.770'	103.41'	194.80'	231.31'
J - J	48°42'11"	11.882'	216.42'	406.46'	478.16'
K - K	48°42'11"	10.867'	243.58'	487.48'	539.16'
L - L	80°22'08"	18.284'	304.66'	603.98'	360.72'
M - M	12°52'29"	7.415'	171.18'	173.82'	772.66'
N - N	12°52'29"	6.985'	92.22'	184.86'	822.66'
O - O	41°56'25"	16.548'	129.59'	247.49'	358.10'



For continuation of this Road See Plat By S. M. Seabrook, Jr., Inc. Dated June 10, 1974

For continuation of this Road See Plat By E. M. Seabrook, Jr., Inc. Dated June 10, 1974

ALL STREETS AND EASEMENTS SHOWN ON THIS PLAT ARE PRIVATE AND ARE TO BE MAINTAINED BY SEABROOK ISLAND COMPANY ITS SUCCESSORS OR ASSIGNS.

# SEABROOK ISLAND

CHARLESTON COUNTY, S. C.

LOTS 4-13 BLOCK 1, LOT 5 BLOCK 2, LOTS 1-5 BLOCK 3, LOTS 16-19 & 28-30 BLOCK 4 & LOTS 62-67 BLOCK 5  
SCALE 1"=100'

JUNE 11, 1974

I, E. M. SEABROOK, JR., a Registered Surveyor of the State of South Carolina, hereby certify that I have surveyed the property shown hereon, that this plat shows the true dimensions of the property, that all necessary markers have been installed and the precision is 1/8000.

*E. M. Seabrook, Jr.*  
E. M. SEABROOK, JR.  
CIVIL ENGINEER & LAND SURVEYOR  
S. C. Reg. No. 1375

- NOTES:
- ALL LOT CORNERS MARKED WITH PILES.
  - ALL CURVE MEASUREMENTS ARE ARC LENGTHS.
  - ALL CORNER RADII ARE 20.0' UNLESS NOTED.
  - OWNED BY SEABROOK ISLAND COMPANY.
  - ACREAGE=19.30 ACRES.
  - ALL CORNERS MARKED C.M. INDICATE CONC. MONUMENTS

APPROVED BY  
*Sara B. Brewer*  
SARA B. BREWER  
DIRECTOR OF PLANNING  
CHARLESTON COUNTY PLANNING BOARD  
DATE 9-18-74  
#3546-DD

Charles W. South Carolina  
Office of Register Home Conveyance  
This Plat recorded this 11th day of November 1974 at  
11:00 o'clock in Plat Book No. 116, and tracing cloth  
copy filed in File No. 116, Folder No. 116, Drawing  
No. 116. Original plat (in triplicate) delivered to  
*Arthur H. Carter*  
Arthur H. Carter  
Register Home Conveyance

FLOOD HEIGHT 11 ft  
5 ft  
A16  
9-18-74

**TOWN OF SEABROOK ISLAND**

**ORDINANCE NO. 2018-\_\_**

**ADOPTED \_\_\_\_\_**

**AN ORDINANCE AMENDING THE ZONING MAP OF THE TOWN OF SEABROOK ISLAND SO AS TO CHANGE THE ZONING DESIGNATION FOR CHARLESTON COUNTY TAX MAP NUMBER 147-02-00-020, CONTAINING APPROXIMATELY 0.54 +/- ACRES LOCATED AT 2460 SEABROOK ISLAND ROAD, FROM THE SR SINGLE-FAMILY RESIDENTIAL DISTRICT TO THE AGC AGRICULTURAL-CONSERVATION DISTRICT**

**WHEREAS**, on or about August 6, 2018, 2018, the Seabrook Island Property Owners Association filed Application #75 with the Town of Seabrook Island seeking to change the zoning designation of Charleston County Tax Map Number 147-02-00-020, containing approximately 0.54 +/- acres located at 2460 Seabrook Island Road, from the SR Single-Family Residential District to the AGC Agricultural-Conservation District; and

**WHEREAS**, the Seabrook Island Planning Commission reviewed the above referenced rezoning application during its regularly scheduled meeting on August 15, 2018, at which time the Planning Commission made a recommendation to the Mayor and Council that the rezoning request is in the best interest of the Town of Seabrook Island and is consistent with the Town's Comprehensive Plan; and

**WHEREAS**, a public hearing was held on the above referenced rezoning application on September 25, 2018;

**NOW, THEREFORE**, pursuant to the authority granted by the Constitution and the General Assembly of the State of South Carolina, **BE IT ORDAINED BY THE MAYOR AND COUNCIL FOR THE TOWN OF SEABROOK ISLAND:**

**SECTION 1. Zoning Map Amendment.** The Official Zoning District Map of the Town of Seabrook Island is hereby amended to change the zoning designation for Charleston County Tax Map Number 147-02-00-020, containing approximately 0.54 +/- acres located at 2460 Seabrook Island Road, from the SR Single-Family Residential District to the AGC Agricultural-Conservation District. A map of the property subject to this rezoning ordinance is attached hereto as Exhibit A.

**SECTION 2. Severability.** If any section, subsection, paragraph, clause, or provision of this ordinance shall be deemed to be unconstitutional, unenforceable, or otherwise invalid by the final decision of a court of competent jurisdiction, it shall be construed to have been the legislative intent of Town Council to pass said ordinance without such unconstitutional provision, and the validity of all remaining sections, subsections, paragraphs, clauses, or provisions of said ordinance shall not be affected thereby. If said ordinance, or any provision thereof, is held by the final decision of a court of competent jurisdiction to be inapplicable to any person, group of persons, property, kind of property, circumstances or set of circumstances, such holding shall not affect the applicability thereof to any other persons, property or circumstances.

**SECTION 3. Conflicting Ordinances Repealed.** All ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed.

**SECTION 4. Effective Date.** This ordinance shall be effective from and after the date of adoption.

**SIGNED AND SEALED** this \_\_\_\_ day of \_\_\_\_\_, 2018, having been duly adopted by the Town Council for the Town of Seabrook Island on the \_\_\_\_ day of \_\_\_\_\_, 2018.

First Reading:  
Public Hearing:  
Second Reading:

TOWN OF SEABROOK ISLAND

\_\_\_\_\_  
Ronald J. Ciancio, Mayor

ATTEST

\_\_\_\_\_  
Faye Allbritton, Town Clerk

EXHIBIT A

Property Map  
Charleston County Tax Map Number 147-02-00-020







## MEMORANDUM

**TO:** Planning Commission Members  
**FROM:** Joseph M. Cronin, Town Administrator  
**SUBJECT:** Encroachment Permit Application for Kiawah Senior Living Project  
**MEETING DATE:** August 15, 2018

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The town has received an encroachment permit application from Atlantic Partners II, LLC, to allow a vehicular access point to be constructed on Seabrook Island Road, located approximately midway between Andell Bluff Boulevard and the existing traffic circle at Freshfields Village. The driveway is intended to serve a planned 200-unit Senior Living Facility adjacent to the existing Freshfields Village development. The facility will be developed by Big Rock Partners, and will include up to 200 independent living, assisted living and memory care units. The proposed facility will be located on Charleston County Tax Map Number 205-00-00-014, which is located within the town limits of Kiawah Island and zoned PUD.

Seabrook Island Road is a 66' wide public right-of-way, which extends from Landfall Way to the bypass lane on Betsy Kerrison Boulevard. The right-of-way easement was transferred from SCDOT to the Town of Seabrook Island via a quit claim deed recorded on February 20, 1990. The land under the public right-of-way is believed to be owned by East Seabrook Limited Partnership, as successor to Andell Development Limited Partnership, which acquired the property from Margaret Beckett, Dorothy McKee and Elizabeth Stringfellow via a quit claim deed recorded on January 27, 1989.

Under the town's Development Standards Ordinance, the Planning Commission is charged with reviewing and approving requests for encroachment permits. Pursuant to Section 13.60.20 of the Development Standards Ordinance:

Completed permit applications, including any required studies, shall be referred to the Planning Commission for review and approval prior to issuance of the permit by the Town Administrator. In approving issuance of an encroachment permit, the Planning Commission may attach such conditions to approval as it deems are warranted to protect the interests of the Town, public streets or right of ways and drainage system and utilities, including without limitation requiring the applicant to:

- (a) Alter existing public streets, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of such alteration;
- (b) Place traffic signs and/or signals, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of placing such signs and/or signals;

- (c) Install replacements and/or modifications to existing roadway drainage systems, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of such replacements and/or modifications; and,
- (d) Protect existing buried utilities, and/or repair and/or replace them as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of doing the same or reach agreement regarding the costs with any utility not controlled by the Town.

Following their presentation to the Planning Commission on July 18<sup>th</sup>, the applicants have revised their plans to include the addition of a left turn lane from Seabrook Island Road into the property. The plans for the pedestrian pathway have also been modified to improve visibility and pedestrian safety. Lastly, the interior road configuration at the main driveway has been modified to address safety concerns identified by town staff.

To assist with the Planning Commission's review of the encroachment permit application, the following materials have been included within the agenda packet:

- DSO Section 13.60 – Encroachment Permit Requirements
- DSO Section 16.10.40 – Design Standards for Arterial Streets
- Encroachment Permit Application (Atlantic Partners II, LLC)
- General Site Layout (Thomas & Hutton)
- Staking & Signage Plan (Thomas & Hutton)
- Traffic Impact Analysis (Thomas & Hutton)
- Senior Facility Staffing Projections (Big Rock Partners)
- Project Schedule & Construction Traffic Plan (Balfour Beatty)
- SCDHEC Notice of Intent (NOI)
- Stormwater Management Report (Thomas & Hutton – To Be Amended)
- Stormwater and Utility Plans (Thomas & Hutton – To Be Amended)
- Freshfields Village Master Drainage Plan (Thomas & Hutton)
- Email from G. Robert George Re: Stormwater Management Plans
- Seabrook Island Road Property Owners Map

In addition, the town has hired two engineering (The Reveer Group and G. Robert George & Associates) firms to provide an independent review of the traffic study, site access plans and stormwater plans. Representatives from these firms are expected to be present at the Planning Commission meeting on August 15<sup>th</sup>.

### **Staff Recommendation**

This request is at the discretion of the Planning Commission.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "J. Cronin". The signature is fluid and cursive, with a prominent initial "J" and a long, sweeping underline.

Joseph M. Cronin  
Town Administrator

**Sec. 13.60. - Encroachment Permit Required.**

An encroachment permit, issued by the Town, shall be required for any development (whether such development occurs within or outside the corporate limits of the Town) which intersects, abuts or in any manner impacts any public street or right of way within the Town, or under control of or in which the Town has any legal right or interests ("public street or right of way"), and/or which in any manner impacts drainage to, from or under any such public street or right of way, and/or which in any manner impacts utilities (whether owned and/or operated by the Town or others) located beneath the surface of any such public street or right of way.

§ 13.60.10. *Information Required for Encroachment Permit.* Encroachment permit applicants shall furnish information concerning the proposed encroachment as requested by the Town and may be required to take any or all of the following actions at no expense to the Town before an encroachment permit is considered:

- (a) Conduct and submit to the Town a traffic flow and volume study to the Town's specifications;
- (b) Conduct and submit to the Town a drainage study to the Town's specifications which identifies and quantifies drainage from the proposed development, including its impact on existing roadway drainage systems and compliance with all applicable provisions of the Town's stormwater program;
- (c) Conduct and submit to the Town a study to the Town's specifications which identifies and quantifies impact of the proposed development on utilities located beneath the surface of any potentially affected public street or right of way.

§ 13.60.20. *Procedures and Conditions for Consideration and Issuance of Encroachment Permits.* Completed permit applications, including any required studies, shall be referred to the Planning Commission for review and approval prior to issuance of the permit by the Town Administrator. In approving issuance of an encroachment permit, the Planning Commission may attach such conditions to approval as it deems are warranted to protect the interests of the Town, public streets or right of ways and drainage system and utilities, including without limitation requiring the applicant to:

- (a) Alter existing public streets, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of such alteration;
- (b) Place traffic signs and/or signals, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of placing such signs and/or signals;
- (c) Install replacements and/or modifications to existing roadway drainage systems, as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of such replacements and/or modifications; and,



- (d) Protect existing buried utilities, and/or repair and/or replace them as specified by the Town, or alternatively, make payment to the Town to defray the entire cost of doing the same or reach agreement regarding the costs with any utility not controlled by the Town.

§ 13.60.30. *Appeal of Planning Commission Action.* An encroachment permit applicant may appeal a final decision of the Planning Commission for de novo review by the Town Council of Seabrook Island. In approving issuance of an encroachment permit, the Town Council may attach such conditions to approval as it deems are warranted, including without limitation those stated in the immediately preceding Section 13.60.20.

(Ord. No. 1990-02, 5-10-1990; Ord. No. 1995-06, 6-8-1995; Ord. No. 2017-02, § 1, 7-25-2017)

**Sec. 16.10.40. Arterial Streets.**

§ 16.10.40.10. *Designation.* That portion of Seabrook Island Road (Road S-1875) lying between the end of Town maintenance at Land Fall Way and Kiawah Island Parkway is designated as an arterial street.

§ 16.10.40.20. *Design.* For arterial streets, the use of divided highways, with turning lanes, is preferred. Pursuant to § 16.10.40.30 the use of divided highways may warrant additional points of access provided that the safe and uncongested flow of vehicles is maintained.

§ 16.10.40.30. *Limited Accessibility.* It shall be the policy of the Town to minimize the number of points of access to arterial streets. The Town encourages the use of feeder streets and neighborhood road networks in order to minimize the number of roads and driveways intersecting with arterial streets.

- (a) For purposes of this section, points of vehicular access shall be defined to include streets intersecting with (i.e., providing ingress to and egress from) an arterial street, driveways, and any other curb cut.
- (b) To the extent feasible, properties abutting arterial streets shall not have direct access to such arterial streets, but shall be provided with street frontage on interior, collector roads.
- (c) To the extent feasible, tract property abutting an arterial street shall be provided with one (1) point of vehicular access to the tract. Subdivision of property subsequent to the effective date of this section shall not entitle the owner(s) of subdivided property to direct access to arterial streets if alternative access through interior roads is either available or feasible.
- (d) To the extent feasible, vehicular access to arterial streets shall be limited to no more than one (1) point of access per every half mile.

§ 16.10.40.40. *Alternatives.* In determining feasibility of alternative points of access to any given property, the criteria set forth Article 20 for consideration of a PD in this Ordinance shall apply.

§ 16.10.40.50. *Studies and improvements required.* For every new or modified road which intersects an arterial street within the Town, the Town may require the owner or developer to take any or all of the following actions before an encroachment permit is issued pursuant to Article 13:

- (a) Conduct and submit to the Town a traffic flow and volume study, to the Town's specifications;
- (b) Conduct and submit to the Town a drainage study, to the Town's specifications, to identify any drainage modifications, structures or improvements needed in the arterial street drainage system to accommodate flows from the new road/development;

- (c) If warranted by the traffic study, widen the arterial street to construct turning lane(s) to/from the new or modified road, to the Town's specifications; or alternatively, make payment to the Town to defray the entire cost of the Town's construction of such improvements;
- (d) Place signs and/or signals on the arterial street right-of-way, as determined by the Town and to the Town's specifications, to facilitate the safe and unimpeded flow of traffic; or alternatively, make payment to the Town to defray the entire cost of placing such signs and/or signals as deemed necessary by the Town;
- (e) If warranted by the drainage study, place or modify drainage control structures or improvements in the arterial street right-of-way, as determined by the Town and to the Town's specifications, to handle any increased demand on the roadway drainage system that may be caused by the new road; or alternatively, make payment to the Town to defray the entire cost of such drainage improvements as deemed necessary by the Town.

July 16, 2018

Joseph M. Cronin  
Town Administrator/Zoning Administrator  
Town Hall  
2001 Seabrook Island Road  
Seabrook Island, SC 29455

Re: Encroachment Permit Application  
Proposed Senior Living Facility  
Freshfields Village  
Atlantic Partners II, LLC

Dear Joe,

Pursuant to Section 13.60 of the Town of Seabrook Island Development Standards Ordinance I am making application on behalf of Atlantic Partners II, LLC for an encroachment permit for a new driveway connection along Seabrook Island Road to serve as additional entrance into Freshfields Village. This new entrance will primarily serve a proposed senior living facility located to the west of the Seabrook-Kiawah roundabout.

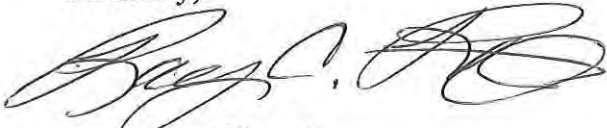
I am enclosing the previously completed traffic study along with the signed application form and a construction plan showing the detailed location of the driveway connection and its geometric design. Please consider this plan as a preliminary design as there will be some refinement in the future of some of the details shown herein. However, the basic location and intended turn movements in and out of Freshfields will remain the same.

We do not anticipate any disruption to any of the existing utilities in the road right of way with the construction of the new entrance. We will be providing additional details on the drainage design of the entrance way to not interfere with the existing drainage patterns along the road. Obviously, we cannot avoid some minor disruption in the existing bike and further details will be provided to address the demolition and restoration of the path to safely tie into the new entrance way as well as detail to address entry signage and lighting.



Please look over this submission and let me have any feedback as soon as it is convenient. Thanks for including this item for discussion at the upcoming Planning Commission meeting. I look forward to introducing the Commission to Richard Ackerman, Chairman & Senior Managing Principal of Big Rock Partners and Sean M. Nealon, Vice President of Operations for Big Rock Senior Living. Big Rock Partners is a well-financed, leading developer of Senior Living Facilities in Florida.

Sincerely,

A handwritten signature in black ink, appearing to read "Ray C. Pantlik". The signature is fluid and cursive, with a large initial "R" and "P".

Ray C. Pantlik, P.E.  
Director of Development

**APPLICATION FOR ENCROACHMENT PERMIT**  
**Town of Seabrook Island**

Street or Road: Seabrook Island Rd Subdivision: Freshfields Village Date: July 16, 2018

The undersigned applicant (owner) hereby applies to the Town of Seabrook Island for a permit to encroach on a public right-of-way.

(Attach a print of the sketch of plan to each copy of this form)



(Applicant [Owner's [Signature)

July 16, 2018

(Date)

AS AGENT FOR  
ATLANTIC PARTNERS II, LLC

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**ENCROACHMENT PERMIT**  
**PERMIT No:** \_\_\_\_\_

Issued to: (Name) Atlantic Partners II, LLC Street or Road: Seabrook Island Rd.ad

Address: One Kiawah Island Parkway Subdivision: Freshfields Village  
Kiawah Island, SC 29455

Telephone No: 843-768-3418

In Compliance with your request and subject to all the provisions, terms, conditions, and restrictions written herein, you are authorized and permitted to:

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Town of Seabrook Island

By: \_\_\_\_\_ Date: July 16, 2018  
Zoning Administrator, Town of Seabrook Island

(Note) This form is to be submitted to the Zoning Administrator, Town of Seabrook Island. When submitting the form the applicant shall sign the application for the encroachment permit and acceptance of the provision, etc on the back.

## Provisions, Terms, Conditions and Restrictions

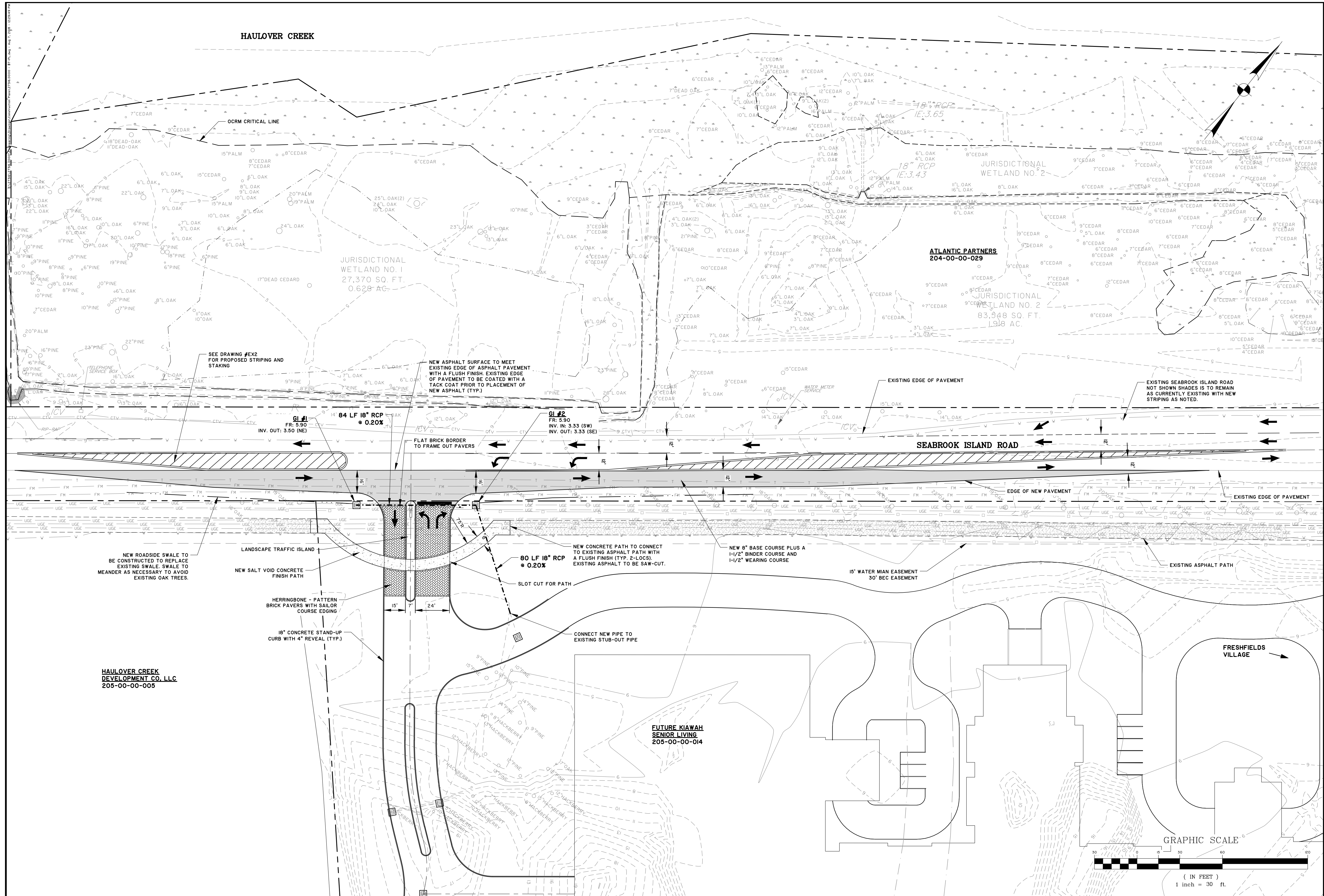
1. **PERMITTEE:** The word "Permittee" used herein shall mean the name of the person, firm or corporation to whom this permit is issued, his, her, its heirs, successors, and assigns.
2. **FUTURE MOVING OF ENCROACHMENT:** If, in the opinion of The Town of Seabrook Island it should become necessary to relocate or remove the encroachment, or any part thereof contemplated herein, on account of improvements, relocation or widening of the road or street, or for any other sufficient reason, such moving or removing shall be done on demand of the duly authorized representative of the Town of Seabrook Island at the expense of the Permittee.
3. **PROTECTION OF TRAVELING PUBLIC:** Adequate provision shall be made for the protection of the traveling public at all times such that, during the process of the work, all necessary detours, barricades, warning signs and watchmen shall be provided by and at the expense of the Permittee. The Permittee agrees to observe all rules and regulations of the Town of Seabrook Island while carrying on the work.
4. **RESPONSIBILITY:** The Permittee, its successors or assigns, assumes full responsibility for any accidents to persons or damage to property, including the street or road, that may be caused by the construction, maintenance, use, moving, or removing of the encroachment contemplated herein, and agrees to indemnify the Town of Seabrook Island for any liability incurred or injury or damage sustained by it.
5. **PERMIT SUBJECT TO INSPECTION:** This permit shall be kept at the site of the work at all times while said work is underway, and must be shown to any representative of the Town of Seabrook Island or Law Enforcement Officers on demand.
6. **STANDARDS OF CONSTRUCTION:** All work shall conform to recognized standards of construction and shall be performed in a workman like manner. No pavement shall be cut, no tunneling shall be permitted and no excavation shall be made nearer than two feet to the edge of any type pavement unless specifically authorized herein. All trenches within the limits of the Roadway shall be backfilled with suitable material and thoroughly tamped in layers not greater than six inches in thickness. All pipes, conduit, cables, etc shall have a minimum cover of 30 inches.
7. **PERMITTEE** shall at all times comply with all provisions of the Town Code and Development Standards Ordinance of the Town of Seabrook Island.

I, we, accept the permit herein granted and agree to comply with all the provisions, terms, conditions and restrictions set out herein.

  
AS AGENT FOR

Date: July 16, 2018 Permittee: Atlantic Partners II, LLC





NO.	REVISIONS	BY	DATE

**THOMAS & HUTTON**  
682 Johnnie Dodds Boulevard • Suite 100  
Mt. Pleasant, SC 29464 • 843.849.0200  
www.thomasandhutton.com

**ATLANTIC PARTNERS, LLC**  
CHARLESTON COUNTY, SOUTH CAROLINA

**SEABROOK ISLAND INTERSECTION**

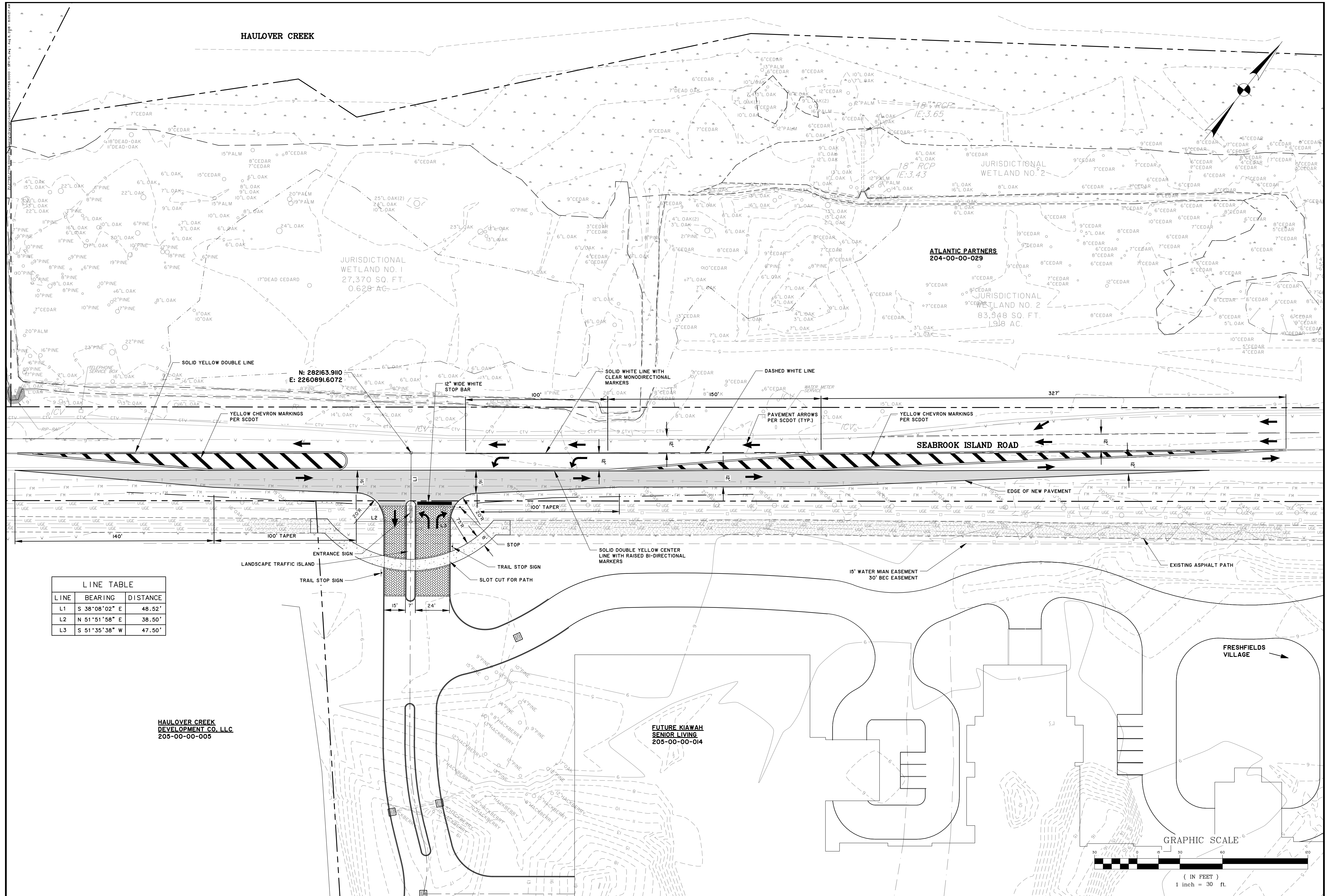
**GENERAL LAYOUT**

JOB NO:	J-27316.0000
DATE:	8/7/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	1" = 30'

**EX1**



HAULOVER CREEK



JURISDICTIONAL WETLAND NO. 1  
27,370 SQ. FT.  
0.628 AC.

ATLANTIC PARTNERS  
204-00-00-029

JURISDICTIONAL WETLAND NO. 2  
83,548 SQ. FT.  
1.918 AC.

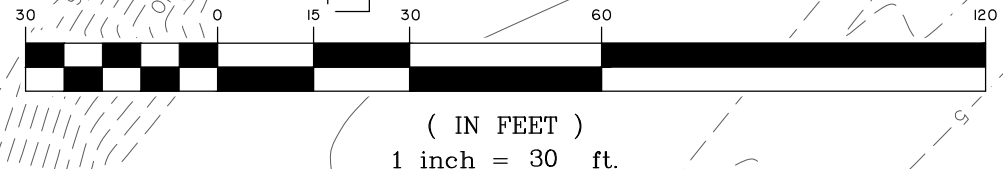
N: 282163.9110  
E: 2260891.6072

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S 38°08'02" E	48.52'
L2	N 51°51'58" E	38.50'
L3	S 51°35'38" W	47.50'

HAULOVER CREEK  
DEVELOPMENT CO. LLC  
205-00-00-005

FUTURE KIAWAH  
SENIOR LIVING  
205-00-00-014

GRAPHIC SCALE



NO.	REVISIONS	BY	DATE

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**ATLANTIC PARTNERS, LLC**  
 CHARLESTON COUNTY, SOUTH CAROLINA  
 SEABROOK ISLAND INTERSECTION  
**STAKING AND SIGNAGE PLAN**

JOB NO:	J-27316.0000
DATE:	8/7/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	1" = 30'

**EX2**



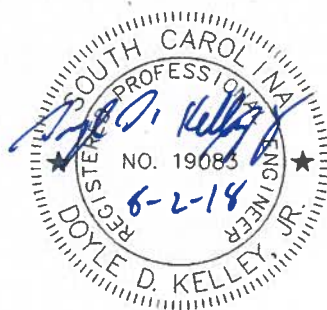
THOMAS  
&  
HUTTON

**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD  
(FRESHFIELDS VILLAGE SENIOR LIVING)  
CHARLESTON COUNTY, SOUTH CAROLINA

Prepared for:  
KIAWAH RESORT ASSOCIATES, LP

J - 27252

JUNE 2018  
REVISED: AUGUST 2018



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Trip Generation Calculations ..... Appendix C

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## 1. INTRODUCTION

The Seabrook Island Road – Freshfields Village Senior Living development is proposed for a site southwest of the existing roundabout at Kiawah Island Parkway, Betsy Kerrison Parkway, Seabrook Island Road and Village Green Lane, in Seabrook Island, SC. A site location map is shown in **Figure 1**. The new development will consist of 128 units of independent living housing, 40 units of assisted living, 32 units of memory care housing, and 50 dwelling units of townhomes. The development is anticipated to be completed in 2023.

This study will examine the traffic impacts of the proposed development on the adjacent roadways and determine if turn lanes are need for the proposed driveway on Seabrook Island Road. The morning and afternoon peak hour traffic conditions will be evaluated with and without the proposed development. The following intersections will be included in the study:

- Kiawah Island Parkway, Betsy Kerrison Parkway, Seabrook Island Road and Village Green Lane (an existing roundabout)
- Seabrook Island Road and Andell Bluff Boulevard (stop controlled)
- Seabrook Island Road and the proposed project driveway (stop controlled)

## 2. EXISTING CONDITIONS

### Roadway Conditions

Betsy Kerrison Parkway, State Road S-10-20, is a north-south minor arterial with a posted speed limit of 35 mph. There are two through lanes in each direction, and a center lane for left turns near the study roundabout. To the north, there are two through lanes in each direction and a grass median. Approximately two miles north of the roundabout, the 2016 ADT on Betsy Kerrison Parkway is 12,400.

Kiawah Island Parkway is an east-west, two-lane major collector roadway with a posted speed limit of 35 mph. On Kiawah Island Parkway, there are auxiliary turn lanes and painted median areas near major intersecting roads. The Freshfields bike path runs along the Kiawah Island Parkway on the south side of the road. It is separated from the road by a grass area.

Seabrook Island Road is an east-west, two-lane major collector roadway with a posted speed limit of 35 mph. Seabrook Island Road provides access to the Town of Seabrook Island.

Andell Bluff Boulevard is a north-south, two-lane roadway with a grass median at its intersection with Seabrook Island Road. There is no posted speed limit. This road provides access to a gated residential community and to a marina village. Andell Bluff Boulevard terminates at Seabrook Island Road at a stop controlled T-intersection.

Village Green Lane is a north-south, two-lane roadway with a 15 mph posted speed limit, Village Green Lane connects to Farm Lake View Road which provides access to the project site.

Traffic Conditions

Traffic operations at intersections are typically evaluated in terms of “Level of Service” or LOS. The LOS is a measurement of delay incurred at an intersection or for a particular movement. LOS is defined by the Transportation Research Board’s Highway Capacity Manual (HCM) from which LOS A represents free flow conditions with minimal delays; LOS F represents congested conditions. Generally, a LOS D or better is considered acceptable.

Table 1 shows the HCM criteria for both roundabouts and unsignalized intersections.

**Table 1. Level of Service definitions**

LEVEL OF SERVICE	Control Delay per Vehicle (seconds)	
	Roundabout	Unsignalized Intersection
A	≤ 10	≤ 10
B	>10 and ≤ 15	>10 and ≤ 15
C	>15 and ≤ 25	>15 and ≤ 25
D	>25 and ≤ 35	>25 and ≤ 35
E	>35 and ≤ 50	>35 and ≤ 50
F	>50	>50

As discussed with the Town of Seabrook Island, peak hour traffic counts were taken at the study intersections on Tuesday, May 29, 2018 along with a 24-hour tube count on Seabrook Island Road just east of Andell Bluff Boulevard. The peak hours during the morning and afternoon are shown in **Figure 2**. Details of the count data are included in Appendix A.

There has been discussion regarding the need to factor the 2018 weekday traffic count data to reflect for Saturday conditions. The 2018 weekday traffic data, when compared to the Saturday summertime visitor count at the security gates southwest of the site, show that the May 29, 2018 count data that was collected on a Tuesday should not be factored. Specifically, the security gate (on Seabrook Island Road, westbound, west of the site) traffic counts indicate 1,175 visitors checked in on a Saturday. The May 29, 2018 count data indicates that 2,759 vehicles traveled westbound on Seabrook Island Road, just east of Andell Bluff Boulevard, in only eight hours (8am-6pm) and a total of 3,657 vehicles for the entire day. While there is one intersection (Landfall Way) between the 24-hour tube count location and the security gate, it is not likely that Saturday peak hour traffic volumes would be higher than the midweek peak hour volumes.

Using Synchro, capacity analyses were complete based on the 2018 counts. Results of the capacity analysis are shown in Table 2, and the Synchro reports are included in Appendix B.

**Table 2. Current Levels of Service (2018)**

Intersection	Control	2018 AM Peak Hour		2018 PM Peak Hour	
		LOS	DELAY (sec)	LOS	DELAY (sec)
Kiawah Island Pkwy, Betsy Kerrison Pkwy, Seabrook Island Rd and Village Green Ln	Round-about				
SE approach (Betsy Kerrison Pkwy)		D	27	A	6
NW approach (Village Green Ln)		B	14	A	10
NE approach (Seabrook Island Rd)		C	21	B	11
SW approach (Kiawah Island Pkwy)		A	1	A	1
<b>Intersection Overall</b>		<b>C</b>	<b>20</b>	<b>A</b>	<b>5</b>
Seabrook Island Rd and Andell Bluff Blvd	Stop				
SB approach (Andell Bluff Blvd)		B	12	B	14

Based on the current conditions, the study intersections are functioning at acceptable levels of service.

### 3. NO-BUILD CONDITIONS

The South Carolina Department of Transportation count station 723 is located on Seabrook Island Road, south of Andell Bluff Boulevard. Historical volumes, obtained for the SCDOT count station, are shown in Table 3.

**Table 3. SCDOT Count Station Data**

Count Station	2012 ADT	2013 ADT	2014 ADT	2015 ADT	2016 ADT	2017 ADT
#723 – Seabrook Island Road	5,900	6,000	5,400	5,600	4,600	5,600

Based on nearby SCDOT count station (#723) data, traffic volumes in the study area have fluctuated in the past several years. The 2014 through 2017 traffic volumes are lower than those counted in 2012 and 2013. Given this information, growth of 1% percent per year is determined to be an appropriate background growth rate. The 2018 peak hour volumes at the study intersections are raised by 1% annually to estimate the 2023 no-build conditions. The 2023 no-build traffic volumes are projected and shown in **Figure 3**.





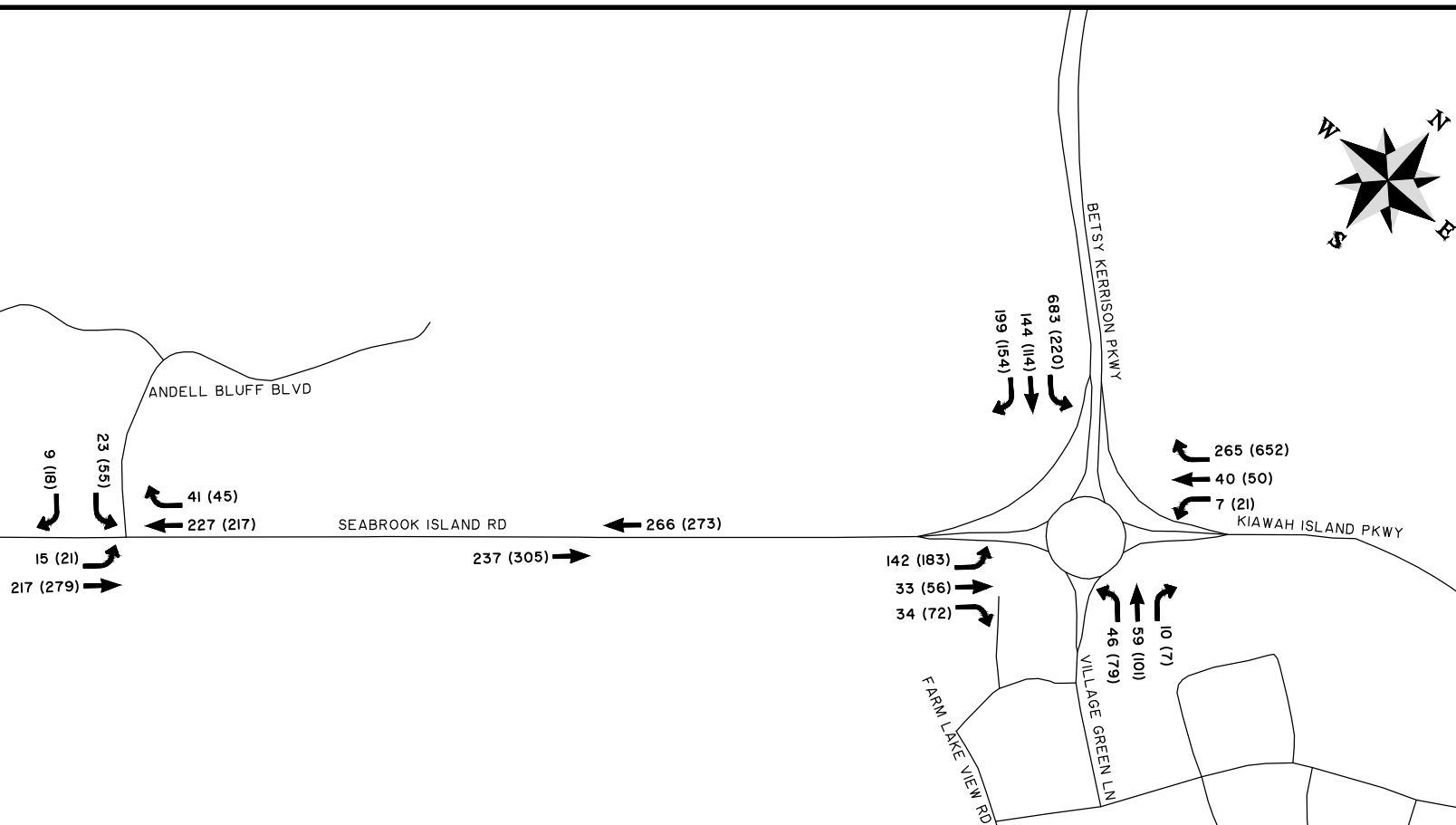
## Seabrook Island Road

Freshfields Village Senior Living  
06/18/2018

Figure 1

Site Location Map



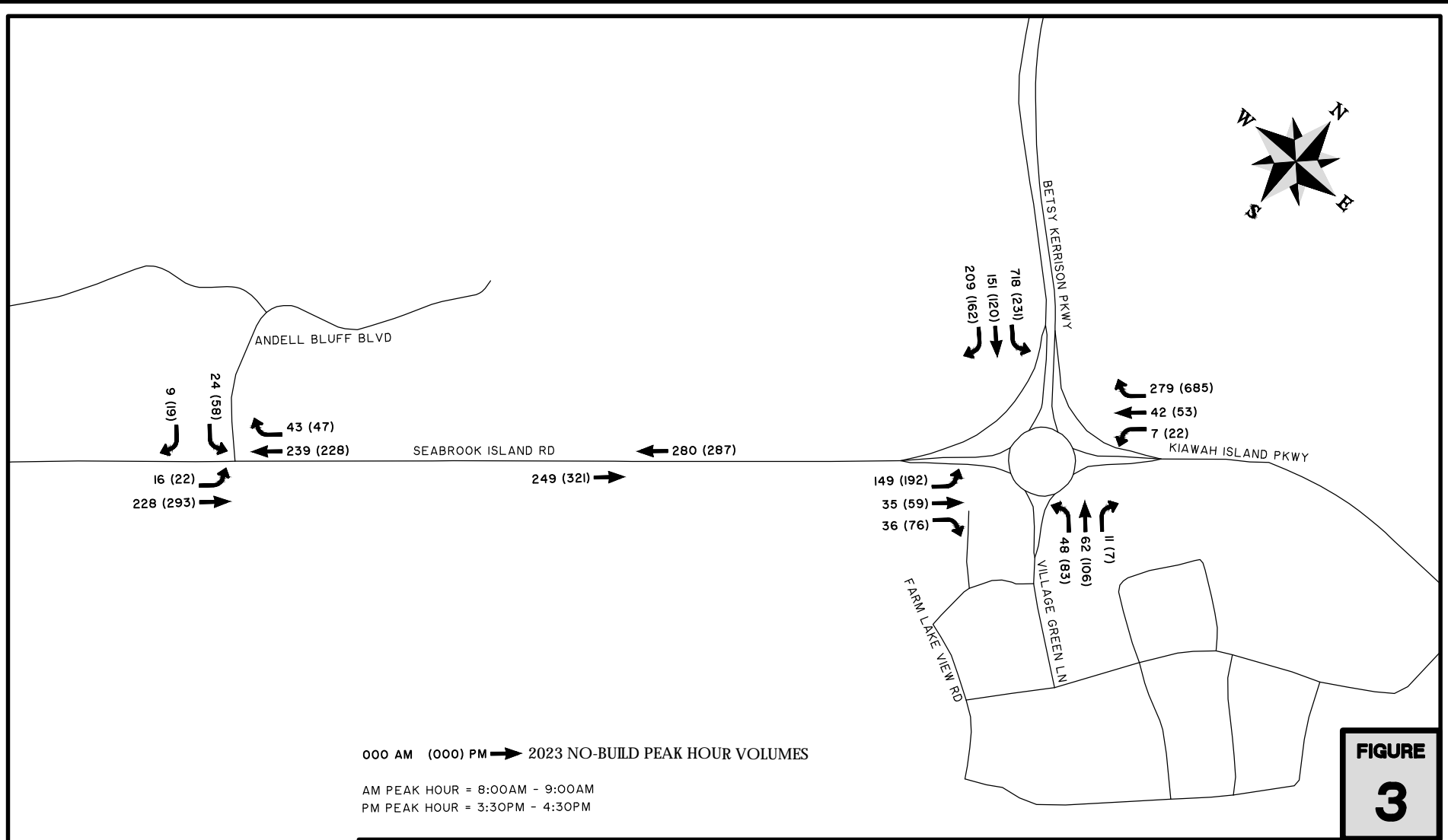


000 AM (000) PM → 2018 EXISTING PEAK HOUR VOLUMES  
 AM PEAK HOUR = 8:00AM - 9:00AM  
 PM PEAK HOUR = 3:30PM - 4:30PM

**FIGURE**  
**2**

**SEABROOK ISLAND ROAD**  
 2018 EXISTING PEAK HOUR VOLUMES  
 CLIENT:  
 KIAWAH RESORT ASSOCIATES, LP  
 LOCATION: SEABROOK ISLAND, SOUTH CAROLINA  
 DATE: 6/18/18 DRAWN BY: DPE SHEET: FIGURE 2  
 JOB NUMBER: J-27252 REVIEWED BY: DDK SCALE: 1" = 400'

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**FIGURE**  
**3**

**SEABROOK ISLAND ROAD**

**2023 NO-BUILD PEAK HOUR VOLUMES**

CLIENT:  
**KIAWAH RESORT ASSOCIATES, LP**

LOCATION: SEABROOK ISLAND, SOUTH CAROLINA  
DATE: 8/2/18 DRAWN BY: DPE SHEET: FIGURE 3  
JOB NUMBER: J-27252 REVIEWED BY: DDK SCALE: 1" = 400'

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#### 4. TRIP GENERATION

Trips generated by the proposed development are estimated using the standard rates and equations from the Institute of Transportation Engineers, Trip Generation, 9<sup>th</sup> Edition, 2012. Trip generation for the project are shown in Table 4 and included in Appendix C.

**Table 4. Trip Generation**

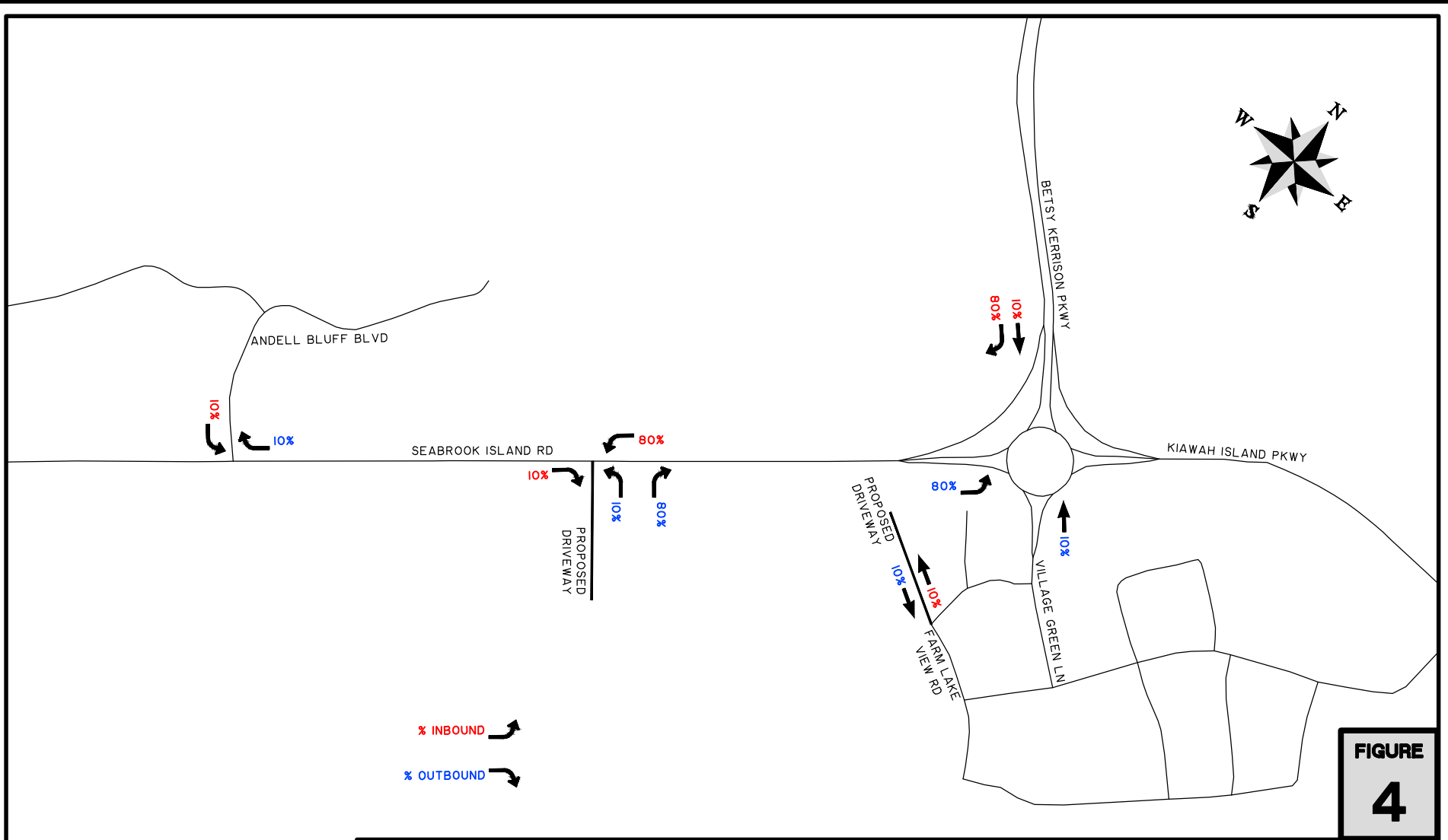
ITE Category	Land Use	Daily Trips	AM Peak		PM Peak	
			Enter	Exit	Enter	Exit
230	Residential Condominium/Townhouse 50 Dwelling Units	291	4	18	17	9
252	Senior Adult Housing - Attached 128 Dwelling Units	440	9	17	17	15
254	Assisted Living & Memory Care 72 Beds	192	7	3	7	9
<b>Total Projected Trips</b>		<b>923</b>	<b>20</b>	<b>38</b>	<b>41</b>	<b>33</b>

#### 5. TRIP DISTRIBUTION

Based on existing traffic counts, the site generated vehicular trips distribution for each development are assumed as follows:

- 80% to/from the east via Betsy Kerrison Parkway to Seabrook Island Road
- 10% to/from the west via Andell Bluff Boulevard to Seabrook Island Road
- 10% to/from the Freshfields Village via Village Green Lane and Farm Lake View Road to the proposed development

The site generated trips are assigned to the study intersection and access points based on the trip distribution assumptions. Site trip distributions are shown in **Figure 4**. Site generated trips are shown in **Figure 5**.



# SEABROOK ISLAND ROAD

## SITE TRIP DISTRIBUTION

CLIENT:

KIAWAH RESORT ASSOCIATES, LP

LOCATION: SEABROOK ISLAND, SOUTH CAROLINA

DATE: 6/18/18

DRAWN BY: DPE

SHEET: FIGURE 4

JOB NUMBER: J-27252

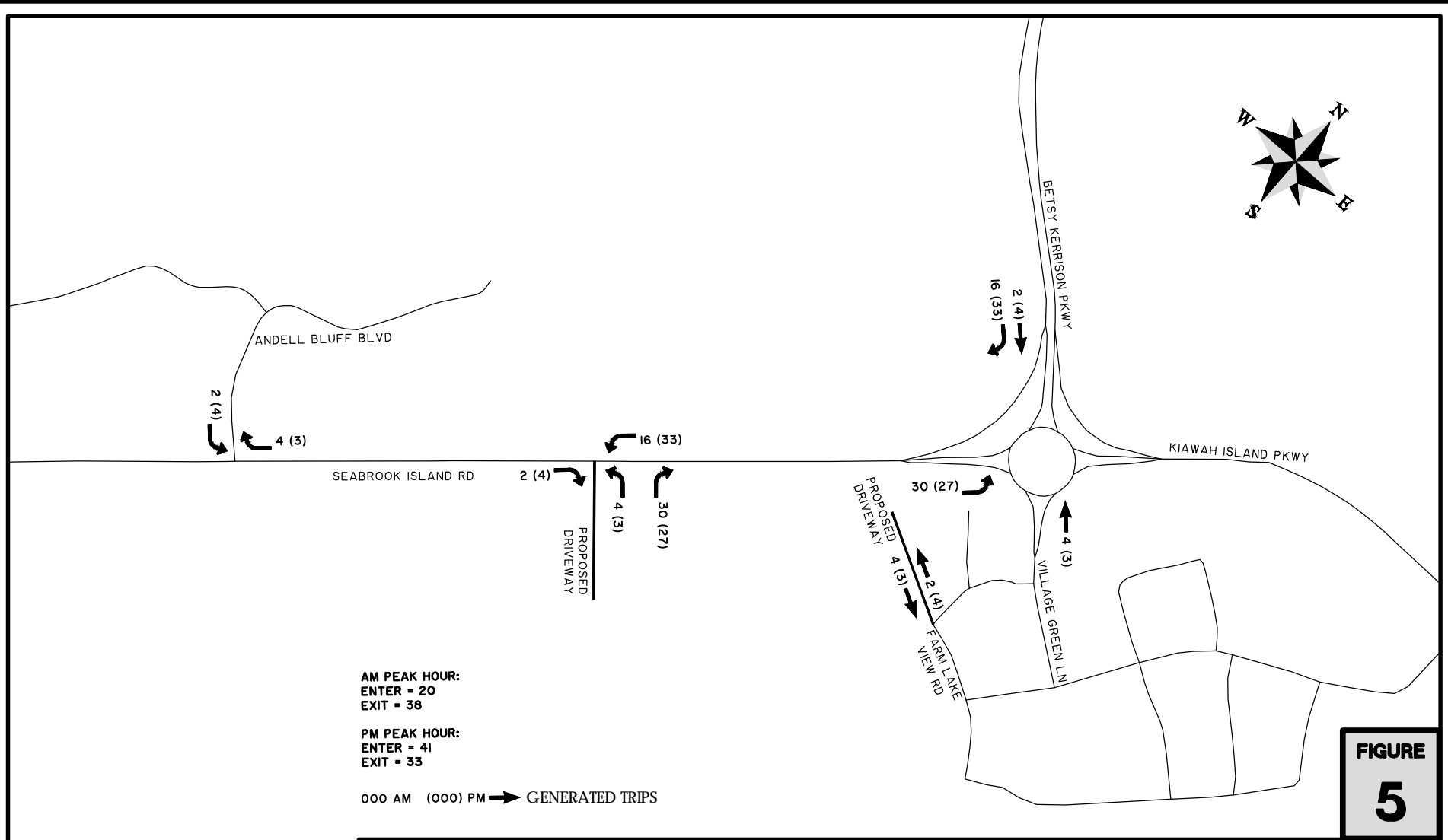
REVIEWED BY: DDK

SCALE: 1" = 400'



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**SEABROOK ISLAND ROAD**

**SITE GENERATED TRIPS**

CLIENT:  
**KIAWAH RESORT ASSOCIATES, LP**

LOCATION: SEABROOK ISLAND, SOUTH CAROLINA  
DATE: 7/26/18 DRAWN BY: DPE SHEET: FIGURE 5  
JOB NUMBER: J-27252 REVIEWED BY: DDK SCALE: 1" = 400'

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## 6. FUTURE 2023 (NO-BUILD/BUILD OUT) CONDITIONS

The site generated volumes (Figure 5) are added to the no-build volumes (Figure 3) to determine the morning and afternoon 2023 build out design volumes (Figure 6).

The future volumes are used to calculate the intersection Levels of Service with and without the proposed development. Results of the capacity analyses are shown in the Table 5, and the Synchro reports are included Appendix D and Appendix E.

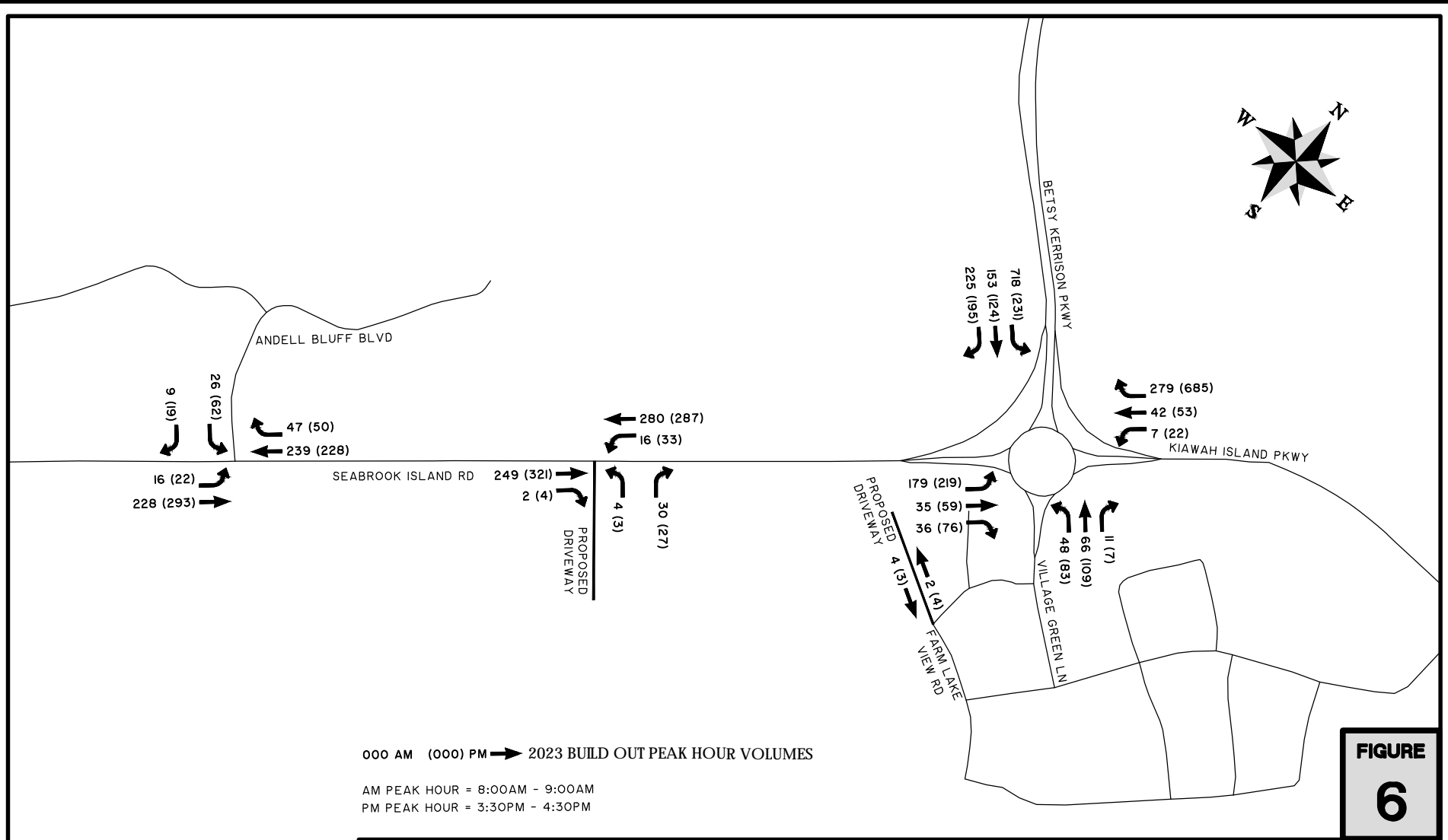
**Table 5. Future Levels of Service (2023)**

Intersection	Control	2023 AM Peak Hour		2023 PM Peak Hour	
		No-Build (LOS/DELAY)	Build Out (LOS/DELAY)	No-Build (LOS/DELAY)	Build Out (LOS/DELAY)
Kiawah Island Pkwy, Betsy Kerrison Pkwy, Seabrook Island Rd and Village Green Ln	Round-about				
SE approach (Betsy Kerrison Pkwy)		D / 35	D / 35	A / 6	A / 6
NW approach (Village Green Ln)		C / 15	C / 16	B / 10	B / 11
NE approach (Seabrook Island Rd)		C / 24	C / 29	B / 12	B / 14
SW approach (Kiawah Island Pkwy)		A / 1	A / 1	A / 1	A / 1
<b>Intersection Overall</b>		<b>D / 26</b>	<b>D / 26</b>	<b>A / 5</b>	<b>A / 6</b>
Seabrook Island Rd and Andell Bluff Blvd	Stop				
SB approach (Andell Bluff Blvd)		B / 12	B / 13	B / 14	B / 15
Seabrook Island Rd and proposed driveway	Stop				
NB approach (driveway)		-	B / 10	-	B / 11

The intersections will operate at acceptable levels of service. Traffic generated by the development should have a minimal effect on the operation of the surrounding roadways. The proposed driveway for the development should also function with very minor delays.

The SCDOT Roadway Design Manual Figure 9.5-A – Guidelines for Right-Turn Lanes at Unsignalized Intersections on Two-Lane Highways was consulted to determine if the right-turning volumes into the proposed driveway warrant the need for a right-turn lane on Seabrook Island Road. Both the AM and PM peak hour right-turning volumes do not warrant the need for the installation of a right-turn lane on Seabrook Island Road. The right-turn lane analysis is included in Appendix F.

Figure 9.5-G – Volume Guidelines for Left-Turn Lanes at Unsignalized Intersections on Two-Lane Highways (40 mph) was consulted to determine if the left-turning volumes into the proposed driveway warrant the need for a left-turn lane on Seabrook Island Road. Both the AM and PM peak hour left-turning volumes fall below the warrants for a left-turn lane on Seabrook Island Road. The left-turn lane analysis is included in Appendix G.



**FIGURE**  
**6**

**SEABROOK ISLAND ROAD**

**2023 BUILD OUT PEAK HOUR VOLUMES**

CLIENT:  
**KIAWAH RESORT ASSOCIATES, LP**

LOCATION: SEABROOK ISLAND, SOUTH CAROLINA  
 DATE: 8/2/18 DRAWN BY: DPE SHEET: FIGURE 6  
 JOB NUMBER: J-27252 REVIEWED BY: DDK SCALE: 1" = 400'

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## **7. SUMMARY / CONCLUSIONS**

The Seabrook Island Road – Freshfields Village Senior Living development is proposed for a site southwest of the existing roundabout at Kiawah Island Parkway, Betsy Kerrison Parkway, Seabrook Island Road and Village Green Lane, in Seabrook Island, SC. The new development will consist of 128 units of independent living housing, 40 units of assisted living, 32 units of memory care housing, and 50 dwelling units of townhomes. The development is anticipated to be completed in 2023.

Traffic generated by the development should have a minimal effect on the operation of the surrounding roadways, and the intersections should continue to function with minimal delays. The proposed driveway for the development should also function with very minor delays.

Based on the analysis using the SCDOT Roadway Design Manual, the right-turning volumes and the left-turning volumes on Seabrook Island Road into the proposed driveway are relatively low and do not warrant the need for the installation of a right-turn lane or a left-turn lane on Seabrook Island Road as a part of this project.



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**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX A**  
EXISTING TRAFFIC COUNTS

J - 27252

August 2018

# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*

File Name : Kiawah Traffic Circle

Site Code :

Start Date : 5/29/2018

Page No : 1

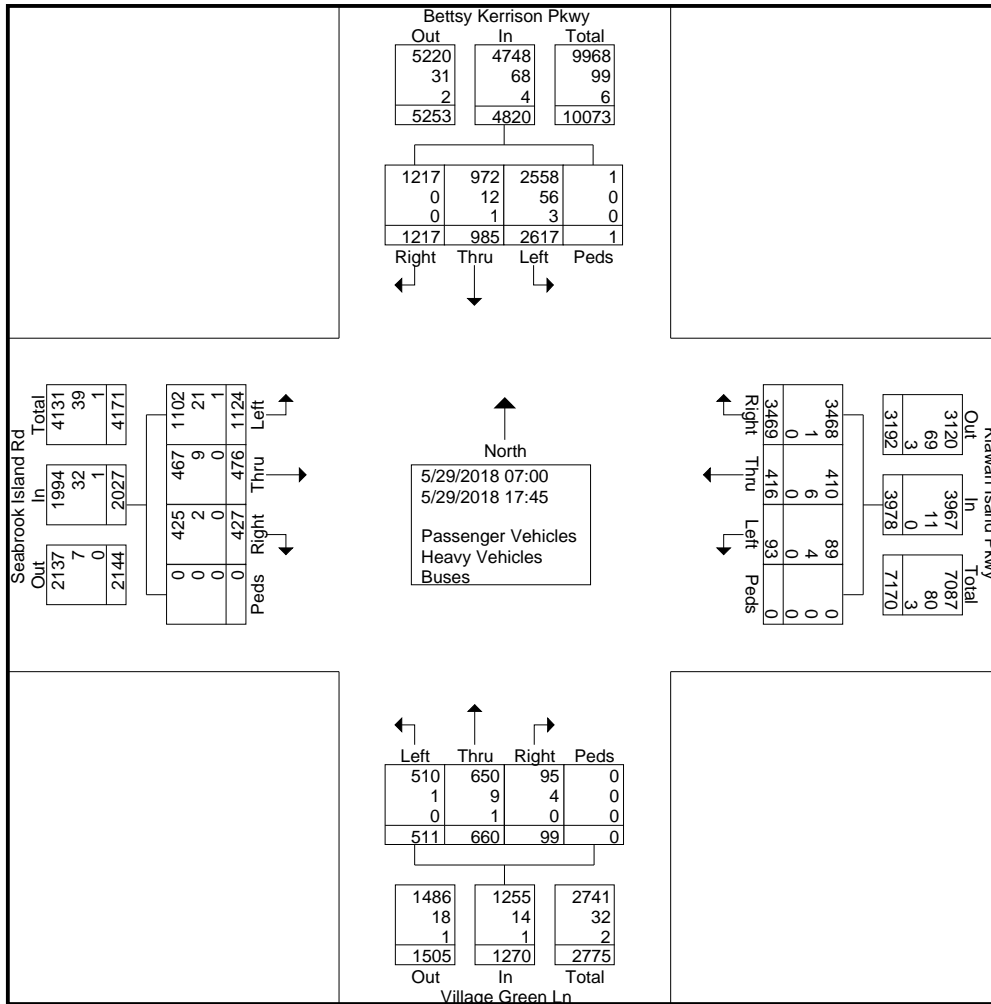
## Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

Start Time	Bettsy Kerrison Pkwy Southbound				Kiawah Isand Pkwy Westbound				Village Green Ln Northbound				Seabrook Island Rd Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	130	27	18	1	0	1	17	0	7	6	1	0	20	7	8	0	243
07:15	132	38	33	0	1	2	26	0	7	3	1	0	16	3	4	0	266
07:30	155	36	38	0	0	7	31	0	9	9	4	0	24	3	9	0	325
07:45	174	40	31	0	0	10	34	0	14	13	2	0	24	5	5	0	352
Total	591	141	120	1	1	20	108	0	37	31	8	0	84	18	26	0	1186
08:00	186	27	36	0	1	7	59	0	12	16	2	0	32	2	10	0	390
08:15	167	36	57	0	0	6	66	0	12	16	1	0	35	5	9	0	410
08:30	153	44	53	0	3	13	66	0	8	10	4	0	38	11	7	0	410
08:45	177	37	53	0	3	14	74	0	14	17	3	0	37	15	8	0	452
Total	683	144	199	0	7	40	265	0	46	59	10	0	142	33	34	0	1662
11:00	74	35	42	0	6	19	82	0	15	17	3	0	39	20	5	0	357
11:15	71	31	37	0	3	14	79	0	10	22	3	0	36	23	3	0	332
11:30	73	30	37	0	4	17	104	0	11	20	5	0	38	13	4	0	356
11:45	79	36	37	0	6	22	100	0	22	20	4	0	36	29	2	0	393
Total	297	132	153	0	19	72	365	0	58	79	15	0	149	85	14	0	1438
12:00	49	36	26	0	5	14	82	0	29	19	3	0	49	29	20	0	361
12:15	70	35	38	0	7	9	97	0	26	22	4	0	44	29	17	0	398
12:30	63	39	54	0	3	20	97	0	14	19	4	0	36	30	15	0	394
12:45	66	44	40	0	4	21	90	0	18	19	4	0	38	32	17	0	393
Total	248	154	158	0	19	64	366	0	87	79	15	0	167	120	69	0	1546
14:00	64	18	36	0	0	10	98	0	14	20	9	0	15	17	23	0	324
14:15	58	20	40	0	4	17	120	0	14	19	9	0	14	15	18	0	348
14:30	70	25	36	0	3	12	120	0	15	22	4	0	17	10	17	0	351
14:45	61	22	30	0	1	18	152	0	19	21	4	0	28	12	16	0	384
Total	253	85	142	0	8	57	490	0	62	82	26	0	74	54	74	0	1407
15:00	59	31	32	0	2	8	141	0	16	42	1	0	51	22	17	0	422
15:15	59	29	35	0	0	11	136	0	19	24	1	0	36	17	15	0	382
15:30	75	32	48	0	5	5	184	0	18	26	0	0	42	16	21	0	472
15:45	31	18	24	0	5	10	168	0	23	27	2	0	48	18	25	0	399
Total	224	110	139	0	12	34	629	0	76	119	4	0	177	73	78	0	1675
16:00	43	25	32	0	7	22	136	0	20	26	2	0	54	10	12	0	389
16:15	71	39	50	0	4	13	164	0	18	22	3	0	39	12	14	0	449
16:30	45	26	33	0	4	15	164	0	15	31	4	0	45	11	22	0	415
16:45	41	22	27	0	1	15	148	0	17	26	1	0	43	9	15	0	365
Total	200	112	142	0	16	65	612	0	70	105	10	0	181	42	63	0	1618
17:00	46	41	49	0	1	13	168	0	17	38	2	0	49	9	22	0	455
17:15	23	23	33	0	7	15	178	0	15	20	2	0	38	13	15	0	382
17:30	30	26	38	0	0	14	152	0	21	22	2	0	33	12	15	0	365
17:45	22	17	44	0	3	22	136	0	22	26	5	0	30	17	17	0	361
Total	121	107	164	0	11	64	634	0	75	106	11	0	150	51	69	0	1563
Grand Total	2617	985	1217	1	93	416	3469	0	511	660	99	0	1124	476	427	0	12095
Apprch %	54.3	20.4	25.2	0	2.3	10.5	87.2	0	40.2	52	7.8	0	55.5	23.5	21.1	0	
Total %	21.6	8.1	10.1	0	0.8	3.4	28.7	0	4.2	5.5	0.8	0	9.3	3.9	3.5	0	
Passenger Vehicles	2558	972	1217	1	89	410	3468	0	510	650	95	0	1102	467	425	0	11964
% Passenger Vehicles	97.7	98.7	100	100	95.7	98.6	100	0	99.8	98.5	96	0	98	98.1	99.5	0	98.9
Heavy Vehicles	56	12	0	0	4	6	1	0	1	9	4	0	21	9	2	0	125
% Heavy Vehicles	2.1	1.2	0	0	4.3	1.4	0	0	0.2	1.4	4	0	1.9	1.9	0.5	0	1
Buses	3	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	6
% Buses	0.1	0.1	0	0	0	0	0	0	0	0.2	0	0	0.1	0	0	0	0

# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*



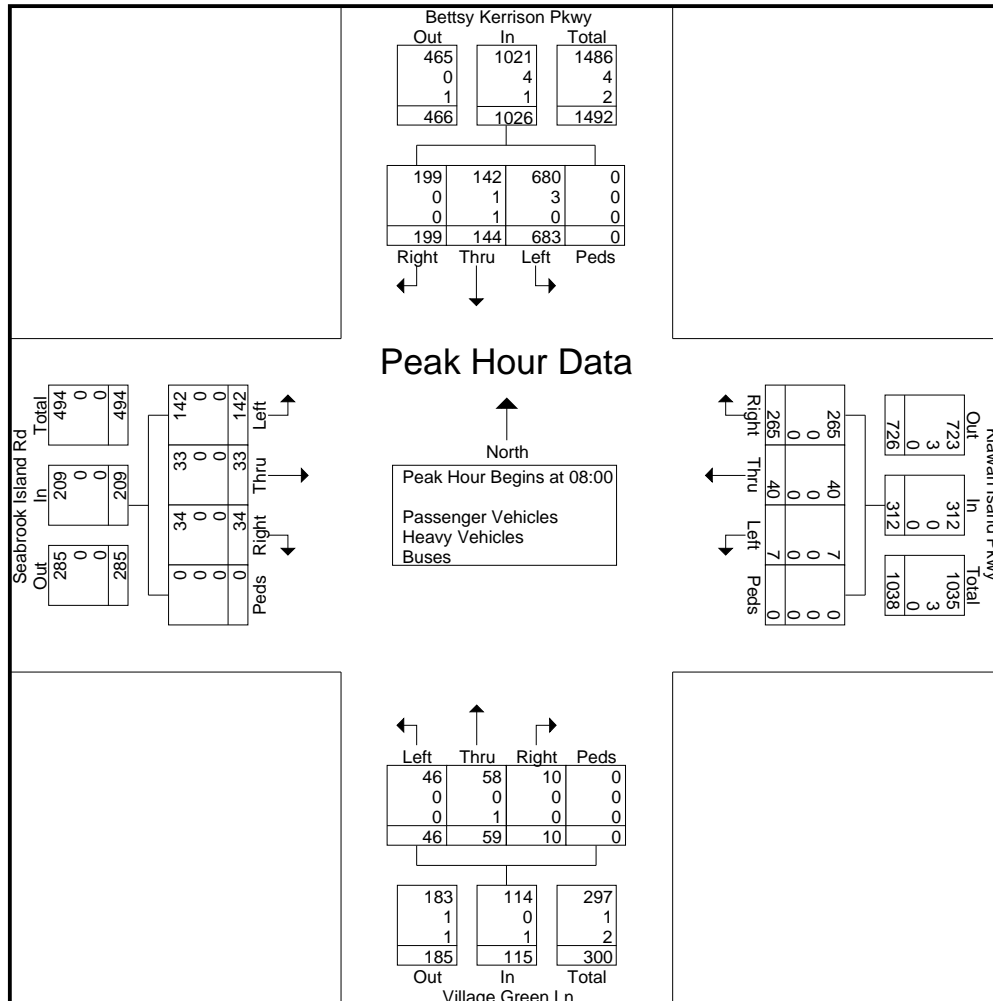
# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*

File Name : Kiawah Traffic Circle  
Site Code :  
Start Date : 5/29/2018  
Page No : 3

Start Time	Betsy Kerrison Pkwy Southbound					Kiawah Isand Pkwy Westbound					Village Green Ln Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	186	27	36	0	249	1	7	59	0	67	12	16	2	0	30	32	2	10	0	44	390
08:15	167	36	57	0	260	0	6	66	0	72	12	16	1	0	29	35	5	9	0	49	410
08:30	153	44	53	0	250	3	13	66	0	82	8	10	4	0	22	38	11	7	0	56	410
08:45	177	37	53	0	267	3	14	74	0	91	14	17	3	0	34	37	15	8	0	60	452
Total Volume	683	144	199	0	1026	7	40	265	0	312	46	59	10	0	115	142	33	34	0	209	1662
% App. Total	66.6	14	19.4	0		2.2	12.8	84.9	0		40	51.3	8.7	0		67.9	15.8	16.3	0		
PHF	.918	.818	.873	.000	.961	.583	.714	.895	.000	.857	.821	.868	.625	.000	.846	.934	.550	.850	.000	.871	.919
Passenger Vehicles	680	142	199	0	1021	7	40	265	0	312	46	58	10	0	114	142	33	34	0	209	1656
% Passenger Vehicles																					
Heavy Vehicles	3	1	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
% Heavy Vehicles	0.4	0.7	0	0	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2
Buses	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
% Buses	0	0.7	0	0	0.1	0	0	0	0	0	0	1.7	0	0	0.9	0	0	0	0	0	0.1



# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*

File Name : Kiawah Traffic Circle

Site Code :

Start Date : 5/29/2018

Page No : 4

Start Time	Bettsy Kerrison Pkwy Southbound					Kiawah Isand Pkwy Westbound					Village Green Ln Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 11:00 to 12:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45																					
11:45	79	36	37	0	152	6	22	100	0	128	22	20	4	0	46	36	29	2	0	67	393
12:00	49	36	26	0	111	5	14	82	0	101	29	19	3	0	51	49	29	20	0	98	361
12:15	70	35	38	0	143	7	9	97	0	113	26	22	4	0	52	44	29	17	0	90	398
12:30	63	39	54	0	156	3	20	97	0	120	14	19	4	0	37	36	30	15	0	81	394
Total Volume	261	146	155	0	562	21	65	376	0	462	91	80	15	0	186	165	117	54	0	336	1546
% App. Total	46.4	26	27.6	0		4.5	14.1	81.4	0		48.9	43	8.1	0		49.1	34.8	16.1	0		
PHF	.826	.936	.718	.000	.901	.750	.739	.940	.000	.902	.784	.909	.938	.000	.894	.842	.975	.675	.000	.857	.971
Passenger Vehicles	252	146	155	0	553	21	64	376	0	461	91	77	14	0	182	162	116	54	0	332	1528
% Passenger Vehicles																					
Heavy Vehicles	9	0	0	0	9	0	1	0	0	1	0	3	1	0	4	3	1	0	0	4	18
% Heavy Vehicles	3.4	0	0	0	1.6	0	1.5	0	0	0.2	0	3.8	6.7	0	2.2	1.8	0.9	0	0	1.2	1.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

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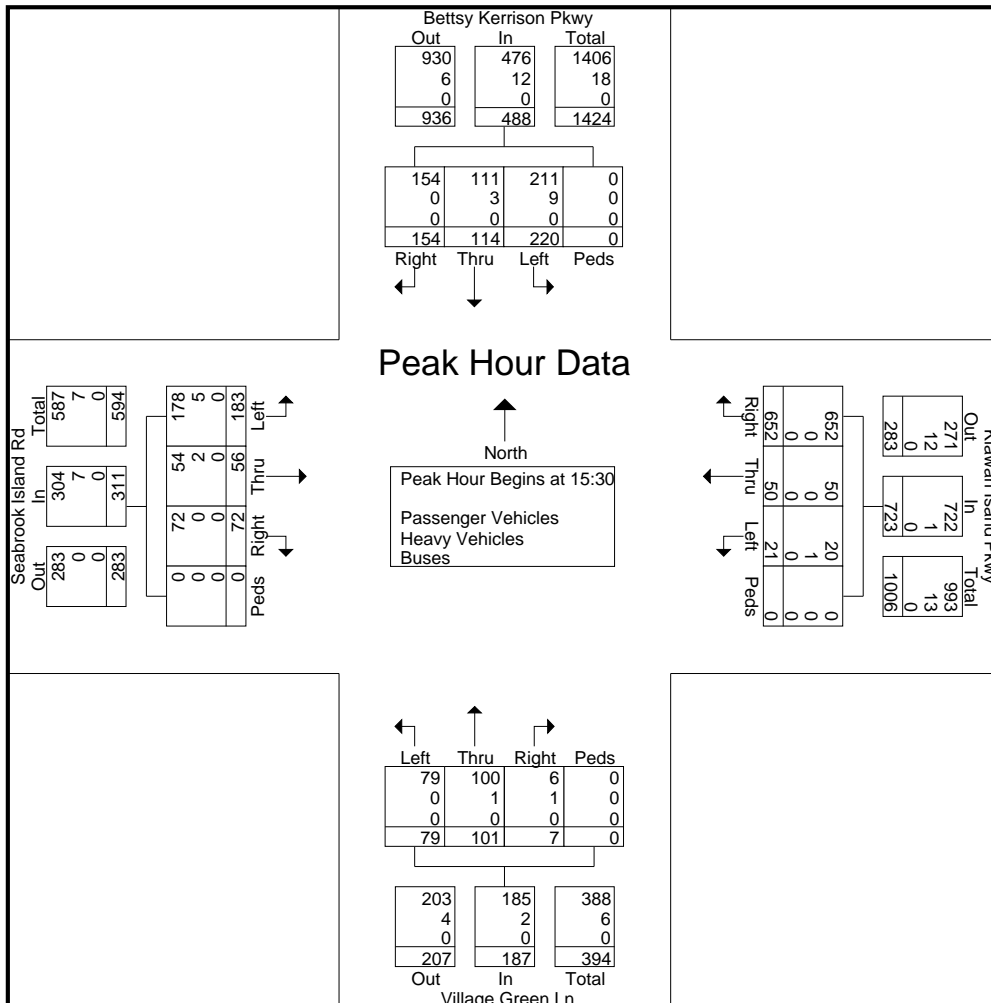
File Name : Kiawah Traffic Circle

Site Code :

Start Date : 5/29/2018

Page No : 5

Start Time	Betsy Kerrison Pkwy Southbound					Kiawah Isand Pkwy Westbound					Village Green Ln Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 14:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:30																					
15:30	75	32	48	0	155	5	5	184	0	194	18	26	0	0	44	42	16	21	0	79	472
15:45	31	18	24	0	73	5	10	168	0	183	23	27	2	0	52	48	18	25	0	91	399
16:00	43	25	32	0	100	7	22	136	0	165	20	26	2	0	48	54	10	12	0	76	389
16:15	71	39	50	0	160	4	13	164	0	181	18	22	3	0	43	39	12	14	0	65	449
Total Volume	220	114	154	0	488	21	50	652	0	723	79	101	7	0	187	183	56	72	0	311	1709
% App. Total	45.1	23.4	31.6	0		2.9	6.9	90.2	0		42.2	54	3.7	0		58.8	18	23.2	0		
PHF	.733	.731	.770	.000	.763	.750	.568	.886	.000	.932	.859	.935	.583	.000	.899	.847	.778	.720	.000	.854	.905
Passenger Vehicles	211	111	154	0	476	20	50	652	0	722	79	100	6	0	185	178	54	72	0	304	1687
% Passenger Vehicles																					
Heavy Vehicles	9	3	0	0	12	1	0	0	0	1	0	1	1	0	2	5	2	0	0	7	22
% Heavy Vehicles	4.1	2.6	0	0	2.5	4.8	0	0	0	0.1	0	1.0	14.3	0	1.1	2.7	3.6	0	0	2.3	1.3
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*

File Name : Seabrook Island Rd @ Andell Bluff Blvd

Site Code :

Start Date : 5/29/2018

Page No : 1

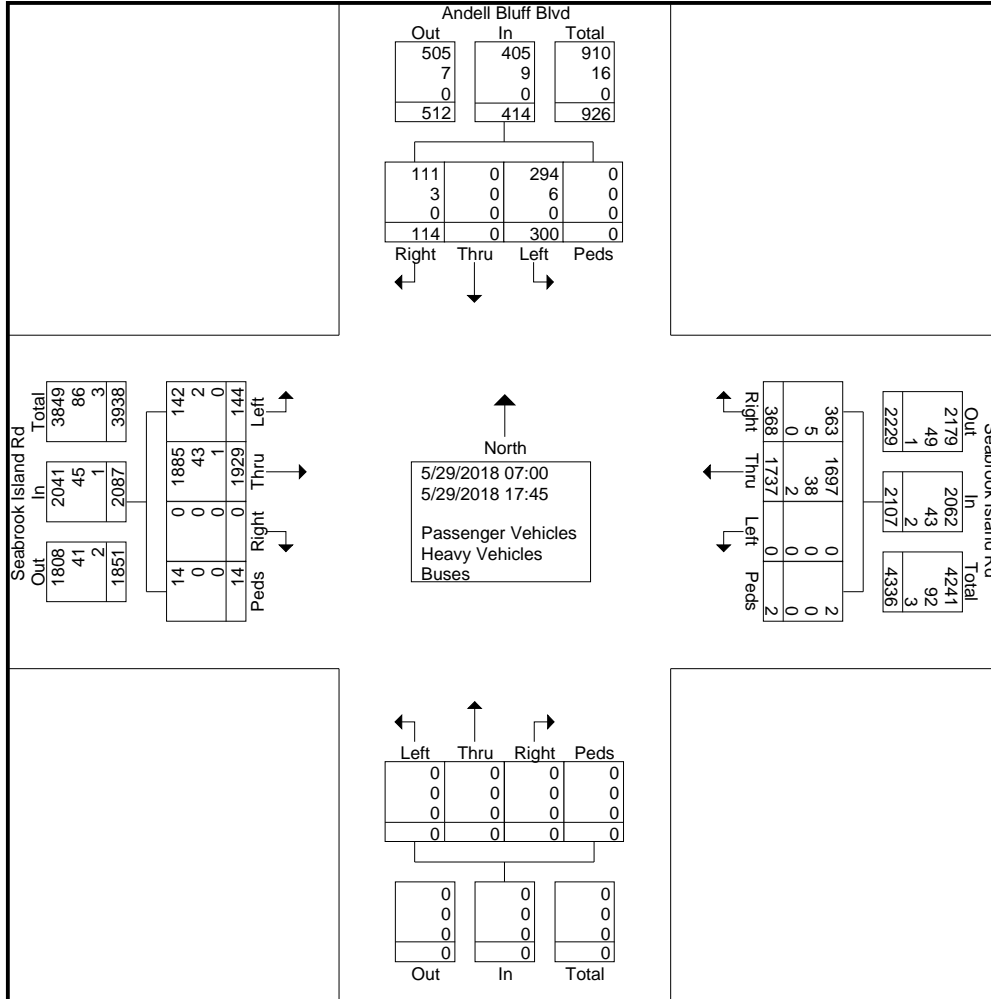
Groups Printed- Passenger Vehicles - Heavy Vehicles - Buses

Start Time	Andell Bluff Blvd Southbound				Seabrook Island Rd Westbound				Northbound				Seabrook Island Rd Eastbound				Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	
07:00	4	0	1	0	0	23	4	0	0	0	0	0	1	36	0	1	70
07:15	3	0	0	0	0	35	2	0	0	0	0	0	1	23	0	0	64
07:30	0	0	4	0	0	38	13	0	0	0	0	0	1	41	0	1	98
07:45	4	0	6	0	0	41	10	0	0	0	0	0	3	39	0	1	104
Total	11	0	11	0	0	137	29	0	0	0	0	0	6	139	0	3	336
08:00	4	0	0	0	0	47	10	0	0	0	0	0	4	45	0	1	111
08:15	5	0	2	0	0	62	8	0	0	0	0	0	2	53	0	1	133
08:30	6	0	3	0	0	55	8	0	0	0	0	0	5	57	0	0	134
08:45	8	0	4	0	0	63	15	0	0	0	0	0	4	62	0	2	158
Total	23	0	9	0	0	227	41	0	0	0	0	0	15	217	0	4	536
11:00	9	0	3	0	0	61	14	0	0	0	0	0	4	69	0	0	160
11:15	19	0	6	0	0	40	12	0	0	0	0	0	7	69	0	1	154
11:30	11	0	3	0	0	57	16	0	0	0	0	0	4	61	0	0	152
11:45	16	0	3	0	0	63	14	0	0	0	0	0	4	78	0	0	178
Total	55	0	15	0	0	221	56	0	0	0	0	0	19	277	0	1	644
12:00	10	0	4	0	0	52	16	0	0	0	0	0	12	83	0	0	177
12:15	8	0	4	0	0	50	14	0	0	0	0	0	6	72	0	0	154
12:30	13	0	3	0	0	73	19	0	0	0	0	0	2	66	0	0	176
12:45	5	0	3	0	0	72	8	0	0	0	0	0	2	70	0	0	160
Total	36	0	14	0	0	247	57	0	0	0	0	0	22	291	0	0	667
14:00	6	0	5	0	0	57	11	0	0	0	0	0	2	55	0	0	136
14:15	14	0	3	0	0	58	15	0	0	0	0	0	2	58	0	1	151
14:30	14	0	2	0	0	51	10	1	0	0	0	0	7	81	0	0	166
14:45	18	0	9	0	0	60	12	0	0	0	0	0	5	59	0	3	166
Total	52	0	19	0	0	226	48	1	0	0	0	0	16	253	0	4	619
15:00	9	0	4	0	0	48	8	1	0	0	0	0	7	81	0	0	158
15:15	5	0	5	0	0	56	6	0	0	0	0	0	7	64	0	0	143
15:30	16	0	3	0	0	55	10	0	0	0	0	0	4	60	0	0	148
15:45	17	0	4	0	0	51	10	0	0	0	0	0	6	71	0	0	159
Total	47	0	16	0	0	210	34	1	0	0	0	0	24	276	0	0	608
16:00	12	0	3	0	0	56	14	0	0	0	0	0	3	64	0	0	152
16:15	7	0	5	0	0	75	6	0	0	0	0	0	3	55	0	0	151
16:30	10	0	3	0	0	51	10	0	0	0	0	0	0	66	0	1	141
16:45	9	0	3	0	0	47	9	0	0	0	0	0	5	54	0	0	127
Total	38	0	14	0	0	229	39	0	0	0	0	0	11	239	0	1	571
17:00	6	0	2	0	0	73	10	0	0	0	0	0	4	79	0	0	174
17:15	7	0	6	0	0	49	13	0	0	0	0	0	11	64	0	0	150
17:30	9	0	1	0	0	55	18	0	0	0	0	0	9	51	0	1	144
17:45	16	0	7	0	0	63	23	0	0	0	0	0	7	43	0	0	159
Total	38	0	16	0	0	240	64	0	0	0	0	0	31	237	0	1	627
Grand Total	300	0	114	0	0	1737	368	2	0	0	0	0	144	1929	0	14	4608
Apprch %	72.5	0	27.5	0	0	82.4	17.5	0.1	0	0	0	0	6.9	92.4	0	0.7	
Total %	6.5	0	2.5	0	0	37.7	8	0	0	0	0	0	3.1	41.9	0	0.3	
Passenger Vehicles	294	0	111	0	0	1697	363	2	0	0	0	0	142	1885	0	14	4508
% Passenger Vehicles	98	0	97.4	0	0	97.7	98.6	100	0	0	0	0	98.6	97.7	0	100	97.8
Heavy Vehicles	6	0	3	0	0	38	5	0	0	0	0	0	2	43	0	0	97
% Heavy Vehicles	2	0	2.6	0	0	2.2	1.4	0	0	0	0	0	1.4	2.2	0	0	2.1
Buses	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	3
% Buses	0	0	0	0	0	0.1	0	42	0	0	0	0	0	0.1	0	0	0.1

# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*



# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

*We can't say we're the Best, but you Can!*

File Name : Seabrook Island Rd @ Andell Bluff Blvd  
Site Code :  
Start Date : 5/29/2018  
Page No : 3

Start Time	Andell Bluff Blvd Southbound					Seabrook Island Rd Westbound					Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00																					
08:00	4	0	0	0	4	0	47	10	0	57	0	0	0	0	0	4	45	0	1	50	111
08:15	5	0	2	0	7	0	62	8	0	70	0	0	0	0	0	2	53	0	1	56	133
08:30	6	0	3	0	9	0	55	8	0	63	0	0	0	0	0	5	57	0	0	62	134
08:45	8	0	4	0	12	0	63	15	0	78	0	0	0	0	0	4	62	0	2	68	158
Total Volume	23	0	9	0	32	0	227	41	0	268	0	0	0	0	0	15	217	0	4	236	536
% App. Total	71.9	0	28.1	0		0	84.7	15.3	0		0	0	0	0		6.4	91.9	0	1.7		
PHF	.719	.000	.563	.000	.667	.000	.901	.683	.000	.859	.000	.000	.000	.000	.000	.750	.875	.000	.500	.868	.848
Passenger Vehicles	23	0	8	0	31	0	219	41	0	260	0	0	0	0	0	14	216	0	4	234	525
% Passenger Vehicles																					
Heavy Vehicles	0	0	1	0	1	0	8	0	0	8	0	0	0	0	0	1	1	0	0	2	11
% Heavy Vehicles	0	0	11.1	0	3.1	0	3.5	0	0	3.0	0	0	0	0	0	6.7	0.5	0	0	0.8	2.1
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

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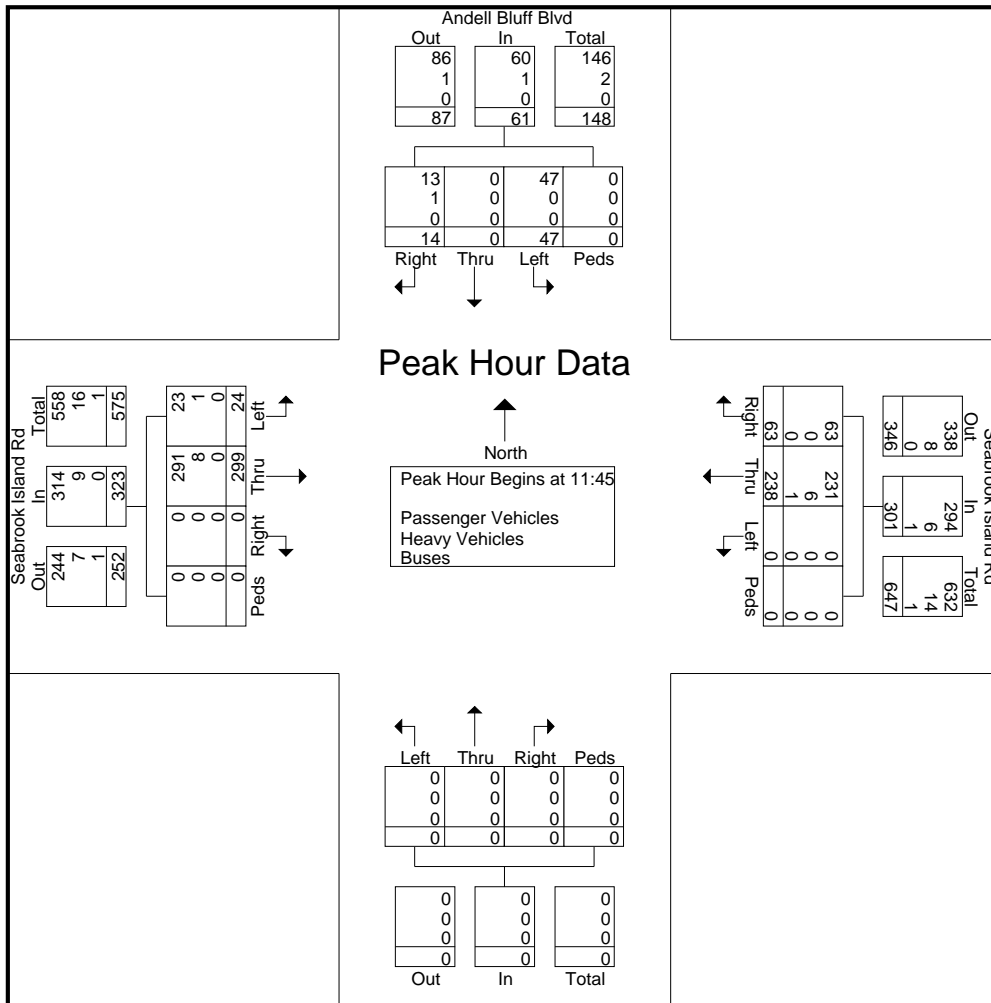
File Name : Seabrook Island Rd @ Andell Bluff Blvd

Site Code :

Start Date : 5/29/2018

Page No : 4

Start Time	Andell Bluff Blvd Southbound					Seabrook Island Rd Westbound					Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 11:00 to 12:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45																					
11:45	16	0	3	0	19	0	63	14	0	77	0	0	0	0	0	4	78	0	0	82	178
12:00	10	0	4	0	14	0	52	16	0	68	0	0	0	0	0	12	83	0	0	95	177
12:15	8	0	4	0	12	0	50	14	0	64	0	0	0	0	0	6	72	0	0	78	154
12:30	13	0	3	0	16	0	73	19	0	92	0	0	0	0	0	2	66	0	0	68	176
Total Volume	47	0	14	0	61	0	238	63	0	301	0	0	0	0	0	24	299	0	0	323	685
% App. Total	77	0	23	0		0	79.1	20.9	0		0	0	0	0		7.4	92.6	0	0		
PHF	.734	.000	.875	.000	.803	.000	.815	.829	.000	.818	.000	.000	.000	.000	.000	.500	.901	.000	.000	.850	.962
Passenger Vehicles	47	0	13	0	60	0	231	63	0	294	0	0	0	0	0	23	291	0	0	314	668
% Passenger Vehicles																					
Heavy Vehicles	0	0	1	0	1	0	6	0	0	6	0	0	0	0	0	1	8	0	0	9	16
% Heavy Vehicles	0	0	7.1	0	1.6	0	2.5	0	0	2.0	0	0	0	0	0	4.2	2.7	0	0	2.8	2.3
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
% Buses	0	0	0	0	0	0	0.4	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0.1



# SHORT COUNTS, LLC

735 Maryland St  
Columbia, SC 29201

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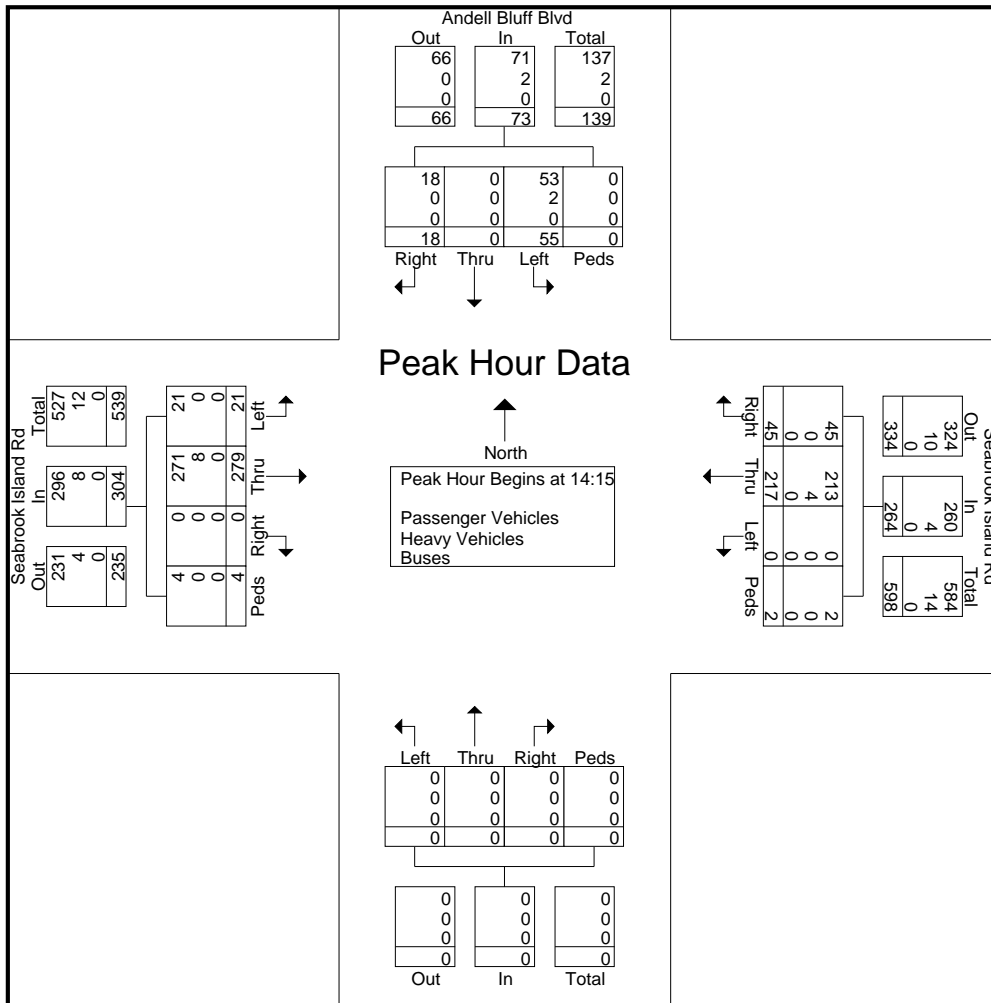
File Name : Seabrook Island Rd @ Andell Bluff Blvd

Site Code :

Start Date : 5/29/2018

Page No : 5

Start Time	Andell Bluff Blvd Southbound					Seabrook Island Rd Westbound					Northbound					Seabrook Island Rd Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour Analysis From 14:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 14:15																					
14:15	14	0	3	0	17	0	58	15	0	73	0	0	0	0	0	2	58	0	1	61	151
14:30	14	0	2	0	16	0	51	10	1	62	0	0	0	0	0	7	81	0	0	88	166
14:45	18	0	9	0	27	0	60	12	0	72	0	0	0	0	0	5	59	0	3	67	166
15:00	9	0	4	0	13	0	48	8	1	57	0	0	0	0	0	7	81	0	0	88	158
Total Volume	55	0	18	0	73	0	217	45	2	264	0	0	0	0	0	21	279	0	4	304	641
% App. Total	75.3	0	24.7	0		0	82.2	17	0.8		0	0	0	0		6.9	91.8	0	1.3		
PHF	.764	.000	.500	.000	.676	.000	.904	.750	.500	.904	.000	.000	.000	.000	.000	.750	.861	.000	.333	.864	.965
Passenger Vehicles	53	0	18	0	71	0	213	45	2	260	0	0	0	0	0	21	271	0	4	296	627
% Passenger Vehicles																					
Heavy Vehicles	2	0	0	0	2	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	14
% Heavy Vehicles	3.6	0	0	0	2.7	0	1.8	0	0	1.5	0	0	0	0	0	0	2.9	0	0	2.6	2.2
Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



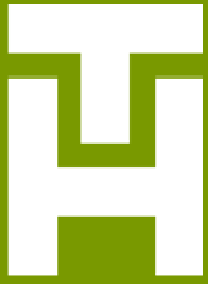
# Short Counts, LLC

735 Maryland St  
Columbia, SC 29201

**We can't say we're the best, but you can!**

Site Code: Seabrook Island Rd  
Station ID: EB & WB Traffic  
Just East of Andell Bluff Blvd  
Kiawah Island, SC  
Latitude: 0' 0.0000 Undefined

Start Time	29-May-18 Tue	WB		EB		Combined		30-May Wed	WB		EB		Combined	
		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.		A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
12:00		4	69	2	<b>102</b>	6	<b>171</b>		*	*	*	*	*	*
12:15		3	63	5	<b>78</b>	8	<b>141</b>		*	*	*	*	*	*
12:30		1	<b>91</b>	2	<b>81</b>	3	<b>172</b>		*	*	*	*	*	*
12:45		2	<b>77</b>	1	<b>87</b>	3	<b>164</b>		*	*	*	*	*	*
01:00		2	<b>74</b>	0	77	2	151		*	*	*	*	*	*
01:15		1	<b>74</b>	1	76	2	150		*	*	*	*	*	*
01:30		0	82	1	67	1	149		*	*	*	*	*	*
01:45		0	75	1	64	1	139		*	*	*	*	*	*
02:00		0	71	1	67	1	138		*	*	*	*	*	*
02:15		1	72	0	68	1	140		*	*	*	*	*	*
02:30		1	59	0	86	1	145		*	*	*	*	*	*
02:45		1	76	3	86	4	162		*	*	*	*	*	*
03:00		0	57	0	87	0	144		*	*	*	*	*	*
03:15		1	62	0	67	1	129		*	*	*	*	*	*
03:30		1	67	0	76	1	143		*	*	*	*	*	*
03:45		0	58	4	86	4	144		*	*	*	*	*	*
04:00		4	69	1	80	5	149		*	*	*	*	*	*
04:15		1	79	4	63	5	142		*	*	*	*	*	*
04:30		3	61	6	73	9	134		*	*	*	*	*	*
04:45		0	59	0	66	0	125		*	*	*	*	*	*
05:00		1	77	5	85	6	162		*	*	*	*	*	*
05:15		6	67	8	70	14	137		*	*	*	*	*	*
05:30		13	72	4	59	17	131		*	*	*	*	*	*
05:45		7	81	7	63	14	144		*	*	*	*	*	*
06:00		10	74	16	53	26	127		*	*	*	*	*	*
06:15		10	50	6	46	16	96		*	*	*	*	*	*
06:30		21	43	24	22	45	65		*	*	*	*	*	*
06:45		27	41	27	22	54	63		*	*	*	*	*	*
07:00		26	49	42	25	68	74		*	*	*	*	*	*
07:15		36	33	24	49	60	82		*	*	*	*	*	*
07:30		53	47	42	21	95	68		*	*	*	*	*	*
07:45		49	35	44	30	93	65		*	*	*	*	*	*
08:00		58	35	46	29	104	64		*	*	*	*	*	*
08:15		66	30	62	20	128	50		*	*	*	*	*	*
08:30		66	21	65	18	131	39		*	*	*	*	*	*
08:45		76	17	64	15	140	32		*	*	*	*	*	*
09:00		60	25	65	18	125	43		*	*	*	*	*	*
09:15		68	31	83	16	151	47		*	*	*	*	*	*
09:30		72	8	74	10	146	18		*	*	*	*	*	*
09:45		62	20	82	10	144	30		*	*	*	*	*	*
10:00		60	13	80	11	140	24		*	*	*	*	*	*
10:15		65	9	74	9	139	18		*	*	*	*	*	*
10:30		63	8	67	3	130	11		*	*	*	*	*	*
10:45		72	10	66	2	138	12		*	*	*	*	*	*
11:00		<b>76</b>	4	<b>73</b>	4	<b>149</b>	8		*	*	*	*	*	*
11:15		<b>53</b>	0	<b>90</b>	3	<b>143</b>	3		*	*	*	*	*	*
11:30		<b>68</b>	8	<b>76</b>	3	<b>144</b>	11		*	*	*	*	*	*
11:45		<b>82</b>	2	<b>90</b>	3	<b>172</b>	5		*	*	*	*	*	*
Total		1352	2305	1438	2256	2790	4561		0	0	0	0	0	0
Day Total		3657		3694		7351			0	0	0	0	0	0
% Total		18.4%	31.4%	19.6%	30.7%				0.0%	0.0%	0.0%	0.0%		
Peak	-	11:00	00:30	11:00	12:00	11:00	12:00	-	-	-	-	-	-	-
Vol.	-	279	316	329	348	608	648	-	-	-	-	-	-	-
P.H.F.		0.851	0.868	0.914	0.853	0.884	0.942							
ADT		ADT 7,351		AADT 7,351										



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**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX B**  
SYNCHRO HCM 2010 CAPACITY ANALYSES  
2018 EXISTING PEAK HOUR VOLUMES

J - 27252

August 2018

HCM 2010 Roundabout

2018 Existing AM Peak Hour

1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy AM Peak Hour

Intersection						
Intersection Delay, s/veh	20.1					
Intersection LOS	C					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	1140	128	233	346		
Demand Flow Rate, veh/h	1162	130	238	353		
Vehicles Circulating, veh/h	105	973	945	280		
Vehicles Exiting, veh/h	228	210	97	823		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	26.6	13.8	20.5	0.7		
Approach LOS	D	B	C	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free				Free	
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	937	225	130	238	53	300
Cap Entry Lane, veh/h	1017	1938	427	439	854	1938
Entry HV Adj Factor	0.981	0.980	0.982	0.980	0.983	0.980
Flow Entry, veh/h	919	221	128	233	52	294
Cap Entry, veh/h	998	1900	419	430	840	1900
V/C Ratio	0.921	0.116	0.304	0.542	0.062	0.155
Control Delay, s/veh	33.0	0.0	13.8	20.5	4.9	0.0
LOS	D	A	B	C	A	A
95th %tile Queue, veh	14	0	1	3	0	1

HCM 2010 Roundabout

2018 Existing PM Peak Hour

1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy PM Peak Hour

Intersection						
Intersection Delay, s/veh	5.0					
Intersection LOS	A					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	542	208	345	803		
Demand Flow Rate, veh/h	553	212	352	818		
Vehicles Circulating, veh/h	170	519	402	411		
Vehicles Exiting, veh/h	321	235	147	320		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	5.7	9.5	11.4	0.6		
Approach LOS	A	A	B	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free				Free	
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	379	174	212	352	80	738
Cap Entry Lane, veh/h	953	1938	672	756	749	1938
Entry HV Adj Factor	0.980	0.980	0.980	0.979	0.986	0.980
Flow Entry, veh/h	371	171	208	345	79	724
Cap Entry, veh/h	934	1900	659	740	739	1900
V/C Ratio	0.398	0.090	0.315	0.466	0.107	0.381
Control Delay, s/veh	8.4	0.0	9.5	11.4	6.0	0.0
LOS	A	A	A	B	A	A
95th %tile Queue, veh	2	0	1	2	0	2



HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

2018 Existing AM Peak Hour  
AM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	23	9	15	217	227	41
Future Vol, veh/h	23	9	15	217	227	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	10	17	241	252	46

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	550	275	298	0	- 0
Stage 1	275	-	-	-	-
Stage 2	275	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	- -
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	- -
Pot Cap-1 Maneuver	496	764	1263	-	- -
Stage 1	771	-	-	-	-
Stage 2	771	-	-	-	-
Platoon blocked, %				-	- -
Mov Cap-1 Maneuver	488	764	1263	-	- -
Mov Cap-2 Maneuver	488	-	-	-	-
Stage 1	759	-	-	-	-
Stage 2	771	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	12.1	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1263	- 543	-	-
HCM Lane V/C Ratio	0.013	- 0.065	-	-
HCM Control Delay (s)	7.9	0 12.1	-	-
HCM Lane LOS	A	A B	-	-
HCM 95th %tile Q(veh)	0	- 0.2	-	-

HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

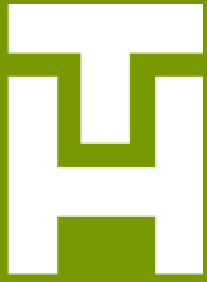
2018 Existing PM Peak Hour  
PM Peak Hour

Intersection						
Int Delay, s/veh	1.9					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	55	18	21	279	217	45
Future Vol, veh/h	55	18	21	279	217	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	20	23	310	241	50

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	622	266	291	0	- 0
Stage 1	266	-	-	-	-
Stage 2	356	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	- -
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	- -
Pot Cap-1 Maneuver	450	773	1271	-	- -
Stage 1	779	-	-	-	-
Stage 2	709	-	-	-	-
Platoon blocked, %				-	- -
Mov Cap-1 Maneuver	440	773	1271	-	- -
Mov Cap-2 Maneuver	440	-	-	-	-
Stage 1	762	-	-	-	-
Stage 2	709	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	13.8	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1271	- 492	-	-
HCM Lane V/C Ratio	0.018	- 0.165	-	-
HCM Control Delay (s)	7.9	0 13.8	-	-
HCM Lane LOS	A	A B	-	-
HCM 95th %tile Q(veh)	0.1	- 0.6	-	-



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**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX C**  
TRIP GENERATION CALCULATIONS

J - 27252

August 2018

From ITE Trip Generation Manual, 9th Edition, Volume 2

Seabrook Island Road (Freshfields Village Senior Living)

**Land Use: 230 - Residential Condominium/Townhouse**

50 Dwelling Units

Weekday - Vehicle Trip Ends vs Dwelling Units

Average Rate = 5.81

Directional Distribution: 50% entering, 50% exiting

Weekday		Entering	Exiting
	Total Trips	Trips	Trips
	291	145	146

Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9am

Average Rate = 0.44

Directional Distribution: 17% entering, 83% exiting

AM Peak Hour		Entering	Exiting
	Total Trips	Trips	Trips
	22	4	18

Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6pm

Average Rate = 0.52

Directional Distribution: 67% entering, 33% exiting

PM Peak Hour		Entering	Exiting
	Total Trips	Trips	Trips
	26	17	9

From ITE Trip Generation Manual, 9th Edition, Volume 2

Seabrook Island Road (Freshfields Village Senior Living)

**Land Use: 252 - Senior Adult Housing-Attached**

128 Dwelling Units

Weekday - Vehicle Trip Ends vs Dwelling Units

Average Rate = 3.44

Directional Distribution: 50% entering, 50% exiting

Weekday		Entering	Exiting
	Total Trips	Trips	Trips
	440	220	220

Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9am

Average Rate = 0.20

Directional Distribution: 34% entering, 66% exiting

AM Peak Hour		Entering	Exiting
	Total Trips	Trips	Trips
	26	9	17

Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6pm

Average Rate = 0.25

Directional Distribution: 54% entering, 46% exiting

PM Peak Hour		Entering	Exiting
	Total Trips	Trips	Trips
	32	17	15

From ITE Trip Generation Manual, 9th Edition, Volume 2

Seabrook Island Road (Freshfields Village Senior Living)

**Land Use: 254 - Assisted Living**

72 Beds

Weekday - Vehicle Trip Ends vs Beds

Average Rate = 2.66

Directional Distribution: 50% entering, 50% exiting

	Total Trips	Entering Trips	Exiting Trips
Weekday	192	96	96

Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9am

Average Rate = 0.14

Directional Distribution: 65% entering, 35% exiting

	Total Trips	Entering Trips	Exiting Trips
AM Peak Hour	10	7	3

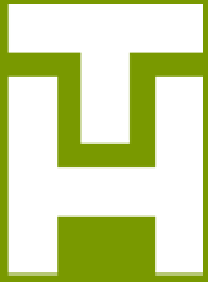
Weekday, Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6pm

Average Rate = 0.22

Directional Distribution: 44% entering, 56% exiting

	Total Trips	Entering Trips	Exiting Trips
PM Peak Hour	16	7	9



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**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX D**  
SYNCHRO HCM 2010 CAPACITY ANALYSES  
2023 NO-BUILD PEAK HOUR VOLUMES

J - 27252

August 2018

HCM 2010 Roundabout 2023 No-Build AM Peak Hour  
 1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy AM Peak Hour

Intersection						
Intersection Delay, s/veh	25.5					
Intersection LOS	D					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	1198	134	245	365		
Demand Flow Rate, veh/h	1222	136	250	372		
Vehicles Circulating, veh/h	110	1023	993	293		
Vehicles Exiting, veh/h	239	220	102	866		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	34.5	15.2	23.9	0.8		
Approach LOS	D	C	C	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free				Free	
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	985	237	136	250	56	316
Cap Entry Lane, veh/h	1012	1938	406	419	843	1938
Entry HV Adj Factor	0.980	0.980	0.983	0.981	0.983	0.980
Flow Entry, veh/h	966	232	134	245	55	310
Cap Entry, veh/h	992	1900	399	411	829	1900
V/C Ratio	0.973	0.122	0.335	0.597	0.066	0.163
Control Delay, s/veh	42.8	0.0	15.2	23.9	5.0	0.0
LOS	E	A	C	C	A	A
95th %tile Queue, veh	17	0	1	4	0	1

HCM 2010 Roundabout 2023 No-Build PM Peak Hour  
 1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy PM Peak Hour

Intersection						
Intersection Delay, s/veh	5.3					
Intersection LOS	A					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	570	218	363	844		
Demand Flow Rate, veh/h	582	222	370	860		
Vehicles Circulating, veh/h	178	546	422	431		
Vehicles Exiting, veh/h	337	246	154	337		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	6.0	10.2	12.3	0.6		
Approach LOS	A	B	B	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free				Free	
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	398	184	222	370	84	776
Cap Entry Lane, veh/h	946	1938	655	741	734	1938
Entry HV Adj Factor	0.981	0.980	0.980	0.980	0.986	0.980
Flow Entry, veh/h	390	180	218	363	83	761
Cap Entry, veh/h	927	1900	642	726	724	1900
V/C Ratio	0.421	0.095	0.339	0.499	0.114	0.401
Control Delay, s/veh	8.8	0.0	10.2	12.3	6.2	0.0
LOS	A	A	B	B	A	A
95th %tile Queue, veh	2	0	1	3	0	2

HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

2023 No-Build AM Peak Hour  
AM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	24	9	16	228	239	43
Future Vol, veh/h	24	9	16	228	239	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	10	18	253	266	48

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	579	290	314	0	-	0
Stage 1	290	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	477	749	1246	-	-	-
Stage 1	759	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	469	749	1246	-	-	-
Mov Cap-2 Maneuver	469	-	-	-	-	-
Stage 1	746	-	-	-	-	-
Stage 2	760	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	12.4	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1246	-	522	-
HCM Lane V/C Ratio	0.014	-	0.07	-
HCM Control Delay (s)	7.9	0	12.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.2	-

HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

2023 No-Build PM Peak Hour  
PM Peak Hour

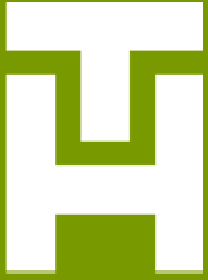
Intersection						
Int Delay, s/veh	1.9					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	58	19	22	293	228	47
Future Vol, veh/h	58	19	22	293	228	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	64	21	24	326	253	52

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	653	279	305	0	-	0
Stage 1	279	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	432	760	1256	-	-	-
Stage 1	768	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	422	760	1256	-	-	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	14.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1256	-	474	-
HCM Lane V/C Ratio	0.019	-	0.18	-
HCM Control Delay (s)	7.9	0	14.3	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-





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**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX E**  
SYNCHRO HCM 2010 CAPACITY ANALYSES  
2023 BUILD OUT PEAK HOUR VOLUMES

J - 27252

August 2018

HCM 2010 Roundabout 2023 Build Out AM Peak Hour  
 1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy AM Peak Hour

Intersection						
Intersection Delay, s/veh	26.2					
Intersection LOS	D					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	1218	138	278	365		
Demand Flow Rate, veh/h	1242	140	284	372		
Vehicles Circulating, veh/h	110	1057	995	331		
Vehicles Exiting, veh/h	277	222	102	866		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	34.3	16.2	28.9	0.8		
Approach LOS	D	C	D	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free		Free			
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	987	255	140	284	56	316
Cap Entry Lane, veh/h	1012	1938	393	418	812	1938
Entry HV Adj Factor	0.980	0.980	0.982	0.980	0.983	0.980
Flow Entry, veh/h	968	250	138	278	55	310
Cap Entry, veh/h	992	1900	386	409	798	1900
V/C Ratio	0.975	0.132	0.357	0.680	0.069	0.163
Control Delay, s/veh	43.2	0.0	16.2	28.9	5.2	0.0
LOS	E	A	C	D	A	A
95th %tile Queue, veh	18	0	2	5	0	1

HCM 2010 Roundabout 2023 Build Out PM Peak Hour  
 1: Seabrook Island Rd/Kiawah Island Pkwy & Village Green Ln/Betsy Kerrison Pkwy PM Peak Hour

Intersection						
Intersection Delay, s/veh	5.7					
Intersection LOS	A					
Approach	SE	NW	NE	SW		
Entry Lanes	1	1	1	1		
Conflicting Circle Lanes	1	1	1	1		
Adj Approach Flow, veh/h	612	221	393	844		
Demand Flow Rate, veh/h	624	225	401	860		
Vehicles Circulating, veh/h	178	577	427	465		
Vehicles Exiting, veh/h	371	251	154	337		
Follow-Up Headway, s	3.186	3.186	3.186	3.186		
Ped Vol Crossing Leg, #/h	0	0	0	0		
Ped Cap Adj	1.000	1.000	1.000	1.000		
Approach Delay, s/veh	5.7	10.7	13.5	0.6		
Approach LOS	A	B	B	A		
Lane	Left	Bypass	Left	Left	Left	Bypass
Designated Moves	LT	R	LTR	LTR	LT	R
Assumed Moves	LT	R	LTR	LTR	LT	R
RT Channelized	Free		Free			
Lane Util	1.000		1.000	1.000	1.000	
Critical Headway, s	5.193		5.193	5.193	5.193	
Entry Flow, veh/h	403	221	225	401	84	776
Cap Entry Lane, veh/h	946	1938	635	737	710	1938
Entry HV Adj Factor	0.981	0.980	0.980	0.979	0.986	0.980
Flow Entry, veh/h	395	217	221	393	83	761
Cap Entry, veh/h	927	1900	622	722	700	1900
V/C Ratio	0.426	0.114	0.355	0.544	0.118	0.401
Control Delay, s/veh	8.9	0.0	10.7	13.5	6.4	0.0
LOS	A	A	B	B	A	A
95th %tile Queue, veh	2	0	2	3	0	2

HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

2023 Build Out AM Peak Hour  
AM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	26	9	16	228	239	47
Future Vol, veh/h	26	9	16	228	239	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	10	18	253	266	52

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	581	292	318	0	-	0
Stage 1	292	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	476	747	1242	-	-	-
Stage 1	758	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	468	747	1242	-	-	-
Mov Cap-2 Maneuver	468	-	-	-	-	-
Stage 1	745	-	-	-	-	-
Stage 2	760	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	12.5	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1242	-	518	-
HCM Lane V/C Ratio	0.014	-	0.075	-
HCM Control Delay (s)	7.9	0	12.5	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.2	-

HCM 2010 TWSC  
2: Seabrook Island Rd & Andell Bluff Rd

2023 Build Out PM Peak Hour  
PM Peak Hour

Intersection						
Int Delay, s/veh	2					
Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	Y			Y	Y	
Traffic Vol, veh/h	62	19	22	293	228	50
Future Vol, veh/h	62	19	22	293	228	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	21	24	326	253	56

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	655	281	309	0	-	0
Stage 1	281	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	431	758	1252	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	421	758	1252	-	-	-
Mov Cap-2 Maneuver	421	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	696	-	-	-	-	-

Approach	SB	NE	SW
HCM Control Delay, s	14.5	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	1252	-	470	-
HCM Lane V/C Ratio	0.02	-	0.191	-
HCM Control Delay (s)	7.9	0	14.5	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-

HCM 2010 TWSC  
3: Seabrook Island Rd & proposed driveway

2023 Build Out AM Peak Hour  
AM Peak Hour

Intersection						
Int Delay, s/veh	0.8					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	↕		↕			↕
Traffic Vol, veh/h	4	30	249	2	16	280
Future Vol, veh/h	4	30	249	2	16	280
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	33	277	2	18	311

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	625	278	0	0	279
Stage 1	278	-	-	-	-
Stage 2	347	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	449	761	-	-	1284
Stage 1	769	-	-	-	-
Stage 2	716	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	441	761	-	-	1284
Mov Cap-2 Maneuver	441	-	-	-	-
Stage 1	756	-	-	-	-
Stage 2	716	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	10.4	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT
Capacity (veh/h)	-	-	701	1284
HCM Lane V/C Ratio	-	-	0.054	0.014
HCM Control Delay (s)	-	-	10.4	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0

HCM 2010 TWSC  
3: Seabrook Island Rd & proposed driveway

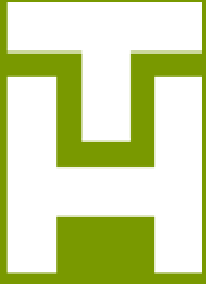
2023 Build Out PM Peak Hour  
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	↕		↕			↕
Traffic Vol, veh/h	3	27	321	4	33	287
Future Vol, veh/h	3	27	321	4	33	287
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	30	357	4	37	319

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	752	359	0	0	361
Stage 1	359	-	-	-	-
Stage 2	393	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12
Critical Hdwy Stg 1	5.42	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218
Pot Cap-1 Maneuver	378	685	-	-	1198
Stage 1	707	-	-	-	-
Stage 2	682	-	-	-	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	364	685	-	-	1198
Mov Cap-2 Maneuver	364	-	-	-	-
Stage 1	680	-	-	-	-
Stage 2	682	-	-	-	-

Approach	NW	NE	SW
HCM Control Delay, s	11	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NERNWLn1	SWL	SWT
Capacity (veh/h)	-	-	629	1198
HCM Lane V/C Ratio	-	-	0.053	0.031
HCM Control Delay (s)	-	-	11	8.1
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1



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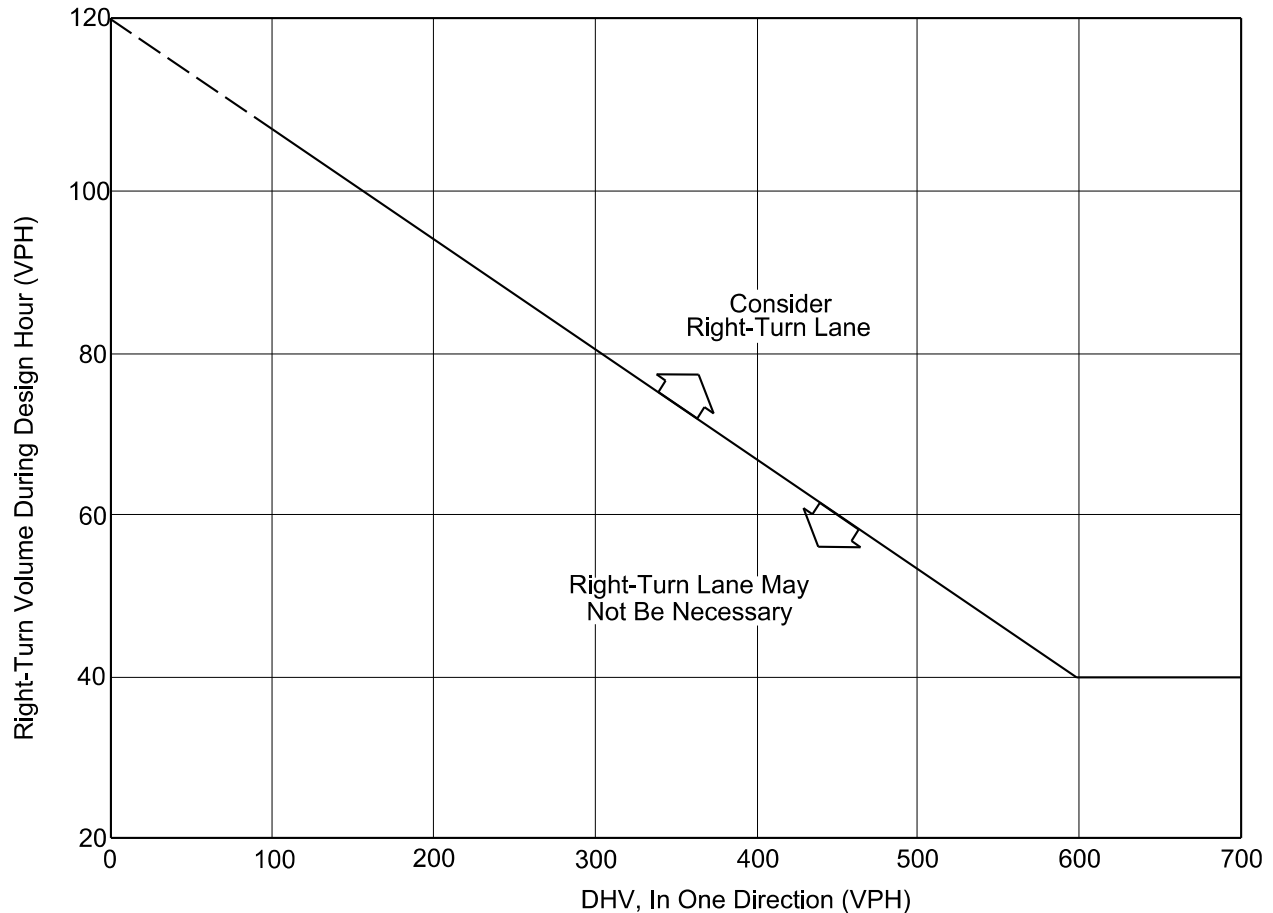
**TRAFFIC IMPACT ANALYSIS**  
SEABROOK ISLAND ROAD

**APPENDIX F**  
SCDOT FIGURE 9.5-A  
GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED  
INTERSECTIONS ON TWO-LANE HIGHWAYS

J - 27252

August 2018

For proposed driveway on Seabrook Island Road (35 mph)



Note: For highways with a design speed below 50 miles per hour with a DHV < 300 and where right turns > 40, an adjustment should be used. To read the vertical axis of the chart, subtract 20 from the actual number of right turns.

AM Peak Hour = 2 right turns with 249 vph through traffic

PM Peak Hour = 4 right turns with 321 vph through traffic

### **Example**

### **RIGHT TURN LANE NOT WARRANTED**

**Given:**

Design Speed	=	35 miles per hour
DHV	=	250 vehicles per hour
Right Turns	=	100 vehicles per hour

**Problem:** Determine if a right-turn lane is necessary.

**Solution:** To read the vertical axis, use  $100 - 20 = 80$  vehicles per hour. The figure indicates that a right-turn lane is not necessary, unless other factors (e.g., high crash rate) indicate a lane is needed.

## **GUIDELINES FOR RIGHT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS**

**Figure 9.5-A**



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## TRAFFIC IMPACT ANALYSIS

SEABROOK ISLAND ROAD

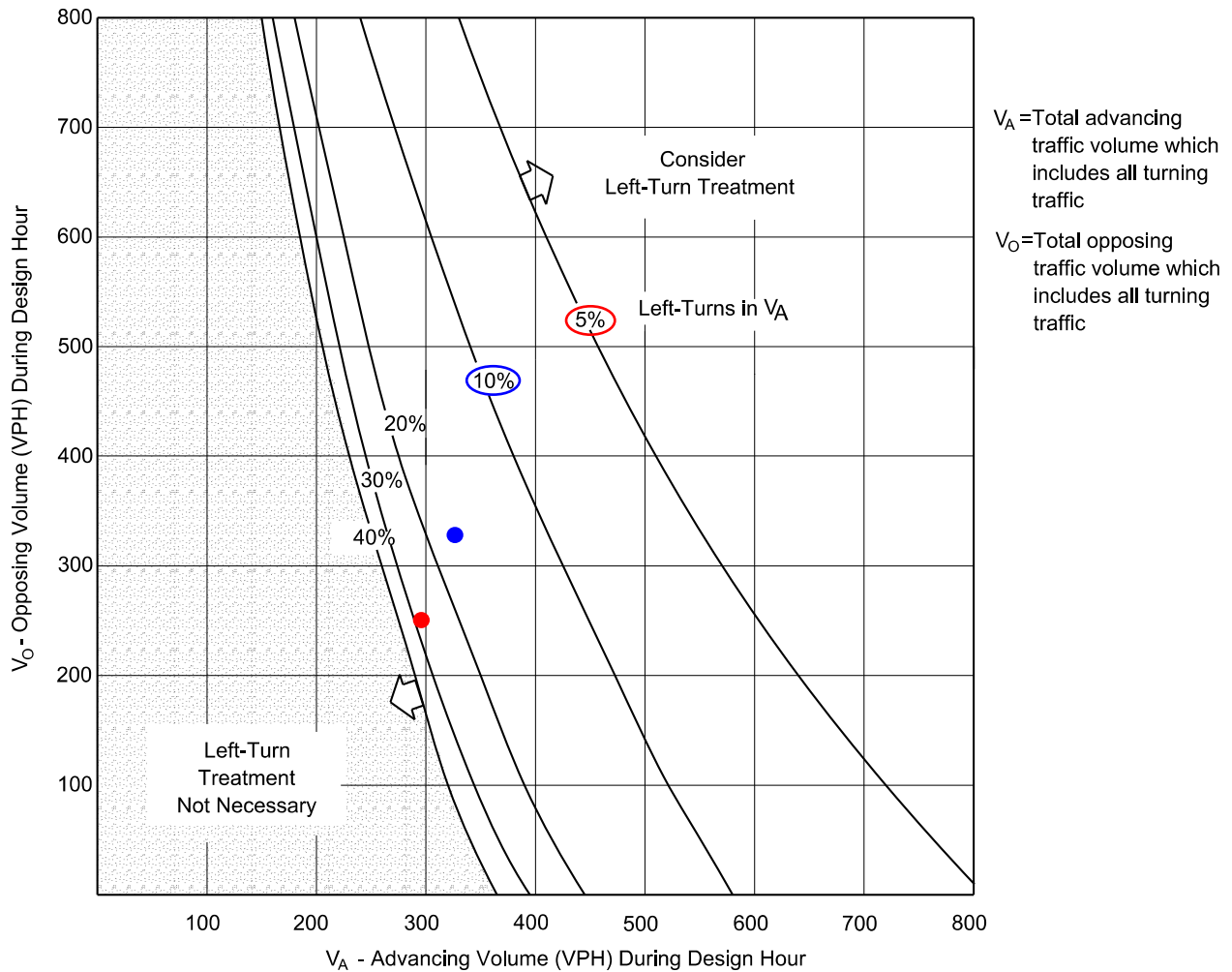
### **APPENDIX G**

SCDOT FIGURE 9.5-G  
GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED  
INTERSECTIONS ON TWO-LANE HIGHWAYS (40 MPH)

J - 27252

August 2018

For proposed driveway on Seabrook Island Road (35 mph)



- AM Peak Hour = 16 left turns (left turns are 5% in  $V_A$ )
- PM Peak Hour = 33 left turns (left turns are 10% in  $V_A$ )

Instructions:

**LEFT TURN LANE NOT WARRANTED**

1. The family of curves represents the percent of left turns in the advancing volume ( $V_A$ ). The designer should locate the curve for the actual percentage of left turns. When this is not an even increment of 5, the designer should estimate where the curve lies.
2. Read  $V_A$  and  $V_O$  into the chart and locate the intersection of the two volumes.
3. Note the location of the point in #2 relative to the line in #1. If the point is to the right of the line, then a left-turn lane is warranted. If the point is to the left of the line, then a left-turn lane is not warranted based on traffic volumes.

**NOTE:** There is not a figure in SCDOT Roadway Design Highway Manual for 35 mph unsignalized intersections

**VOLUME GUIDELINES FOR LEFT-TURN LANES AT UNSIGNALIZED INTERSECTIONS ON TWO-LANE HIGHWAYS (40 mph)**

Figure 9.5-G



**Project Name:** \_\_\_\_\_ **Beds:** \_\_\_\_\_  
 (Any subheading information about client) \_\_\_\_\_

		Fiscal Year		2021	2022	2023	2024	2025
		Avg. Occupancy		74.08	155.50	186.00	186.00	186.00
Department: <b>General &amp; Administration</b>	Position:	Executive Director		1.00	1.00	1.00	1.00	1.00
	Department Mgr & Asst.			-	-	-	-	-
	Accounting			1.00	1.00	1.00	1.00	1.00
	Human Resources			-	-	-	-	-
	Marketing			2.00	2.00	2.00	2.00	2.00
	Clerical & Secretary			2.10	2.10	2.10	2.10	2.10
				<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>	<b>7.10</b>
<b>Plant</b>	Department Mgr & Asst			1.00	1.00	1.00	1.00	1.00
	General Maintenance			2.00	2.00	2.00	2.00	2.00
	Grounds			-	-	-	-	-
	Security			2.80	2.80	2.80	2.80	2.80
	Clerical & Secretary			1.00	1.00	1.00	1.00	1.00
	Supervisors			-	-	-	-	-
Refurbishment			1.00	1.00	1.00	1.00	1.00	
				<b>7.80</b>	<b>7.80</b>	<b>7.80</b>	<b>7.80</b>	<b>7.80</b>
<b>Environmental Services</b>	Department Mgr & Asst			-	-	-	-	-
	Housekeeping			4.08	6.50	7.00	7.00	7.00
	Laundry			2.00	2.00	2.00	2.00	2.00
	Janitors			3.00	3.00	3.00	3.00	3.00
	Supervisors			-	-	-	-	-
	Other Env. Services			-	-	-	-	-
				<b>9.08</b>	<b>11.50</b>	<b>12.00</b>	<b>12.00</b>	<b>12.00</b>
<b>Food &amp; Beverage Services</b>	F&B Director			1.00	1.00	1.00	1.00	1.00
	Food Production			3.63	6.11	7.18	7.18	7.18
	Dining Room			3.63	6.11	7.18	7.18	7.18
	Utility Workers			4.20	4.20	4.20	4.20	4.20
	Clerical & Secretary			-	-	-	-	-
	Supervisors			-	-	-	-	-
				<b>19.49</b>	<b>27.67</b>	<b>30.79</b>	<b>30.79</b>	<b>30.79</b>
<b>Resident Services</b>	Drivers			2.80	2.80	2.80	2.80	2.80
	Activities			2.80	2.80	2.80	2.80	2.80
	Other Resident Services			-	-	-	-	-
	Department Mgr & Asst			1.00	1.00	1.00	1.00	1.00
	Future			-	-	-	-	-
				<b>9.40</b>	<b>9.40</b>	<b>9.40</b>	<b>9.40</b>	<b>9.40</b>
<b>Assisted Living</b>	Department Mgr -- RN(DON)			1.00	1.00	1.00	1.00	1.00
	Activities			2.40	2.40	2.40	2.40	2.40
	Clerical & Secretary			2.60	2.60	2.60	2.60	2.60
	Non-Licensed - Care Givers			4.38	6.89	10.50	10.50	10.50
	Licensed - LPN's			3.28	4.27	7.88	7.88	7.88
	Licensed - RN's			-	-	-	-	-
Other Assisted Living			1.40	1.40	1.40	1.40	1.40	
				<b>15.06</b>	<b>18.56</b>	<b>25.78</b>	<b>25.78</b>	<b>25.78</b>
<b>Memory Care</b>	Department Mgr & Asst			-	-	-	-	-
	Non-Licensed - Care Givers			3.50	6.56	6.56	6.56	6.56
	Licensed - LPN's			2.19	2.63	2.63	2.63	2.63
	Licensed - RN's			-	-	-	-	-
	Other Memory Care			-	-	-	-	-
Future			7.09	10.59	10.59	10.59	10.59	
				<b>7.09</b>	<b>10.59</b>	<b>10.59</b>	<b>10.59</b>	<b>10.59</b>
<b>TOTAL</b>				<b>75.01</b>	<b>92.61</b>	<b>103.45</b>	<b>103.45</b>	<b>103.45</b>

G&A Staff typically M-F, 9am - 5pm

Staffing is mainly M-F, 8am - 4pm with 1 person being 12pm - 8pm and 1 FTE weekend 8am 4pm

Staffing mainly M-F 8am to 4pm. 2 FTEs on weekends 8am-4pm

Staffing is spread out over several shifts and 7 days per week. Opening 5am to 1pm; breakfast 6am to 2pm; lunch 10am to 6pm and dinner/closing noon to 8pm.

Staffing is spread out over 3 shifts 7 days per week. 7am to 3pm; 9am to 5pm and noon to 8pm.

Staffing is spread out over 3 shifts, 7 days per week. 7am to 3:30pm; 3pm to 11:30pm and 11pm to 7:30am.

Staffing is spread out over 3 shifts, 7 days per week. 7am to 3:30pm; 3pm to 11:30pm and 11:00pm to 7:30am

## **Freshfields Village – Big Rock Partners – Senior Living Project – Kiawah Island, SC**

Conceptual Logistics Narrative by Milestone and Construction Traffic Plan

August 7, 2018

Balfour Beatty strives to provide the safest and most efficient site logistics plan for each project. This requires teamwork and coordination with all entities involved, i.e. authorities having jurisdiction, property owners, associations, neighboring properties, residents, and the general public. This specific project will require coordination with many of these entities. We will work as a team with all appropriate parties to ensure our commitment to safety is always met and the daily construction logistics is a minimally invasive activity while all parties are made aware of important construction deliveries.

Below is our initial plan on how and when we foresee construction to occur. This plan is a living and breathing document that will get updated and edited by feedback from all parties on a constant basis. All durations and start and finish times are assumptions. As we continue through early conceptual phase to the construction phase, these durations and milestones will be confirmed. Many activities and milestones will overlap as we phase the project into separate parts.

Balfour Beatty is assuming at this early phase all construction traffic will enter the first traffic circle at Freshfields and take the second exit into the Freshfields parking areas. The first right hand turn would be used after that and construction traffic would continue between the new northwest parking lot and Fuji Sushi. Construction traffic would then exit the jobsite at Seabrook Island Road where the future main entrance into the new facility will be located.

The project team has also provided an option for building a new left-hand turn lane off Seabrook Island Road into the project site. This left-hand turn lane would allow an option during construction to not enter through the Freshfields parking and provide a smooth transition for turning left into the jobsite during construction and after. We anticipate this left-hand turn lane could be completed and ready for use at around the approximate start date of the first sitework activities depending on approvals of permit approvals. There may be a time period of approximately 1-3 months depending on approvals that the turn lane would not be available for use during construction.

We have studied several other options for consideration regarding construction traffic. We look forward to working with all parties involved to provide the safest routes possible while coordinating deliveries around all schedules.

### **MILESTONE #1 – Early Sitework – Surcharge (preload) Haul-in Dirt Process**

February 2019 – May 2019 (3 Months)

Because of soil and seismic conditions found in the low-country coastal region and for this particular project, we are required to haul in approximately 5 - 10ft of fill (soils) over the footprint of the property and let the soil sit and compact the existing soils to an acceptable compaction level. This activity will take approximately 3 months to bring in fill dirt to the jobsite. We are anticipating approximately 25 dump trucks a day bringing dirt to the site during this time period.

### **MILESTONE #2 – Surcharge (preload) Compaction Process**

May 2019 – July 2019 (2 Months)

After all the dirt is placed on the footprint of the project, it must stay for approximately 1-2 months to allow proper compaction required for the new structure. There will be minimal construction traffic at this time other than engineering investigations and testing of soils.

### **MILESTONE #3 – Remaining Sitework, Utilities, EQ Drains and Pad Prep**

July 2019 – October 2019 (4 Months)

After approval from the engineer we will start remaining sitework for foundations and structure to begin. This phase will reintroduce dump trucks to the traffic flow as well as other large equipment being delivered to and from the jobsite.

### **MILESTONE #4 – Foundations and Retaining Walls**

August 2019 – February 2020 (6 Months)

This phase of the project will introduce our first concrete trucks to the jobsite. All concrete pours will be coordinated with local entities to ensure flow of concrete trucks is not interfering with island traffic.

### **MILESTONE #5 – Structure Erection**

December 2019 – June 2020 (6 Months)

This phase of the project will include large deliveries of steel, wall and floor structures, and concrete trucks as the building starts coming out of the ground and is topped-out.

### **MILESTONE #6 – Exterior Envelope**

May 2020 – November 2020 (6 Months)

This phase of the project will include deliveries associated with the skin of the building (stucco, windows, siding, etc.) and the roof. Larger deliveries of steel and concrete will have stopped by this phase.

### **MILESTONE #7 – Interiors**

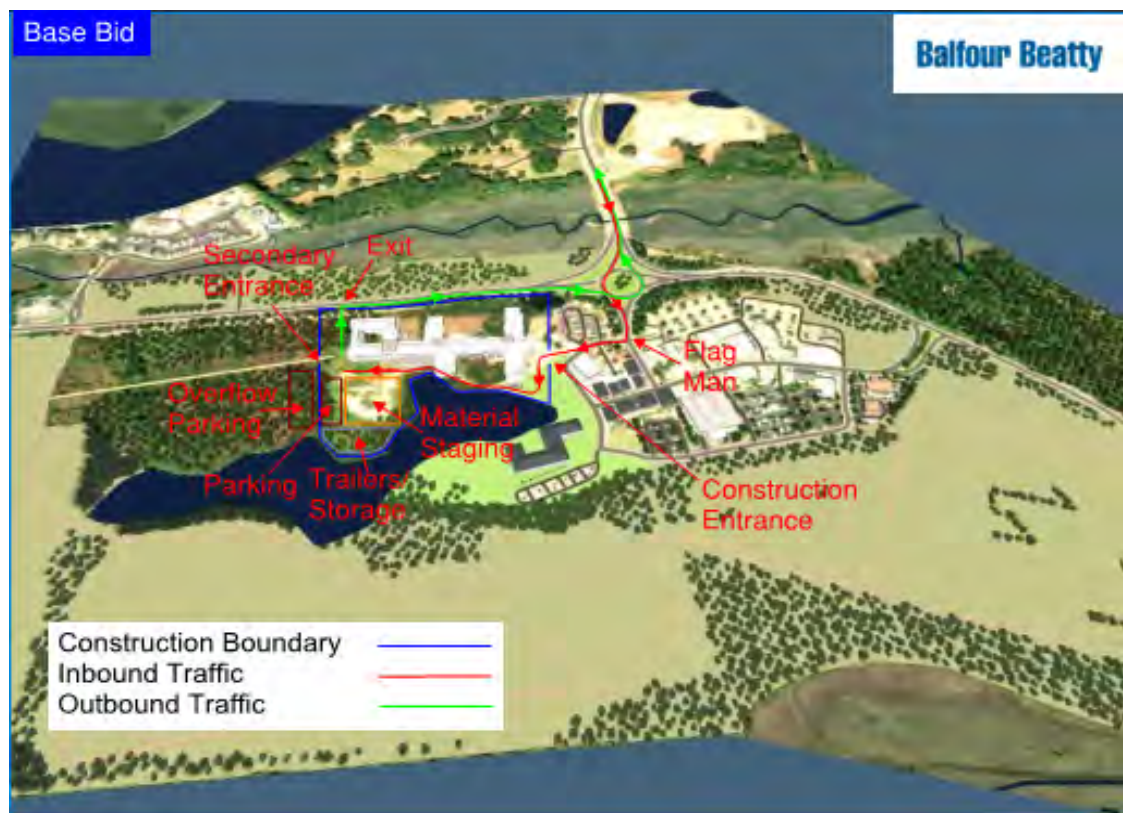
June 2020 – August 2021 (13 Months)

The interiors phase of the project will include deliveries of drywall, plumbing, mechanical, and electrical fixtures. Deliveries of all the finished materials will also occur, including millwork, cabinets, flooring, paint, appliances, etc. This phase will have the most number of workers on site.

### **MILESTONE #8 – Finish Sitework and Landscaping**

January 2021 – August 2021 (6 Months)

The final phase will include landscaping along with site and hardscape features.







**NOTICE OF INTENT (NOI)**  
**For Coverage(s) of Primary Permittees**  
**Under South Carolina NPDES General Permit**  
**For Stormwater Discharges From Construction Activities SCR100000**  
 (Maintain As Part of On-Site SWPPP)

**For Official Use Only**

File Number: \_\_\_\_\_  
 Permit Number: SCR10 \_\_\_\_\_  
 Submittal Package Complete: \_\_\_\_\_

*Submission of this Notice of Intent constitutes notice that the Applicant identified in Section II intends to be authorized as a Primary Permittee in the state of South Carolina under NPDES General Permit SCR1000000. Fees required for review and NPDES coverage of each application type are as listed on page 2 of the Instructions.*

Date: 7/17/2018

Project/Site Name: Kiawah Senior Living County: Charleston  
 (Modification or Change of Information Only) Prior Approved NPDES Permit or File Number: \_\_\_\_\_

Do you want this project to be considered for the Expedited Review Program (ERP)?  Yes or  No (See instructions)

**I. Notice of Intent (NOI) Application Type(s)**

A. **Project (Application/Review) Type(s)** (Select **ALL** that apply):

- New Project (Initial Notification)  Ongoing Project:  Permitted or  Un-Permitted
- Late Notification  Low Impact Development (LID) or Project Design Above Regulatory Requirements
- New Owner/Operator or Company Name Change (see instructions, attach Form A (Transfer of Ownership))
- Major Modification: (see instructions, attach Form B (Major Modifications))
- MS4 Project Review
- Ocean and Coastal Resource Management (OCRM) Review
- Change of Information/Other (Specify): \_\_\_\_\_

B. If Applicable, identify the entity designated as **MS4 Reviewer and MS4 Operator** (i.e., Lexington County, City of Greer, etc.): **MS4 Reviewer** \_\_\_\_\_ **MS4 Operator** \_\_\_\_\_

**II. Primary Permittee Information**

Person or  Company If a Company, are you a  Lending Institution or  Government Entity?  
 Company EIN (If applicable): EIN: 82-3707473  Change of Information

A. **Primary Permittee Name:** BRP Kiawah LLC  
 Mailing Address: 2645 North Federal Hwy., Suite 230 City: Delray Beach State: FL Zip: 33483  
 Phone: 561-701-4544 Fax: \_\_\_\_\_ Email Address: snealon@bigrockpartners.com

B. **Contact /ODSA Name** (If different from above OR if owner is a company): \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

C. **Property Owner Name** (If different from above): \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email Address: \_\_\_\_\_

**III. Comprehensive Stormwater Pollution Prevention Plan (C-SWPPP) Preparer Information**  Change of Information

A. **C-SWPPP Preparer Name:** Tony Woody, PE

B. **Registered Professional**  Engineer  Landscape Architect  Tier B Land Surveyor **S. C. Registration #:** 14545

C. **Company/Firm Name:** Thomas & Hutton Engineering Co. **S. C. COA #:** 00285  
 Mailing Address: 682 Johnnie Dodds Blvd., Suite 100 City: Mt. Pleasant State: SC Zip: 29464  
 Phone: 843-849-0200 Fax: 843-849-0203 Email Address: woody.t@thomasandhutton.com

**IV. Project/Site Information**

A. **Type of Construction Activity(ies)** (Select **ALL** that apply):  Change of Information

- Commercial  Industrial  Institutional  Mass Grading  Linear  Utility/Infrastructure
- Residential: Single-family  Residential: Multi-family  Multi-use (Commercial & Residential)
- Site Preparation (No New Impervious Area)  Other (Specify) \_\_\_\_\_

B. **Site Address/Location** (street address, nearest intersection, etc.) 400 Farm Lake View  
 City/Town (If in limits): Seabrook Island, SC Zip Code: 29455  
 Latitude: 32 ° 36 ' 24 " N Longitude: - 80 ° 09' 02" W (Source):  GPS  Web Site: \_\_\_\_\_  
**Tax Map Number (s)** (List all): 205-00-00-014



C. Is this site located on Indian Land?  Yes  No  
 D. Proposed Start Date: 12/01/2018 Proposed Completion Date: 12/1/2020  
 E. Disturbed Area (nearest tenth of an acre): 8.6 ac Total Area (acres): 9.02 ac  
 F. Modification Only: (nearest tenth of an acre): Disturbed Area: Current (Approved) Area: \_\_\_\_\_  
 Disturbed Area Change (Increase Only): \_\_\_\_\_ Total Disturbed Area (After Change): \_\_\_\_\_  
 G. Is this project part of a Larger Common Plan for Development or Sale (LCP)?  Yes  No  
 LCP/ Overall Development Name: Freshfields Village Check here if this is the First Phase.

Previous State Permit/File Number: 10-03-02-07C Previous NPDES Coverage Number: SCR10 V322

H. Any Flooding Problems exist downstream of or adjacent to this site?  Yes  No (If yes, provide detailed description of flooding problems and applicable floodway/flood zone information in the C-SWPPP).  
 I. Active S.C. DHEC Warning Notice, Notice to Comply or Notice of Violation for this site or LCP?  Yes  No  
 J. List Relevant State and Federal Environmental Permits or Approvals applied for or obtained for this site (e.g., RCRA, USACOE, Nationwide, etc.). If None, list None.  
 SCDHEC Water and Sewer Permit to Construct, CZC cert.  
 K. Any Waiver(s)/Variances/Exceptions Requested for this Project? (If yes, identify below and include Waiver Request and Justifications in the C-SWPPP for each proposed request).

1. Small Construction Activity Waiver(s) From NPDES permitting (Section 1.4 & Appendix B)?  Yes  No  
 If yes, identify requested waiver:  Rainfall Erosivity Waiver  TMDL Waiver  Equivalent Analysis Waiver  
 2. Detention Waiver (72-302(B))  Yes  No 3. Other (Specify): \_\_\_\_\_

V. Waterbody Information (Attach additional sheet(s) as needed)  Change of Information

A. Receiving Waterbody(s) (RWB) Information (List the nearest and next nearest receiving waterbodies to which the sites stormwater discharges will drain. If stormwater discharges drain to multiple waterbodies, list all such waterbodies).

1. Name of Receiving Waterbodies (RWB)	2. Distance to RWB (feet)	3. Classification of RWB
a. Nearest: Brick Creek	1,600	SFH
b. Next Nearest: Kiawah River	4,500	SFH
c. Coastal Zone ONLY: Coastal Receiving Water (CRW): Brick Creek	1,600	Not Applicable
d. Other Waterbodies: _____		

B. Waters of the U.S. / State Information (Attach additional sheet(s) as needed)

Waters of the U.S./ State	1. On the site?	2. Delineated/ Identified?	3. Impacts?	4. Amount of impacts
a. Jurisdictional wetlands	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Ac
b. Non-jurisdictional wetlands	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Ac
c. Other Water(s): _____	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Ac _____ Feet
d. Coastal Zone ONLY: Direct Critical Area	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	_____ Ac _____ Feet

5. If yes for impacts in B.3, describe each impact and activity, and list all permits (e.g., USACOE Nationwide Permit, DHEC General Permit) and certifications that have been applied for or obtained for each impact:

C. S.C. Navigable Waters (SCNW) Information (Section 2.6.5) The Department will address any issues related to State Navigable Waters' Program under SC Regulation 19-450 during the review of the C-SWPPP for activities that will NOT require a 404 permit or a 401 certification. (Attach additional sheet(s) as needed).

1. Are S. C. Navigable Waters (SCNW) on the site:  Yes  No  
 a. If no, do not complete this question. Proceed to Section D (Impaired Waterbodies).  
 b. If yes, provide the name of S.C. Navigable Waters (SCNW) on the site: \_\_\_\_\_

2. If yes for C.1, will construction activities cross over or occur in, under, or thru the SCNW?  Yes  No  
 If yes, describe SCNW activities (e.g., road crossing, sub-aqueous utility line, temporary or permanent structures, etc.) and proceed to Section C.3: \_\_\_\_\_

3. Identify permits providing coverage of SCNW activities proposed for your site. If NONE, list none. NONE

Permits/Certifications	Permit or Certification No.	Corresponding Covered SCNW Activity(ies)
a. DHEC General/ Other DHEC Permit		
b. USACOE 404 Permit or 401 Certification		
c. SCNW Permit If applied for or issued, identify Date applied for or issued: _____		<input type="checkbox"/> All Activities or <input type="checkbox"/> Some Activities (Describe): _____

d. If a SCNW Permit has NOT been applied for provide an additional plan sheet that shows plan and profile views (drawn to scale) of the SCNW and associated activities. Include a description of all proposed activities on this plan.



**D. Impaired Waterbodies Information** (Attach additional sheet(s) as needed)

1. 303(d) Listed Impaired Waterbodies					
a. Name of Nearest DHEC Water Quality Monitoring Stations (WQMS)(s) that receives stormwater from your construction site and/or thru an MS4 and the Name of the Corresponding Waterbody?		b. Is this WQMS(s) listed on the <u>most current</u> 303(d) list? If No, proceed to Section 2 of this table. If Yes, complete items c thru f.	c. List the pollutant(s) identified as "CAUSES" of the impairment	d. Will any pollutants causing the impairment be present in your site's construction stormwater discharges?	e. If yes for d, list the "USE SUPPORT" impairment(s) affected by the pollutant(s) identified in c.
Nearest DHEC WQMS(s)	Corresponding Waterbody				
12A-31	Bohicket Creek	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
11-22	Kiawah River	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	
MD-273	Kiawah River	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	

f. If yes for d above, will use of the BMPs proposed for your project ensure the site's discharges will NOT contribute to or cause further WQS violations for the impairment(s) listed in c?  Yes  No  
(NOTE: If no for f, this site is NOT eligible for coverage under the CGP). See Instructions.

2. TMDL Impaired Waterbodies					
a. Name of Nearest DHEC Water Quality Monitoring Stations (WQMS)(s) that receives stormwater from your construction site and/or thru an MS4?		b. Has a TMDL(s) been developed for this WQMS(s)? If No, identify as such below and proceed to Section VI. If Yes, complete items c thru f of this table.	c. If yes for b, what pollutants are listed as "CAUSES" or causing the impairment?	d. If yes for b, has the standard been "ATTAINED" or "Fully Supported" for the impairment(s)?	e. If no for d (Not Attained), will any pollutants causing the impairment be present in your site's construction stormwater discharges?
Nearest DHEC WQMS(s)	Corresponding Waterbody				
12A-31		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
11-22		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
MD-273		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

f. If yes for e above, are your discharges consistent with the assumptions and requirements of the TMDL(s)?  Yes  No  
(NOTE: If no for f, this site is NOT eligible for coverage under the CGP). See Instructions.

**VI. Signatures and Certifications DO NOT SIGN IN BLACK INK! Read the Certifications below (in entirety). Provide date, printed name, and signatures below. If you are a New Owner/Operator, as Primary Permittee you must also sign and date the applicable Comprehensive SWPPP Acceptance & Compliance Agreement below.**

**C-SWPPP PREPARER:** "One copy of the C-SWPPP, all specifications and supporting calculations, forms, and reports are herewith submitted and made a part of this application. I have placed my signature and seal on the design documents submitted signifying that I accept responsibility for the design of the system. Further, I certify to the best of my knowledge and belief that the design is consistent with the requirements of Title 48, Chapter 14 of the Code of Laws of SC, 1976 as amended, pursuant to Regulation 72-300 et seq. (if applicable), and in accordance with the terms and conditions of SCR100000." (This should be the person identified in Section III).

Tony Woody, PE

Printed Name of C-SWPPP Preparer

Signature of C-SWPPP Preparer

14545

S. C. Registration #

**PRIMARY PERMITTEE:** "I or I (on behalf of my company and its contractors and agents), as the case may be, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I understand that DHEC enforcement actions may be taken if the terms and conditions of the C-SWPPP are not met and I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

"I or I (on behalf of my company and its contractors and agents), as the case may be, also hereby certify that all land-disturbing construction and associated activity pertaining to this site shall be accomplished pursuant to and in keeping with the terms and conditions of the approved plans and SCR100000. I also certify that a responsible person will be assigned to the project for day-to-day control. I hereby grant authorization to the to S. C. Department of Health and Environmental Control (DHEC) and/or the local implementing agency the right of access to the site at all times for the purpose of on site inspections during the course of construction and to perform maintenance inspections following the completion of the land-disturbing activity." (See Section 122.22 of S.C. Reg. 61-9 for signatory authority information.) Having understood the above information, I am signing this certification as Primary Permittee to the aforementioned NPDES general permit."

Sean Nealon

Director of Development

Printed Name of Primary Permittee

Title/Position

Signature of Primary Permittee

Date Signed

2/9/18



## NPDES CGP FEE SCHEDULE A

(All Counties EXCEPT Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, Horry, and Jasper)  
 This schedule should not be used for projects reviewed by a delegated entity or MS4 operator.

If you are completing the fillable version of this form and if the **County** and **Disturbed Area** fields are correctly filled out on page 2 of this form, the fees in the right hand column will be automatically entered based on your answers to the questions below. The schedule should be attached to DHEC Form 2617. Do not send payment in window envelope. **DO NOT MAIL CASH**. DHEC will notify the Project Owner/ Operator if the submitted check or credit card payment cannot be processed. **The review clock will start when acceptable payment is received.**

1. Identify (✓) the Project Review Type(s) Enter NPDES Coverage Fee of \$125 in the right-hand column if <u>any</u> of the following project/review types apply to this application. Proceed to Item 2.	(✓)	NPDES Coverage Fee
<b>a. Project or LCP (Item IV.G) that will ultimately disturb one (1) acre or more</b> <b>Note:</b> If your project will ultimately disturb less than one (1) acre <b>AND</b> is <b>NOT</b> a part of a Larger Common Plan, coverage under SCR100000 is <b>not</b> required; see <a href="http://www.scdhec.gov/administration/library/d-2628.pdf">http://www.scdhec.gov/administration/library/d-2628.pdf</a> (Notification Form for Sites Disturbing Less Than 1-Acre Not Part of a Larger Common Plan, Non-Coastal County"	<input type="checkbox"/>	\$ ____ 0.00
<b>b. New Owner/Operator (Transfer of Ownership)/Company Name Change</b> (\$125 NPDES Coverage fee is required by the Department for Transfers of Ownership and Company Name Changes)	<input type="checkbox"/>	
<b>c. Unpermitted Ongoing Project or Late Notification</b>	<input type="checkbox"/>	
<b>d. MS4 Project Review (Item I.A and I.B)</b> (\$125 payable to Department thru MS4 Reviewer)	<input type="checkbox"/>	
<b>e. Other (Specify):</b> _____	<input type="checkbox"/>	

2. Determine the Project Review Fees (Review fees cannot exceed \$2000 for a project)		
PROJECT OR LCP THAT WILL ULTIMATELY DISTURB ONE (1) ACRE OR MORE	(✓)	Review Fees
a. Enter the disturbed area (Item IV.E) for this project. Proceed to Items 2.b and 2.c.		(Nearest tenth of an acre)
b. Will this project or LCP (Item IV.G) ultimately disturb more than 1.0 acres	<input type="checkbox"/> Yes <input type="checkbox"/> No	
c. Is this project exempt from S. C. Reg. 72-300 et seq.?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
1. If this project <b>will not</b> ultimately disturb more than 1.0 acre, and is not part of an LCP, your project is <b>automatically covered under this permit and the NPDES coverage fee and review fee are not required.</b> See the BOW-SPWS for "Less Than 1-Acre of Land Disturbance - Non-Coastal Counties". 2. If this project <b>will</b> ultimately disturb more than 1.0 acre, proceed to Item 2.d.		
<b>d. Enter the project review fees (based on \$100/disturbed area) in the right-hand column.</b> (Multiply the disturbed area (Item 2.a) by \$100/disturbed area). If the disturbed area for this project (Item 2.a.) totals 20.0 acres or more, enter \$2000 in the right-hand column. <u>Review fees cannot exceed \$2000 for a project.</u>		\$ ____ 0.00

3. Total Required Fees Add the values in the right-hand columns of Items 1 and 2.d. Proceed to Item 4. (The Department will not review this project until all required fees are received).	\$ ____ 0.00
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**4. Identify the Method of Payment:**

**Payment by Check:**

Attach a **signed and dated check payable to S.C. DHEC** to the **front** of this Fee Schedule.  
 Please note that all checks must be **less than 30 days old** and must be for the **entire required fees**.

**Payment by Credit Card:** (Check here if you wish to pay via credit card using the on-line payment system).

The Department will contact you to provide instructions and the invoice number necessary for online payment.  
 Please provide an e-mail address where the invoice number may be sent: \_\_\_\_\_

**For official use only:** Invoice Number \_\_\_\_\_



## NPDES CGP FEE SCHEDULE B

(ONLY for Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, Horry, and Jasper Counties)

This schedule should not be used to calculate MS4 review fees for projects reviewed by a delegated entity or MS4 operator.

**Submit payment for NPDES Coverage fees only to DHEC.**

If you are completing the fillable version of this form and if the **County** and **Disturbed Area** fields are correctly filled out on page 2 of this form, the fees in the right hand column will be automatically entered based on your answers to the questions below. The schedule should be attached to DHEC Form 2617. Do not send payment in window envelope. **DO NOT MAIL CASH.** DHEC will notify the Project Owner/ Operator if the check or credit card payment cannot be processed. **The review clock will start when acceptable payment is received and after the project is deemed consistent with the S.C. Coastal Zone Management Plan.**

<b>1. Identify (✓) the Project/Review Types</b> (NOTE: You may ONLY select Item 1.a OR 1.b BELOW). Enter NPDES coverage fee of \$125 in the right-hand column if <u>any</u> of the following project/review types apply to this application. Proceed to Item 2.	(✓)	<b>NPDES Coverage Fee(s)</b>
<b>a. Project or LCP that is located within ½ mile of CRW (Item V.A) that will ultimately disturb more than 0.5 acres (if select a, do not select b)</b>	<input checked="" type="checkbox"/>	\$ <u>  125  </u> .00
<b>b. Project or LCP that is NOT located within ½ mile of CRW (Item V.A) that will ultimately disturb one (1) acre or more (if select b, do not select a)</b>	<input type="checkbox"/>	
<b>c. New Owner/Operator (Transfer of Ownership)/Company Name Change</b> (\$125 NPDES Coverage fee is required by the Department for Transfers of Ownership and Company Name Changes)	<input type="checkbox"/>	
<b>d. Unpermitted Ongoing Project or Late Notification</b>	<input type="checkbox"/>	
<b>e. MS4 Project Review (Item I.A and I.B)</b>	<input type="checkbox"/>	
<b>f. Other (Specify):</b> _____	<input type="checkbox"/>	

**2. Determine the Project Review Fees** (Review fees cannot exceed \$2000 for a project).  
**NOTE: COMPLETE ITEM 2.a BELOW. COMPLETE EITHER SECTION 3 OR SECTION 4. DO NOT COMPLETE BOTH SECTIONS.**

a. Enter the disturbed area (Item IV.E) for this project. Proceed to Item 3 OR Item 4. 8.6 (nearest tenth of an acre)

<b>3. PROJECT OR LCP LOCATED WITHIN ½ MILE OF A CRW (ITEM V.A)</b>	(✓)	<b>Review Fees</b>
a. Will this project or LCP (Item IV.G) ultimately disturb more than 0.5 acres?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
b. Is this project exempt from S. C. Reg. 72-300 et seq.?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	

1. If this project will NOT ultimately disturb more than 0.5 acres and is not part of an LCP, your project is automatically covered under this permit and the NPDES coverage fee and review fee are not required. See section 1.3.1.B. See the BOW-SPWS for "Less Than 1-Acre of Land Disturbance - Coastal Counties".
2. If this project or LCP will ultimately disturb more than 0.5 acres, proceed to Item 3.c.

**c. Enter the project review fees (based on \$100/ disturbed acre)** in the right-hand column. (Multiply the disturbed area (Item 2.a.) by \$100/disturbed area). If the disturbed area for this project (Item 2.a.) totals 20.0 acres or more, enter \$2000 in the right-hand column. **Review fees cannot exceed \$2000 for a project. Proceed to item 3.d**

\$   860   .00

**d. Total Required Fees (Coastal Project located WITHIN ½ mile of a CRW (Item V.A)**  
 Add the values in the right-hand columns of Items 1 and 3.c. (The Department will not review this project until all required fees are received). Proceed to Item 5. (\$ 325.00 previously paid with original application)

\$   985   .00

<b>4. PROJECT OR LCP NOT LOCATED WITHIN ½ MILE OF A CRW (ITEM V.A)</b>	(✓)	<b>Review Fees</b>
a. Will this project or LCP (Item IV.G) ultimately disturb one (1) acre or more?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
b. Is this project exempt from S. C. Reg. 72-300 et seq.?	<input type="checkbox"/> Yes <input type="checkbox"/> No	

1. If this project will NOT ultimately disturb one (1) acre or more, and is not part of an LCP, coverage under SCR100000 is NOT required; see the BOW-SPWS for "Less Than 1-Acre of Land Disturbance - Coastal Counties".
2. If this project or LCP will ultimately disturb one (1) acre or more, proceed to Item 4.c.

**c. Enter the project review fees (based on \$100/ disturbed acre)** in the right-hand column. (Multiply the disturbed area (Item 2.a.) by \$100/disturbed area). If the disturbed area for this project (Item 2.a.) totals 20.0 acres or more, enter \$2000 in the right-hand column. **Review fees cannot exceed \$2000 for a project. Proceed to item 4.d.**

\$        .00

**d. Total Required Fees (Coastal Project NOT located WITHIN ½ mile of a CRW (Item V.A)**  
 Add the values in the right-hand columns of Items 1 and 4.c. (The Department will not review this project until all required fees are received). Proceed to Item 5.

\$        .00

**5. Identify the Method of Payment:**  **Payment by Check:** (Attach a signed and dated check payable to S.C. DHEC to the front of this fee schedule. All checks must be less than 30 days old and must be for the entire amount of required fees).  **Payment by Credit Card:** (Check here if you wish to pay via credit card using the on-line payment system). The Department will contact you via e-mail to provide instructions and the invoice number necessary for online payment. **Please provide an e-mail address where the invoice number may be sent:**  
 snealon@bigrockpartners.com

**For official use only: Invoice Number** \_\_\_\_\_





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Soils Map .....	Figure 2
FEMA Flood Map.....	Figure 3
Water Quality Monitoring Station Location Map.....	Figure 4
Drainage Flow Path / Shellfish Location Map.....	Figure 5

### APPENDICES:

Time of Concentration and Curve Number Calculations .....	Appendix A
Pre-Development ICPR Model and Simulation Results .....	Appendix B
Post-Development ICPR Model and Simulation Results .....	Appendix C
Water Quality Design .....	Appendix D
Sediment Trapping Efficiency .....	Appendix E



The following can be found in pockets at the end of this report:

Pre-Development Drainage Exhibit..... 24" x 36" Exhibit

Post-Development Drainage Exhibit ..... 24" x 36" Exhibit



**SUMMARY OF RESULTS**  
**Freshfields Village – Kiawah Senior Living Update**

Table 1 – Watershed Pre and Post Development Runoff Rates

<b>Storm Frequency</b>	<b>Pre-Development Runoff Rates</b>	<b>Post-Development Runoff Rates (2003)</b>	<b>Post-Development Runoff Rates (2018)</b>
2-Year	140 cfs	40 cfs	46 cfs
10-Year	238 cfs	78 cfs	86 cfs
25-Year	283 cfs	96 cfs	106 cfs
50-Year	328 cfs	113 cfs	125 cfs
100-Year	382 cfs	132 cfs	146 cfs

Table 2 – Pond Stage Summary

	<i>NWL</i>	<i>2-Year</i>	<i>10-Year</i>	<i>25-Year</i>	<i>50-Year</i>	<i>100-Year</i>
Pond 1 (2003)	3.2	4.19	2.05	2.42	2.82	6.31
Pond 1 (2018)	3.2	4.30	5.13	5.52	5.91	6.39



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## PROJECT NARRATIVE

Seabrook Island is a 3,900 acre tract of barrier island land located between the Atlantic Ocean and the Bohicket Creek/Kiawah River in northeastern Charleston County. The island became incorporated in 1988 and is located approximately 20 miles southeast of Charleston, SC. The proposed project's site is located off of Seabrook Island Road to the west of the roundabout with Betsy Kerrison Parkway, in the Freshfields Village mixed-use commercial and retail complex. The first phase of Freshfields Village was completed in 2003 and additional projects have been completed in 2007 and 2013. The site is located at the southeastern end of Seabrook Island approximately 9,700 lf west of the Atlantic Ocean.

This project will be constructed on 8.6 acres of previously cleared and filled land that was originally disturbed in the phase one construction activity in 2003. The site is adjacent to the existing stormwater lagoon that is located in the western-center of the Freshfields Village complex. This lagoon serves as the stormwater detention basin for most of the complex including this site. This site contains no wetlands, tidal marshes or other delineated critical areas.

The pre-developed condition of the site was mostly wooded and drained to the surrounding wetlands, and containing soils classified as Hydrologic soil group B/D. This dual designation represents the drainage characteristics of the soil in drained and undrained conditions. For the purposes of determining curve numbers in this study, the post-developed soils are considered to be drained.

## PURPOSE

- To define the limits of the drainage basin or basins that contain this project.
- To document that major drainage infrastructure such as drainage connectors, ponds, and outfalls are adequate for all existing, proposed, and future development within the drainage basin.
- To document compliance with regulatory requirements of the State of South Carolina and Charleston County summarized as follows:
  - **South Carolina DHEC**
    - Post Development peak runoff rates shall be detained for the 2 and 10 year storms.
    - Water Quality shall be maintained by retaining specified amounts of runoff in a 24 hour period.





- Sediment shall be prevented from leaving the site during construction.
- ***Charleston County***
  - Post Development peak runoff rates shall be detained for the 2 and 10 year storms.
  - Study entire drainage basin at a buildout condition, including areas upstream and downstream of the current project.
  - Drainage culverts shall be sized to accommodate runoff from the 25 year storm

### **PROPOSED DRAINAGE SYSTEM**

The Freshfields Village – Kiawah Senior Living project post-development conditions will consist of a 300,000 sq. ft. building, a pool/deck area, access drives and associated utilities, situated within the existing Freshfields Village stormwater master plan. The new driveways turn around and parking areas will have the appropriate stormwater collection and piping that will flow to the adjacent existing lagoon which is part of the Freshfields Village stormwater system. Stormwater runoff will be collected into new drainage structures and flow through piping directly into the existing Freshfields Village lagoon system. This lagoon system serves as the stormwater detention system. It is designed to store and release the first ½ inch of runoff from the site over a 24 hour period. After being discharged into the lagoon the stormwater will flow through a discharge drainage canal to an outfall structure situated at Brick Creek. Ultimately the flow will travel through Brick Creek to the Kiawah River and later connected to the Atlantic Ocean.

The original 2003 Phase One stormwater management plan was designed for future growth that included the an 85% impervious commercial lot in this portion of ‘Basin A’, which this land plan meets. The runoff from the Kiawah Senior Living project was accounted for in the 2003 and reaffirmed in the 2007 and 2013 Stormwater Management Reports as part of basin ‘A’ and listed under the commercial space in the CN calculation found on page # 1 & 2 of 7 of the Post-Development Peak Runoff section of the report. The updated CN calculations for Basin ‘A’ and Basin ‘A-1’, can be found in Appendix A of this report.



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## STORMWATER QUANTITY METHODOLOGY

The existing and proposed conditions will be analyzed using the Interconnected Channel and Pond Routing (ICPR) computer program developed by Streamline Technologies. The program is used to model rainfall and stormwater runoff and to perform hydraulic routing through the storm drainage system. The ICPR program is a FEMA approved model that has the ability to analyze complex interconnected drainage systems dynamically over extended time periods.

The hydrologic input data consists of information for each drainage basin, or subwatershed, within the project. Input variables include runoff curve number, rainfall distribution pattern, hydrograph peaking factor, area of each drainage basin, and time of concentration (see below section “Hydrology” for specifics on the values of these variables that were used in this model). The ICPR program generates runoff hydrographs for each subwatershed based on the user-specified variables. Hydrographs are generated by ICPR using the SCS Unit Hydrograph Method.

The model hydraulic input data consists of a system of nodes and links. Nodes represent locations where flows enter or exit the system, pipe or channel characteristics change, or where stage/storage/time relationships are provided. Links represent traditional types of hydraulic conveyance such as pipes, channels, drop structures, weirs, etc. The sizes, inverts, lengths, and Manning n values for all pipes connecting the lagoons are input into the model. In addition to pipe information, all lagoon and detention area stage-storage information and the respective outfall structure information is input into the model. The node and link conditions are analyzed within the model for a given storm, and flow conditions are determined.

The basic equation used by ICPR to route flows through the system is:

$$\Delta S = (Q_{in} - Q_{out}) \Delta t$$

Where:

$\Delta S$	=	Change in storage for time step
$Q_{in}$	=	Flow into a node at time “t”
$Q_{out}$	=	Flow out of a node at time “t”
$\Delta t$	=	Length of time step; user defined range from 1.0 sec to 0.1 sec.

Hydrographs for each drainage area are merged within the ICPR program, and the hydrologic results are then combined with the hydraulic information to model the hydraulic interactions of the entire drainage system. The results include lagoon and detention area discharge rates and stage/storage information during the design storm.





For the design of the storm drainage system, a warning stage elevation is set for each lagoon and detention area and structure to assure no stormwater ponding. In addition, the ultimate discharge rate from the system cannot exceed the pre-developed runoff rate. Knowing these two factors, the drainage system is designed by trial and error.

## **HYDROLOGY**

- SCS Unit Hydrograph Method is used.
- Amount of rainfall for each storm frequency is determined based on Technical Paper No. 40, Rainfall Frequency of the U.S., USDA Soil Conservation Service. The following design storms are used in the model simulations:
  - 2-year, 24-hour Design Storm = 4.6 inches
  - 10-year, 24-hour Design Storm = 6.8 inches
  - 25-year, 24-hour Design Storm = 7.8 inches
  - 50-year, 24-hour Design Storm = 8.8 inches
  - 100-year, 24-hour Design Storm = 10.0 inches
- SCS Type III Statistical Rainfall Distribution is used. This distribution pattern is determined by the Soil Conservation Service comparing regional rain-gage data.
- A 323 Hydrograph Peaking Factor is used instead of the Typical SCS 484 Peaking Factor. The 323 Factor is based on statistical analysis of actual rainfall and runoff data from the Southeastern United States, and is typical for coastal areas.
- The Curve Number assigned to each basin is based on recommended values listed in Technical Release No. 55, Urban Hydrology for Small Watersheds, USDA Natural Resources Conservation Service. For basins A, B, and C, the actual land uses and associated acreages were used to determine a composite value. However, basins D, E, and F will become a future golf course community and there are no curve number recommendations that cover that broad of a land use. Because of this, an assumption was made based on the Kiawah Island Course No. 2 development. The majority of the soils in that site were B and C soils and had an average curve number of 67 for the entire project. The soils in the future golf course community site are all B soils in the post-developed condition which will result in an overall lower curve number. Therefore, a conservative curve number of 67 was applied to the future golf course basins.



## **CONCLUSIONS**

The post-developed runoff is detained on site and released at less than pre-developed rates. The storm drainage system design meets SCDHEC and Charleston County requirements.



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# KIAWAH SENIOR LIVING

## CHARLESTON COUNTY, SOUTH CAROLINA

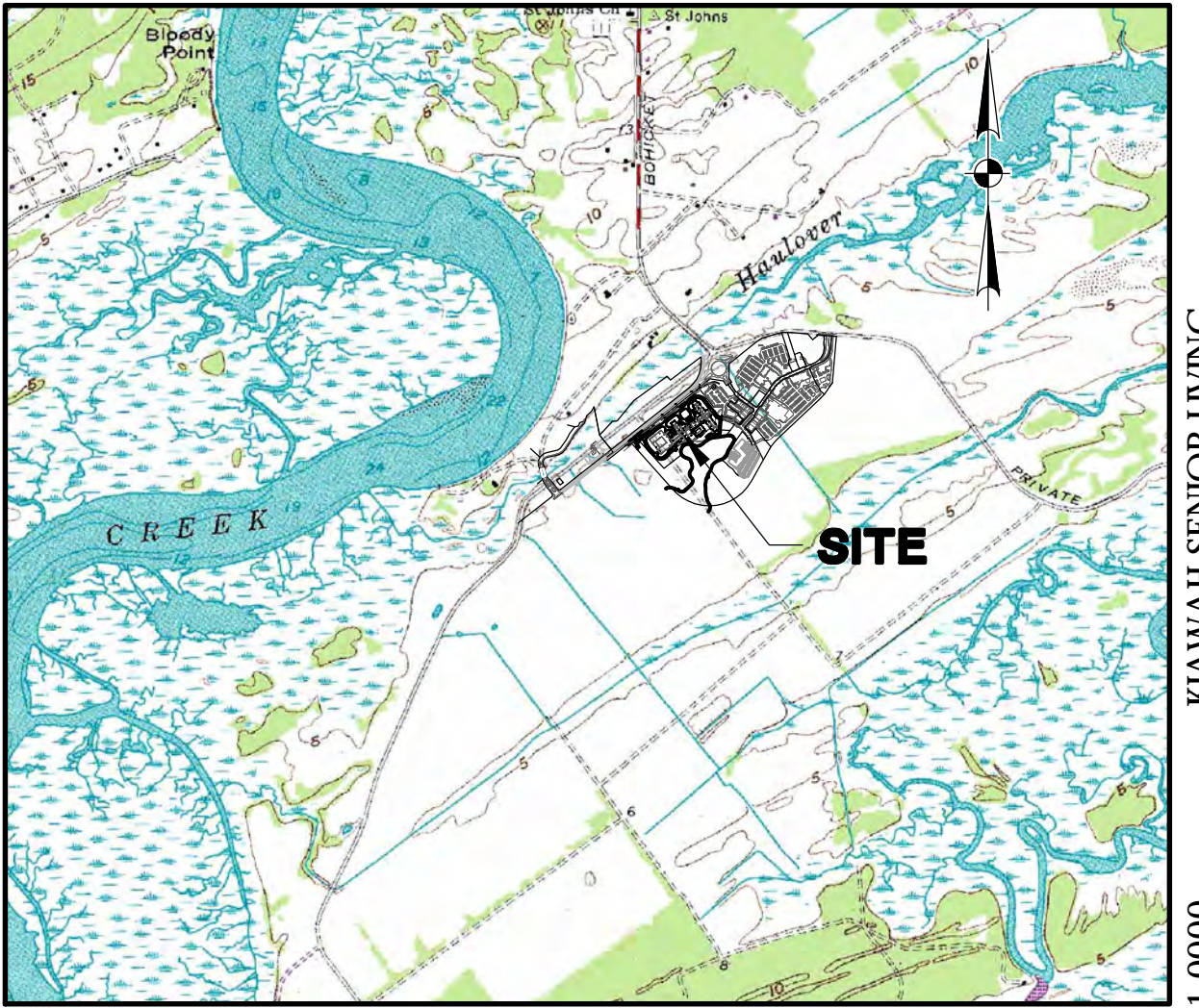
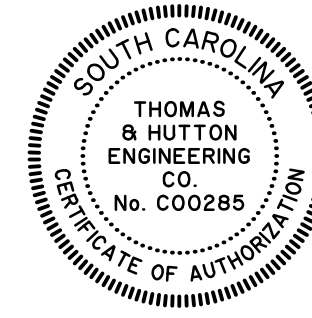
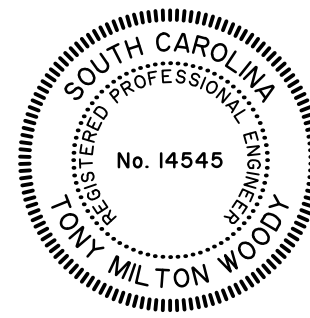
PREPARED FOR:  
**BRP KIAWAH LLC**  
2645 N. FEDERAL HWY, SUITE 230  
DELRAY BEACH, FL 33483  
(561) 701-4544

TM# 205-00-00-014

JULY 17, 2018

J-27151.0000

PREPARED BY:



VICINITY MAP  
SCALE: 1" = 2000'

J-27151.0000  
7/17/18  
KIAWAH SENIOR LIVING

### Sheet List Table

Sheet Number	Sheet Title
C0	Cover Sheet
G0.1	General Notes and Site Map
EC0.1	SWPPP - Notes
EC0.2	SWPPP - Charts
EC1.1	SWPPP - Initial Land Disturbance Phase
EC1.2	SWPPP - Initial Land Disturbance Phase
EC1.3	SWPPP - Initial Land Disturbance Phase
EC1.4	SWPPP - Initial Land Disturbance Phase
EC2.1	SWPPP - Construction Phase
EC2.2	SWPPP - Construction Phase
EC2.3	SWPPP - Construction Phase
EC2.4	SWPPP - Construction Phase
EC3.1	SWPPP - Stabilization Phase
EC3.2	SWPPP - Stabilization Phase
EC3.3	SWPPP - Stabilization Phase
EC3.4	SWPPP - Stabilization Phase
EC4.1	SWPPP - Details
C3.1	Site Development Plan
C3.2	Site Development Plan
C3.3	Site Development
C3.4	Site Development Plan
C5.1	Details
C5.2	Details
C5.3	Water Details
C5.4	Sewer Details

### REVISION HISTORY

REV. NO.	REVISION	BY	DATE

### SUBMITTAL HISTORY

SUBMITTED TO	DATE



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## EROSION CONTROL LEGEND

DESCRIPTION	PLAN SYMBOL
SILT FENCE	
CLEARING LIMITS	
LIMITS OF DISTURBANCE	
SUBSURFACE DRAIN	
TREE PROTECTION	
TEMPORARY SEEDING	
PERMANENT SEEDING	
SODDING	
RIPRAP	
OUTLET PROTECTION - RIP RAP	
SEDIMENT TRAP	
ROCK CHECK DAM	
STABILIZED CONSTRUCTION ENTRANCE	
STORM DRAIN INLET PROTECTION - TYPE A FILTER FABRIC	
STORM DRAIN INLET PROTECTION - TYPE E SURFACE COURSE CURB INLET FILTER	

## DRAINAGE LEGEND

DESCRIPTION	EXISTING	PROPOSED
PIPE		
DITCH		
CURB INLET		
GRATE INLET		
JUNCTION BOX		
OUTLET STRUCTURE		

## SEWER LEGEND

DESCRIPTION	EXISTING	PROPOSED
GRAVITY PIPE		
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
MANHOLE		
CLEANOUT		
FORCEMAIN		
VALVE AND BOX		
FLUSH HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-1/2° BEND - HORIZONTAL		
11-1/4° BEND - HORIZONTAL		
BEND - VERTICAL		
PLUG \ CAP		

## WATER LEGEND

DESCRIPTION	EXISTING	PROPOSED
WATER MAIN		
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
VALVE AND BOX		
FIRE HYDRANT W/VALVE & BOX		
POST HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-1/2° BEND - HORIZONTAL		
11-1/4° BEND - HORIZONTAL		
BEND - VERTICAL		
CAP		

## ABBREVIATIONS

HDPE	HIGH DENSITY POLYETHYLENE	JB	JUNCTION BOX	SDMH	STORM DRAINAGE MANHOLE
BOT	BOTTOM	LF	LINEAR FEET	SF	SQUARE FEET
CI	CURB INLET	MAX	MAXIMUM	SS	SANITARY SEWER
CPP	CORRUGATED PLASTIC PIPE	MIN	MINIMUM	TC	TOP OF CURB
DIP	DUCTILE IRON PIPE	MH	MANHOLE	TG	TOP OF GUTTER
EL	ELEVATION	OC	ON CENTER	TP	TOP OF PAVEMENT
FG	FINISH GRADE	PC	POINT OF CURVE	TW	TOP OF WALK
FH	FIRE HYDRANT	PH	POST HYDRANT	TYP	TYPICAL
FM	FORCE MAIN (SANITARY SEWER)	PT	POINT OF TANGENT	W	WATER
FR	FINISH PAD	PVC	POLYVINYL CHLORIDE	W/	WITH
FP	FRAME	RCP	REINFORCED CONCRETE PIPE	WV	WATER VALVE
GI	GRATE INLET	RJP	RESTRAINED JOINT PIPE	YI	YARD INLET
GV	GATE VALVE	R/W	RIGHT-OF-WAY		
INV	INVERT ELEVATION	SD	STORM DRAINAGE		

## OTHER UTILITIES LEGEND

DESCRIPTION	EXISTING
NATURAL GAS	
TELEPHONE	
UNDERGROUND TELEPHONE	
ELECTRICITY	
UNDERGROUND ELECTRICITY	

## GENERAL INFORMATION

COUNTY: CHARLESTON COUNTY  
 TOWN: KIAWAH ISLAND, SC  
 ZONING: PUD  
 TMS#: 205-00-00-014  
 FLOOD ZONE: AE-14  
 FEMA MAP: 45019C0785J

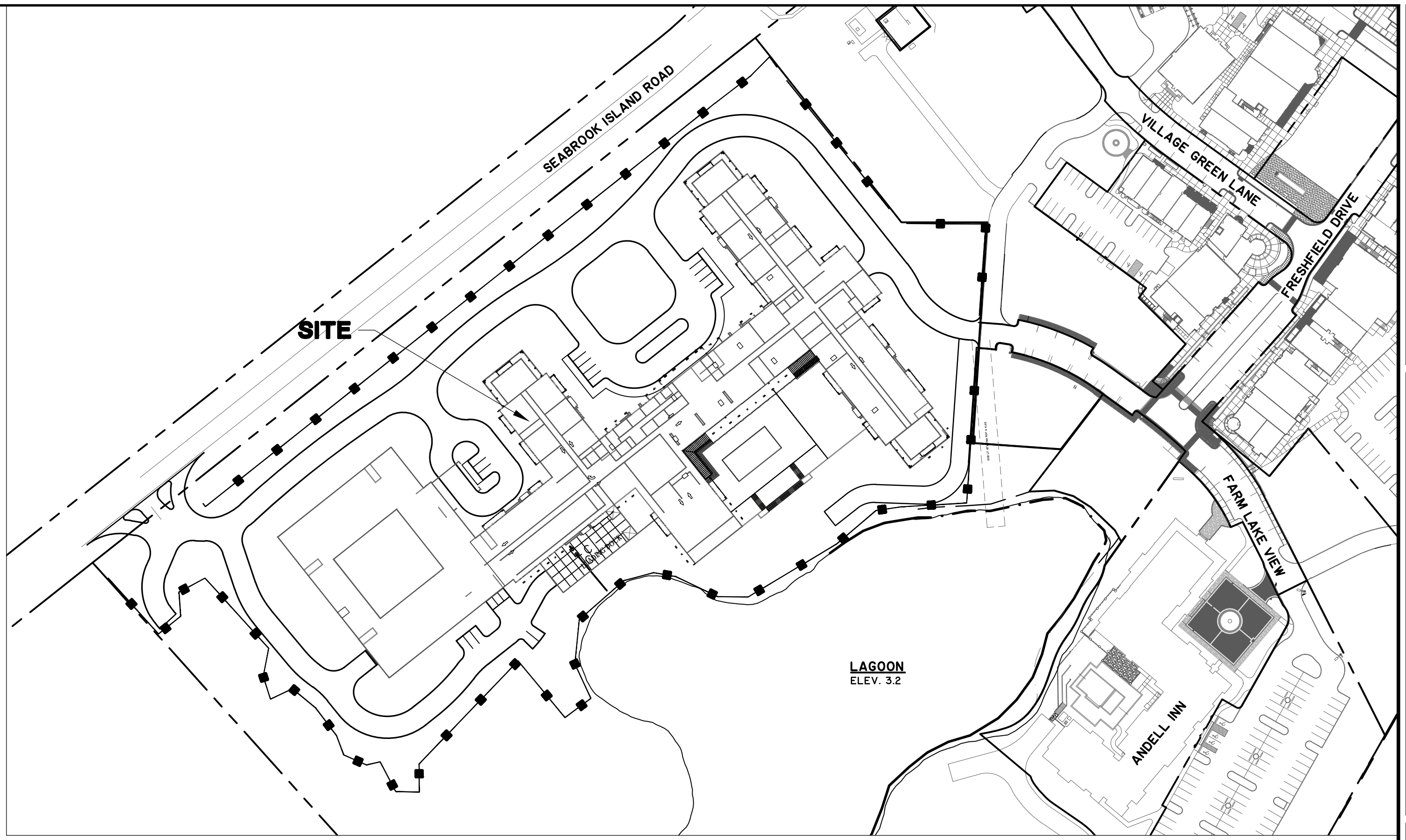
**ENGINEER:**  
 THOMAS & HUTTON  
 682 JOHNNIE DODDS BLVD.  
 MT. PLEASANT, SC 29464  
 (843) 849-0200

**SURVEYOR:** SEAMEN WHITESIDE SURVEYING, LLC  
 CHARLESTON, SC  
 (843) 795-9330

**UTILITY:** ST. JOHNS WATER CO.  
 P.O. BOX 629  
 JOHNS ISLAND, SC 29455  
 (843) 559-0371 - TERRY BARRON

SEABROOK ISLAND UTILITY COMMISSION  
 2001 SEABROOK ISLAND ROAD  
 SEABROOK ISLAND, SC 29455  
 (843) 768-0102 - TOMMY WEST

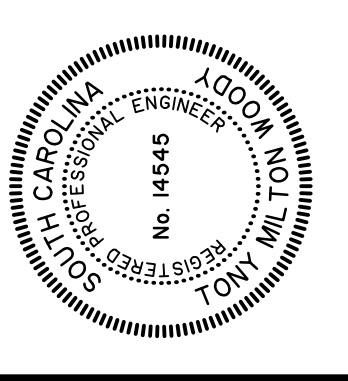
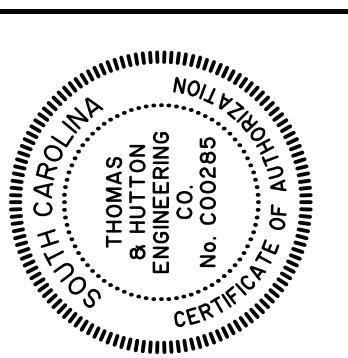
**PREPARED FOR:**  
**BRP KIAWAH LLC**  
 2645 N. FEDERAL HWY, SUITE 230  
 DELRAY BEACH, FL 33483  
 (561) 701-4544



**PROJECT MAP**  
 SCALE: 1" = 100'

## GENERAL NOTES

- SURVEYING AND BOUNDARY INFORMATION SUPPLIED BY SEAMEN & WHITESIDE ASSOC.
- CONTRACTOR IS TO VERIFY ACCURACY OF ANY TEMPORARY BENCHMARKS SHOWN PRIOR TO UTILIZING THEM FOR CONSTRUCTION. ALL ELEVATIONS SHOWN ARE BASED ON NGVD29.
- THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES PRIOR TO BEGINNING DIGGING OPERATIONS. IF UTILITIES OTHER THAN THOSE SHOWN ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND TAKE STEPS TO PROTECT THE LINE(S) AND ENSURE CONTINUED SERVICE. DAMAGE CAUSED TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES TO EXISTING UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.
- THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION CONTROL AND PREVENTION STRUCTURES SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL GRASS ALL DISTURBED AREAS. IF WORK IS SUSPENDED OR DELAYED FOR 14 DAYS, THE CONTRACTOR SHALL TEMPORARILY STABILIZE THE DISTURBED AREA AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
- THE CONTRACTOR WILL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
- ALL PAVING, GRADING, AND DRAINAGE MATERIALS SHALL BE IN ACCORDANCE WITH THE TOWN OF KIAWAH ISLAND, SC ROAD CODE UNLESS SHOWN OTHERWISE.
- THE STORM WATER FILTER BUFFER IS GENERALLY LOCATED 15 FOOT LAND WARD OF THE ESTABLISHED CRITICAL LINE. THIS BUFFER IS INTENDED TO PROVIDE A STRIP OF NATURAL VEGETATION THROUGH WHICH RUNOFF FROM YARDS, WHICH OFTEN CONTAINS FERTILIZERS, PESTICIDES, AND OR PET WASTE WILL BE FILTERED PRIOR TO ENTERING THE MARSH OR SALT WATER POND AND IMPACTING THE NATURAL RESOURCES IN THE AREA. NO CLEAR CUTTING, FILLING, EXCAVATION, OR CONSTRUCTION ACTIVITY (OTHER THAN NECESSARY FOR PERMITTED DRAINAGE OR WATER ACCESS STRUCTURES) OR OTHER PERMANENT STRUCTURES SHALL BE ALLOWED IN THE BUFFER. LIMITED CLEARING OF TREES AND GROUND COVER IS ALLOWED TO PROVIDE AND MAINTAIN VIEWS. ONLY INDIGENOUS VEGETATION SHALL BE PLANTED. VARIOUS SPECIES OF GRASS, SHRUBS, AND TREES WHICH REQUIRE FERTILIZATION SHALL NOT BE ALLOWED IN THE BUFFER. ALL CLEARING, THINNING, AND NEW PLANTING MUST BE APPROVED BY THE KIAWAH ISLAND ARCHITECTURAL REVIEW BOARD.
- THE CONSTRUCTION PLANS AND EXECUTION OF THE CONTRACTORS CERTIFICATION CONTAINED IN THE CONTRACT DOCUMENTS SHALL CONSTITUTE THE REQUIREMENTS OF THE STORM WATER POLLUTION PREVENTION PLAN REQUIRED BY NPDES GENERAL PERMIT NO. SC000000 FOR CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR SHALL NOTIFY FRESHFIELD'S VILLAGE MANAGEMENT IN ADVANCE OF ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL MAINTAIN TRAFFIC AND ESTABLISH SCOOT STANDARD TRAFFIC CONTROL DEVICES DURING CONSTRUCTION ACTIVITIES WITHIN THE RIGHT-OF-WAY.
- THE CONTRACTOR SHALL ESTABLISH A TEMPORARY GRAVEL CONSTRUCTION EXIT AT ALL POINTS OF EGRESS FROM THE SITE.
- THE CONTRACTOR SHALL RETAIN A COPY OF THE STORM WATER POLLUTION PLAN AT THE CONSTRUCTION SITE AT ALL TIMES. THE PLAN SHALL BE STORED AND MAINTAINED IN A WEATHER TIGHT ENCLOSURE FREELY ACCESSIBLE TO ALL PARTIES.
- CONSTRUCTION THAT MAY AFFECT THE ROOT SYSTEM OF PROTECTED TREES WILL REQUIRE THE APPROVAL OF A CERTIFIED ARBORIST OF LANDSCAPE ARCHITECT EMPLOYED BY THE OWNER/DEVELOPER OF THE PROPERTY AND APPROVAL BY A REPRESENTATIVE OF THE CHARLESTON COUNTY PLANNING DEPARTMENT.
- THE CONTRACTOR SHALL TAKE THE NECESSARY ACTION TO MINIMIZE THE TRACKING OF SOIL ONTO PAVED ROADWAYS. CONTRACTOR SHALL PERFORM DAILY CLEAN-UP OF ANY SOIL THAT DOES GET ONTO PAVEMENT.
- THE CONTRACTOR SHALL NOT USE ANY WATER FROM THE EXISTING WATER SYSTEM WITHOUT REQUESTING AND PURCHASING THE WATER FROM ST. JOHNS WATER CO. CONTACT MS. AVA ROBICHAUX AT 559-0188.



NO.	REVISIONS	BY	DATE

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**BRP KIAWAH LLC**  
 CHARLESTON COUNTY, SOUTH CAROLINA  
 KIAWAH SENIOR LIVING  
**GENERAL NOTES AND SITE MAP**

JOB NO:	J-27191.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	AS SHOWN

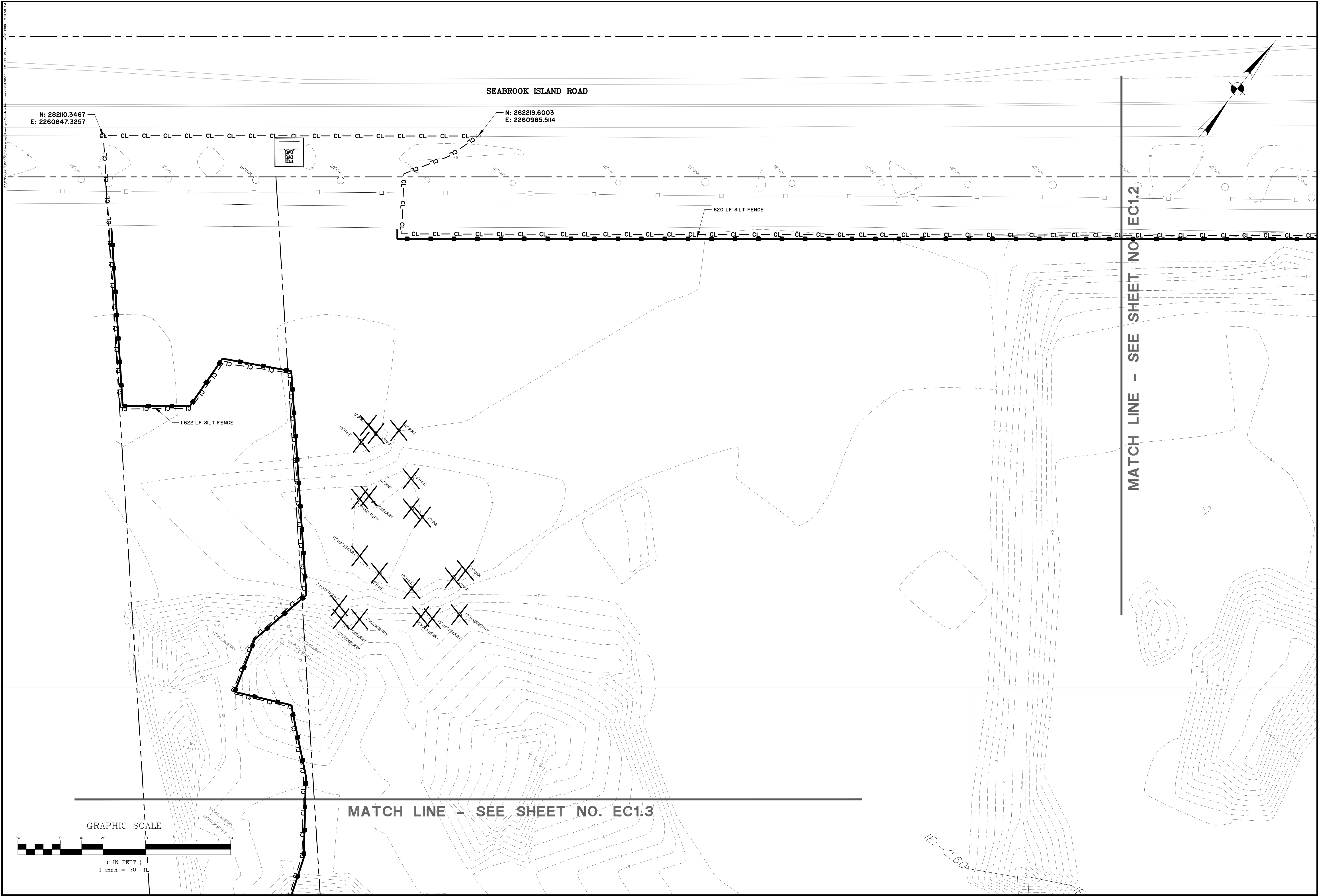
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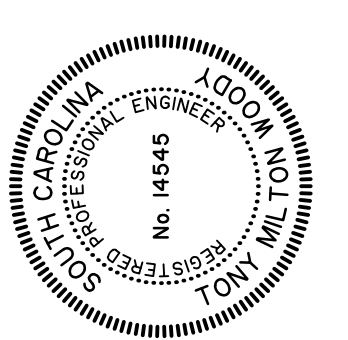
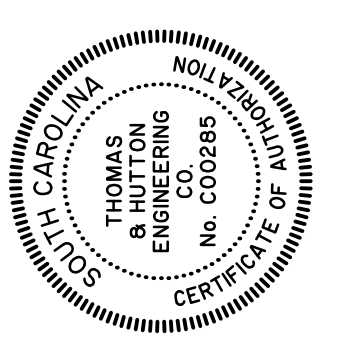
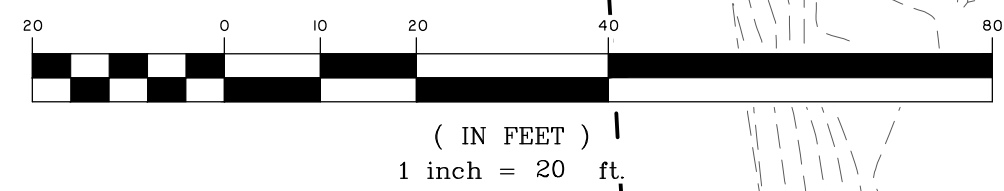
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SEABROOK ISLAND ROAD

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MATCH LINE - SEE SHEET NO. EC1.3

GRAPHIC SCALE



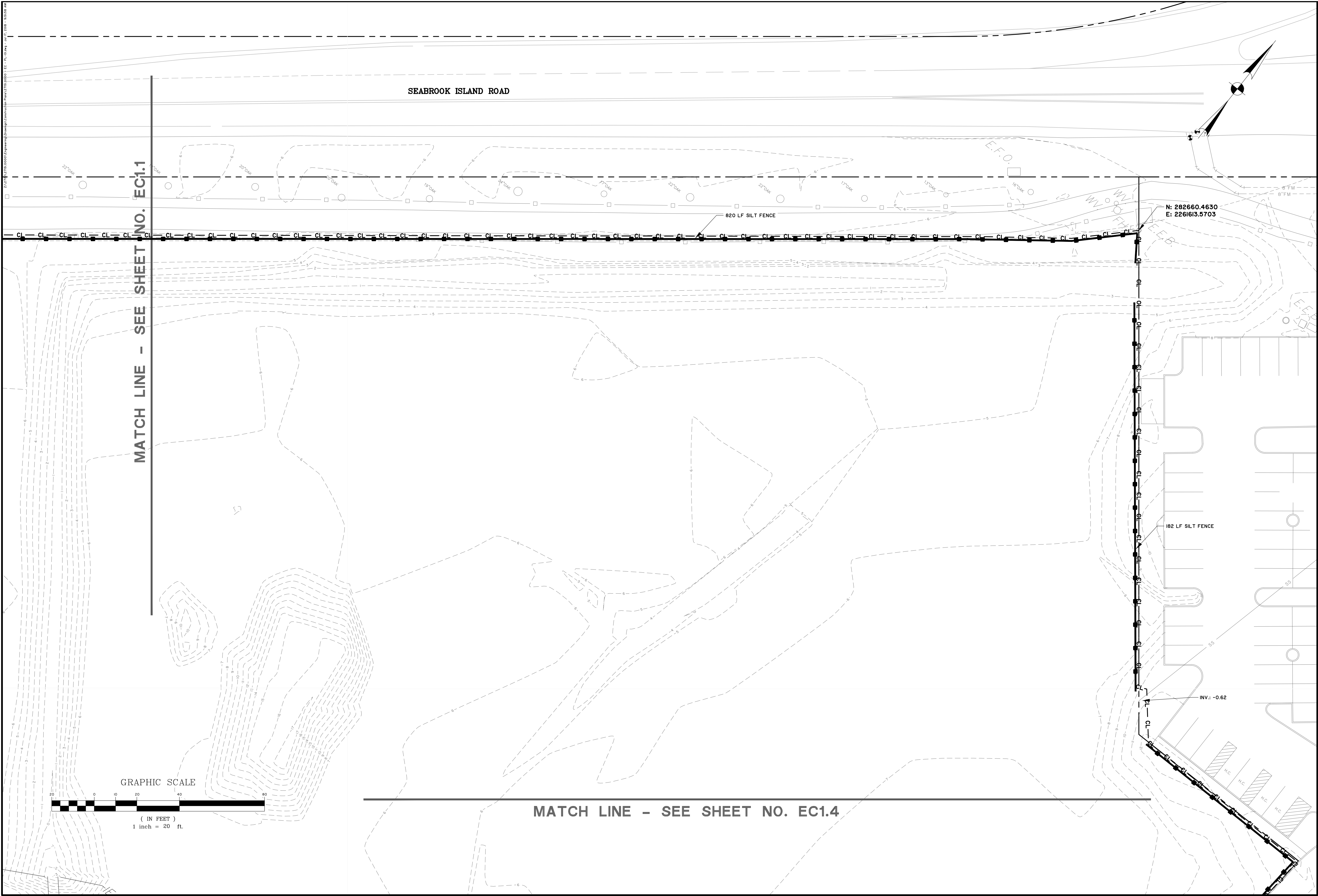
NO.	REVISIONS	BY	DATE

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**BRP KIAWAH LLC**  
 CHARLESTON COUNTY, SOUTH CAROLINA  
 KIAWAH SENIOR LIVING  
 SWPPP - INITIAL LAND DISTURBANCE PHASE

JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	1" = 20'

**EC1.1**



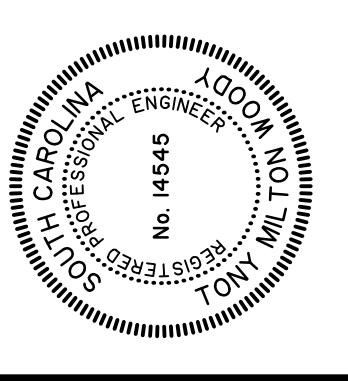
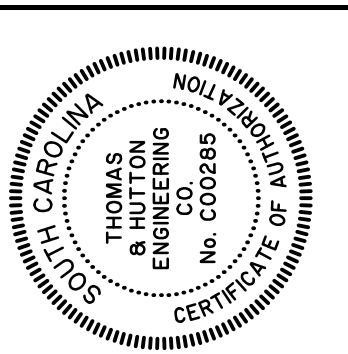
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MATCH LINE - SEE SHEET NO. EC1.4

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 ( IN FEET )  
 1 inch = 20 ft.

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NO.	REVISIONS	BY	DATE

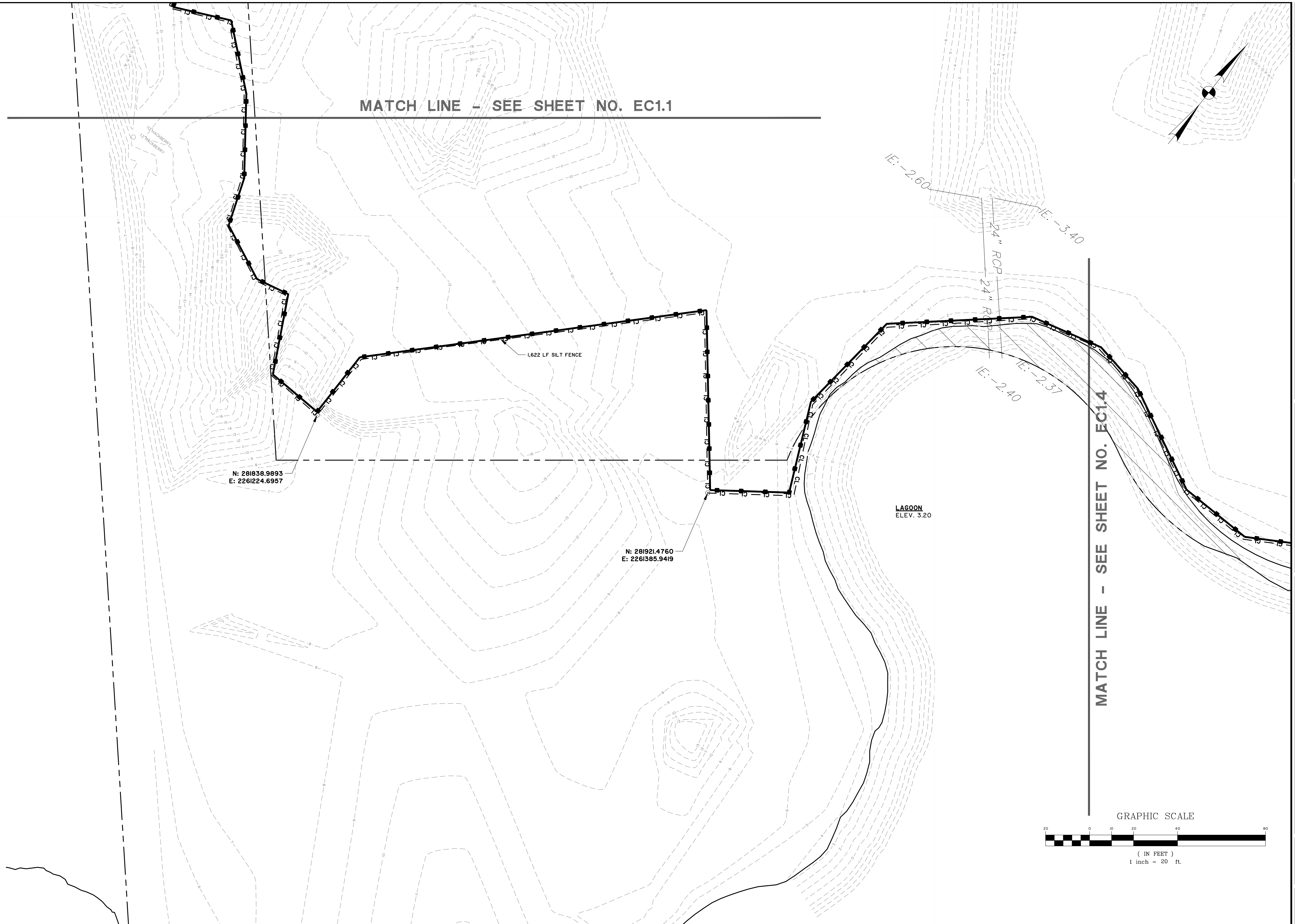
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**BRP KIAWAH LLC**  
 CHARLESTON COUNTY, SOUTH CAROLINA  
 KIAWAH SENIOR LIVING  
 SWPPP - INITIAL LAND DISTURBANCE PHASE

JOB NO: J-27151.0000  
 DATE: 7/17/18  
 DRAWN: BRW  
 DESIGNED: WEF  
 REVIEWED: WEF  
 APPROVED: TMW  
 SCALE: 1" = 20'

**EC1.2**

PL 21705 (12/15/2005) Engineering Computer Aided Drafting (CAD) - EC - PL-05 (04) - 07/17/2018 - 2018/08/08



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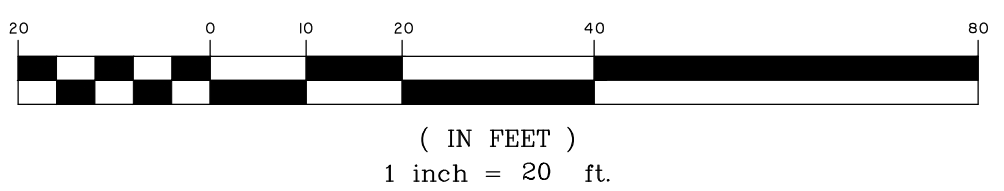
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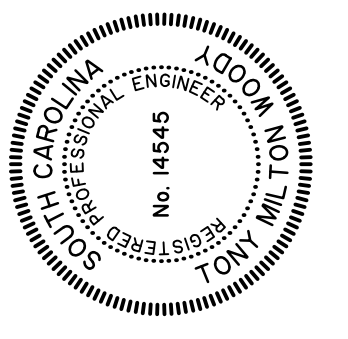
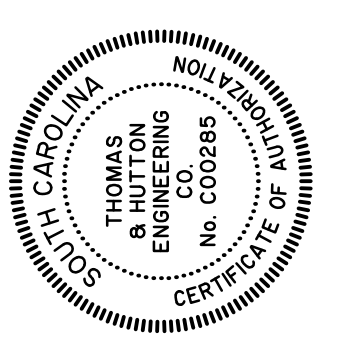
LAGOON  
ELEV. 3.20

IE: -2.60  
IE: -3.40  
24" RCP  
24" RCP  
IE: -2.40  
IE: -2.37

GRAPHIC SCALE



( IN FEET )  
1 inch = 20 ft.



NO.	REVISIONS	BY	DATE

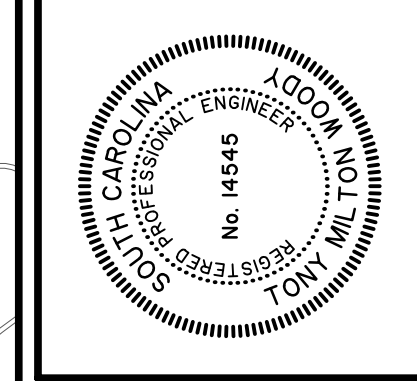
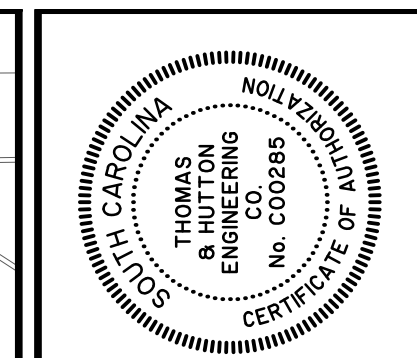
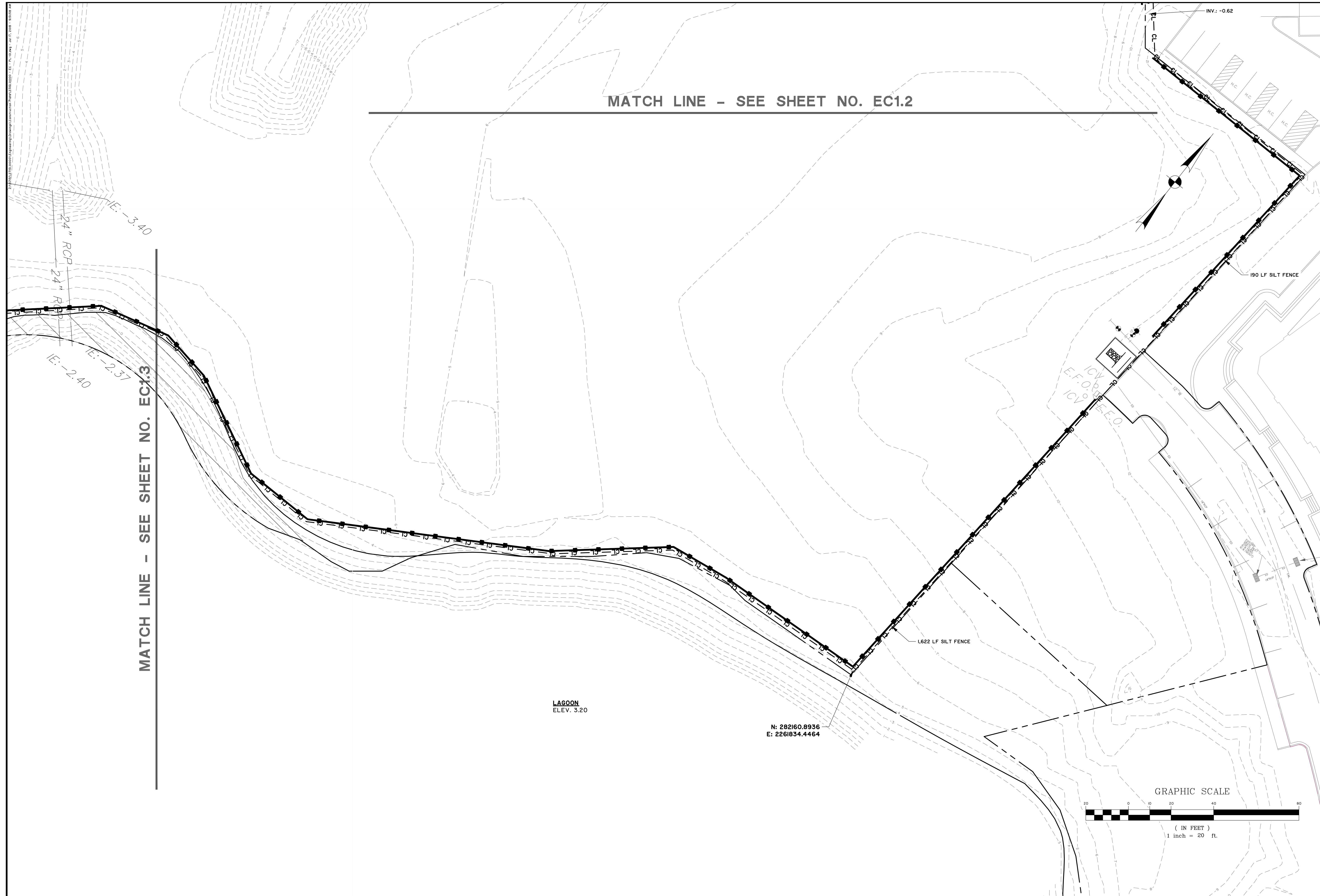
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 CHARLESTON COUNTY, SOUTH CAROLINA  
 KIAWAH SENIOR LIVING  
**SWPPP - INITIAL LAND DISTURBANCE PHASE**

JOB NO: J-27151.0000  
 DATE: 7/17/18  
 DRAWN: BRW  
 DESIGNED: WEF  
 REVIEWED: WEF  
 APPROVED: TMW  
 SCALE: 1" = 20'

**EC1.3**





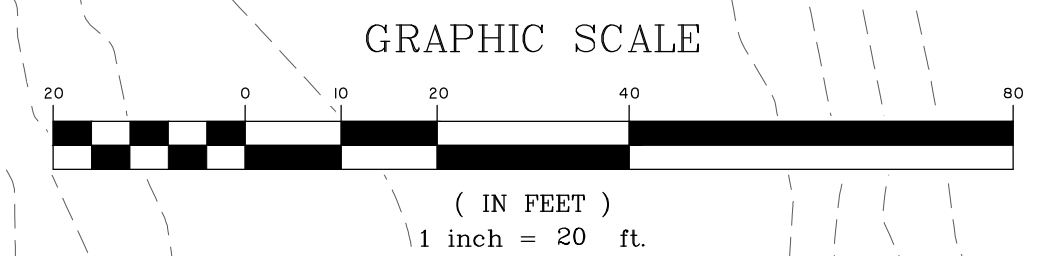
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**EC1.4**



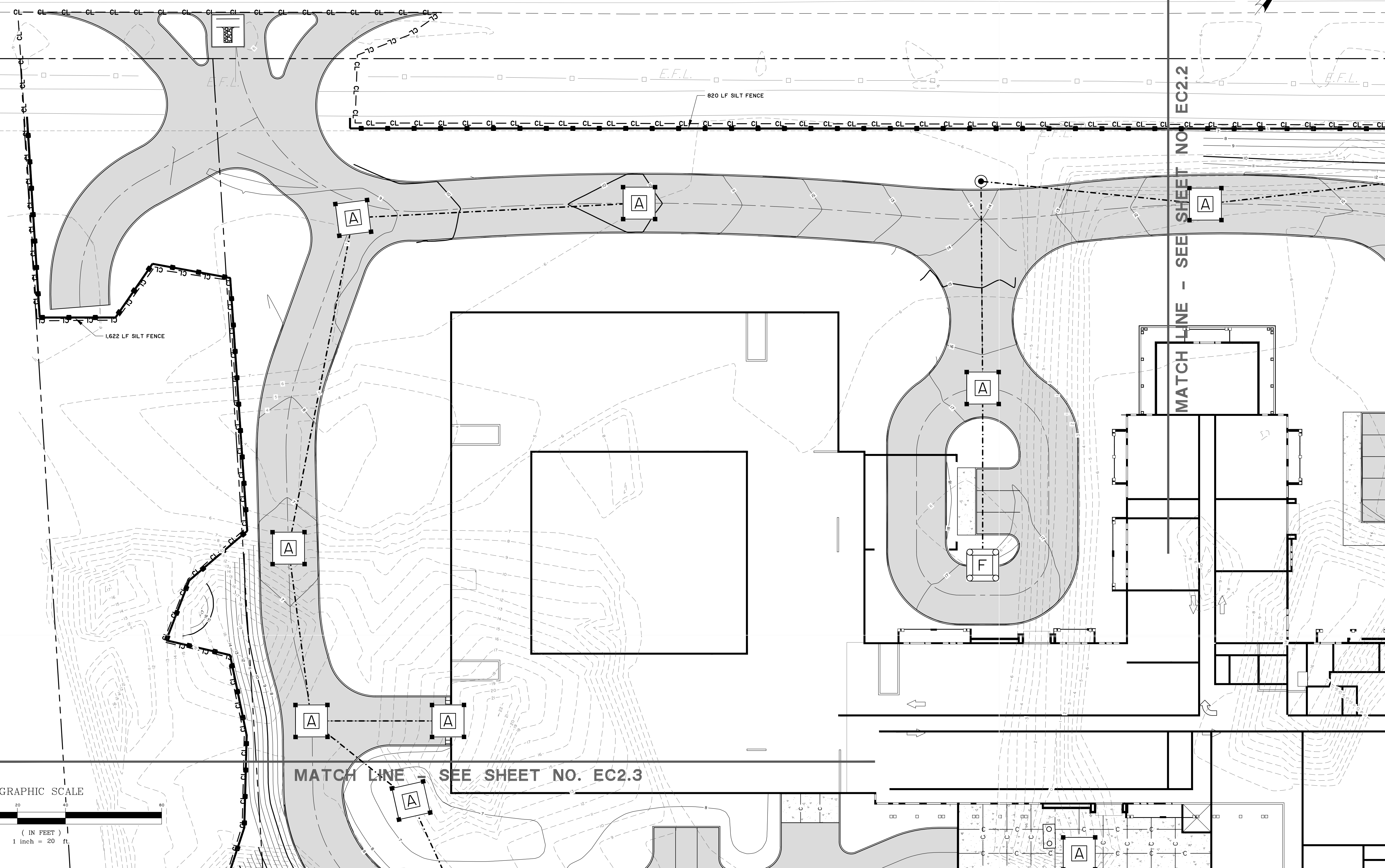
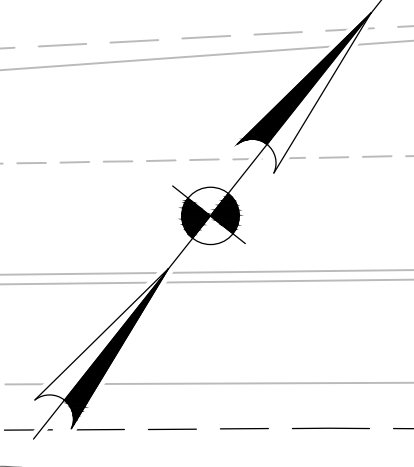
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LAGOON  
 ELEV. 3.20



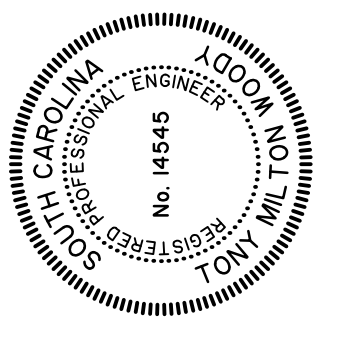
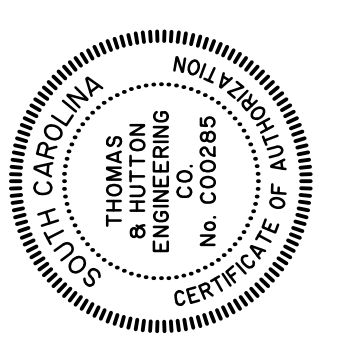
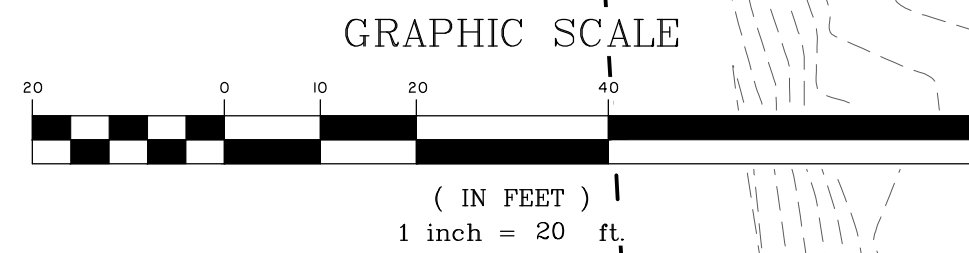
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SEABROOK ISLAND ROAD



MATCH LINE - SEE SHEET NO. EC2.2

MATCH LINE - SEE SHEET NO. EC2.3



NO.	REVISIONS	BY	DATE

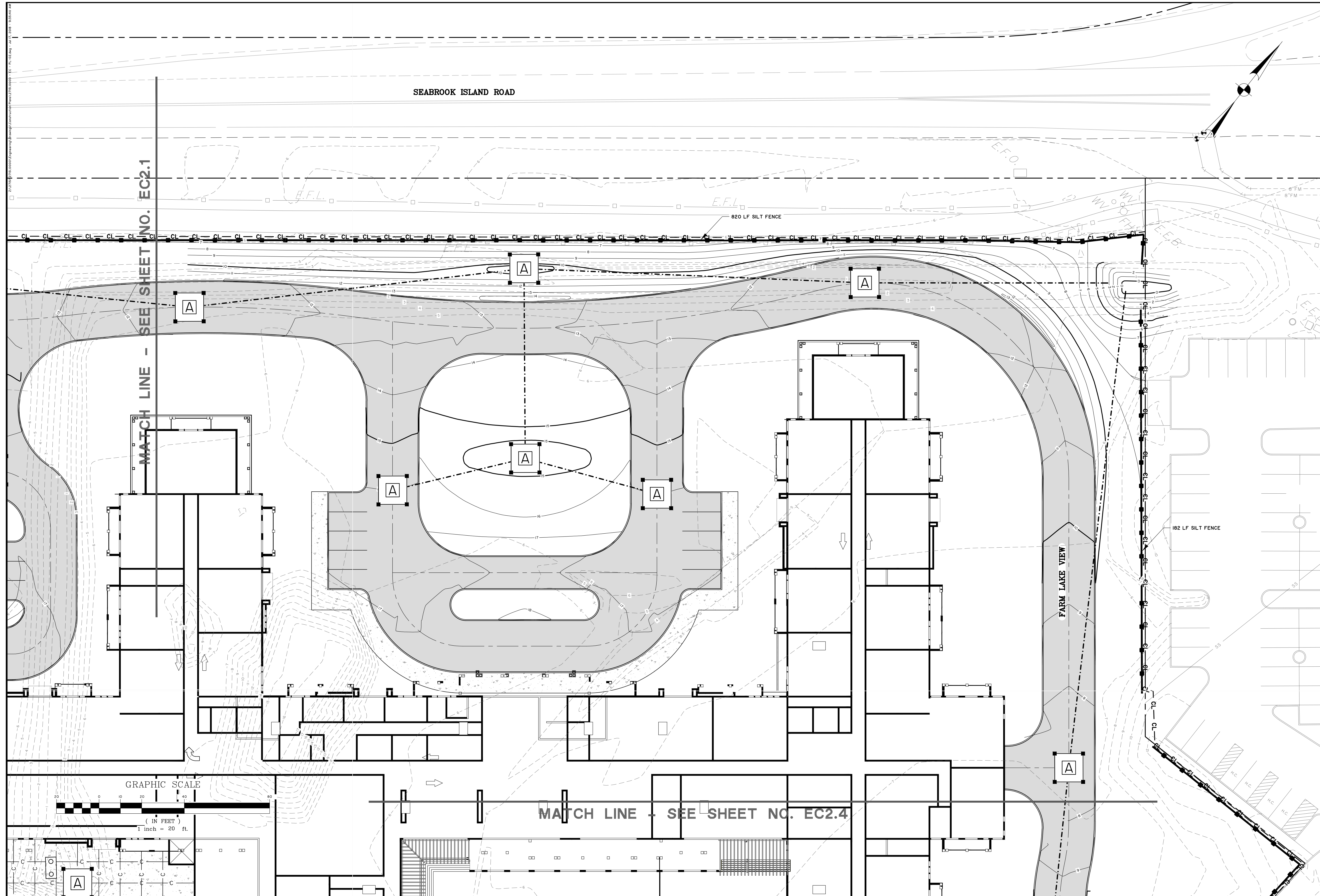
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 SCALE: 1" = 20'

**EC2.1**





MATCH LINE - SEE SHEET NO. EC2.1

MATCH LINE - SEE SHEET NO. EC2.4

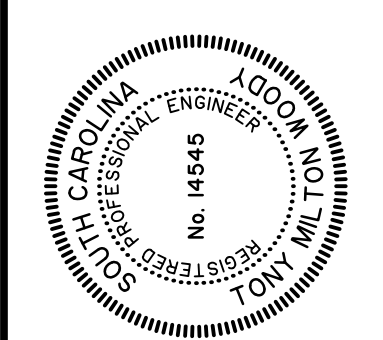
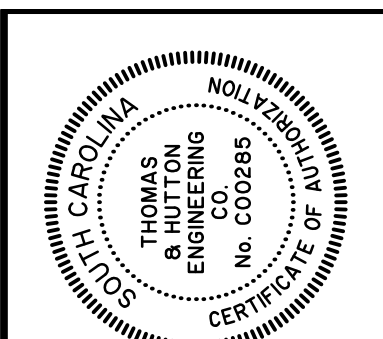
GRAPHIC SCALE  
 ( IN FEET )  
 1 inch = 20 ft.

SEABROOK ISLAND ROAD

FARM LAKE VIEW

820 LF SILT FENCE

182 LF SILT FENCE



NO.	REVISIONS	BY	DATE

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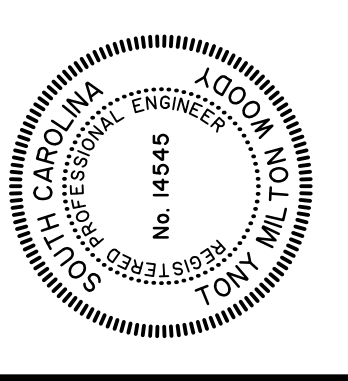
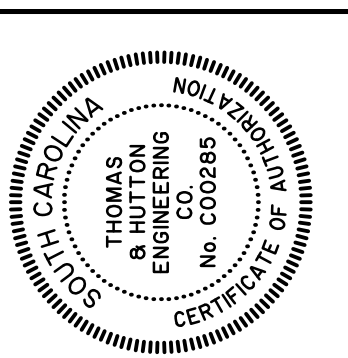
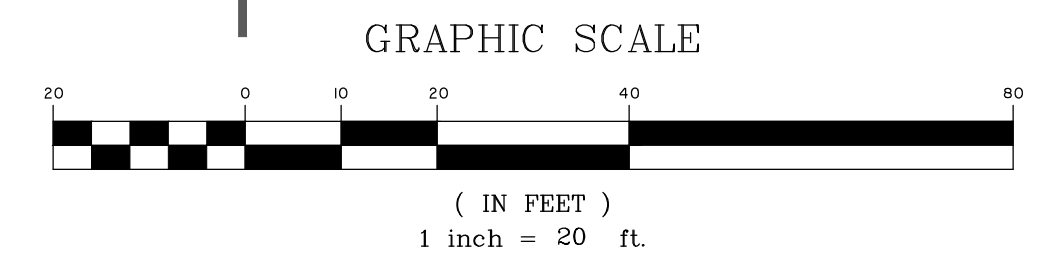
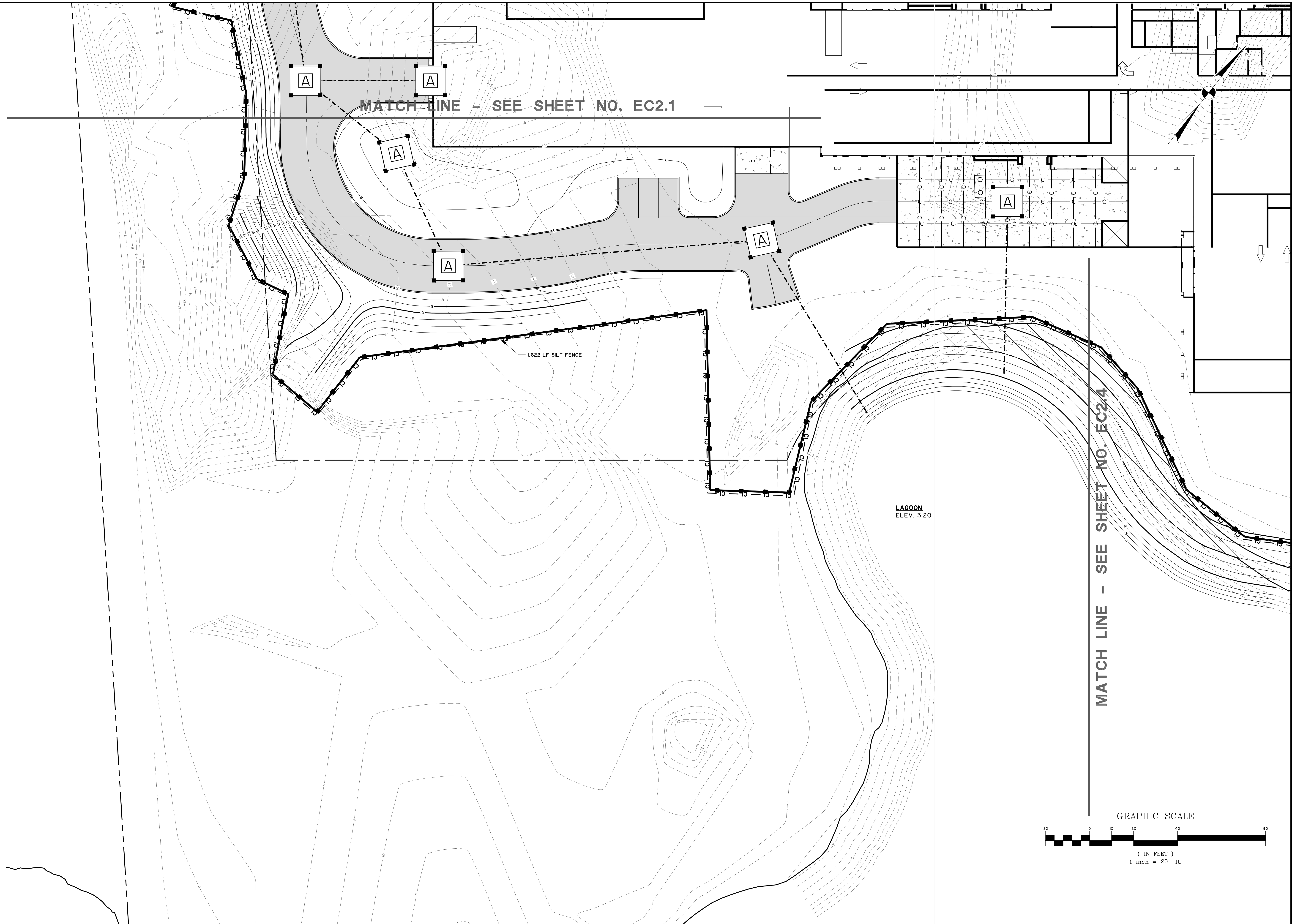
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**EC2.2**



24/7/18/17/16/0000/Engineering/Drawings/Construction Plans/27151.0000 - EC - PL - 18.049 - 04.17.2018 - 13:33:00 AM



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**EC2.3**

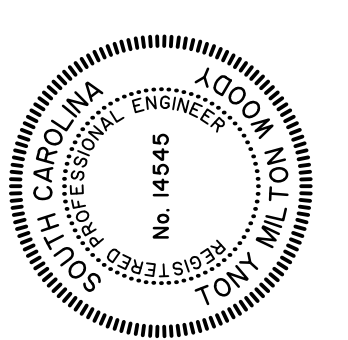
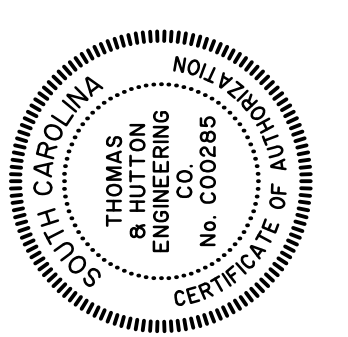
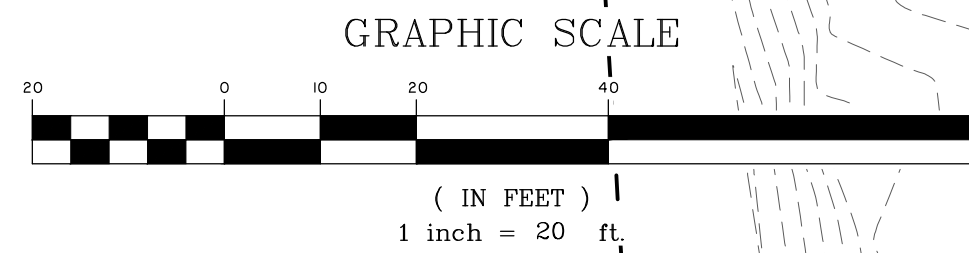
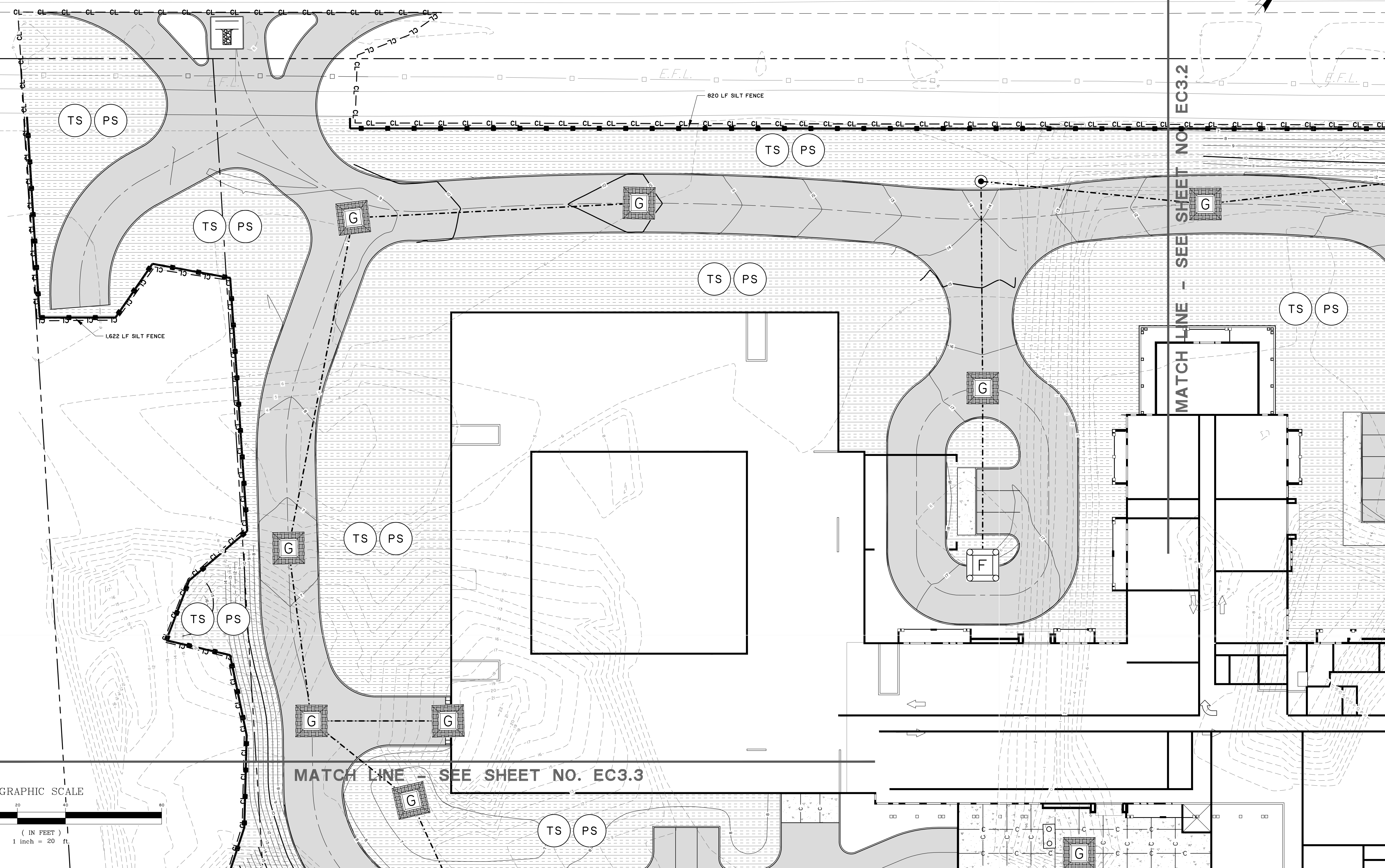
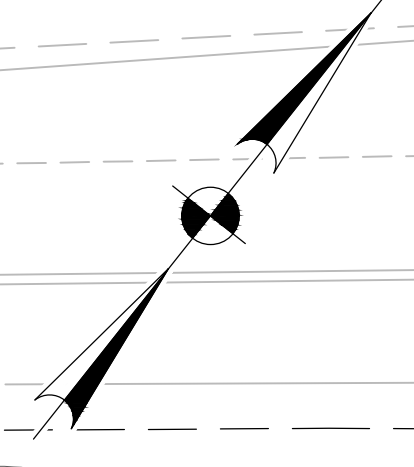






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SEABROOK ISLAND ROAD



NO.	REVISIONS	BY	DATE

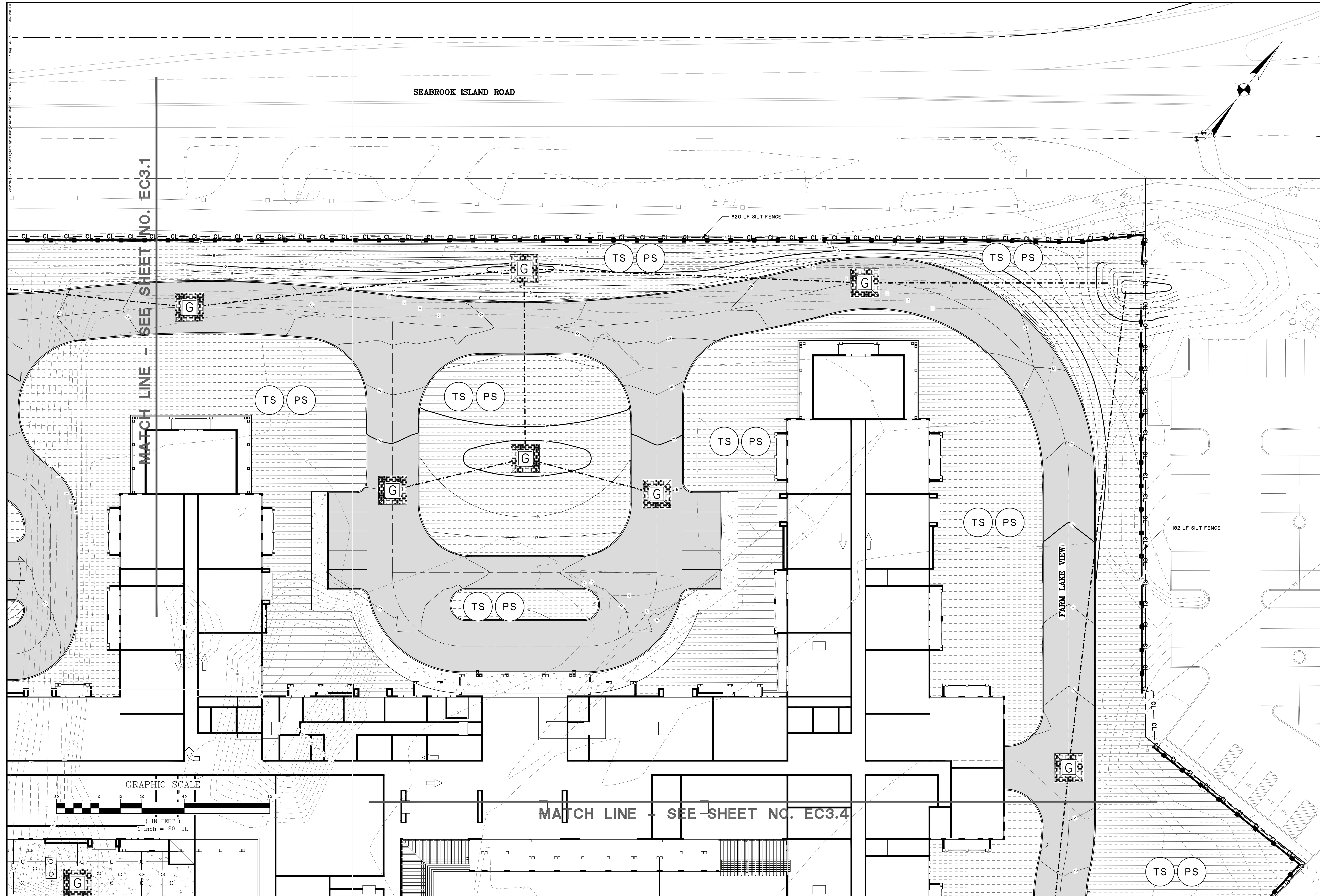
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 SWPPP - STABILIZATION PHASE

JOB NO:	J-27151.0000
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APPROVED:	TMW
SCALE:	1" = 20'

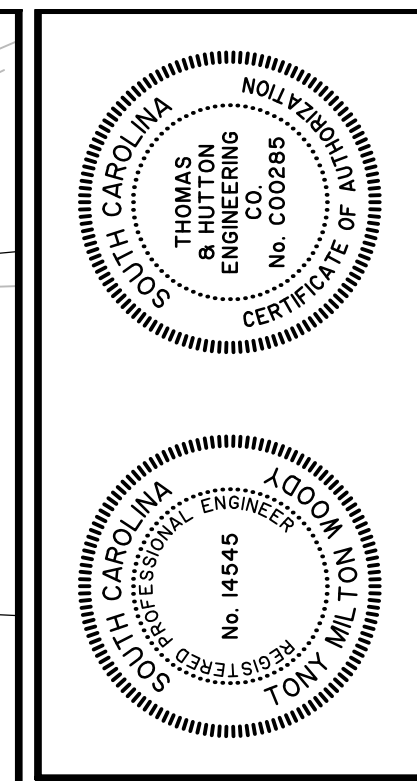
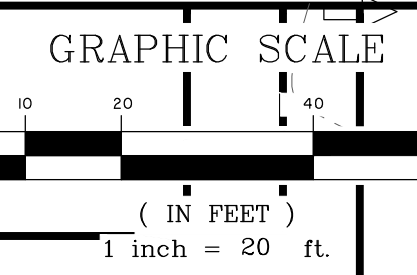
**EC3.1**





MATCH LINE - SEE SHEET NO. EC3.1

MATCH LINE - SEE SHEET NO. EC3.4



NO.	REVISIONS	BY	DATE

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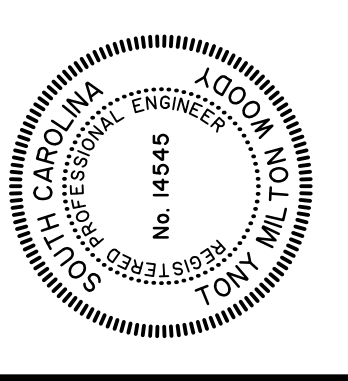
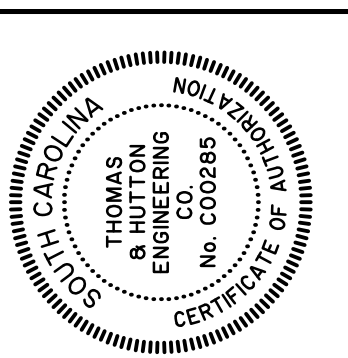
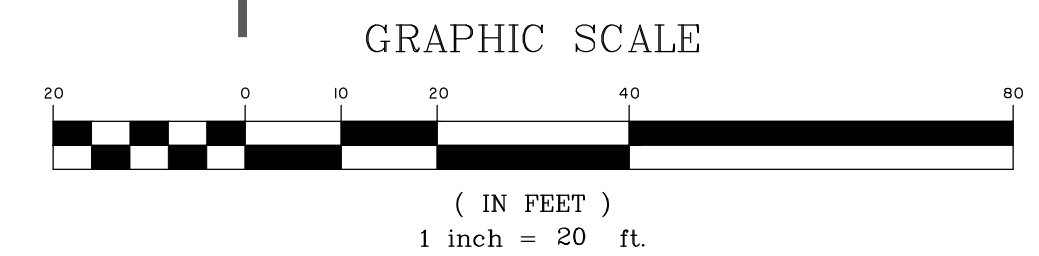
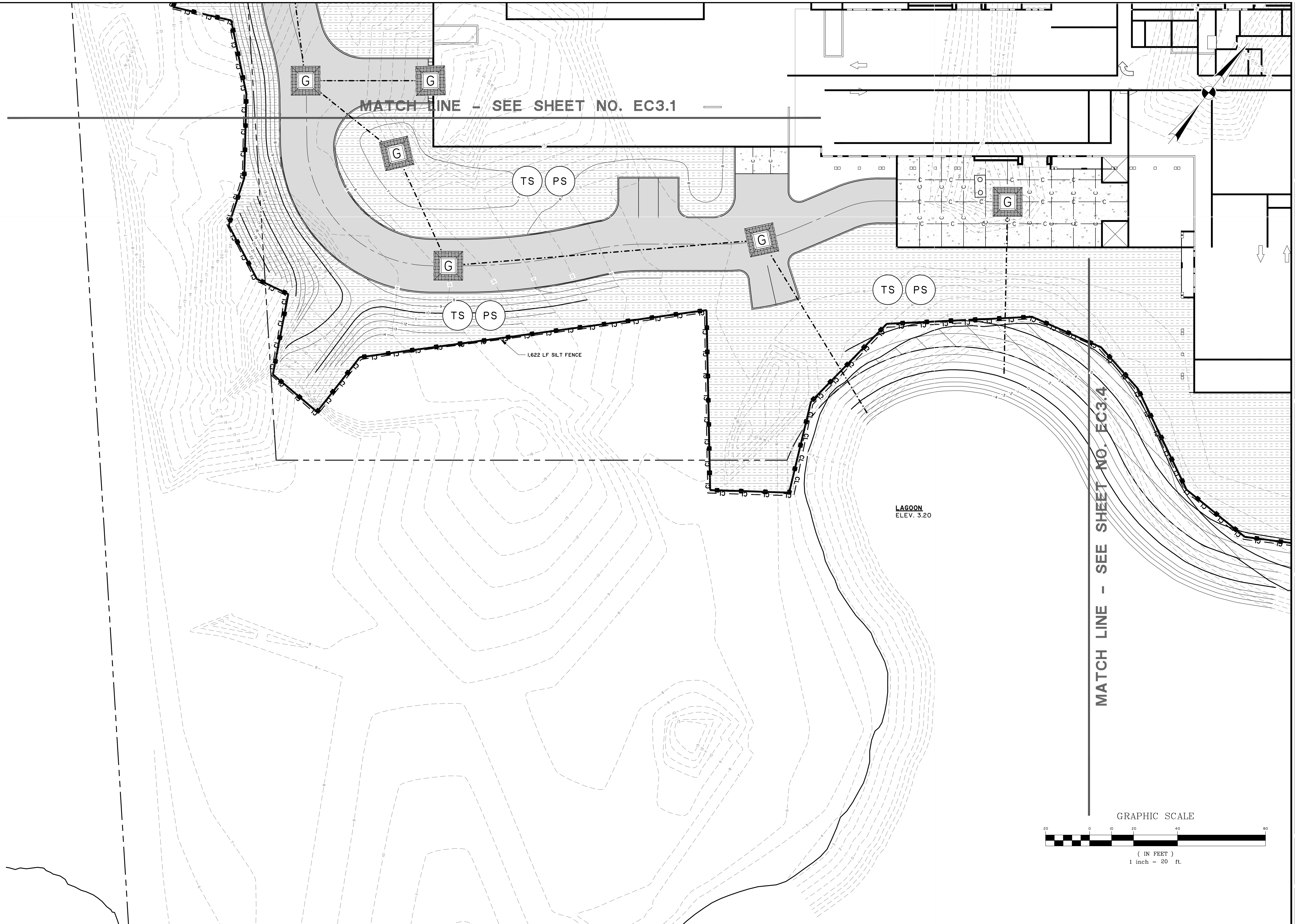
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**EC3.2**



24/7/18/17/16/0000/Engineering/Drawings/Construction Plans/27151.0000 - EC - PL - 03.dwg - 07/17/2018 - 10:37:49 AM



NO.	REVISIONS	BY	DATE

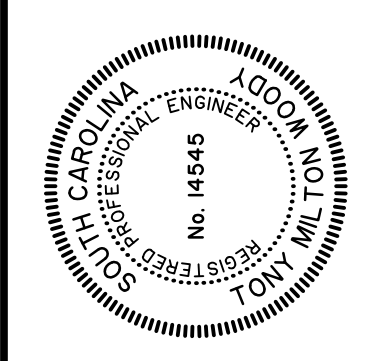
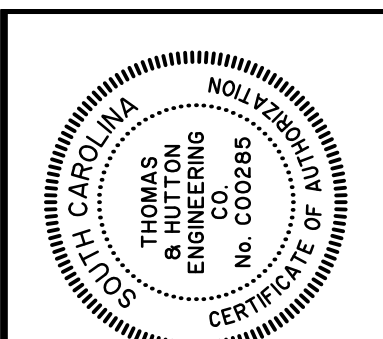
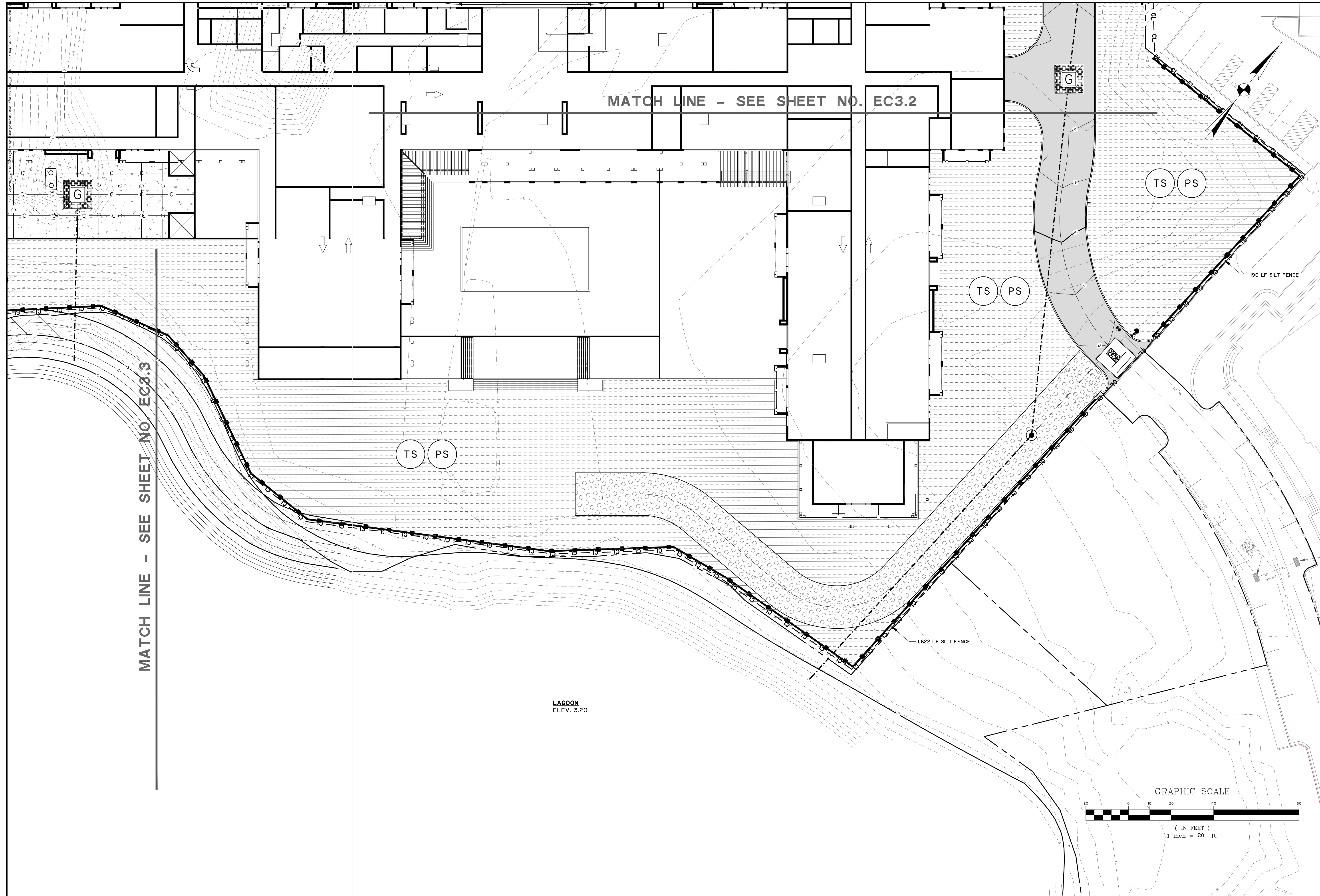
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**EC3.3**





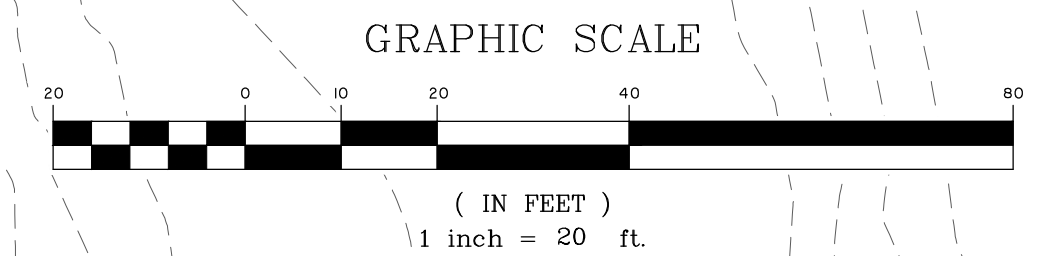
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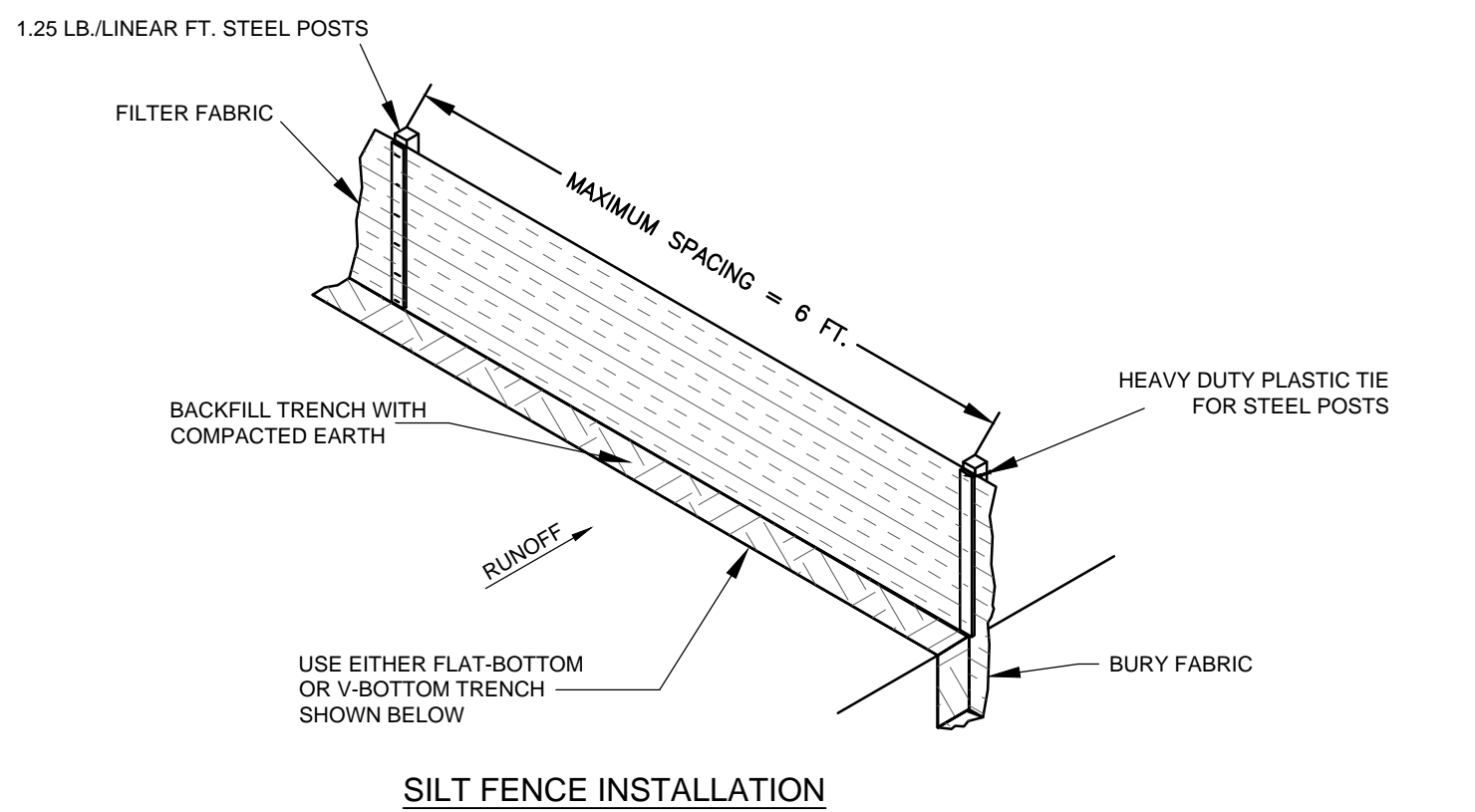
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**EC3.4**

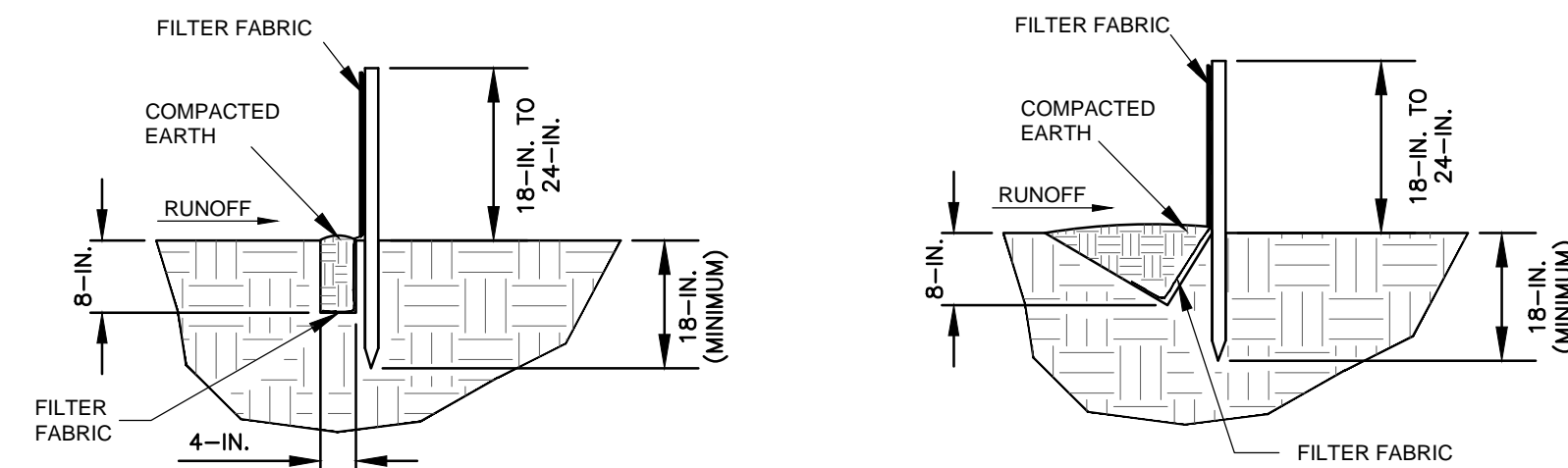




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**SILT FENCE INSTALLATION**



**FLAT-BOTTOM TRENCH DETAIL**

**V-SHAPED TRENCH DETAIL**

**WHEN AND WHERE TO USE IT:**  
SILT FENCE IS APPLICABLE IN AREAS:

WHERE THE MAXIMUM SHEET OR OVERLAND FLOW PATH LENGTH TO THE FENCE IS 100-FEET.  
WHERE THE MAXIMUM SLOPE STEEPNESS (NORMAL [PERPENDICULAR] TO FENCE LINE) IS 2H:1V.  
THAT DO NOT RECEIVE CONCENTRATED FLOWS GREATER THAN 0.5 CFS.

**DO NOT** PLACE SILT FENCE ACROSS CHANNELS OR USE IT AS A VELOCITY CONTROL BMP.

**MATERIALS:**  
**STEEL POSTS**  
USE 48-INCH LONG STEEL POSTS THAT MEET THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:  
COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.  
HAVE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND NOMINAL "T" LENGTH OF 1.48-INCHES.  
WEIGH 1.25 POUNDS PER FOOT (±8%).  
HAVE A SOIL STABILIZATION PLATE WITH A MINIMUM CROSS SECTION AREA OF 17-SQUARE INCHES ATTACHED TO THE STEEL POSTS.  
PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.

USE STEEL POSTS WITH A MINIMUM LENGTH OF 4-FEET, WEIGHING 1.25 POUNDS PER LINEAR FOOT (±8%) WITH PROJECTIONS TO AID IN FASTENING THE FABRIC. EXCEPT WHEN HEAVY CLAY SOILS ARE PRESENT ON SITE, STEEL POSTS WILL HAVE A METAL SOIL STABILIZATION PLATE WELDED NEAR THE BOTTOM SUCH THAT WHEN THE POST IS DRIVEN TO THE PROPER DEPTH, THE PLATE WILL BE BELOW THE GROUND LEVEL FOR ADDED STABILITY.  
THE SOIL PLATES SHOULD HAVE THE FOLLOWING CHARACTERISTICS:  
BE COMPOSED OF MINIMUM 16 GAUGE STEEL.  
HAVE A MINIMUM CROSS SECTION AREA OF 17-SQUARE INCHES.

**GEOTEXTILE FILTER FABRIC:**  
FILTER FABRIC IS:  
COMPOSED OF FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS COMPOSED OF AT LEAST 85% BY WEIGHT OF POLYOLEFINS, POLYESTERS, OR POLYAMIDES.  
FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER.  
FREE OF ANY TREATMENT OR COATING WHICH MIGHT ADVERSELY ALTER ITS PHYSICAL PROPERTIES AFTER INSTALLATION.  
FREE OF DEFECTS OR FLAWS THAT SIGNIFICANTLY AFFECT ITS PHYSICAL AND/OR FILTERING PROPERTIES.  
CUT TO A MINIMUM WIDTH OF 36 INCHES.

USE ONLY FABRIC APPEARING ON SCDOT APPROVAL SHEET #34 MEETING THE REQUIREMENTS OF THE MOST CURRENT EDITION OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION.

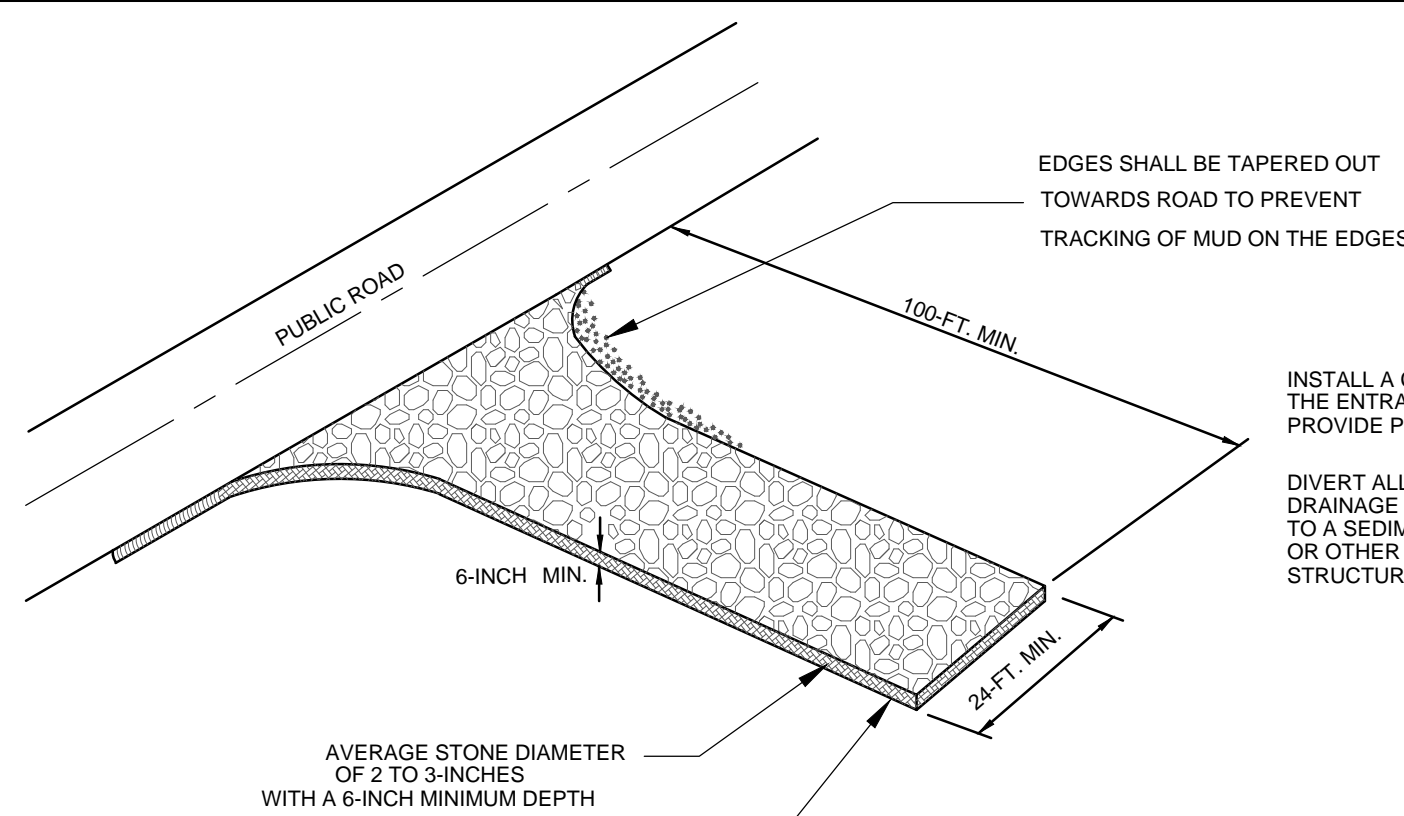
**INSTALLATION:**  
EXCAVATE A TRENCH APPROXIMATELY 6-INCHES WIDE AND 6-INCHES DEEP WHEN PLACING FABRIC BY HAND. PLACE 12-INCHES OF GEOTEXTILE FABRIC INTO THE 6-INCH DEEP TRENCH, EXTENDING THE REMAINING 6-INCHES TOWARDS THE UPSLOPE SIDE OF THE TRENCH. BACKFILL THE TRENCH WITH SOIL OR GRAVEL AND COMPACT. BURY 12-INCHES OF FABRIC INTO THE GROUND WHEN PNEUMATICALLY INSTALLING SILT FENCE WITH A SLICING METHOD. PURCHASE FABRIC IN CONTINUOUS ROLLS AND CUT TO THE LENGTH OF THE BARRIER TO AVOID JOINTS. WHEN JOINTS ARE NECESSARY, WRAPPED THE FABRIC TOGETHER AT A SUPPORT POST WITH BOTH ENDS FASTENED TO THE POST, WITH A 6-INCH MINIMUM OVERLAP. INSTALL POSTS TO A MINIMUM DEPTH OF 24-INCHES. INSTALL POSTS A MINIMUM OF 1- TO 2- INCHES ABOVE THE FABRIC, WITH NO MORE THAN 3- FEET OF THE POST ABOVE THE GROUND. SPACE POSTS TO MAXIMUM 6- FEET CENTERS. ATTACH FABRIC TO WOOD POSTS USING STAPLES MADE OF HEAVY-DUTY WIRE AT LEAST 1-1/2-INCH LONG. SPACED A MAXIMUM OF 6-INCHES APART. STAPLE A 2-INCH WIDE LATHE OVER THE FILTER FABRIC TO SECURELY FASTEN IT TO THE UPSLOPE SIDE OF WOODEN POSTS. ATTACH FABRIC TO THE STEEL POSTS USING HEAVY-DUTY PLASTIC TIES THAT ARE EVENLY SPACED AND PLACED IN A MANNER TO PREVENT SAGGING OR TEARING OF THE FABRIC. IN CALL CASES, TIES SHOULD BE AFFIXED IN NO LESS THAN 4 PLACES. INSTALL THE FABRIC A MINIMUM OF 24-INCHES ABOVE THE GROUND. WHEN NECESSARY, THE HEIGHT OF THE FENCE ABOVE GROUND MAY BE GREATER THAN 24-INCHES. IN TIDAL AREAS, EXTRA SILT FENCE HEIGHT MAY BE REQUIRED. THE POST HEIGHT WILL BE TWICE THE EXPOSED POST HEIGHT. POST SPACING WILL REMAIN THE SAME AND EXTRA HEIGHT FABRIC WILL BE 4-, 5-, OR 6- FEET TALL. LOCATE SILT FENCE CHECKS EVERY 100 FEET MAXIMUM AND AT LOW POINTS. INSTALL THE FENCE PERPENDICULAR TO THE DIRECTION OF FLOW AND PLACE THE FENCE THE PROPER DISTANCE FROM THE TOE OF STEEP SLOPES TO PROVIDE SEDIMENT STORAGE AND ACCESS FOR MAINTENANCE AND CLEANOUT.

**INSPECTION AND MAINTENANCE:**  
CHECK FOR SEDIMENT BUILDUP AND FENCE INTEGRITY. CHECK WHERE RUNOFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED BY FENCE OVERTOPPING. IF THE FENCE FABRIC TEARS, BEGINS TO DECOMPOSE, OR IN ANY WAY BECOMES INEFFECTIVE, REPLACE THE SECTION OF FENCE IMMEDIATELY. REMOVE SEDIMENT ACCUMULATED ALONG THE FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED. REMOVE TRAPPED SEDIMENT FROM THE SITE OR STABILIZE IT ON SITE. REMOVE SILT FENCE WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED OR

AFTER TEMPORARY BEST MANAGEMENT PRACTICES (BMPs) ARE NO LONGER NEEDED. PERMANENTLY STABILIZE DISTURBED AREAS RESULTING FROM FENCE REMOVAL.

**SILT FENCE**

NOT TO SCALE



DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE STONE PAD TO A SEDIMENT TRAP OR BASIN OR OTHER SEDIMENT TRAPPING STRUCTURE.

**NOTES:** UNDERLINING NON-WOVEN GEOTEXTILE FABRIC

**WHEN AND WHERE TO USE IT:**

STABILIZED CONSTRUCTION ENTRANCES SHOULD BE USED AT ALL POINTS WHERE TRAFFIC WILL BE LEAVING A CONSTRUCTION SITE AND MOVING DIRECTLY ONTO A PUBLIC ROAD.

**IMPORTANT CONSIDERATIONS:**

IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFFSITE. WASHDOWN FACILITIES SHALL BE REQUIRED AS DIRECTED BY SCHEC AS NEEDED. WASHDOWN AREAS IN GENERAL MUST BE ESTABLISHED WITH CRUSHED GRAVEL AND DRAIN INTO A SEDIMENT TRAP OR SEDIMENT BASIN.

CONSTRUCTION ENTRANCES SHOULD BE USED IN CONJUNCTION WITH THE STABILIZATION OF CONSTRUCTION ROADS TO REDUCE THE AMOUNT OF MUD PICKED UP BY VEHICLES.

**INSTALLATION:**

REMOVE ALL VEGETATION AND ANY OBJECTIONABLE MATERIAL FROM THE FOUNDATION AREA.

DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM STONES TO A SEDIMENT TRAP OR BASIN.

INSTALL A NON-WOVEN GEOTEXTILE FABRIC PRIOR TO PLACING ANY STONE.

INSTALL A CULVERT PIPE ACROSS THE ENTRANCE WHEN NEEDED TO PROVIDE POSITIVE DRAINAGE.

THE ENTRANCE SHALL CONSIST OF 1-INCH TO 3-INCH D50 STONE PLACED AT A MINIMUM DEPTH OF 6-INCHES.

MINIMUM DIMENSIONS OF THE ENTRANCE SHALL BE 24- FEET WIDE BY 100- FEET LONG, AND MAY BE MODIFIED AS NECESSARY TO ACCOMMODATE SITE CONSTRAINTS.

THE EDGES OF THE ENTRANCE SHALL BE TAPERED OUT TOWARDS THE ROAD TO PREVENT TRACKING OF MUD AT THE EDGE OF THE ENTRANCE.

**INSPECTION AND MAINTENANCE:**

INSPECT CONSTRUCTION ENTRANCES EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION, OR AFTER HEAVY USE. CHECK FOR MUD AND SEDIMENT BUILDUP AND PAD INTEGRITY. MAKE DAILY INSPECTIONS DURING PERIODS OF WET WEATHER. MAINTENANCE IS REQUIRED MORE FREQUENTLY IN WET WEATHER CONDITIONS. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.

WASH OR REPLACE STONES AS NEEDED. THE STONE IN THE ENTRANCE SHOULD BE WASHED OR REPLACED WHENEVER THE ENTRANCE FAILS TO REDUCE MUD BEING CARRIED OFF-SITE BY VEHICLES.

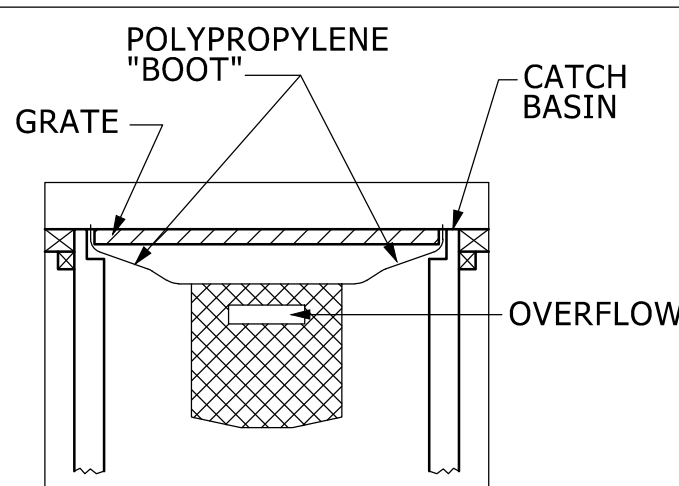
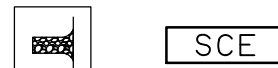
FREQUENT WASHING WILL EXTEND THE USEFUL LIFE OF STONE.

IMMEDIATELY REMOVE MUD AND SEDIMENT TRACKED OR WASHED ONTO PUBLIC ROADS BY BRUSHING OR SWEEPING. FLUSHING SHOULD ONLY BE USED WHEN THE WATER CAN BE DISCHARGED TO A SEDIMENT TRAP OR BASIN.

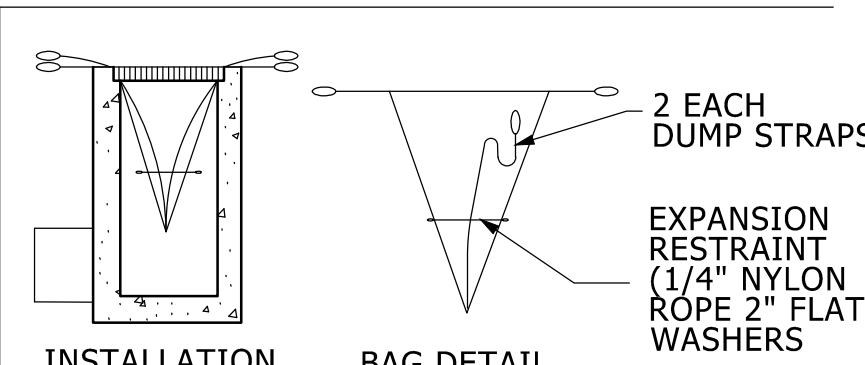
REPAIR ANY BROKEN PAVEMENT IMMEDIATELY.

**STABILIZED CONSTRUCTION ENTRANCE**

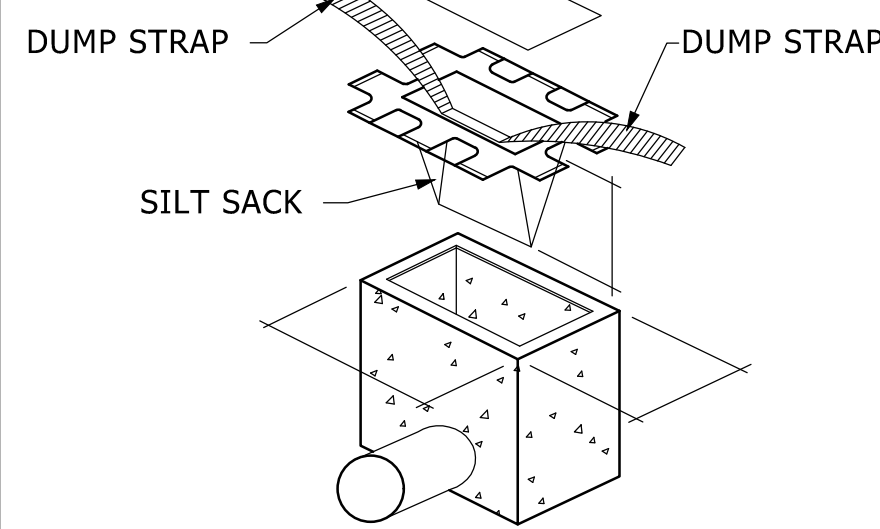
NOT TO SCALE



**TEMPORARY INLET SEDIMENT FILTER**

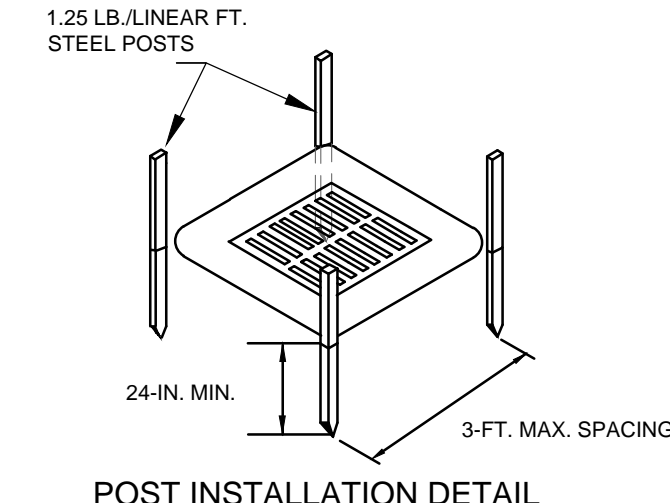


**TEMPORARY INLET SEDIMENT FILTER**



**SILT SACK DETAIL (TYPE G)**

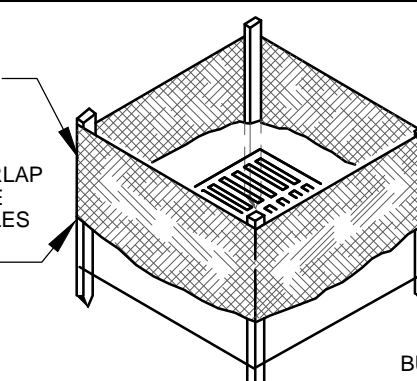
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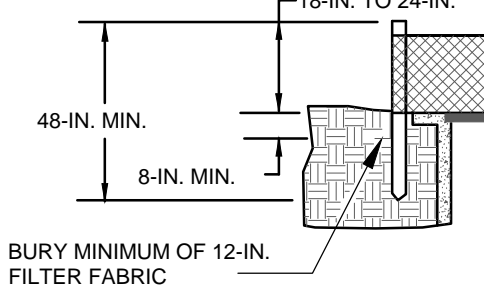
**POST INSTALLATION DETAIL**

ATTACH FILTER FABRIC TO POSTS SPACED 6-IN. APART MAX.

FOLD FABRIC TO OVERLAP 6 INCHES AND SECURE TO POSTS WITH STAPLES OR WIRE TIES



**FILTER FABRIC INSTALLATION DETAIL**



**FILTER FABRIC BURIAL DETAIL**

**MATERIALS:**

USE FILTER FABRIC THAT CONFORMS TO SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION (LATEST EDITION).

USE STEEL POSTS THAT MEET THE FOLLOWING MINIMUM PHYSICAL REQUIREMENTS:  
BE COMPOSED OF HIGH STRENGTH STEEL WITH MINIMUM YIELD STRENGTH OF 50,000 PSI.  
HAVE A STANDARD "T" SECTION WITH A NOMINAL FACE WIDTH OF 1.38-INCHES AND NOMINAL "T" LENGTH OF 1.48-INCHES.  
WEIGH 1.25 POUNDS PER FOOT (±8%).  
BE PAINTED WITH A WATER BASED BAKED ENAMEL PAINT.

**INSTALLATION:**

EXCAVATE A TRENCH 6-INCHES WIDE AND 6-INCHES DEEP AROUND THE OUTSIDE PERIMETER OF THE INLET UNLESS THE FABRIC IS PNEUMATICALLY INSTALLED. EXTEND THE FILTER FABRIC A MINIMUM OF 12-INCHES INTO THE TRENCH. BACKFILL THE TRENCH WITH SOIL OR CRUSHED STONE AND COMPACT OVER THE FILTER FABRIC UNLESS THE FABRIC IS PNEUMATICALLY INSTALLED.

USE STEEL POSTS WITH A MINIMUM POST LENGTH OF 60-INCHES CONSISTING OF STANDARD "T" SECTIONS WITH A WEIGHT OF 1.25 POUNDS PER FOOT (±8%). INSTALL THE FILTER FABRIC TO A MINIMUM HEIGHT OF 24-INCHES ABOVE GRADE. SPACE THE STEEL POSTS AROUND THE PERIMETER OF THE INLET A MAXIMUM OF 3- FEET APART AND DRIVE THEM INTO THE GROUND A MINIMUM OF 24-INCHES. CUT THE FILTER FABRIC FROM A CONTINUOUS ROLL TO THE LENGTH OF THE PROTECTED AREA TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, WRAP FILTER FABRIC TOGETHER ONLY AT A SUPPORT POST WITH BOTH ENDS SECURELY FASTENED TO THE POST, WITH A MINIMUM 6-INCH OVERLAP.

ATTACH FABRIC TO STEEL POSTS WITH HEAVY-DUTY PLASTIC TIES.

ATTACH AT LEAST FOUR (4) EVENLY SPACED TIES IN A MANNER TO PREVENT SAGGING OR TEARING OF THE FABRIC. IN ALL CASES, AFFIX TIES IN NO LESS THAN FOUR (4) PLACES.

**INSPECTION AND MAINTENANCE:**

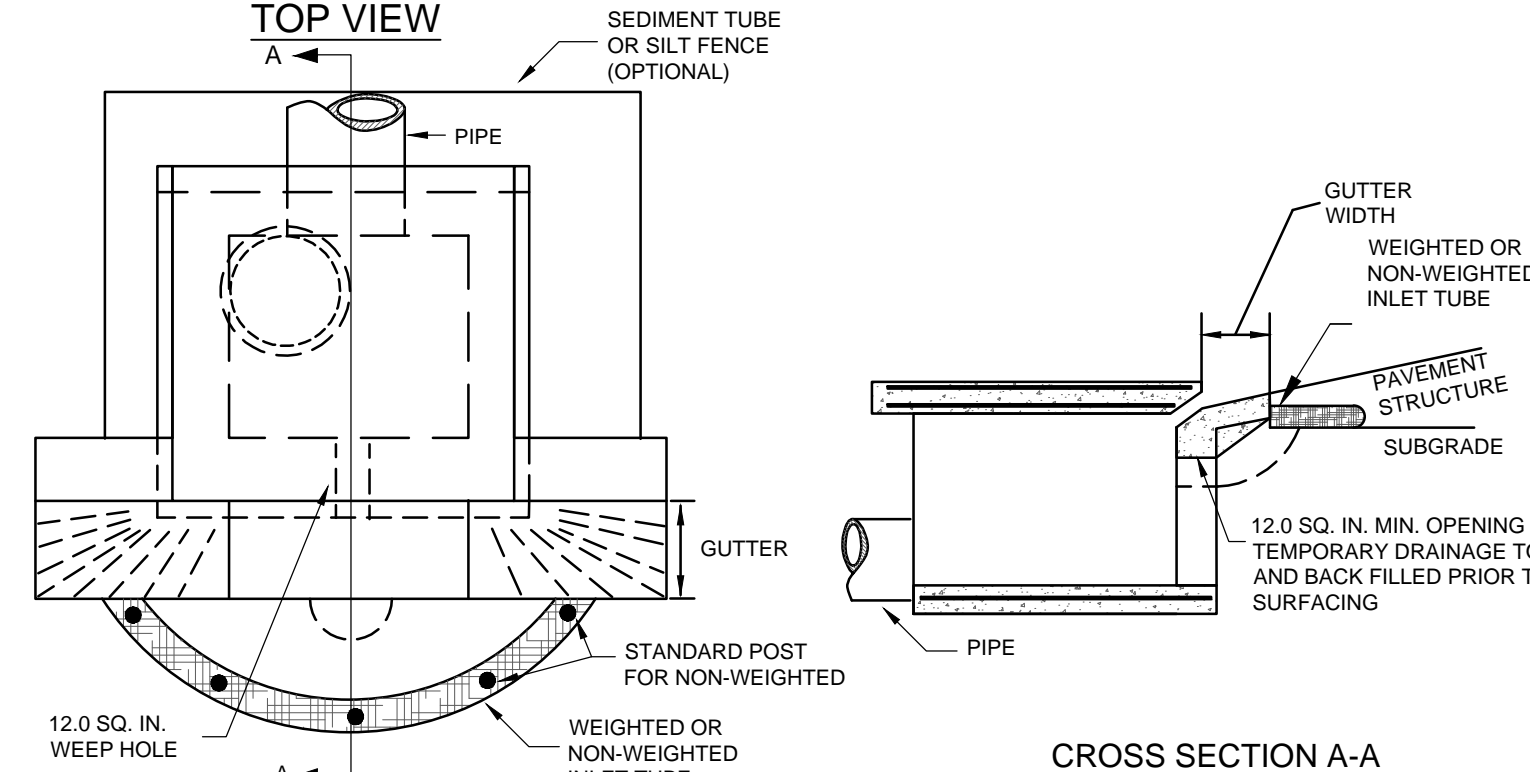
SEDIMENT SHOULD BE REMOVED WHEN IT REACHES APPROXIMATELY 1/3 THE HEIGHT OF THE FENCE. TAKE CARE NOT TO DAMAGE OR UNDERCUT FABRIC WHEN REMOVING SEDIMENT. IF A SUMP IS USED, SEDIMENT SHOULD BE REMOVED WHEN IT FILLS APPROXIMATELY 1/3 THE DEPTH OF THE HOLE. MAINTAIN THE POOL AREA, ALWAYS PROVIDING ADEQUATE SEDIMENT STORAGE VOLUME FOR THE NEXT STORM.

STORM DRAIN INLET PROTECTION STRUCTURES SHOULD BE REMOVED ONLY AFTER THE DISTURBED AREAS ARE PERMANENTLY STABILIZED. REMOVE ALL CONSTRUCTION MATERIAL AND SEDIMENT, AND DISPOSE OF THEM PROPERLY. GRADE THE DISTURBED AREA TO THE ELEVATION OF THE DROP INLET STRUCTURE CREST. USE APPROPRIATE PERMANENT STABILIZATION METHODS TO STABILIZE BARE AREAS AROUND THE INLET.

**FILTER FABRIC INLET PROTECTION (TYPE A)**

NOT TO SCALE

**TOP VIEW**



**CROSS SECTION A-A**

**MATERIALS:**

USE INLET TUBES THAT EXHIBIT THE FOLLOWING PROPERTIES:  
PRODUCED BY A MANUFACTURER EXPERIENCED IN SEDIMENT TUBE MANUFACTURING.  
COMPOSED OF COMPACTED GEOTEXTILES, CURLED EXCELSIOR WOOD, NATURAL COCONUT FIBERS OR HARDWOOD MULCH OR A MIX OF THESE MATERIALS ENCLOSED BY A FLEXIBLE NETTING MATERIAL. DO NOT USE STRAW, STRAW FIBER, STRAW BALES, PINE NEEDLES OR LEAF MULCH UNDER THIS SPECIFICATION. UTILIZE AN OUTER NETTING THAT CONSISTS OF SEAMLESS, HIGH-DENSITY POLYETHYLENE PHOTODEGRADABLE MATERIALS TREATED WITH ULTRAVIOLET STABILIZERS OR A SEAMLESS, HIGH-DENSITY POLYETHYLENE NON-DEGRADABLE MATERIALS. CURLED WOOD EXCELSIOR FIBER, OR NATURAL COCONUT FIBER ROLLED EROSION CONTROL PRODUCTS (RECP) ROLLED UP TO CREATE AN INLET TUBE DEVICES ARE NOT ALLOWED UNDER THIS SPECIFICATION.

**WEIGHTED INLET TUBES:**

WEIGHTED INLET TUBES ARE SEDIMENT TUBES CAPABLE OF STAYING IN PLACE WITHOUT EXTERNAL STABILIZATION MEASURES AND MAY HAVE A WEIGHTED INNER CORE OR OTHER WEIGHTED MECHANISM TO KEEP THEM IN PLACE.

**MATERIALS:**

APPLICABLE TYPE F WEIGHTED INLET TUBES MAY BE SELECTED FROM THE SCDOT APPROVED PRODUCTS LIST.

**INSTALLATION:**

INSTALL WEIGHTED INLET TUBES LYING FLAT ON THE GROUND, WITH NO GAPS BETWEEN THE UNDERLYING SURFACE AND THE INLET TUBE. NEVER STACK WEIGHTED INLET TUBES ON TOP OF ONE ANOTHER.

DO NOT COMPLETELY BLOCK INLETS WITH WEIGHTED INLET TUBES.

INSTALL WEIGHTED INLET TUBES IN SUCH A MANNER THAT ALL OVERFLOW OR OVERTOPPING WATER HAS THE ABILITY TO ENTER THE INLET UNOBSTRUCTED.

TO AVOID POSSIBLE FLOODING, TWO OR THREE CONCRETE CINDER BLOCKS MAY BE PLACED BETWEEN THE WEIGHTED INLET TUBES AND THE INLET.

**NON-WEIGHTED INLET TUBES**

NON-WEIGHTED INLET TUBES ARE DEFINED AS SEDIMENT TUBES THAT REQUIRE STAKING OR OTHER STABILIZATION METHODS TO KEEP THEM SAFELY IN PLACE.

**MATERIALS:**

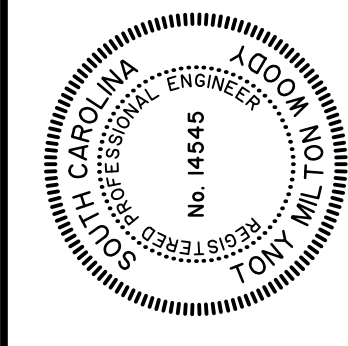
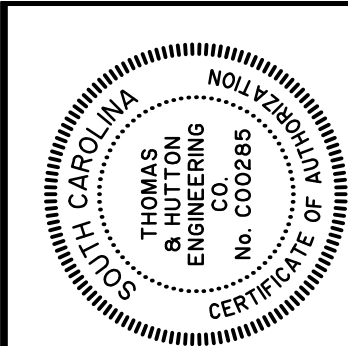
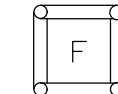
APPLICABLE TYPE F NON-WEIGHTED INLET TUBES MAY BE SELECTED FROM THE SCDOT APPROVED PRODUCTS LIST.

**INSPECTION AND MAINTENANCE:**

INLET TUBES MAY BE TEMPORARILY MOVED DURING CONSTRUCTION AS NEEDED.  
REPLACE INLET TUBES DAMAGED DURING INSTALLATION AS DIRECTED BY THE ENGINEER OR MANUFACTURER'S REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

**TYPE F INLET TUBES**

NOT TO SCALE



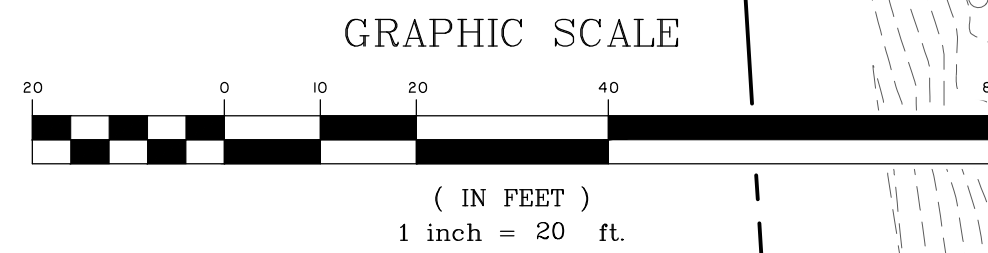
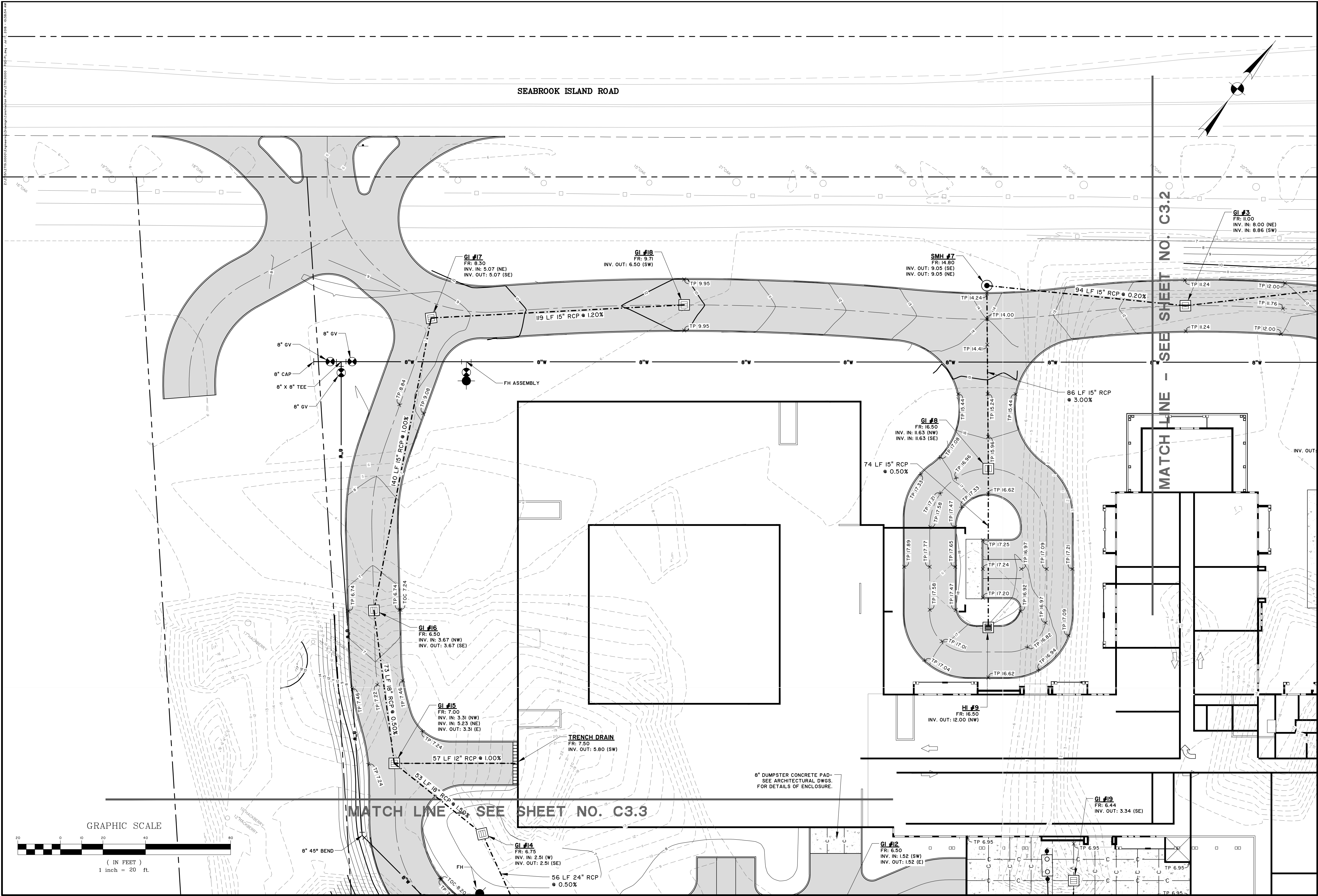
NO.	REVISIONS	BY	DATE

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 CHARLESTON COUNTY, SOUTH CAROLINA  
**KIAWAH SENIOR LIVING**  
**SWPPP - DETAILS**

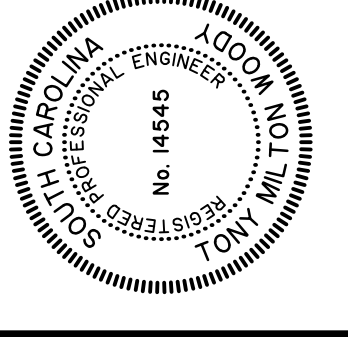
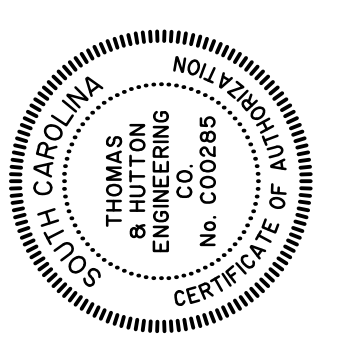
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DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	N/A

**EC4.1**



MATCH LINE - SEE SHEET NO. C3.2

MATCH LINE - SEE SHEET NO. C3.3



NO.	REVISIONS	BY	DATE

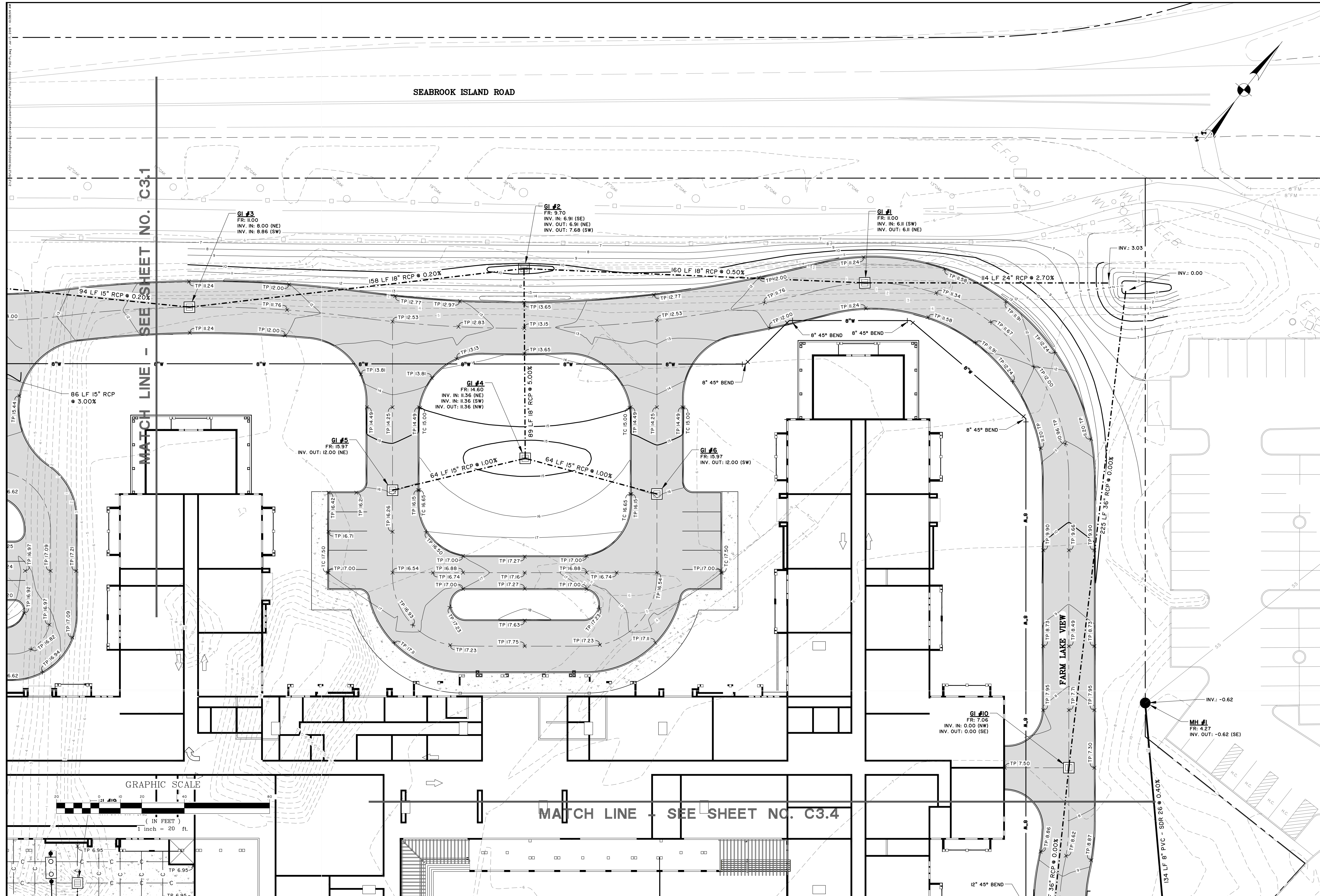
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 SITE DEVELOPMENT PLAN

JOB NO: J-27191.0000  
 DATE: 7/17/18  
 DRAWN: BRW  
 DESIGNED: WEF  
 REVIEWED: WEF  
 APPROVED: TMW  
 SCALE: 1" = 20'

**C3.1**



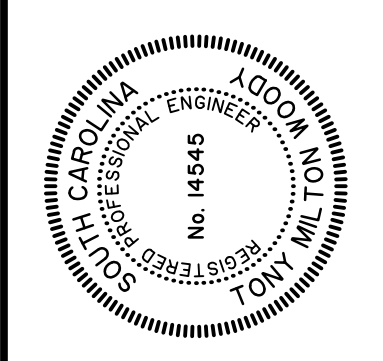
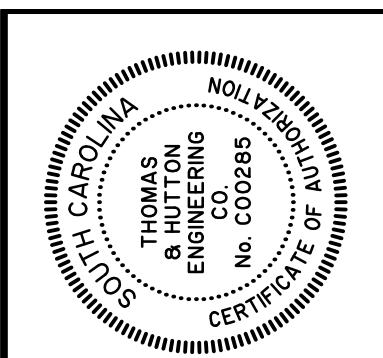
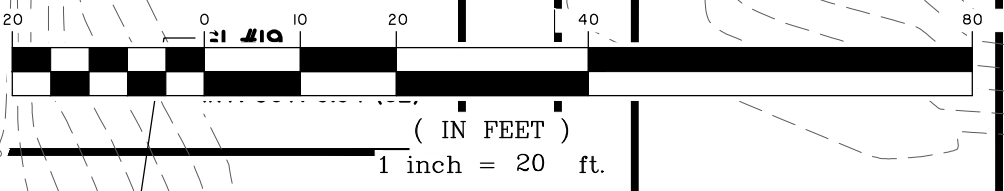


SEABROOK ISLAND ROAD

MATCH LINE - SEE SHEET NO. C3.1

MATCH LINE - SEE SHEET NO. C3.4

GRAPHIC SCALE



NO.	REVISIONS	BY	DATE

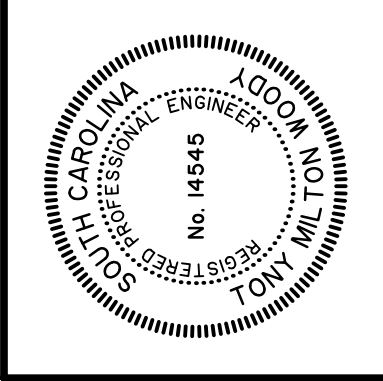
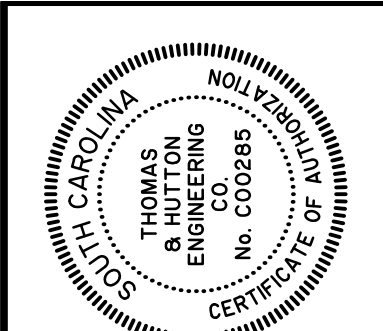
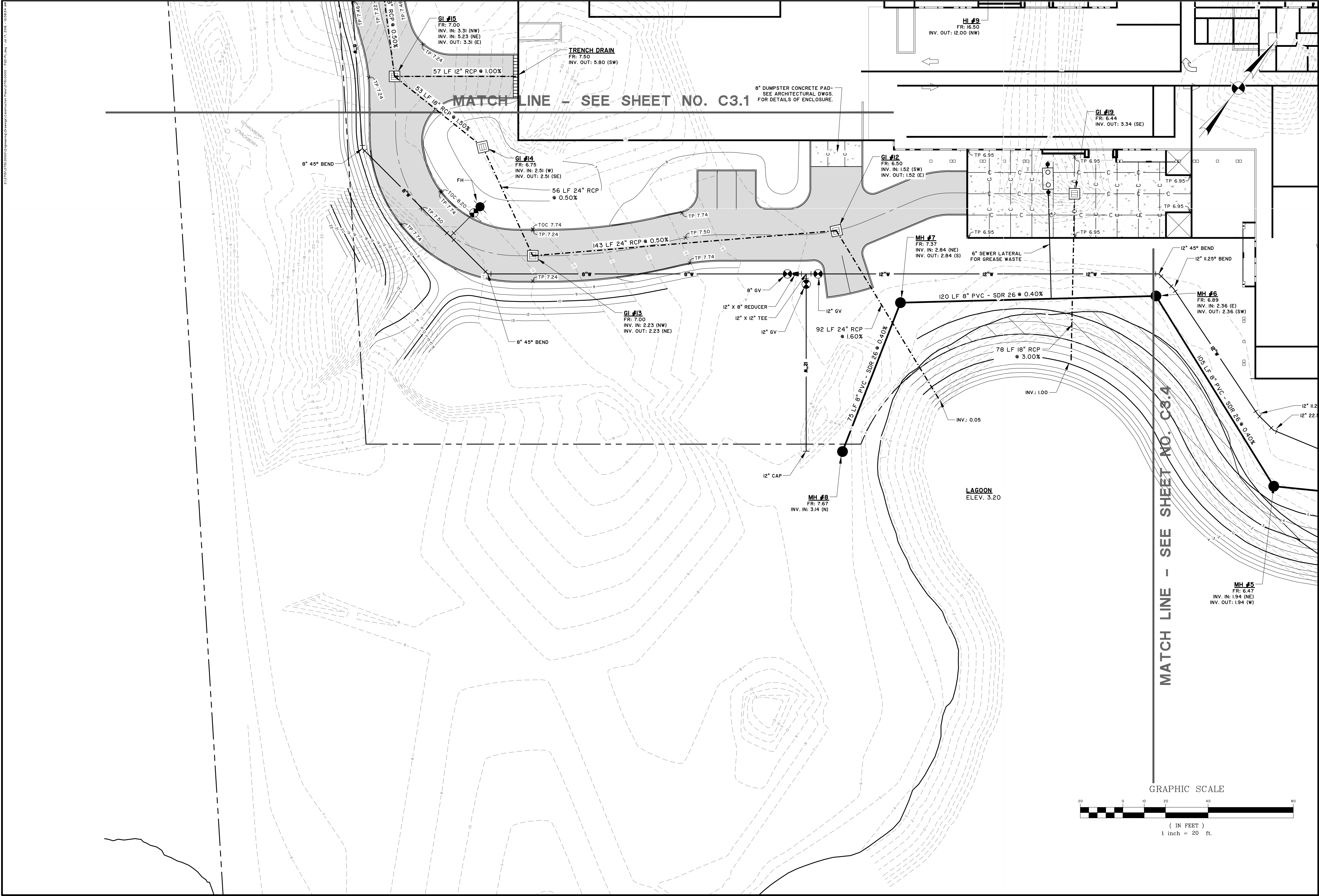
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JOB NO: J-27151.0000  
 DATE: 7/17/18  
 DRAWN: BRW  
 DESIGNED: WEF  
 REVIEWED: WEF  
 APPROVED: TMW  
 SCALE: 1" = 20'

**C3.2**





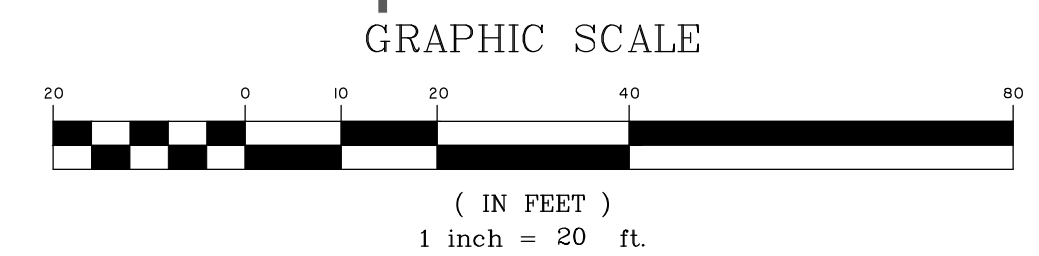
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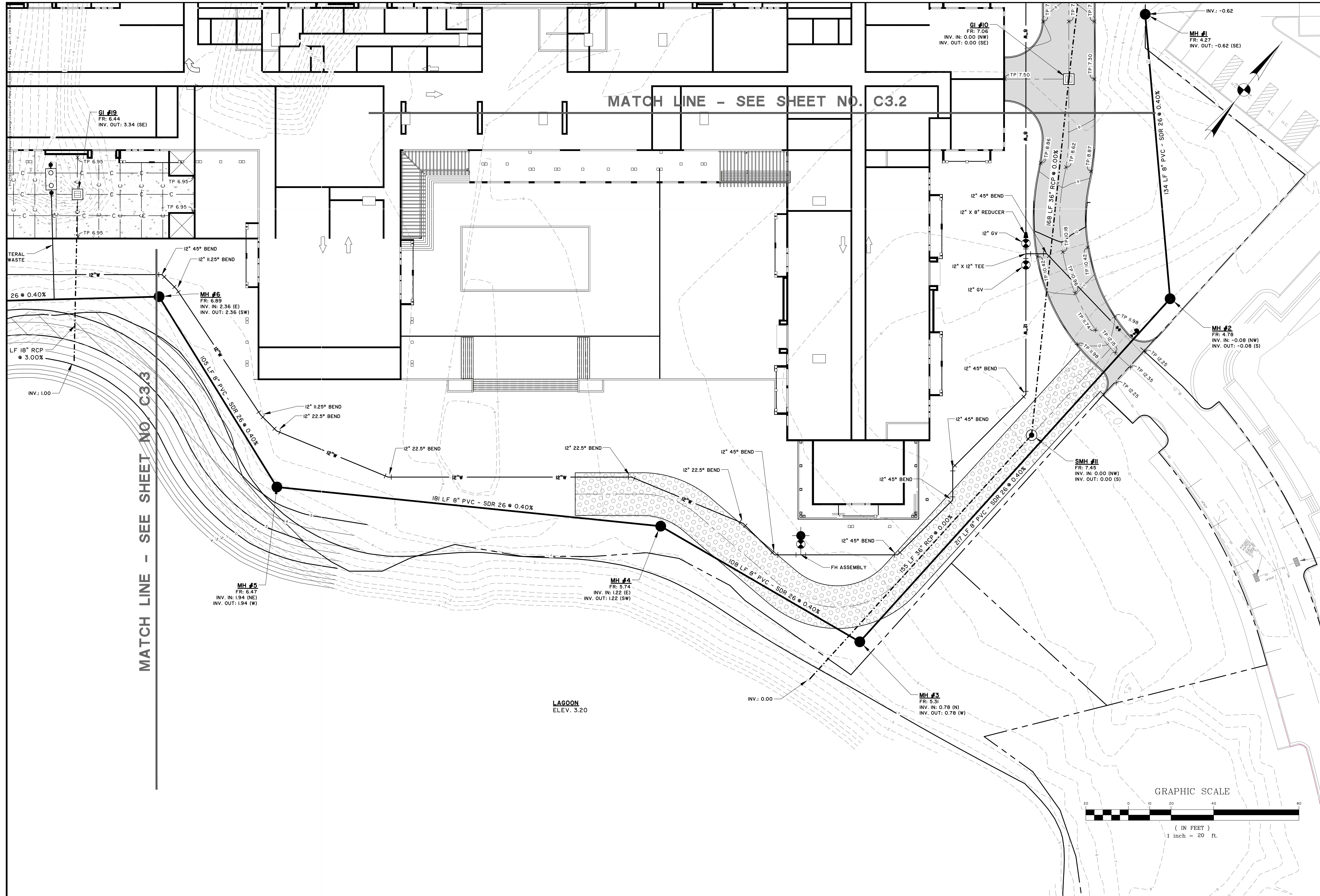
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**SITE DEVELOPMENT**

JOB NO: J-27151.0000  
 DATE: 7/17/18  
 DRAWN: BRW  
 DESIGNED: WEF  
 REVIEWED: WEF  
 APPROVED: TMW  
 SCALE: 1" = 20'

**C3.3**



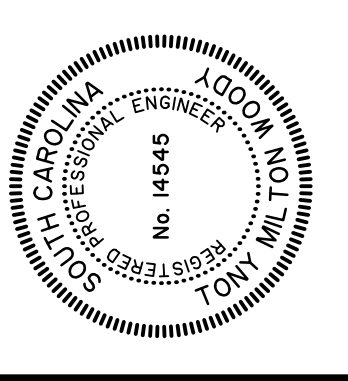
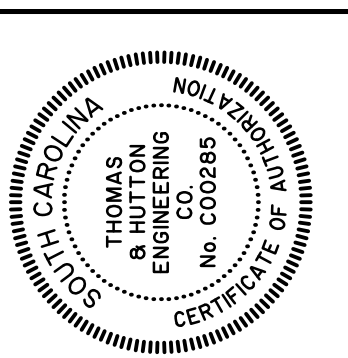
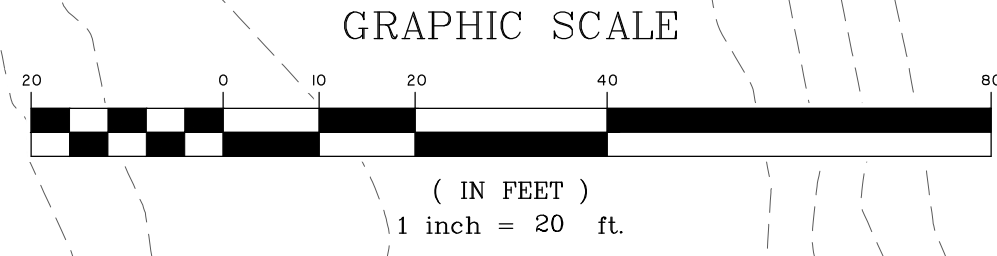




MATCH LINE - SEE SHEET NO. C3.2

MATCH LINE - SEE SHEET NO. C3.3

LAGOON  
ELEV. 3.20



NO.	REVISIONS	BY	DATE

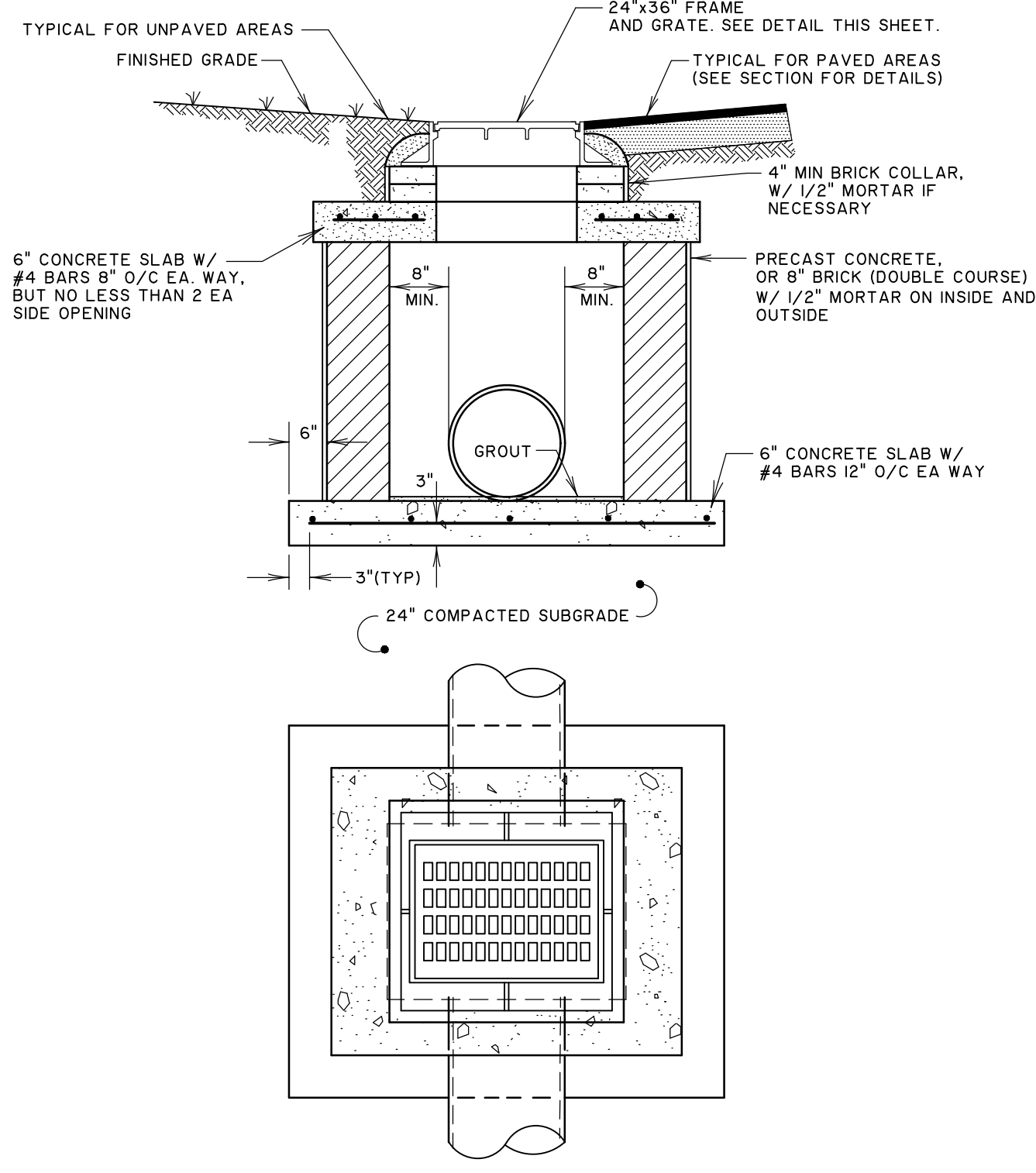
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JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	1" = 20'

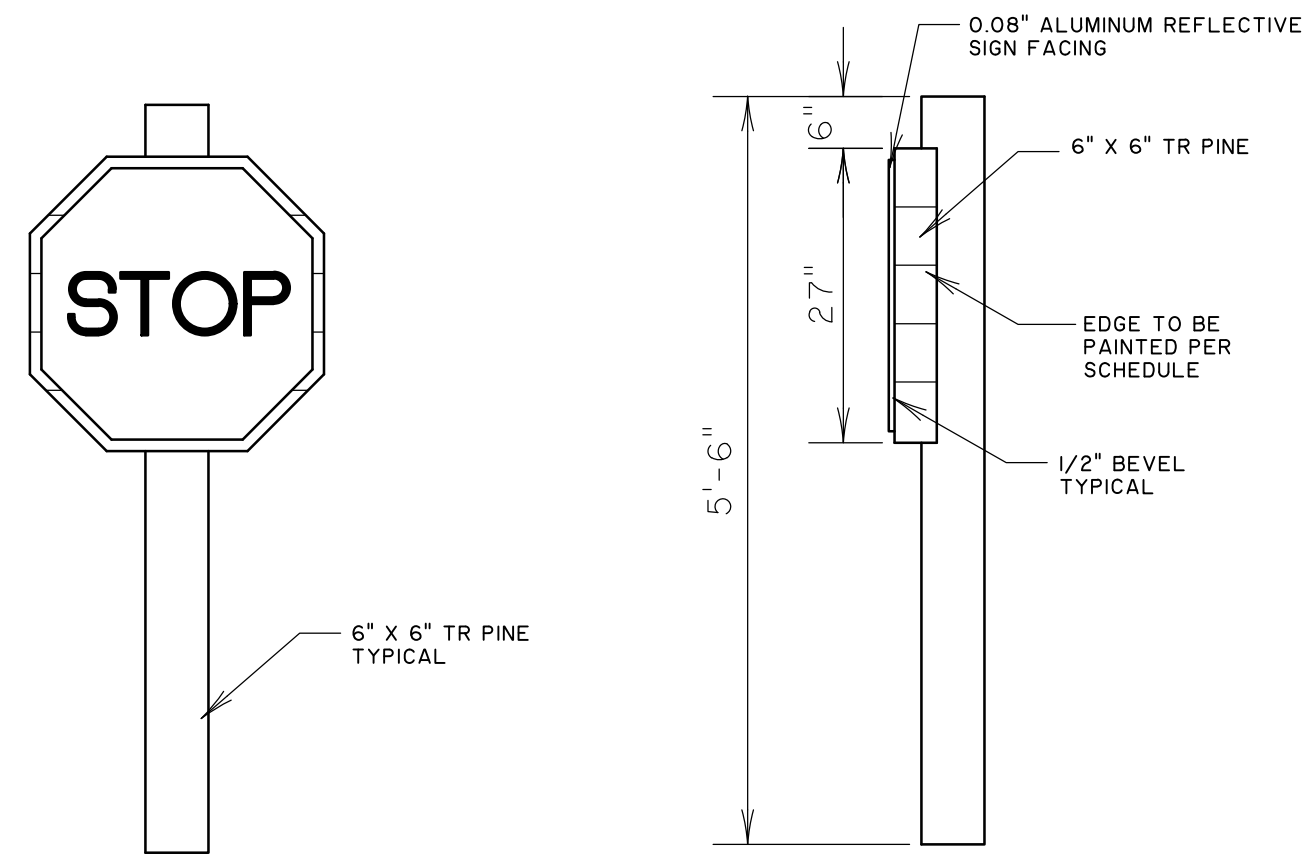
**C3.4**





**(GI) STANDARD 24"x36" GRATE INLET**  
NOT TO SCALE

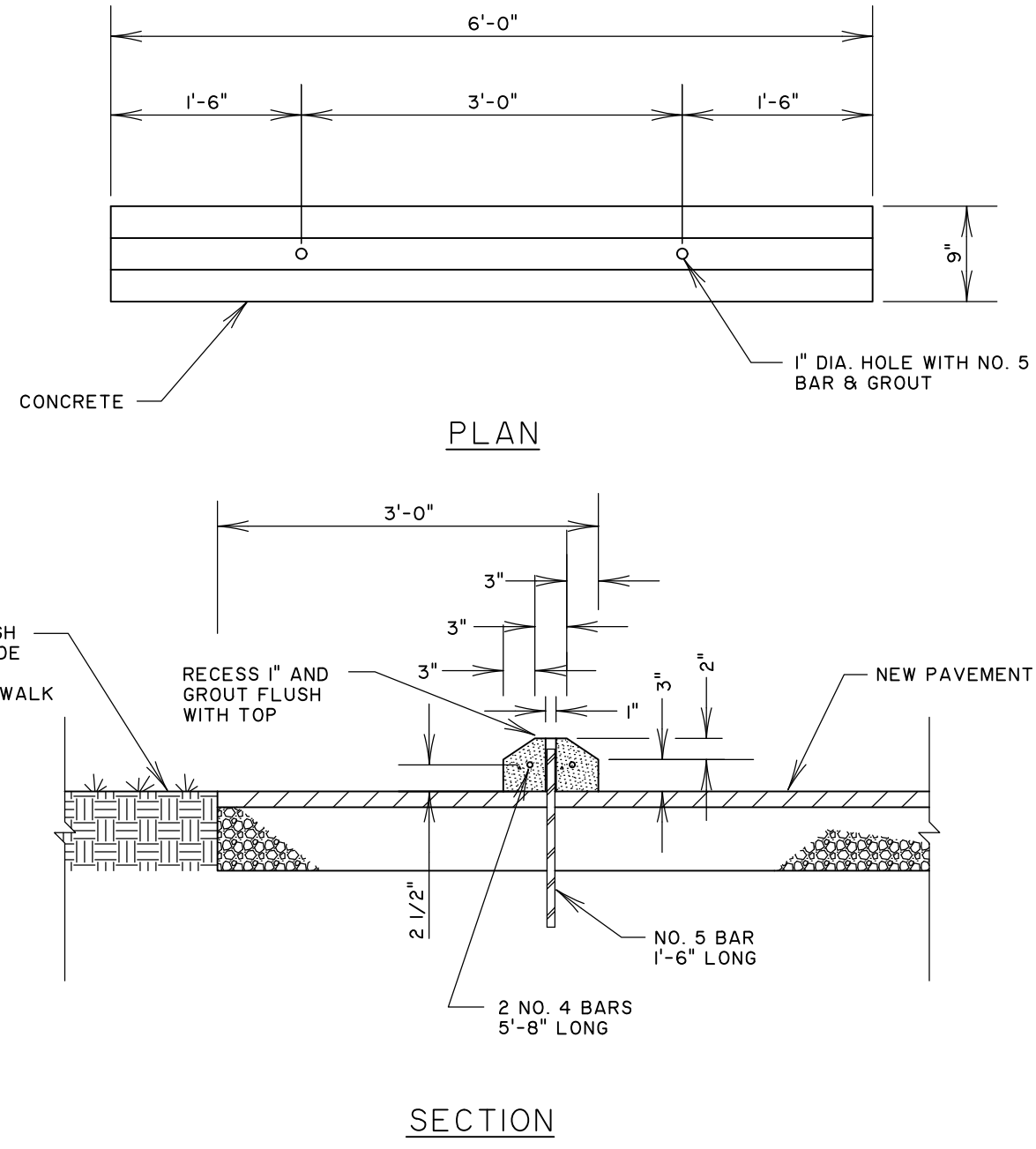
- NOTES:
1. CHAMFER ALL EXPOSED CONCRETE EDGES 3/4".
  2. WHERE BRICK IS USED, ALL EXPOSED SURFACES SHALL BE COATED WITH 1/2" 1:2 MORTAR INSIDE AND OUTSIDE.
  3. IF PRECAST BOX IS USED, TOP, RISER, AND BASE SHALL CONFORM TO THE LATEST REVISION OF ASTM C-478.
  4. ONLY TYPE S OR M MORTAR SHALL BE USED AND ALL BRICK SHALL MEET SCDOT SPECIFICATIONS.
  5. UNLESS OTHERWISE SHOWN THE CENTER OF THE FRAME FOR GRATE INLET STRUCTURES ARE TO BE LOCATED 6'-0" FROM THE EDGE OF PAVEMENT I.E. CENTER OF FRAME TO ALIGN WITH THE CENTER OF ROADSIDE SWALE.



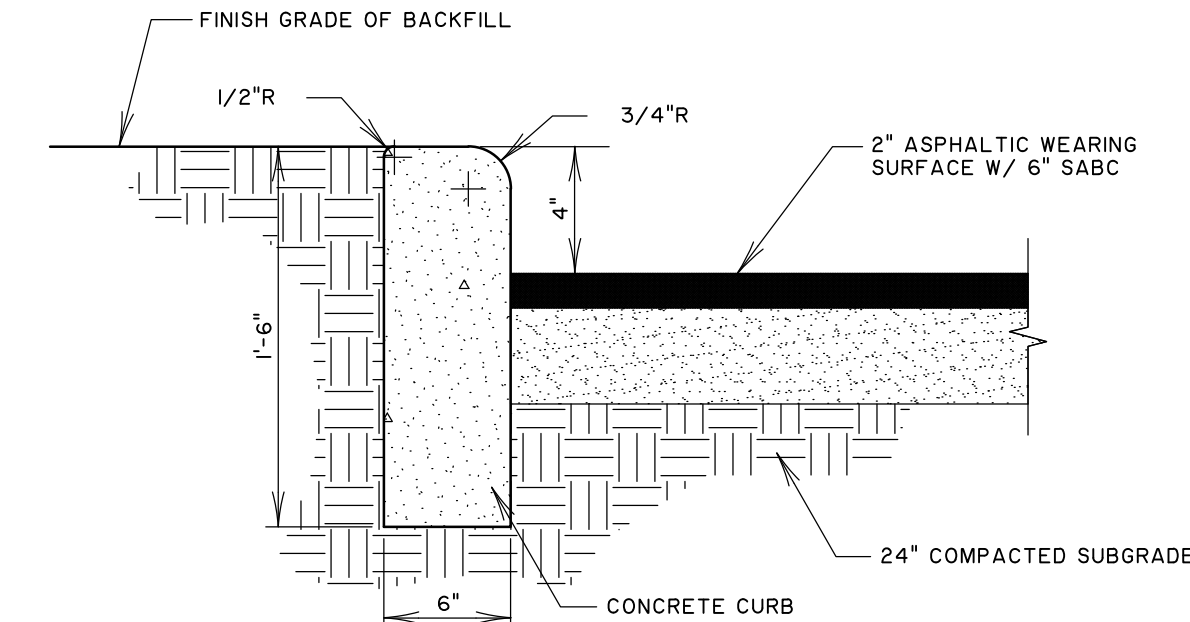
**STOP SIGN**

- NOTES:
1. USED WHEREVER VEHICULAR TRAFFIC CONTROL IS NEEDED. GUIDELINES FOR USE SHOULD BE BASED ON SOUTH CAROLINA'S TRAFFIC LAWS AND MUTCD CURRENT ADDITIONS.
  2. PRIMARY MATERIAL FOR THE SIGN POST AND FACE SHOULD BE 6" X 6" TREATED YELLOW PINE. OVERALL POST LENGTH IS 9'-0". SPECIAL HARDWARE INCLUDES 2 1/2" COUNTERSUNK OGEE WASHERS USED ON BOLTS HOLDING THE FACE PANEL TO POST. ALL OTHER HARDWARE IS STANDARD.
  3. SIGN SHAPES AND SYMBOLS SHOULD BE BASED ON STANDARDS AS USED BY THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION AND MUTCD.
  4. THE SIGN POST SHOULD BE STAINED CABOT'S CREOSOTE STAIN 0247. THE SIGN FACE FOR ALL REGULATORY SIGNS SHOULD BE 0.08 INCH ALUMINUM CONFORMING TO ASTM B 209. FINISHED SIGN SHALL BE CLEAR CUT AND THE LINES OF ALL LETTERS SHALL BE TRUE, REGULAR AND FREE OF UNEVENNESS. THE SIGN FACE SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
  5. CARE SHOULD BE TAKEN TO MAKE SURE POSTS ARE PROPERLY TREATED TO PREVENT DECAY OR ATTACK FROM TERMITES.
  6. THE FRONT, BACK AND EDGES OF THE SIGN BACKING SHALL BE PAINTED ACCORDING TO THE FOLLOWING SCHEDULE: STOP SIGN RED

**TRAFFIC SIGNAGE**  
NOT TO SCALE

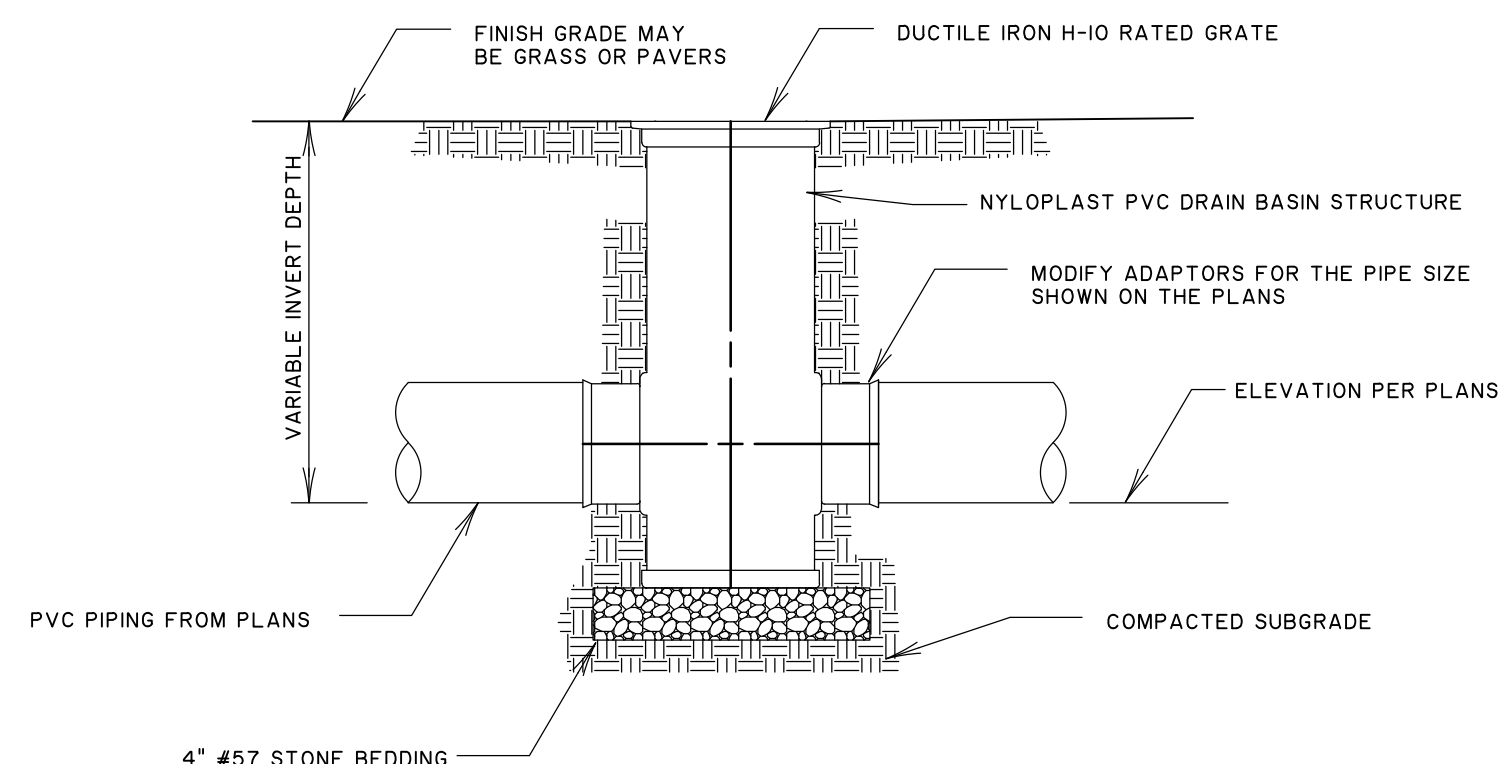


**WHEEL STOP DETAIL**  
NOT TO SCALE



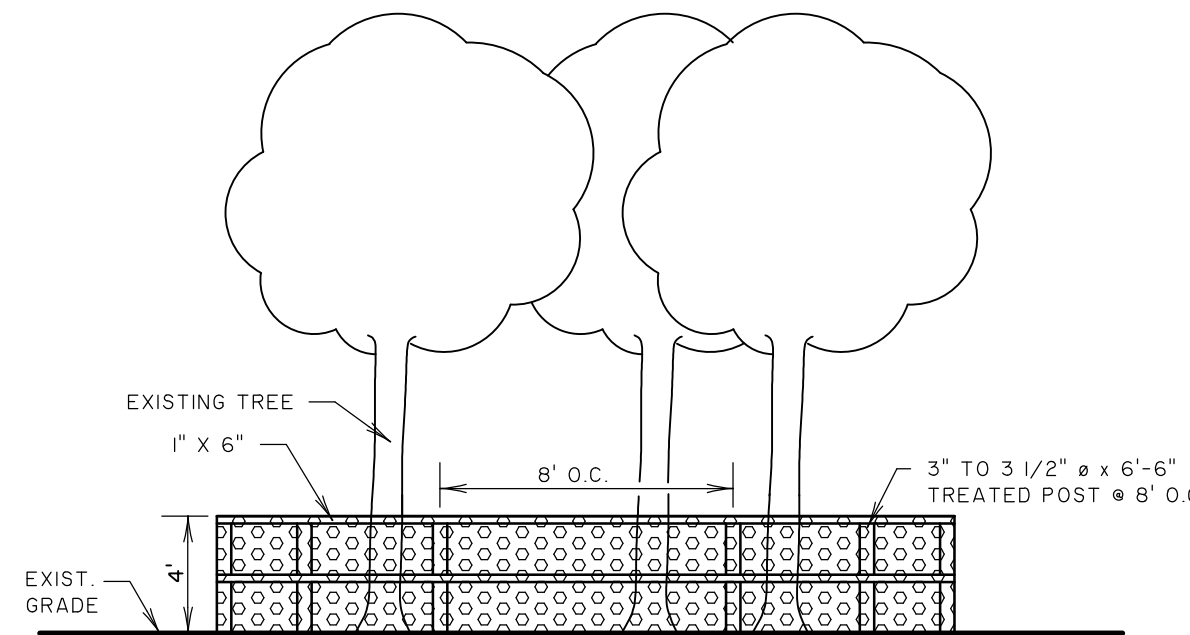
**CONCRETE HEADER CURB DETAIL**  
NOT TO SCALE

- NOTES:
1. ALL CONCRETE SHALL BE 3,000 PSI.
  2. PROVIDE CONTROL JOINTS EVERY TEN FEET (10').
  3. PROVIDE EXPANSION JOINTS EVERY FIFTY FEET (50').
  4. PROVIDE EXPANSION JOINT WHERE CURB ABUTS SIDEWALKS, OR OTHER STRUCTURES.
  5. PROVIDE LIGHT BROOM FINISH.



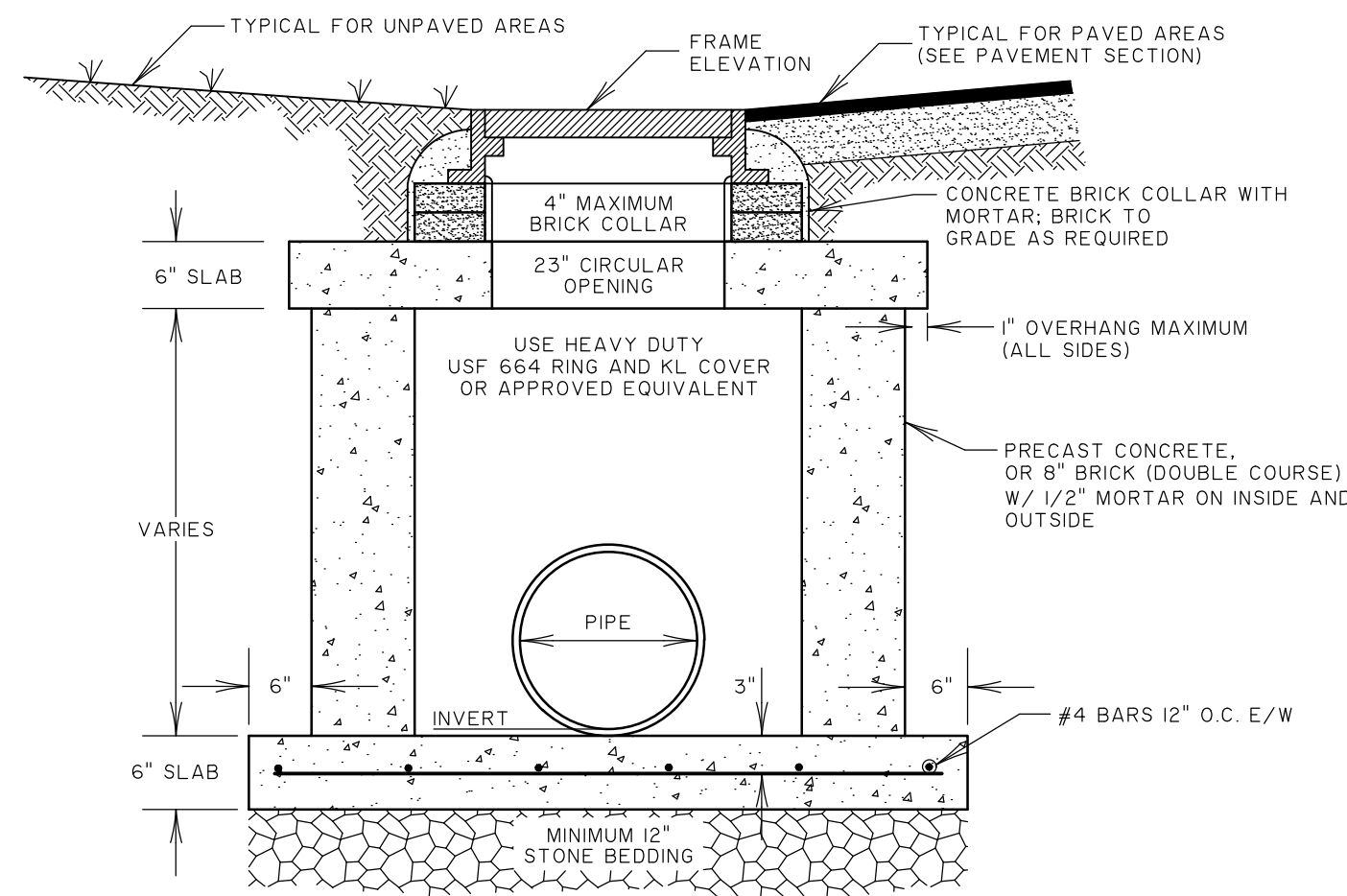
**(YI) YARD INLET DETAIL**  
NOT TO SCALE

- NOTES:
1. THE DIAMETER OF THE INLET AND GRATE SHALL BE 10" FOR 8" PIPE, 12" FOR 12" PIPE AND 15" FOR 15" PIPE.
  2. YARD INLET TO BE MANUFACTURED BY NYLOPLAST AMERICA INC. (800) 859-0328 OR EQUAL.
  3. YARD INLET ARE TO BE BEDDED AND BACKFILLED UNIFORMLY IN ACCORDANCE WITH SECTION 02400, STORM DRAINAGE OF THE TECHNICAL SPECIFICATIONS.
  4. YARD INLET TO BE INSTALLED PER THE MANUFACTURERS RECOMMENDATIONS.



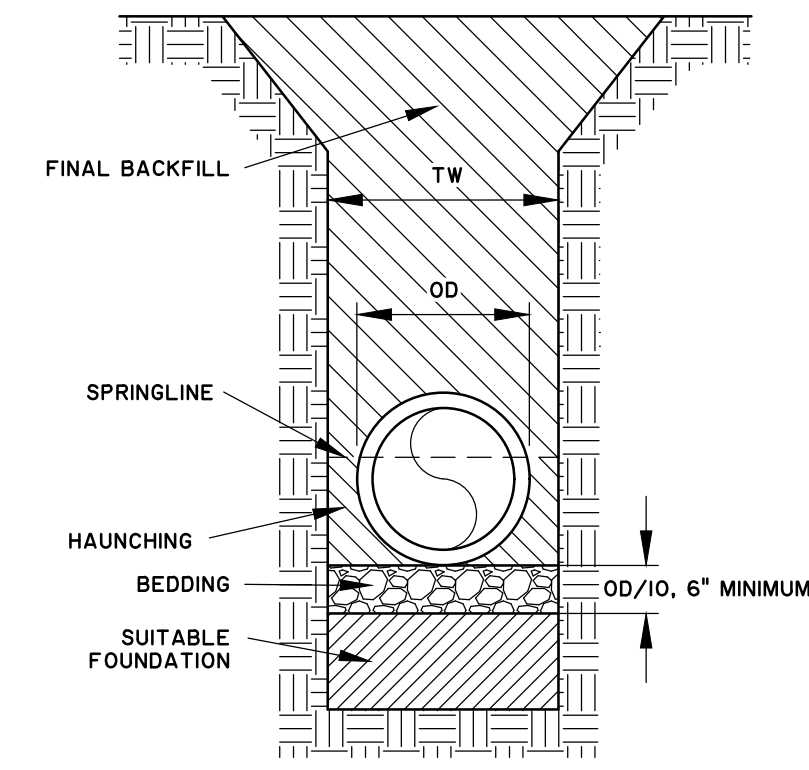
**TREE PROTECTION DETAIL**  
NOT TO SCALE

- NOTES:
1. CONTRACTOR TO PROTECT AND SAVE TREE. INSTALL 4' HIGH WOODEN RAIL FENCE AROUND TREE. FENCE TO BE CONSTRUCTED OF TREATED LUMBER.
  2. ATTACH RAILS TO POST WITH GALVANIZED NAILS.



**(SMH) STORM DRAIN MANHOLE 30" PIPE AND SMALLER**  
NOT TO SCALE

- NOTES:
1. DO NOT USE KNOCKOUT BOXES.
  2. TOP, RISER, AND BASE SHALL CONFORM TO THE LATEST REVISION OF ASTM C913.
  3. USE GRADE 60 REINFORCING STEEL.
  4. PROVIDE AT LEAST 3 INCHES OF COVER ON REINFORCING STEEL.
  5. REINFORCING IN TOP SLAB, VERTICAL WALLS (RISERS), AND BOTTOM SLAB SHALL BE #4 BARS AT 12" O.C. EACH WAY.
  6. CHAMFER ALL EXPOSED CONCRETE EDGES 3/4".

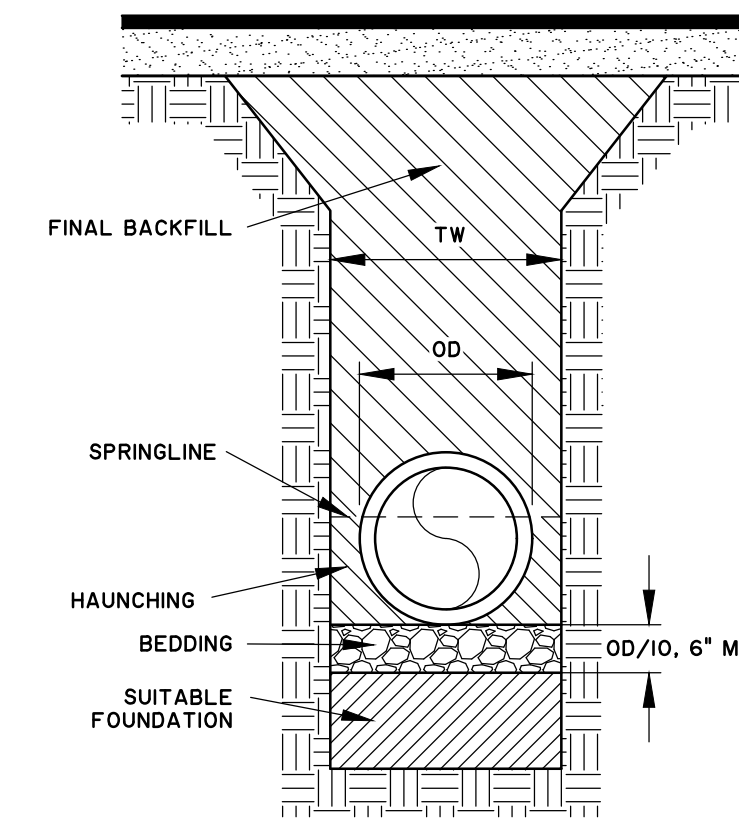


**RCP BEDDING UNPAVED AREAS**  
NOT TO SCALE

- NOTES:
1. TW SHALL BE LESS THAN OR EQUAL TO OD + 2 FEET.
  2. TRENCH SHALL BE DEWATERED BEFORE BEDDING MATERIAL IS PLACED.
  3. EACH JOINT SHALL BE WRAPPED WITH FILTER FABRIC.
  4. SEE ASTM D2321, TABLE I FOR MATERIAL CLASSIFICATIONS.
  5. SEE ASTM D698 FOR COMPACTION METHOD.

MATERIAL REQUIREMENTS  
FOUNDATION - IF NATIVE MATERIAL IS UNSUITABLE, COORDINATE WITH ENGINEER TO DETERMINE AMOUNT OF MATERIAL TO REMOVE AND SUITABLE MATERIAL WITH WHICH TO REPLACE IT.  
BEDDING - CLASS IB OR CLASS II.  
HAUNCHING - CLASS II OR CLASS III.  
FINAL BACKFILL - CLASS II, CLASS III, OR CLASS IVA.

COMPACTION REQUIREMENTS  
BEDDING - LOOSELY PLACE BEDDING UNDER MIDDLE 1/3 OF PIPE. FOR REST OF BEDDING, COMPACT CLASS IB AND CLASS II MATERIAL TO 95%  
HAUNCHING - COMPACT CLASS II AND CLASS III MATERIAL TO 95% IN 6" LIFTS  
FINAL BACKFILL - COMPACT CLASS II, CLASS III, OR CLASS IVA MATERIAL TO 90% IN 6" LIFTS.

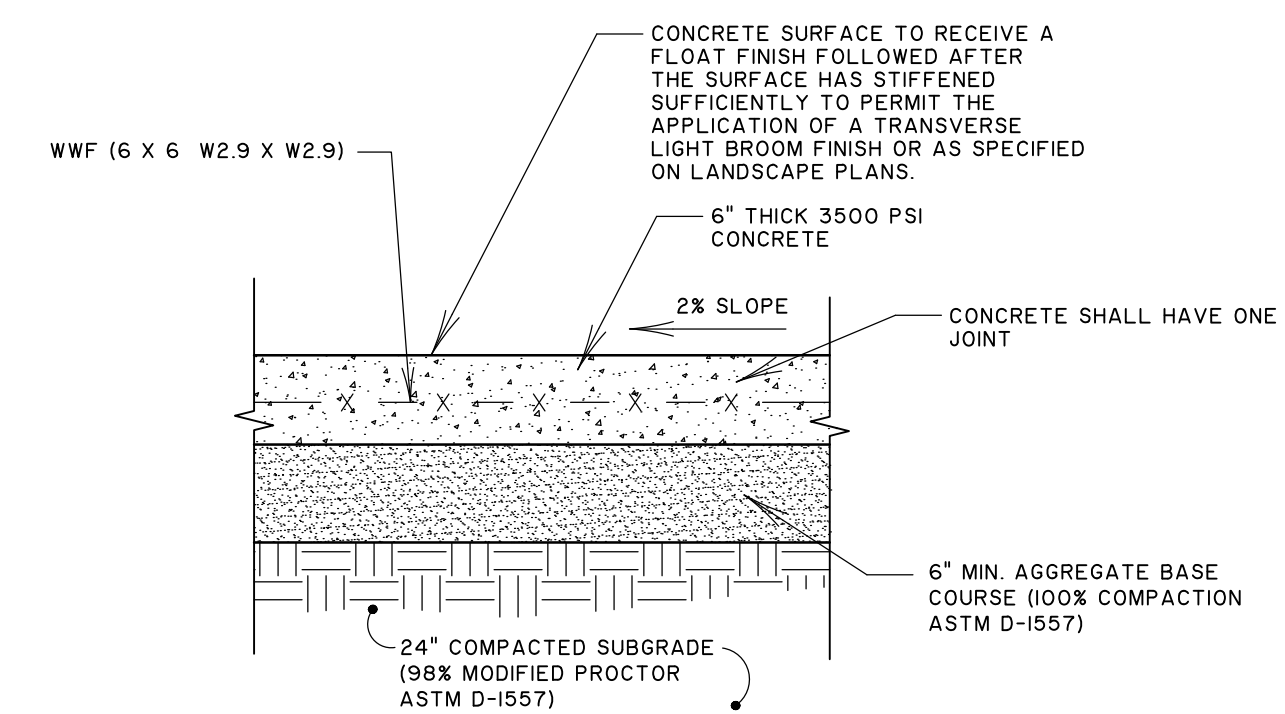


**RCP BEDDING PAVED AREAS**  
NOT TO SCALE

- NOTES:
1. TW SHALL BE LESS THAN OR EQUAL TO OD + 2 FEET.
  2. TRENCH SHALL BE DEWATERED BEFORE BEDDING MATERIAL IS PLACED.
  3. EACH JOINT SHALL BE WRAPPED WITH FILTER FABRIC.
  4. SEE ASTM D2321, TABLE I FOR MATERIAL CLASSIFICATIONS.
  5. SEE ASTM D698 FOR COMPACTION METHOD.

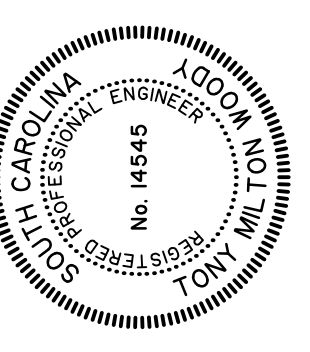
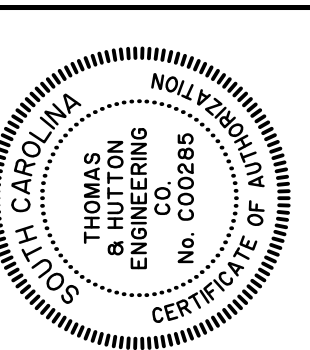
MATERIAL REQUIREMENTS  
FOUNDATION - IF NATIVE MATERIAL IS UNSUITABLE, COORDINATE WITH ENGINEER TO DETERMINE AMOUNT OF MATERIAL TO REMOVE AND SUITABLE MATERIAL WITH WHICH TO REPLACE IT.  
BEDDING - CLASS IB OR CLASS II.  
HAUNCHING - CLASS II OR CLASS III.  
FINAL BACKFILL - CLASS II OR CLASS III.

COMPACTION REQUIREMENTS  
BEDDING - LOOSELY PLACE BEDDING UNDER MIDDLE 1/3 OF PIPE. FOR REST OF BEDDING, COMPACT CLASS IB AND CLASS II MATERIAL TO 95%  
HAUNCHING - COMPACT CLASS II AND CLASS III MATERIAL TO 95% IN 6" LIFTS  
FINAL BACKFILL - COMPACT CLASS II OR CLASS III MATERIAL TO 95% IN 6" LIFTS



**CONCRETE PAVEMENT**  
NOT TO SCALE

- NOTES:
1. CONTRACTOR TO CONFIRM FINISH, COLOR, TEXTURE OF CONCRETE WITH LANDSCAPE ARCHITECT PRIOR TO COMMENCEMENT.
  2. CONTROL JOINTS ARE TO BE LOCATED WHERE SHOWN ON THE PLANS.



NO.	REVISIONS	DATE

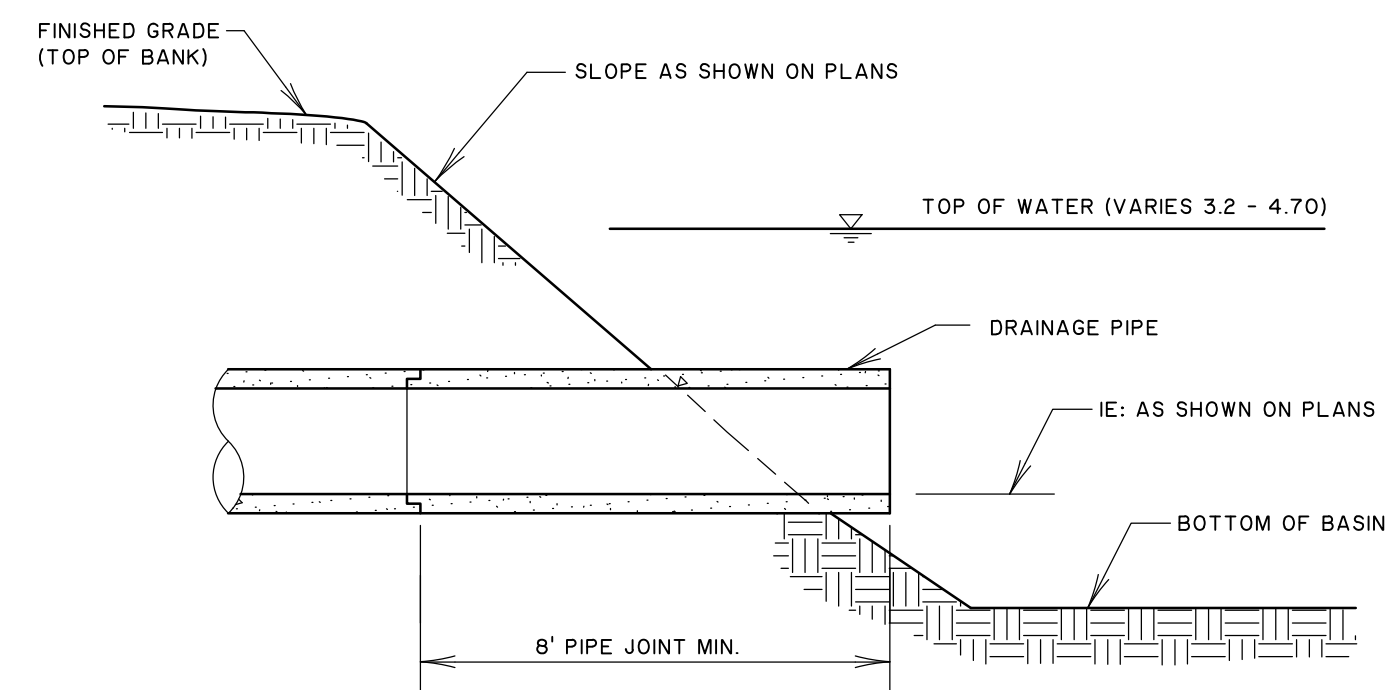
**THOMAS & HUTTON**  
682 Johnnie Dodds Boulevard • Suite 100  
Mt. Pleasant, SC 29564 • 843.849.0200  
www.thomasandhutton.com

**BRP KIAWAH LLC**  
CHARLESTON COUNTY, SOUTH CAROLINA  
KIAWAH SENIOR LIVING  
DETAILS

JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	N/A

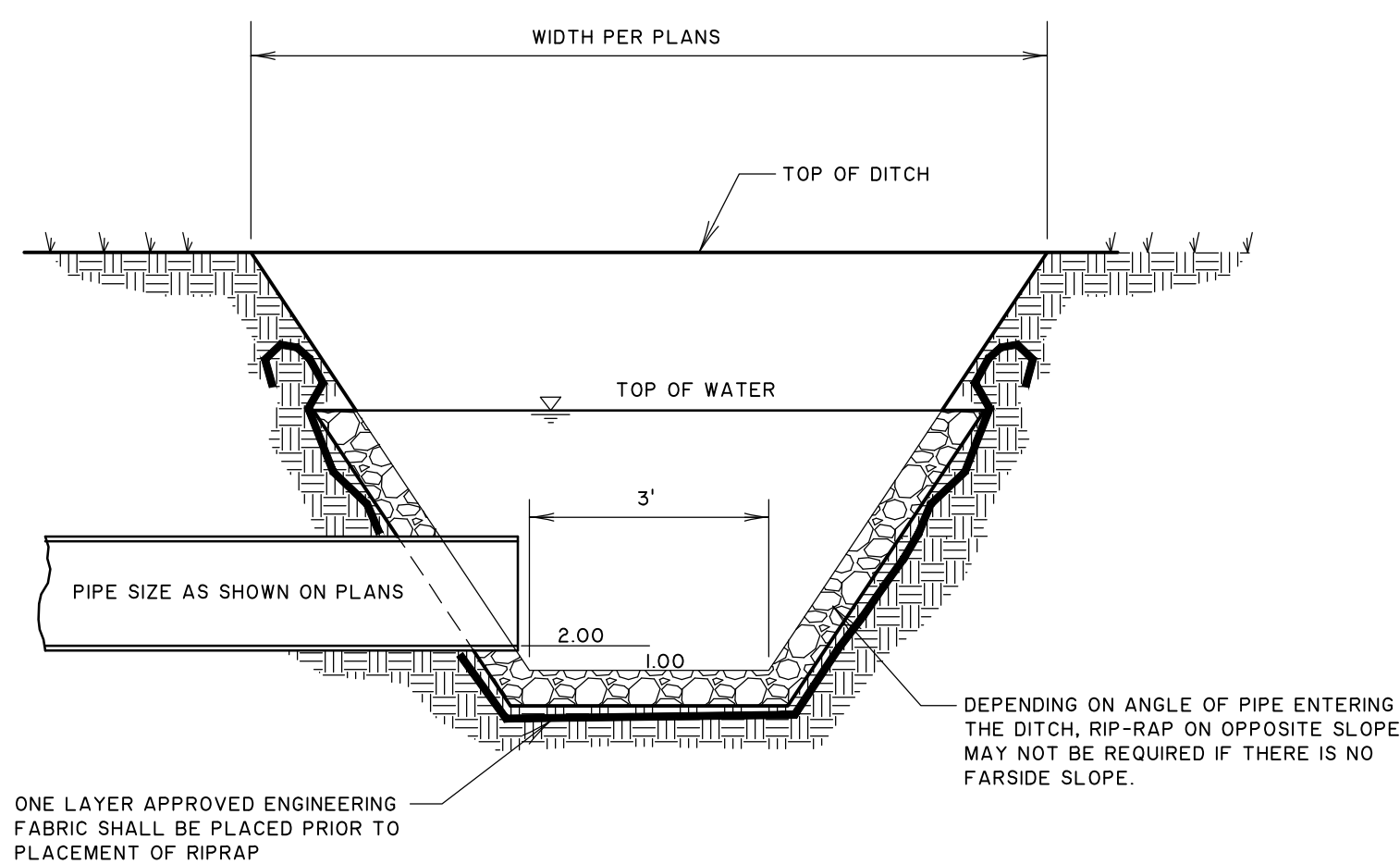
**C5.1**

2017/07/27 10:00 AM C:\Users\jthomas\OneDrive\Documents\Drawings\2017\2017-07-27\2017-07-27.dwg - 10:00 AM



### PIPE OUTLET TO BASIN

NOT TO SCALE



### TYPICAL PIPE OUTLET TO DITCH

NOT TO SCALE



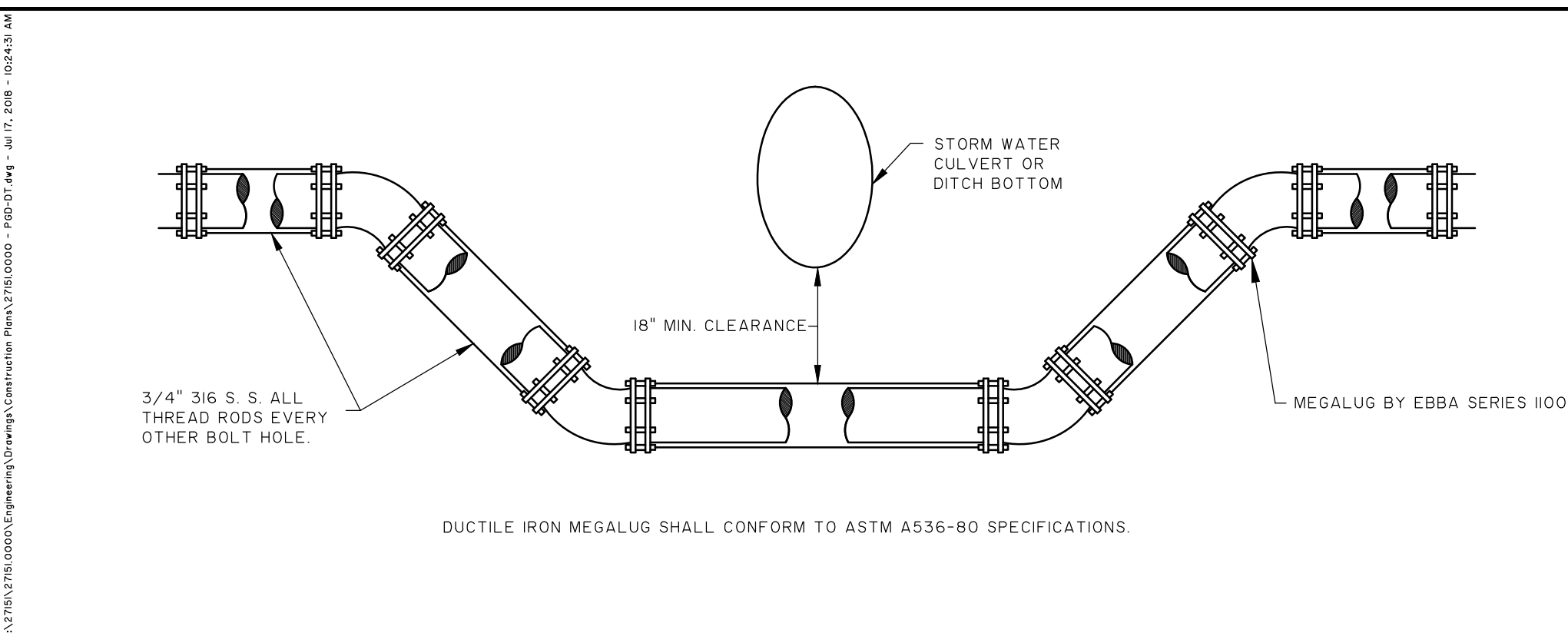
NO.	REVISIONS	BY	DATE

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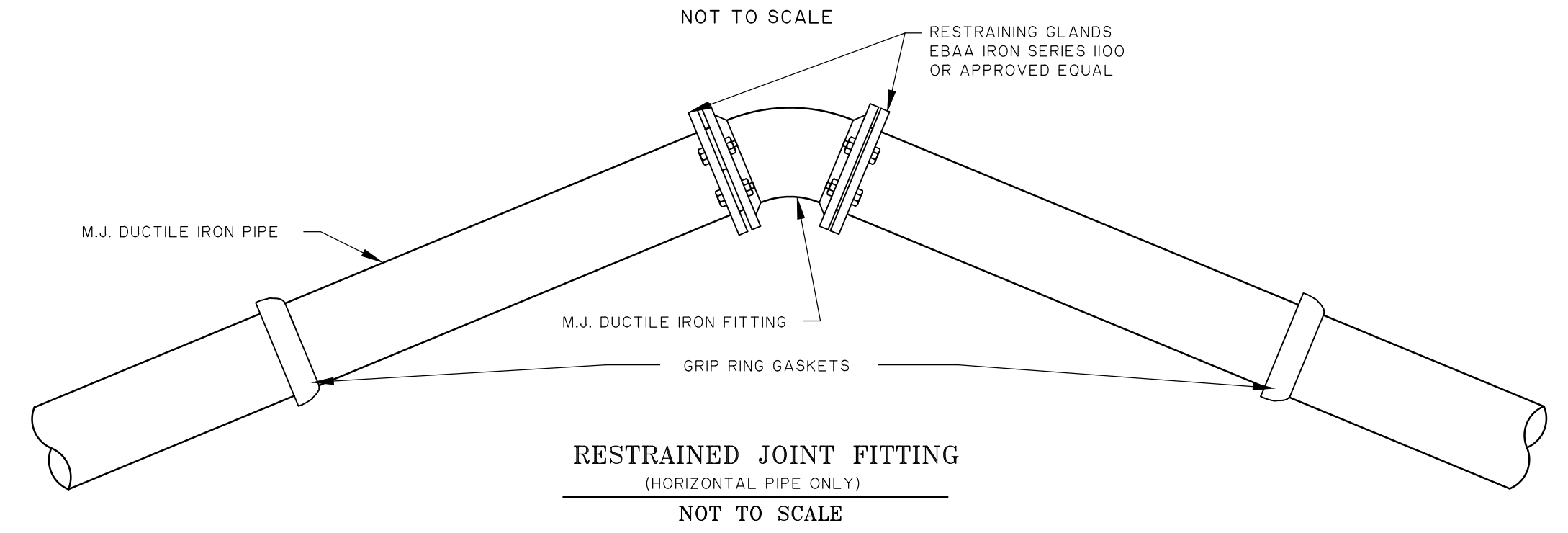
**BRP KIAWAH LLC**  
 CHARLESTON COUNTY, SOUTH CAROLINA  
 KIAWAH SENIOR LIVING  
 DETAILS

JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	N/A

# C5.2



**VERTICAL OFFSET DETAIL**  
NOT TO SCALE



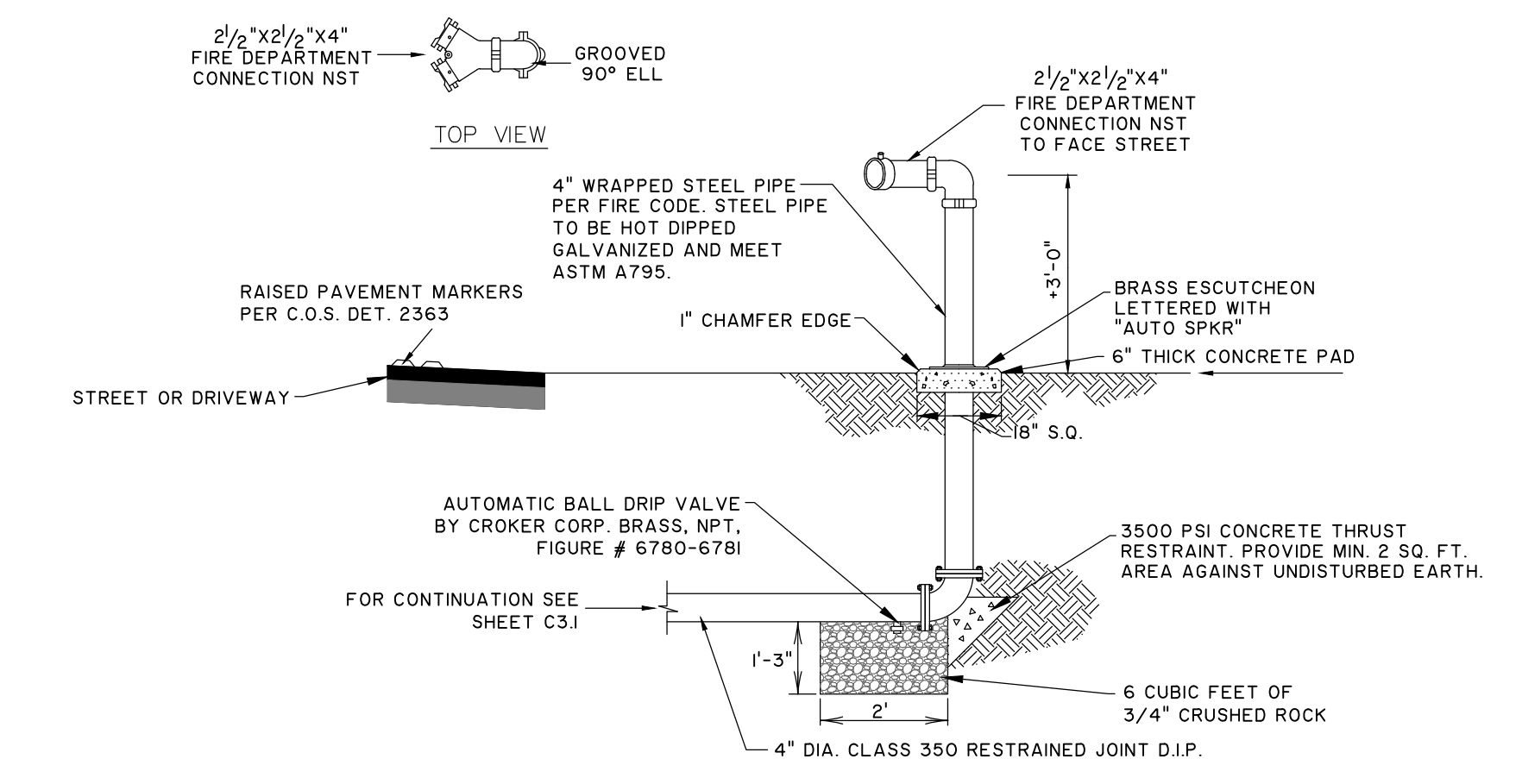
**RESTRAINED JOINT FITTING (HORIZONTAL PIPE ONLY)**  
NOT TO SCALE

- NOTES:**
- THE FOLLOWING CONDITIONS WERE USED TO CALCULATE THE RESTRAINED LENGTHS:  
LAYING CONDITION IS TYPE 3;  
SOIL DESIGNATED AS SAND-SILT;  
DEPTH IS 3 FT.;  
DESIGN PRESSURE (TEST) IS 150 PSI;  
SAFETY FACTOR IS 1.5.
- FOR THE TEE BRANCH AND REDUCER, LENGTHS IN THE TABLE BELOW ARE BASED ON BRANCHING AND REDUCING FROM THE NEXT LARGER SIZE IN THE TABLE. DEVIATIONS FROM THESE CONDITIONS MUST BE BASED ON THE ABOVE PARAMETERS.

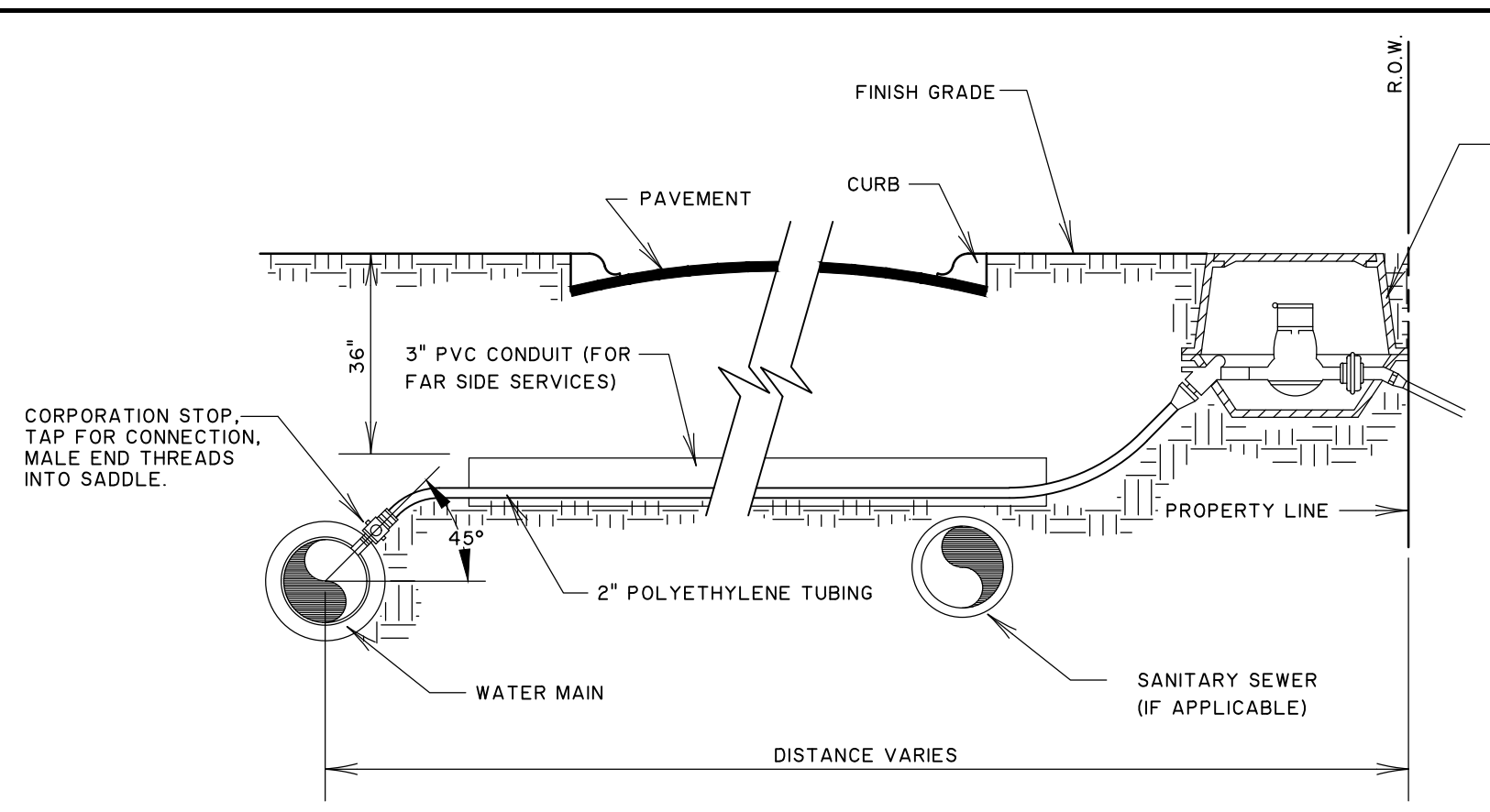
- JOINT RESTRAINT SHALL BE:  
FOR PVC (4"-12"): EBAA SERIES 1500 RESTRAINT HARNESS OR APPROVED EQUIVALENT FOR "DIP" - EBAA SERIES 1700 RESTRAINT HARNESS OR APPROVED EQUIVALENT

RESTRAINED JOINT TABLE								
LENGTH OF RESTRAINED JOINT REQUIRED (IN L.F. EACH SIDE OF THE BEND)								
SIZE	1 1/4"	2 1/2"	4 5/8"	90°	TEE BRANCH	DEAD END	REDUCER	VALVE
4"	2	5	10	24	37	60	44	60
6"	3	7	14	33	64	85	46	85
8"	4	9	18	43	90	110	46	110
10"	5	10	21	51	113	133	50	133
12"	10	20	30	60	140	160	60	160

**RESTRAINED JOINT FITTING**  
NOT TO SCALE

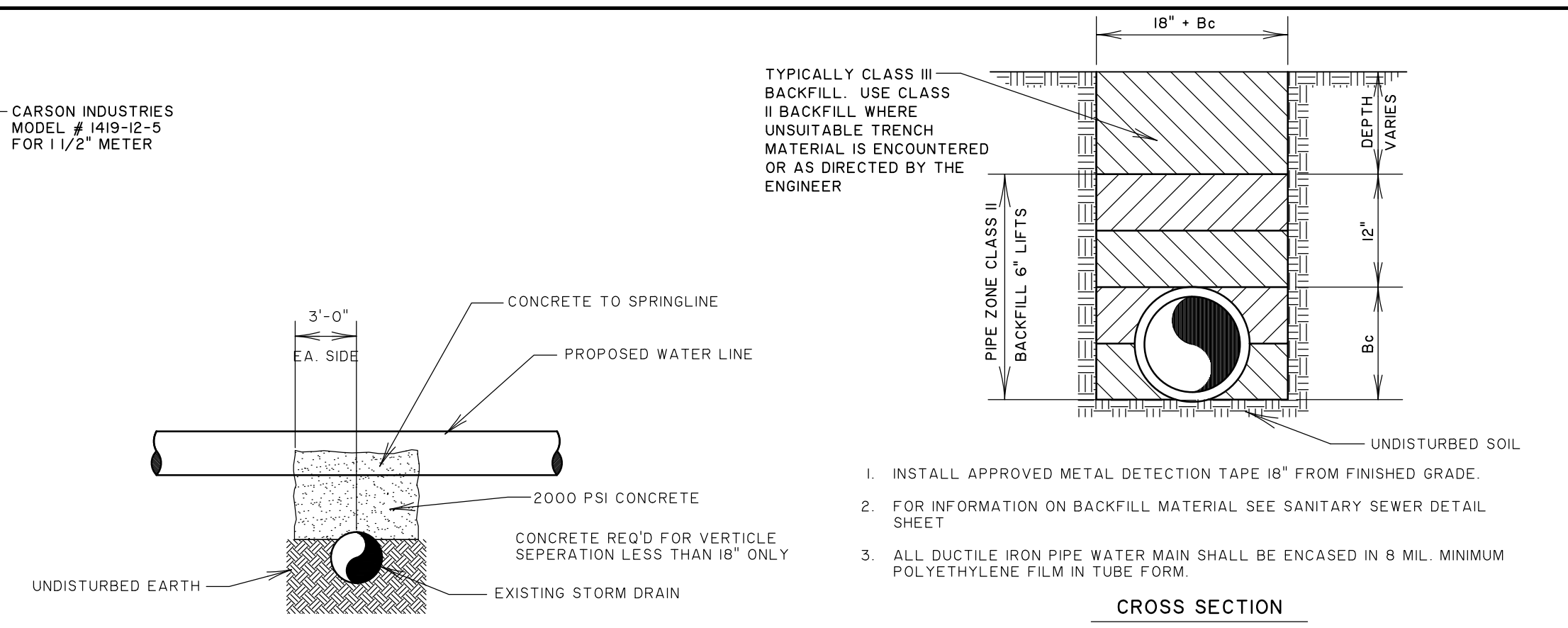


**REMOTE FIRE DEPARTMENT CONN.**  
NOT TO SCALE

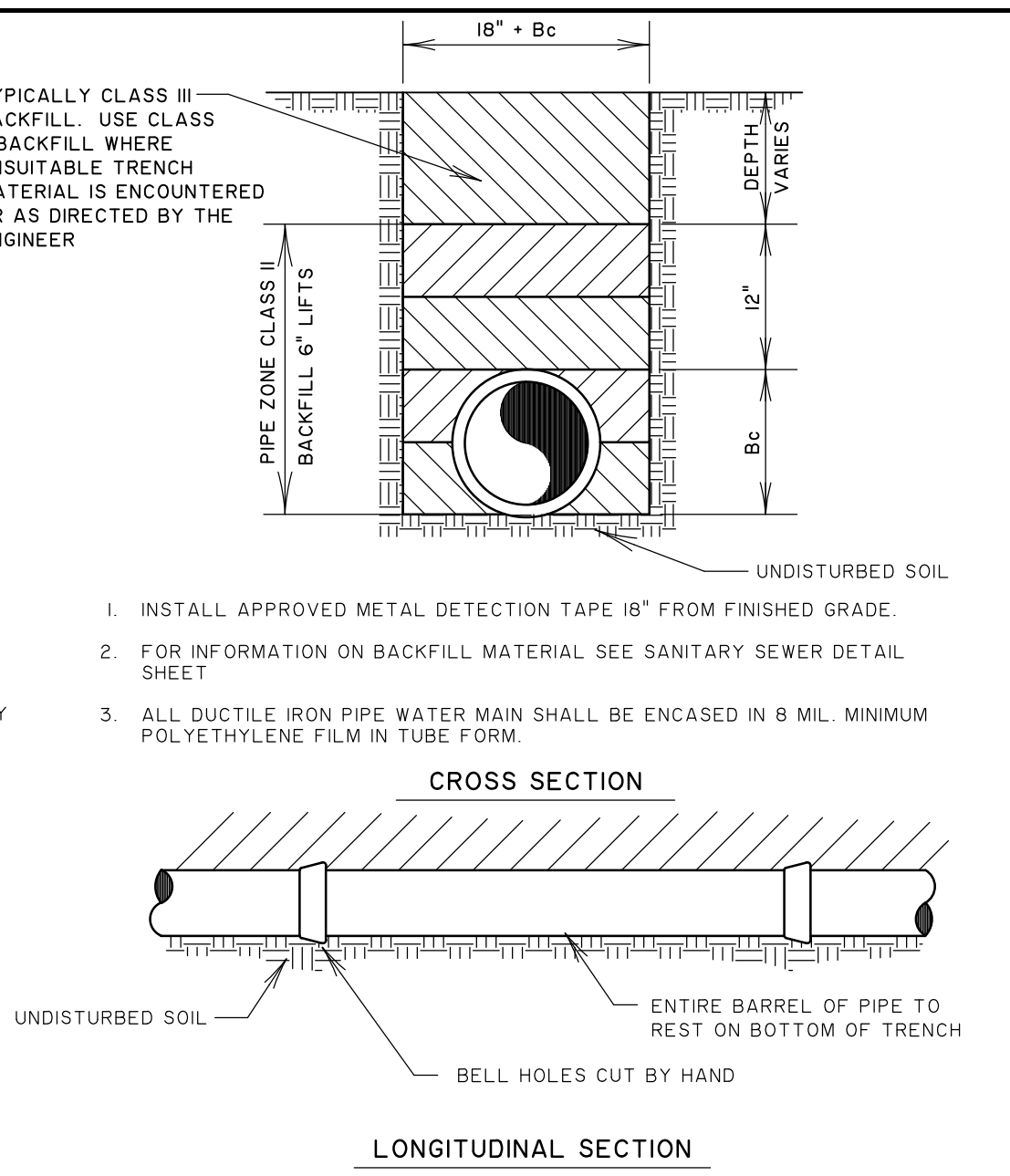


**IRRIGATION WATER SERVICE**  
NOT TO SCALE

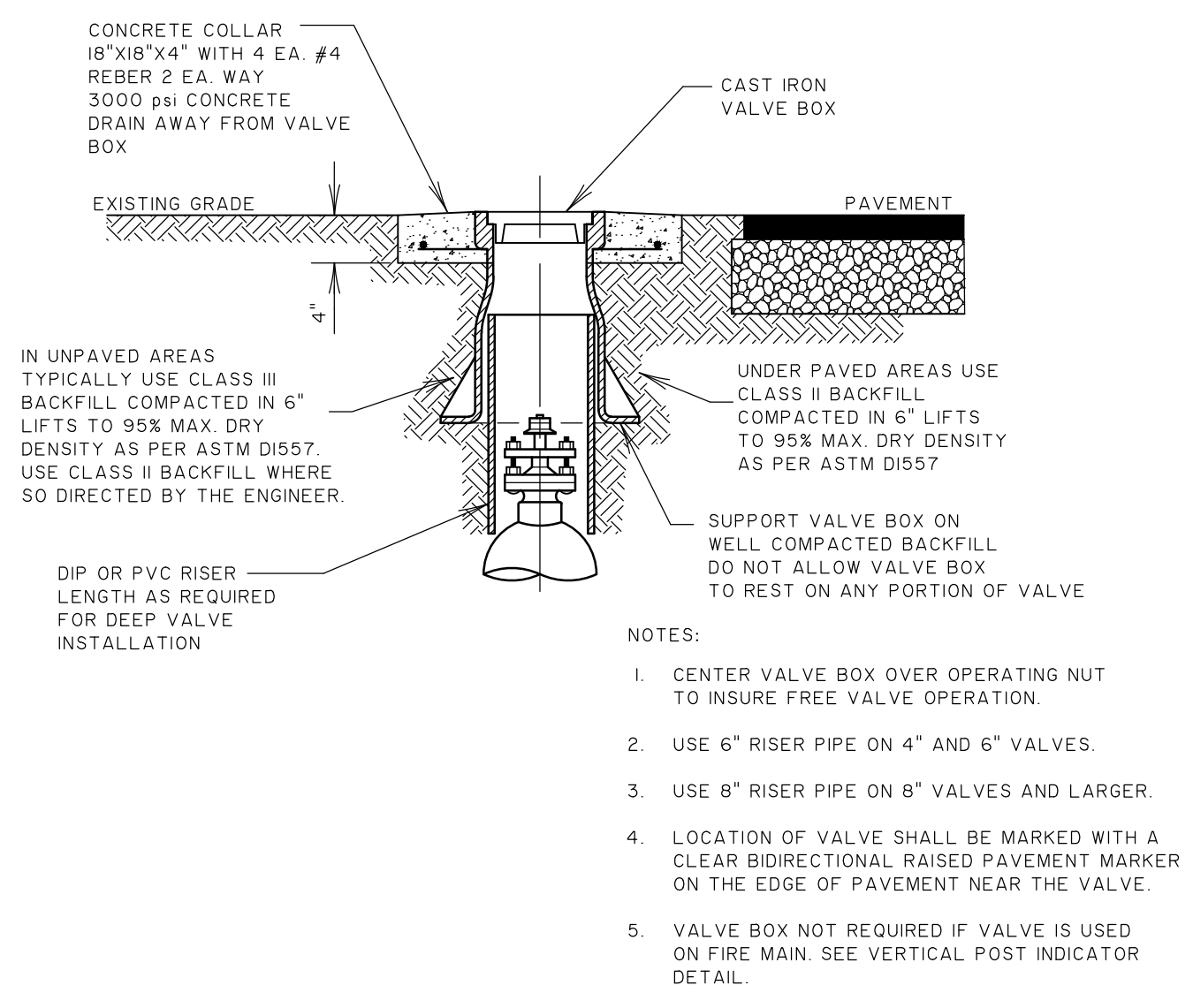
- CORPORATION STOP TO BE 2 1/2" MUELLER # H 15005
- POLYETHYLENE TUBING TO BE 2 1/2" IPS 4-04306
- CURB VALVE AND YOKE BOX TO BE CARSON INDUSTRIES MODEL # 1419-12-5 FOR 1 1/2" METER
- WATER METER TO BE INSTALLED BY KIAWAH ISLAND UTILITY, INC.



**WATER LINE CROSSING ABOVE STORM DRAIN**  
NOT TO SCALE

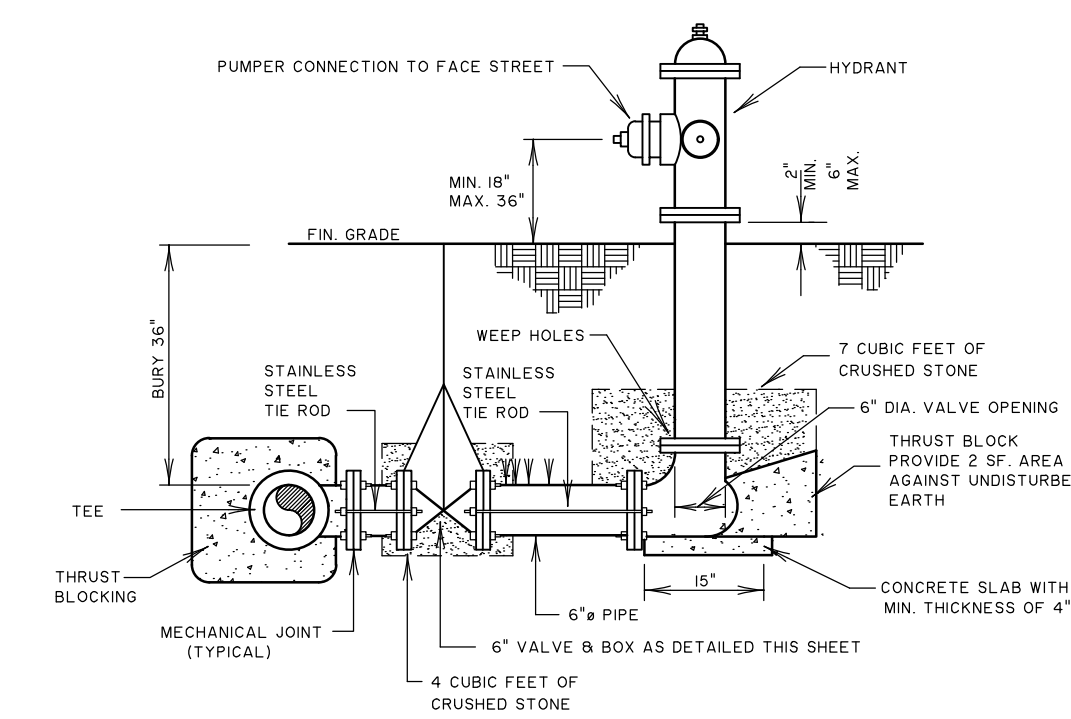


**WATER MAIN BEDDING DETAIL**  
NOT TO SCALE



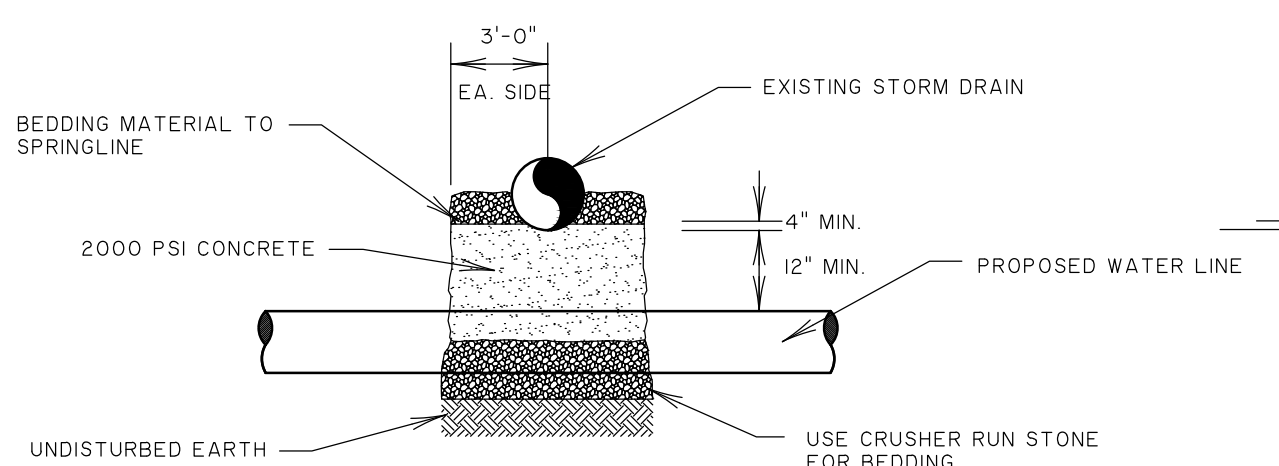
**VALVE BOX DETAIL**  
NOT TO SCALE

- NOTES:**
- CENTER VALVE BOX OVER OPERATING NUT TO INSURE FREE VALVE OPERATION.
  - USE 6" RISER PIPE ON 4" AND 6" VALVES.
  - USE 8" RISER PIPE ON 8" VALVES AND LARGER.
  - LOCATION OF VALVE SHALL BE MARKED WITH A CLEAR BIDIRECTIONAL RAISED PAVEMENT MARKER ON THE EDGE OF PAVEMENT NEAR THE VALVE.
  - VALVE BOX NOT REQUIRED IF VALVE IS USED ON FIRE MAIN. SEE VERTICAL POST INDICATOR DETAIL.

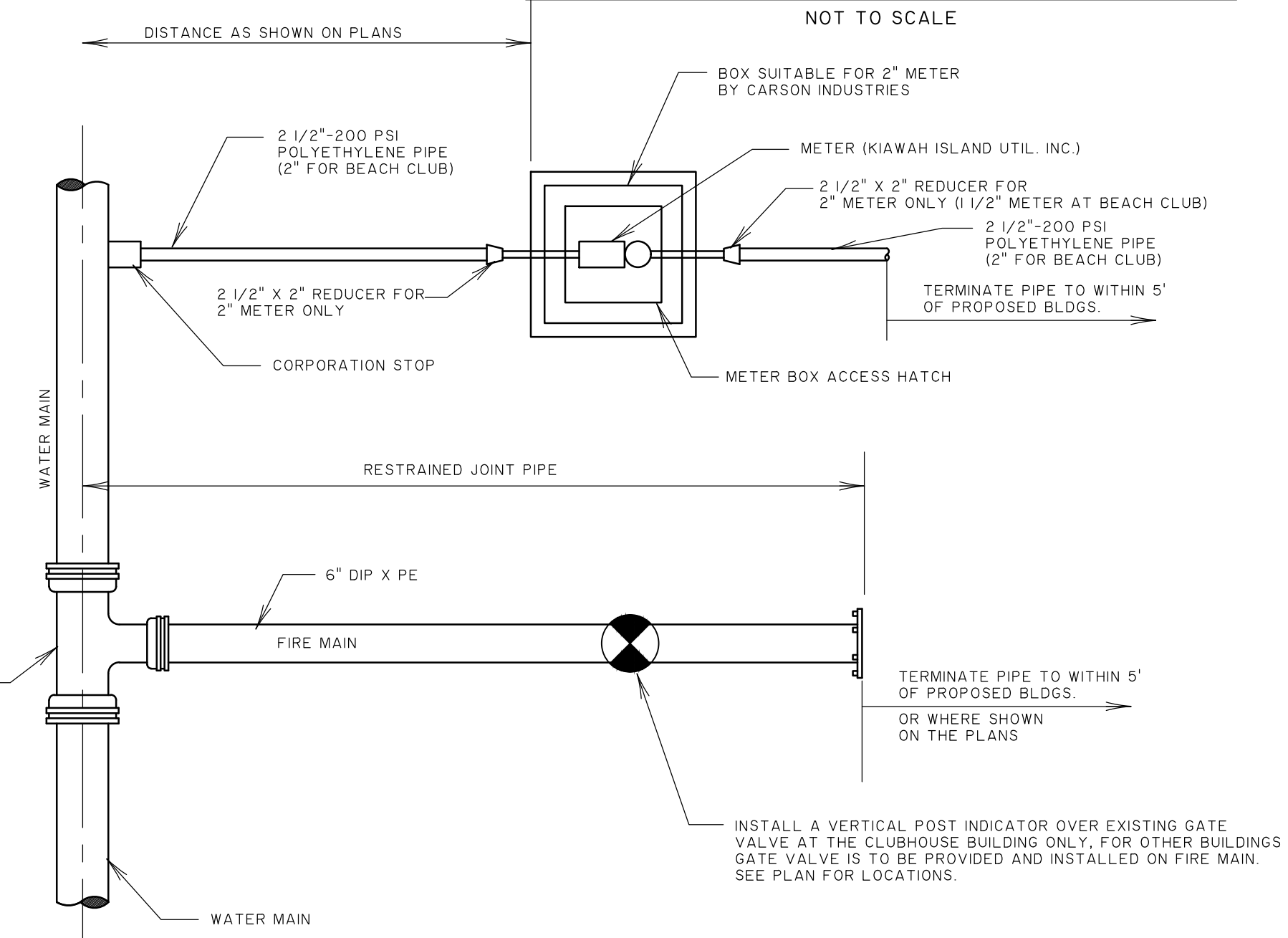


**FIRE HYDRANT DETAIL**  
NOT TO SCALE

- NOTES:**
- FIRE HYDRANT TO BE PLACED A MIN. OF 3' FROM EDGE OF PAVEMENT AND BACK OF CURB.
  - PUMPER CONNECTION TO FACE STREET AND HOSE CONNECTIONS SHALL BE FREE OF OBSTRUCTIONS.
  - TOP OF VALVE BOXES TO BE 1" ABOVE FINISHED GRADE IN UNPAVED AREAS AND FLUSH IN PAVED AREAS.
  - WHERE VALVE BOX IS LOCATED IN PAVERS OR CONCRETE SURFACE A COLLAR WILL NOT BE REQUIRED. TOP OF VALVE SHALL BE SET FLUSH WITH FINISH SURFACE.



**WATER LINE CROSSING BELOW STORM DRAIN**  
NOT TO SCALE



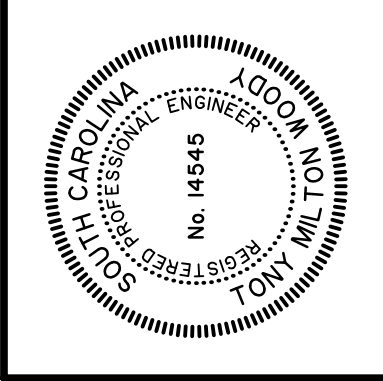
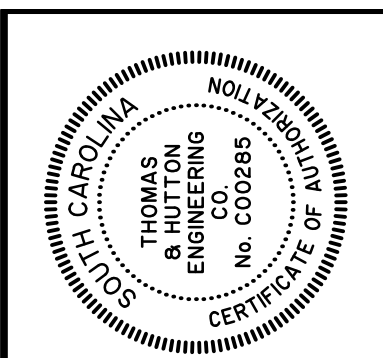
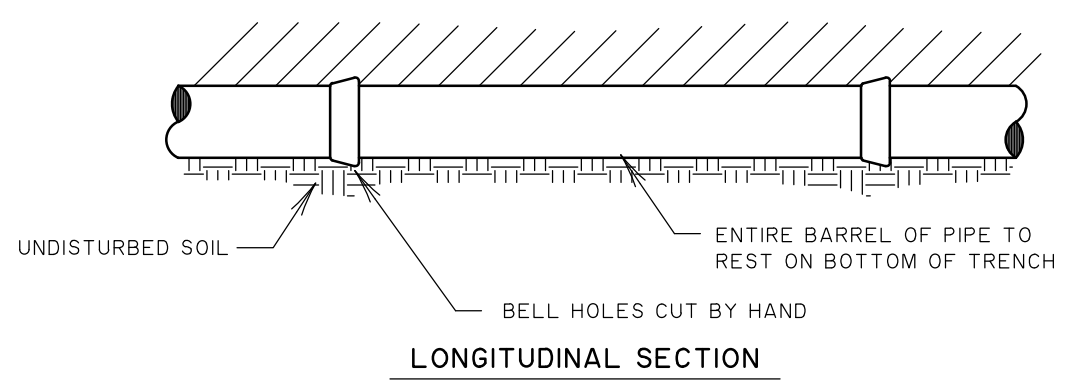
**TYPICAL FIRE/DOMESTIC WATER SERVICE**  
NOT TO SCALE

- METER BOX TO BE AS MANUFACTURED BY CARSON INDUSTRIES, KIAWAH ISLAND UTILITY, INC. WILL PROVIDE AND INSTALL THE METER.
- DOMESTIC WATER METER SIZE TO BE DETERMINED BY THE OWNER FOR EACH SPECIFIC BUILDING. CONTRACTOR TO VERIFY THIS SIZE PRIOR TO PURCHASING METER BOXES AND APPURTENANCES.
- PRIOR TO SETTING THE METER BOX FRAMES THE CONTRACTOR SHALL VERIFY THE FINISH GRADE OF THE ADJACENT HARDSCAPE/LANDSCAPE.
- PIPING AND METER BOX FOR BEACH CLUB TO BE 1/2" SMALLER THAN OTHER BUILDINGS.

**GENERAL NOTES**

- ALL VALVES AND HYDRANTS SHALL OPEN COUNTER CLOCKWISE.
- THE CONTRACTOR MUST CALL KIAWAH ISLAND UTILITY, INC. 72 HOURS PRIOR TO TAPPING THE MAIN WATER LINE, PERFORMING A PRESSURE TEST, OR CONDUCTING BACTERIOLOGICAL TESTS. KIAWAH ISLAND UTILITY, INC. WILL HAVE A COMPANY REPRESENTATIVE ON SITE FOR EACH OF THESE EVENTS. KIAWAH ISLAND UTILITY, INC. MUST ALSO BE NOTIFIED AND PRESENT FOR THE INSPECTION OF ALL HYDRANTS, VALVES, AND THRUST BLOCKS PRIOR TO THEM BEING COVERED.
- AFTER A SUCCESSFUL PRESSURE TEST, THE CONTRACTOR MUST CONDUCT BACTERIOLOGICAL TESTS ACCORDING TO SC DHEC REGULATIONS. TWO SAMPLES MUST SHOW NEGATIVE BACTERIOLOGICAL RESULTS OR THE PROCESS MUST BE REPEATED. THE CONTRACTOR IS RESPONSIBLE FOR ALL COSTS OF ALL TESTING, INCLUDING WATER USED IN FLUSHING.
- ALL NEW FIRE HYDRANTS MUST BE TESTED FOR STATIC AND RESIDUAL FLOWS AND THE FLOWS AT 20 PSI.
- KIAWAH ISLAND UTILITY, INC. SHALL HAVE THE RIGHT OF ENTRY TO THE CONSTRUCTION SITE TO OBSERVE AND VERIFY THAT THE CONSTRUCTION IS IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND TO WITNESS TESTING OF THE SYSTEM.

**FIRE MAIN BEDDING DETAIL**  
NOT TO SCALE



NO.	REVISIONS	BY	DATE

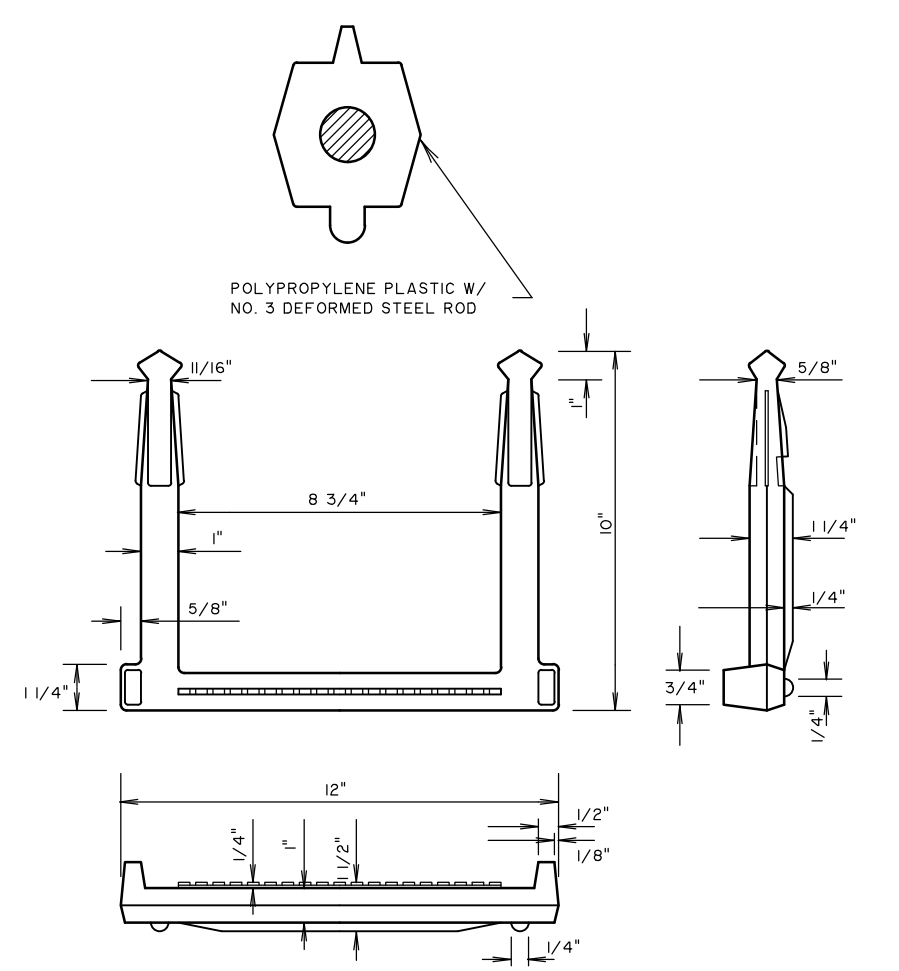
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**BRP KIAWAH LLC**  
CHARLESTON COUNTY, SOUTH CAROLINA  
**KIAWAH SENIOR LIVING**  
**WATER DETAILS**

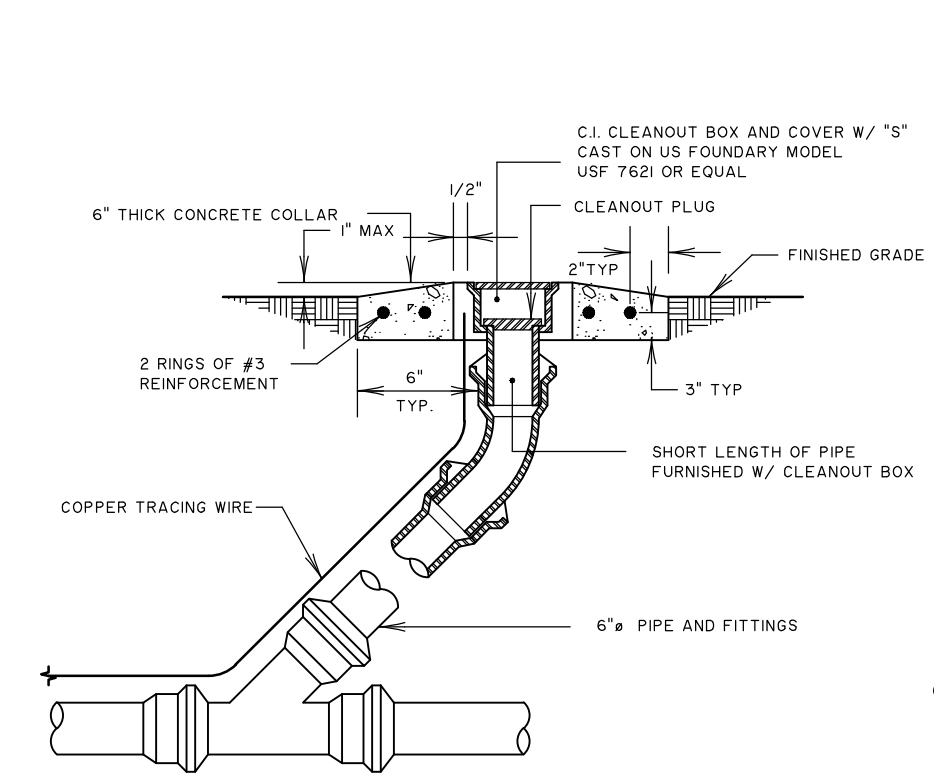
JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	N/A

**C5.3**

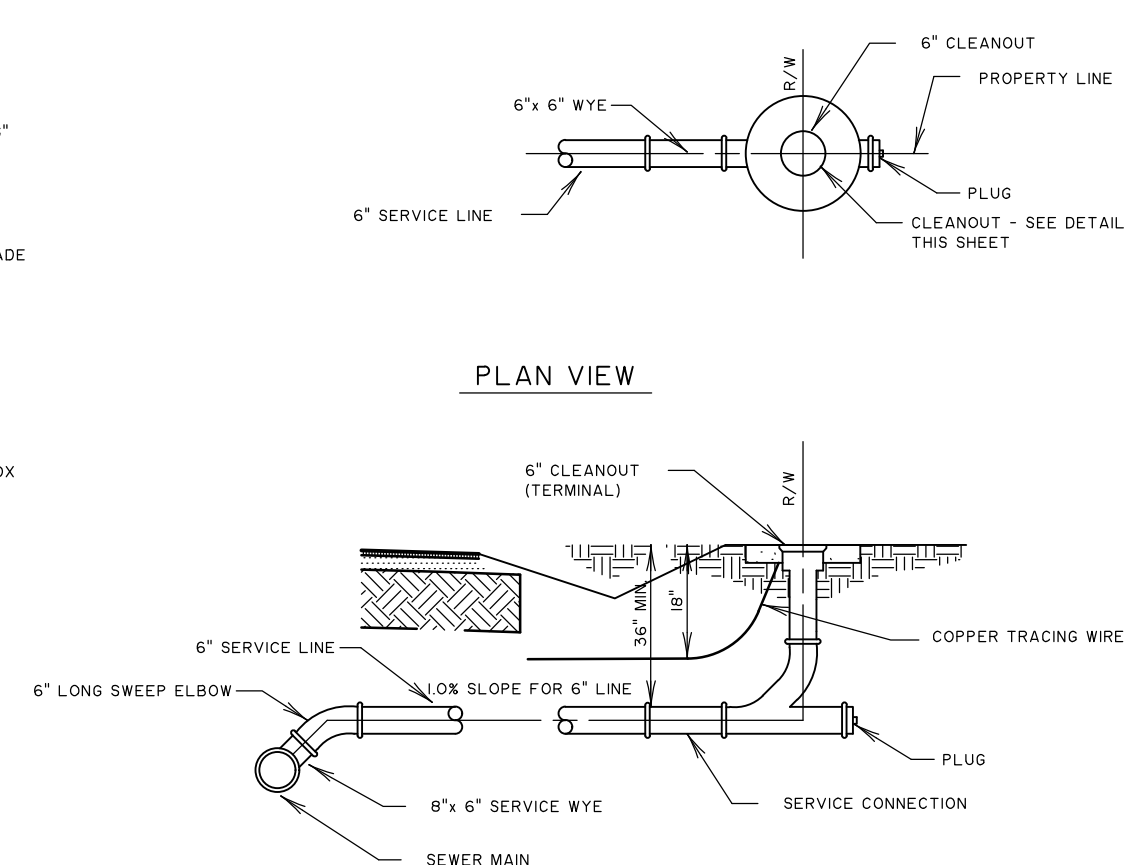




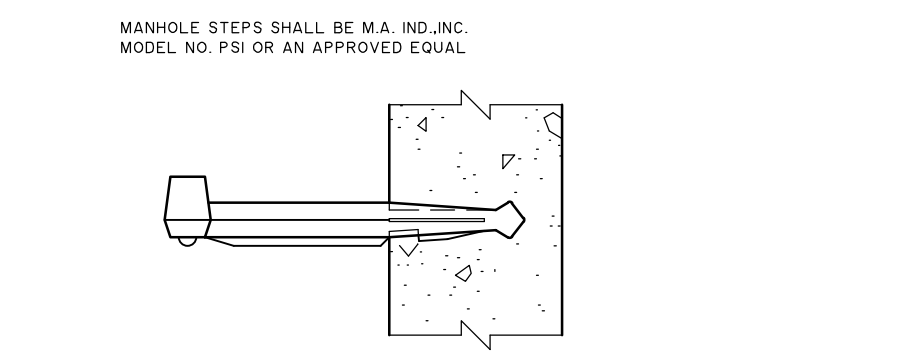
**SEWER LINE BEDDING DETAIL UNDER PAVED AREAS**  
NOT TO SCALE



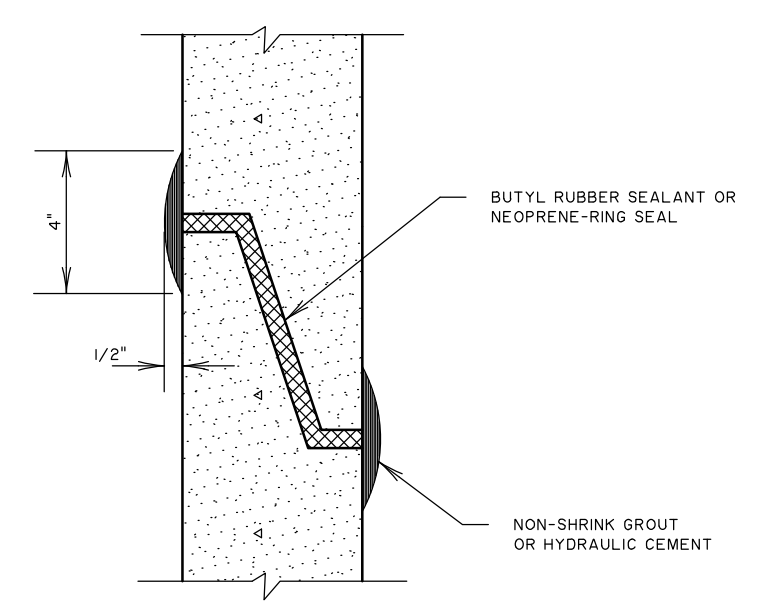
**CLEANOUT DETAIL**  
NOT TO SCALE



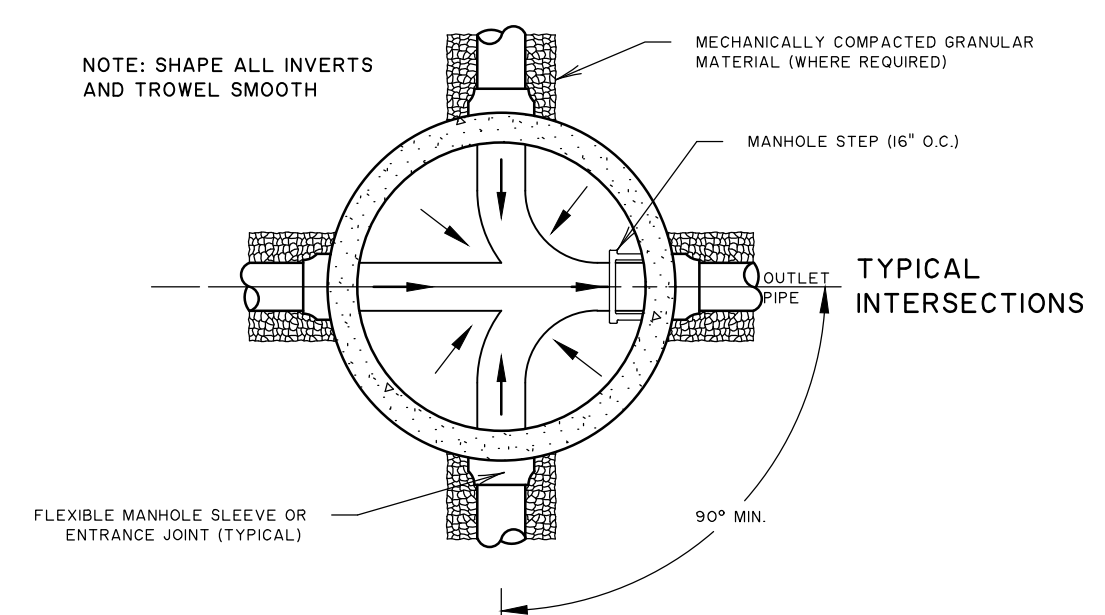
**SINGLE SEWER SERVICE DETAIL**  
NOT TO SCALE



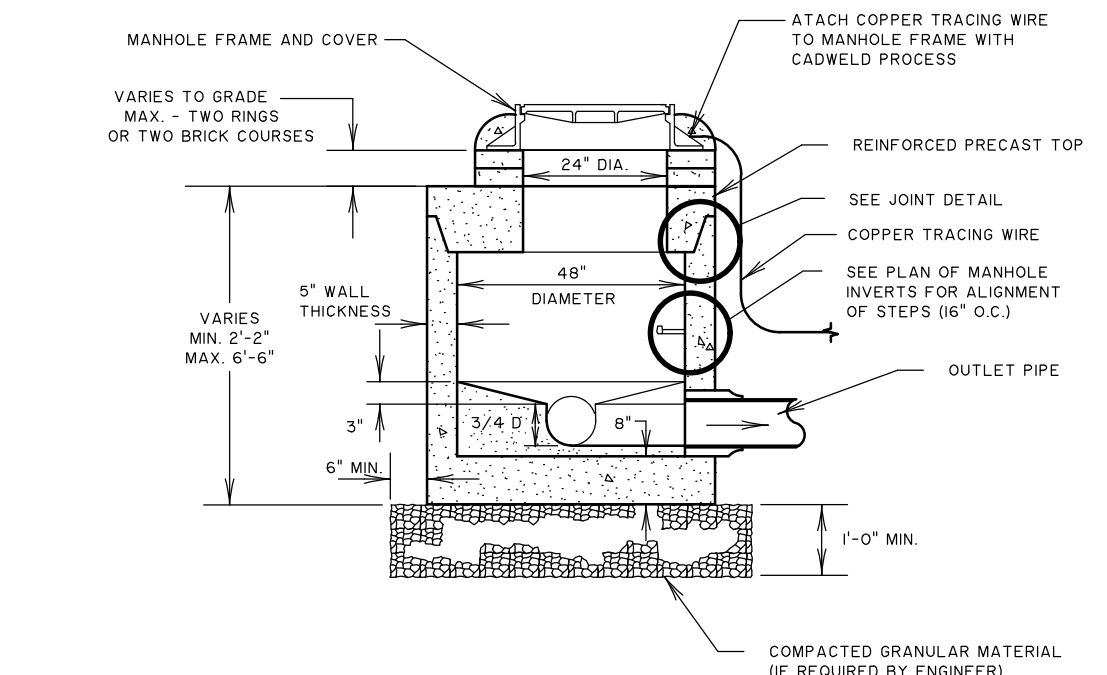
**MANHOLE STEP DETAIL**  
NOT TO SCALE



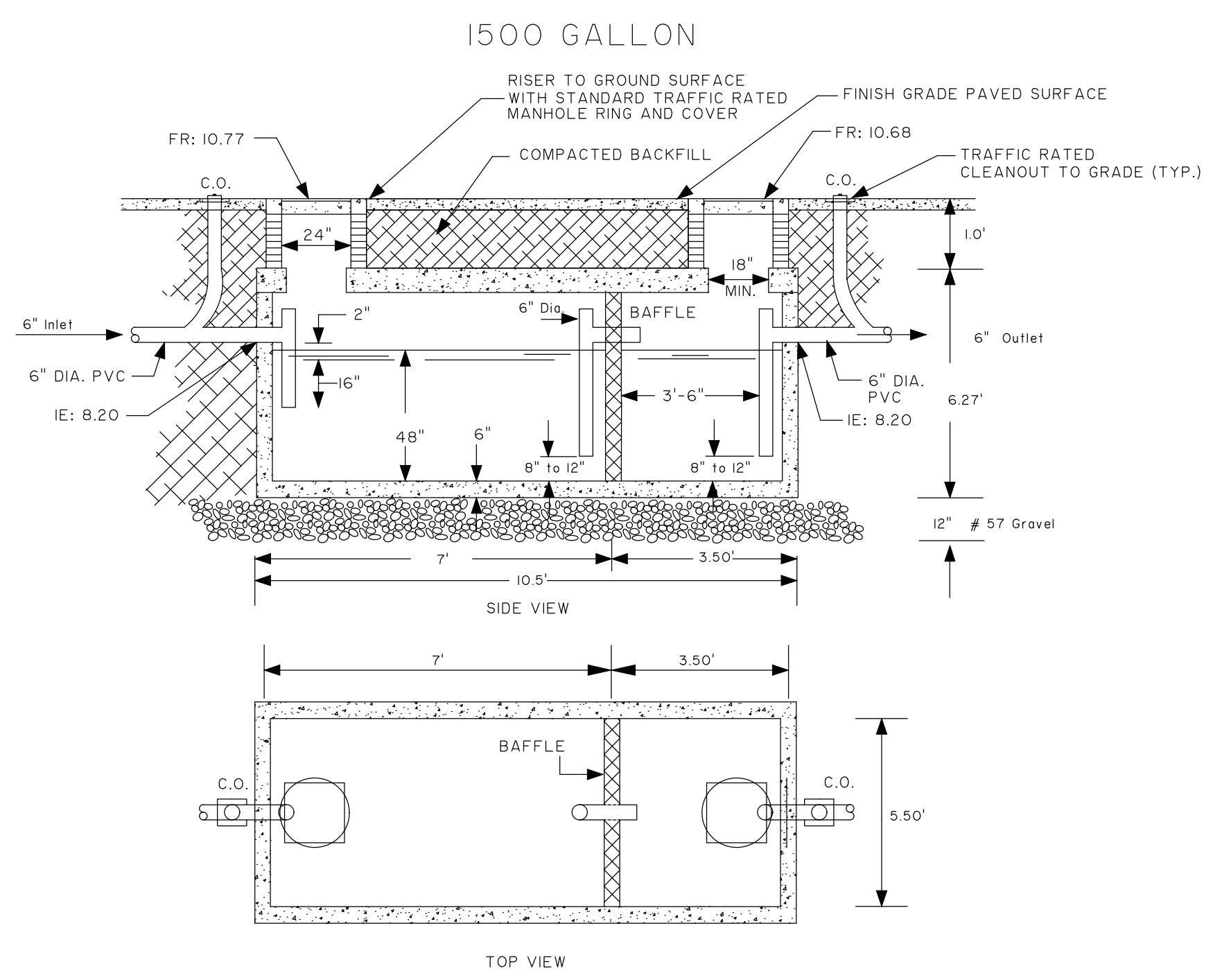
**PRECAST MANHOLE TYPICAL JOINT DETAIL**  
NOT TO SCALE



**PLAN OF MANHOLE INVERTS**  
NOT TO SCALE

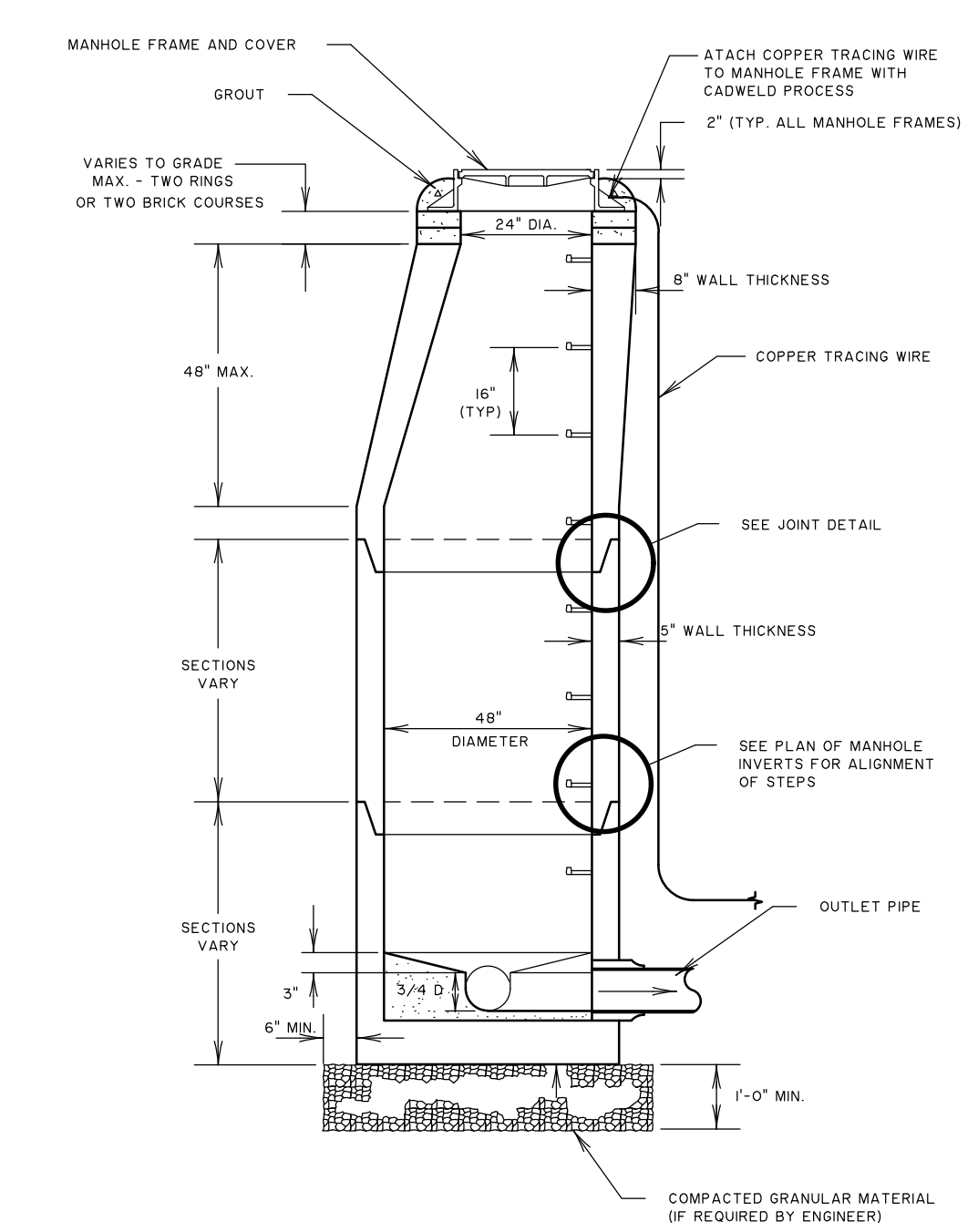


**STANDARD PRECAST SHALLOW MANHOLE**  
NOT TO SCALE

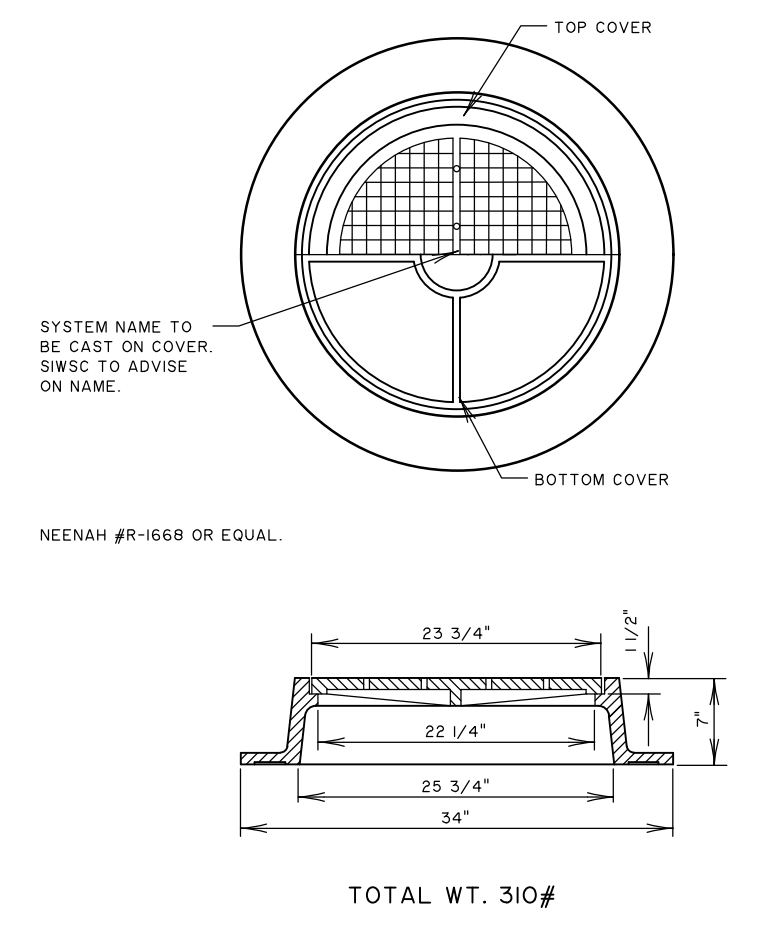


**TYPICAL UNDERGROUND GREASE TRAP**  
NOT TO SCALE

- GREASE TRAP SYSTEM SHALL BE SIZED FOR 1,500 GALLONS
- FLOW CONTROL FITTINGS SHALL BE INSTALLED ON THE INLET SIDE OF THE GREASE TRAP TO PROTECT AGAINST OVERLOADING OR SUDDEN SURGES THROUGH THE SYSTEM
- DOMESTIC WASTE LINES FROM BUILDINGS ARE TO BE CONNECTED DOWNSTREAM OF THE GREASE TRAP SYSTEM AS SHOWN ON THE PLANS.
- MANHOLE FRAME AND COVER TO BE NEENAH # R-1668 OR EQUAL.
- CLEAN-OUTS SHALL BE TRAFFIC RATED CAST IRON.



**STANDARD PRECAST MANHOLE**  
NOT TO SCALE



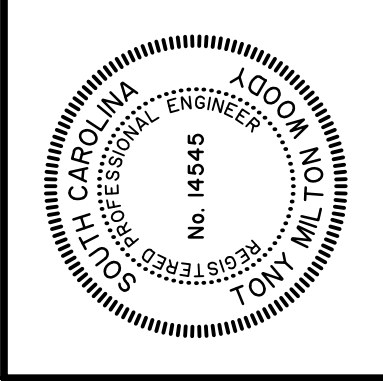
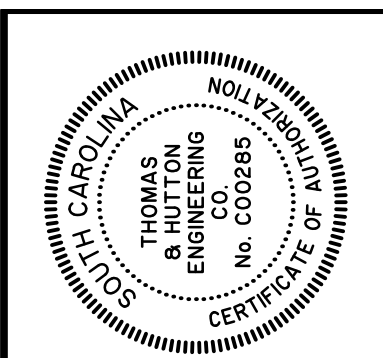
**MANHOLE COVER AND FRAME DETAIL**  
NOT TO SCALE

NOTE: CASTINGS SHALL BE OF UNIFORM QUALITY, FREE FROM BLOWHOLES, PROSDITY, HARD SPOTS, SHRINKAGE, DISTORTION OR OTHER DEFECTS. THEY SHALL BE SMOOTH AND WELL CLEANED BY SHOTBLASTING OR BY OTHER APPROVED METHOD. UNLESS AN ALTERNATIVE SPECIFICATION IS MADE, THEY SHALL BE COATED W/ ASPHALT PAINT WHICH SHALL RESULT IN A SMOOTH COATING, TOUGH AND TENACIOUS WHEN COLD, NOT TACKY AND NOT BRITTLE.

MATERIALS USED IN THE MANUFACTURE OF CASTINGS SHALL CONFORM TO ASTM, AASTHO, ASA, MIL, AMS OR FEDERAL SPECIFICATIONS FOR IRON OR DUCTILE IRON, AS FOLLOWS: GRAY IRON-ASTM CLASS 30, DUCTILE IRON-GRADE 60-40-18.

ALL CASTINGS SHALL BE MANUFACTURED TRUE TO PATTERN. COMPONENT PARTS SHALL FIT TOGETHER IN A SATISFACTORY MANNER. ROUND FRAMES AND COVERS SHALL BE OF NON-ROCKING DESIGN, OR SHALL HAVE MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING UNDER TRAFFIC.

ALL WEIGHTS GIVEN ARE AVERAGE (AND APPROXIMATE) VALUES. DEVIATIONS SHALL NOT EXCEED TOLERANCES PERMITTED BY ASTM STANDARDS. CASTINGS TO MATCH EXISTING SWSCA STANDARD.



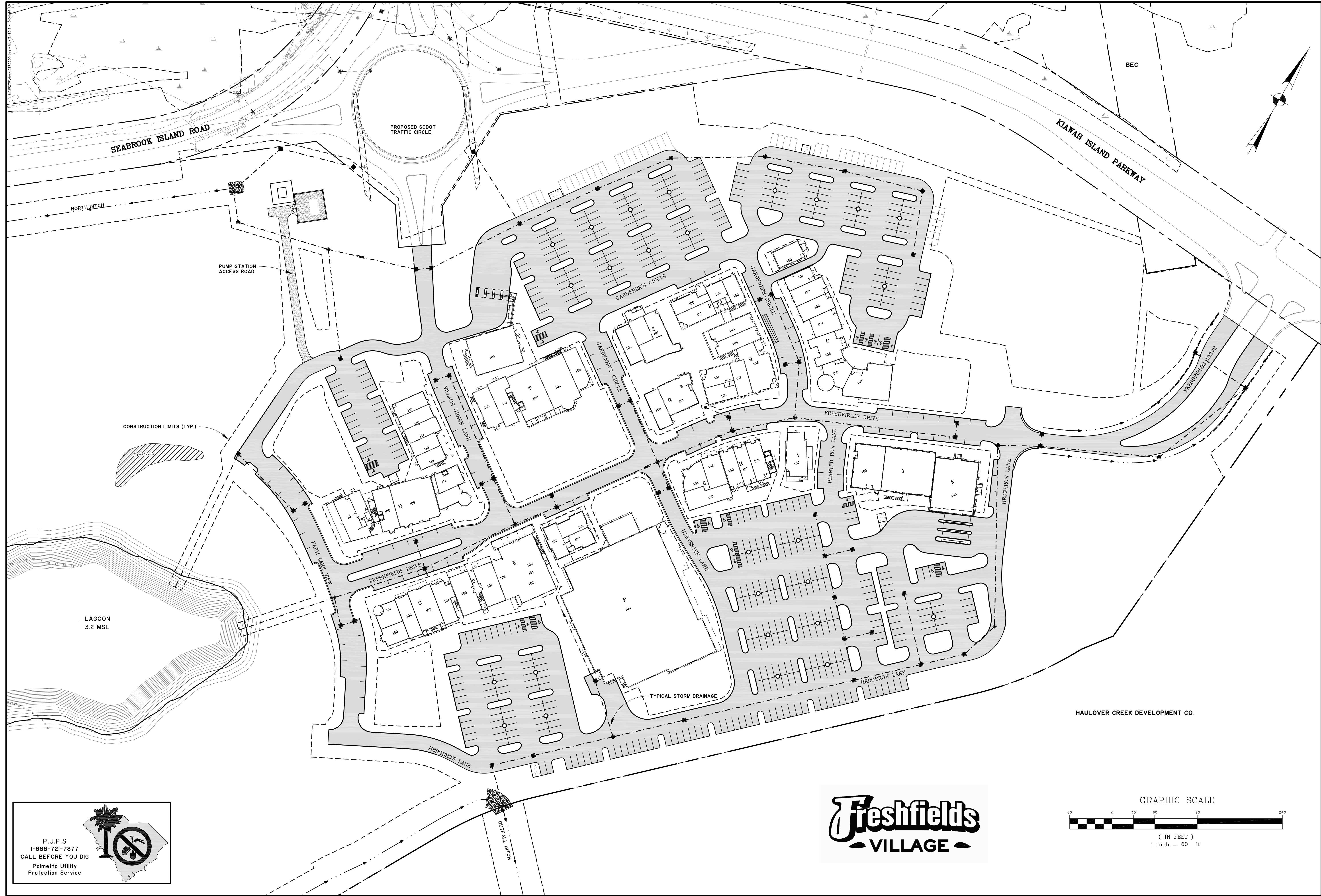
NO.	REVISIONS	BY	DATE

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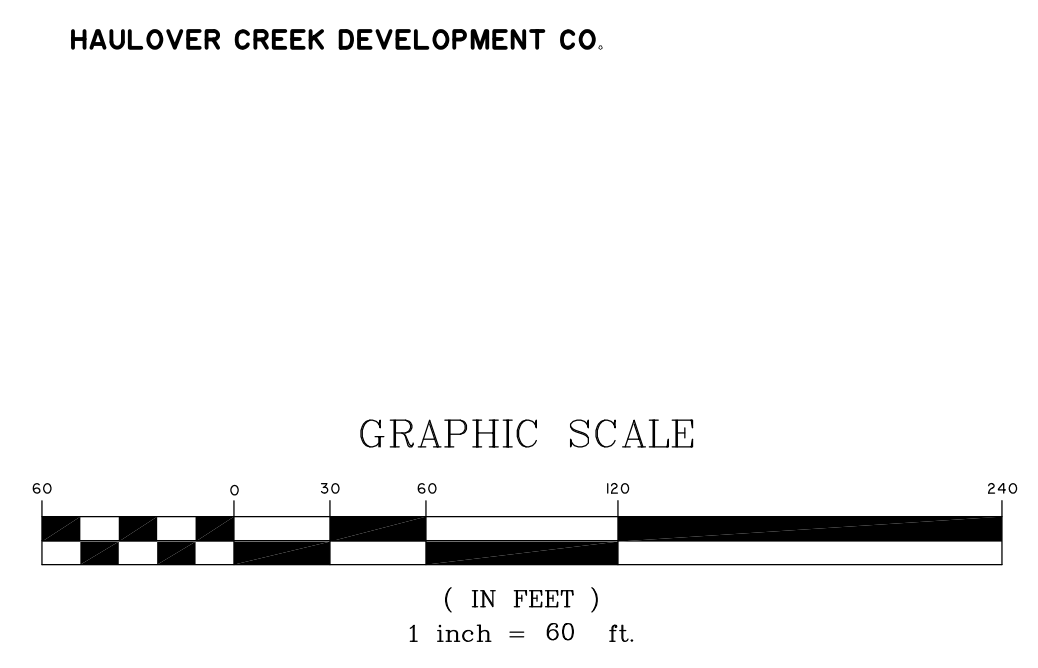
**BRP KIAWAH LLC**  
CHARLESTON COUNTY, SOUTH CAROLINA  
KIAWAH SENIOR LIVING  
**SEWER DETAILS**

JOB NO:	J-27151.0000
DATE:	7/17/18
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	N/A

**C5.4**



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Palmetto Utility  
Protection Service



NO.	BY	DATE	REVISIONS
8	WEF	8-16-04	ADD STUB-OUTS & DELETE YARD INLETS
7	WEF	8-19-04	ADD STORM PIPE AT BLDG F-100
6	WEF	4-18-04	INCREASED CONST. LIMITS AT KI PARKWAY ENTRANCE
5	WEF	4-13-04	REVISED SITE PLAN AND PIPING LAYOUT
4	WEF	2-15-04	REVISED SITE PLAN
3	WEF	1-15-04	ADD EXISTING GRADES & SCOTD ROW
2	WEF	12-14-03	RELOCATE DMH, ADD A, G, AND SHOW SCOTD PIPING
1	WEF	12-11-03	REVISE SOUTH DITCH

**THOMAS & HUTTON ENGINEERING CO.**  
935 HOUSTON NORTHGATE BOULEVARD  
SUITE 100  
MOUNT PLEASANT, SC 29464 (843) 949-0200  
SAVANNAH, GA • MYRTLE BEACH, SC

**FRESHFIELDS VILLAGE PHASE 1A**  
CHARLESTON COUNTY SOUTH CAROLINA  
**MASTER DRAINAGE PLAN**

JOB NO:	J-15275
DATE:	7/1/03
DRAWN:	BRW
DESIGNED:	WEF
REVIEWED:	WEF
APPROVED:	TMW
SCALE:	1" = 60'

SHEET **5**

## Joe Cronin

---

**From:** G. Robert George <bobgeorgegrga@comcast.net>  
**Sent:** Wednesday, July 25, 2018 12:12 PM  
**To:** Joe Cronin  
**Cc:** 'Ronald Ciancio'  
**Subject:** RE: Freshfields Village Encroachment Permit follow up

Joe:

Following a detailed review of the hydrology report and project drawings provided for the subject project, in our opinion, there will be no adverse drainage impact from the proposed project upon Seabrook Island Road. The initial 2003 phase of the Freshfields Village Complex include the design and construction of a large detention lagoon that was intended to accommodate the required post-development storm water discharge from the proposed project. The design drawings indicate that all storm water runoff from the subject project will be discharged into the existing lagoon which, in turn, discharges into an existing drainage canal to the discharge into Brick Creek tributary to the Kiawah River.

We trust that all went well with regard to the meeting yesterday regarding the requested roadway connection.

Bob George

*G. Robert George, P.L.S., P.E.*

***G. Robert George & Associates, Inc. (GRGA)  
Consulting Engineers, Land Planners and Land Surveyors***

2411 Savannah Highway  
Charleston, South Carolina 29414  
Post Office Box 32158 29417  
PH: (843) 556-4261  
FAX: (843) 571-0276  
[bobgeorgegrga@comcast.net](mailto:bobgeorgegrga@comcast.net)

---

**From:** Joe Cronin [mailto:jcronin@townofseabrookisland.org]  
**Sent:** Tuesday, July 24, 2018 11:08 AM  
**To:** G. Robert George  
**Cc:** Ronald Ciancio  
**Subject:** FW: Freshfields Village Encroachment Permit follow up

Bob,

I have attached the stormwater drawings and materials for the Senior project in Kiawah.

***Joseph M. Cronin***

Town Administrator  
Town of Seabrook Island  
2001 Seabrook Island Road  
Seabrook Island, SC 29455  
Office: (843) 768-5321  
Cell: (843) 637-9832



## Seabrook Island Road Property Owners

- ① Town of Seabrook Island
  - ② Haulover Creek Development Co. LLC
  - ③ Atlantic Partners II LLC
  - ④ NW FV Land LLC
  - ⑤ Atlantic Partners II LLC
  - ⑥ Atlantic Partners II LLC
  - ⑦ Haulover Creek Development Co. LLC
  - ⑧ Bohicket Investors LLC
  - ⑨ Lowcountry Open Land Trust
  - ⑩ Haulover Creek Development Co. LLC
  - ⑪ COC Corporation
  - ⑫ The Club at Seabrook Island
- Town of Seabrook Island  
■ Town of Kiawah Island

