CITY OF LEESBURG
FLORIDA

INVITATION TO BID (ITB)

ITB TITLE:	**VENETIAN GARDENS PHASE II - INFRASTRUCTURE IMPROVEMENTS**

ITB Number:	170461	Contracting Buyer:	Lisa Wolfkill
Bid Due Date:	September 14, 2017	Pre-Bid Meeting:	August 24, 2017
Bid Due Time:	2:00 P.M.	Issue Date:	August 14, 2017

Estimated Project Magnitude: $500,000 to $700,000

Brief Description / Purpose

INVITATION TO BID
No. 170461
City of Leesburg, Florida

The City of Leesburg, Florida invites interested and qualified contractors to submit sealed bids for providing all necessary labor, materials, equipment to construct a two lane boat ramp, paved roadway and sidewalk within an area located at Venetian Gardens. Details and specifications are outlined within the Invitation to Bid document.

Sealed bids will be received at the Purchasing Office located at 204 N. 5th Street, Leesburg, Florida 34748 no later than the appointed due date and time or as revised by any addenda.

Registered vendors may obtain a copy of the ITB online at www.vendorregistry.com. A copy may also be obtained by e-mailing a request to purch@leesburgflorida.gov or by calling (352)728-9880.

Publish: Vendor Registry | Public Purchase | Orland Sentinel | Ocala Star Banner

Bid Package Distribution

As of **August 1, 2017** the City of Leesburg will utilize Vendor Registry (www.vendorregistry.com) as the ONLY official on-line bid management system to distribute solicitations, addenda and answers to questions. Solicitations **issued** before August 1, 2017 will remain on Public Purchase until they are complete. Solicitation information obtained from other sources may not be current or accurate and should not be relied on for submitting a response to a solicitation.

There is no charge to vendors/contractors to register and participate in the solicitation, nor will any fees be charged to the awarded vendor. Refer to www.leesburgflorida.gov/purchasing/bids.aspx for further information.

Registration with Vendor Registry is required, at no cost, in order to download solicitation documents. Should time not permit you to complete the registration process please contact the Purchasing Division at (352)728-9880 or by e-mail at purch@leesburgflorida.gov to obtain a solicitation document(s).

SECTION 1 – SPECIAL TERMS & CONDITIONS

ST-1. **PURPOSE**

The purpose of this project is to create a recreation area on the south side of Venetian Gardens. This project will include construction of approximately 2,000 linear feet of 20 foot wide paved roadway, sidewalk, parking areas, curb and gutter, a two lane boat ramp and floating dock.

ST-2. **PROJECT LOCATION**

Project site is Lake Harris Drive located along the shore line of Lake Harris between Lake Shore Drive and Lake Harris Drive.

ST-3. **QUESTIONS, INFORMATION or CLARIFICATION**

ALL questions regarding this solicitation, including technical specifications or scope of work, shall be submitted in writing to the Designated Procurement Representative. To ensure fair consideration for all parties, the City prohibits communication to or with any department, division, employee, or city representative from the date of issuance of this solicitation until final City action.

a. Bidders are to submit questions and requests for information in writing by email to the Designated Procurement Representative at **puch@leesburgflorida.gov**.
b. The deadline for questions is seven (7) business days prior to the solicitation due date. Does not include the day the solicitations are due.
c. Any interpretation made to Bidders shall be expressed in the form of a written Addendum to the solicitation. Which, if issued, will be made available to all prospective Bidders no later than the three (3) business days immediately before the solicitation due date. Does not include the day the solicitations are due.
d. Inquiries received after the deadline for questions may not be given any consideration at the discretion of the Purchasing Manager.
e. It will be the responsibility of the Bidders to contact the Purchasing Division prior to submitting bids to ascertain if any addenda have been issued, to obtain all such addenda, incorporate addenda in their bid response and acknowledge said addenda on the appropriate form.

ST-4. **PRE-BID CONFERENCE/SITE VISIT**

A "non-mandatory" pre-bid meeting/site visit will be held on:

Date/Time: Thursday, August 24, 2017 at 9:00 AM.

Location: Project Site in Venetian Gardens
Lake Harris Drive
(Coordinates: 28.800570, -81.874548)
Leesburg, FL 34748

This is the only scheduled time contractors and their subcontractors can visit, inspect conditions, and take measurements. Additional contractor visits may take place at contractor's convenience.

Bidders are advised to bring this solicitation document to the conference, as additional copies may not be available. Also, attendees should have equipment needed for measuring, as this may be their only opportunity.

Prior to submitting a bid, it is advisable the vendor visit the site(s) of the projected work and become familiar with any conditions which may in any manner affect the work to be done or affect the equipment, materials and labor required. The vendor is also advised to examine carefully the specifications and to become thoroughly aware regarding any and all conditions and requirements that may in any manner affect the work to be performed under the contract. No additional allowances will be made because of lack of knowledge of these conditions. For any additional information regarding the specifications and requirements of this bid contact the designated procurement representative.

ST-5. **ELIGIBILITY**

To be eligible to respond to this Invitation to Bid (ITB), bidding firms must demonstrate they, or the principals assigned to the project, have successfully completed projects similar to those specified in the Scope of Services section of the ITB.

Bidders/Contractors must have a minimum of five (5) years experience in performing the same or similar work required on this project. Bidders shall provide a minimum of three (3) reference projects completed within the last five (5) years related to similar contracts of similar scope and size. References shall be given on the forms provided.

ST-6. **LICENSES**

The vendor submitting a bid must hold at least one of the following licenses:

- State of Florida CERTIFIED GENERAL CONTRACTOR (CGC), or
- Registered* GENERAL CONTRACTOR (RG)

- State of Florida CERTIFIED BUILDING CONTRACTOR (CBC), or
- Registered* BUILDING CONTRACTOR (BC)

- State of Florida UTILITY AND EXCAVATION (CUC), or
- Registered* UTILITY AND EXCAVATION (RU).

*Lake County Building Services, Lake County Florida is the registering authority for work performed by registered contractors with the City of Leesburg.

The vendor shall obtain and pay for all licenses required for this project and shall comply with all laws, ordinances, regulations and building code requirements applicable to the work contemplated herein. Damages, penalties and/or fines imposed on the City or the vendor for failure to obtain required licenses shall be borne by the vendor.

The contractor and subcontractors must hold the necessary valid license for the type of work to be performed for the full duration of the project. Allowing the license to lapse at any time

during the project will be cause for the contract to be terminated for cause. The license must be effective at the time their bid is submitted.

Licenses will be verified through the Florida Department of Professional Regulation website (myfloridalicense.com).

ST-7. **'APPROVED EQUAL' PROCESS**

The floating dock design specifies a dock system by Ravens Marine, or approved equal. Should a bidder desire to bid a dock system manufacturer other than Ravens Marine the bidder shall be required to request approval of an alternate manufacturer prior to bid submission. Requests or substitutes following the opening of bids shall not be accepted and not receiving prior approval may result in a bid being deemed non-responsive and disqualified.

Bidders must submit a request for manufacturer approval no later than fourteen (14) calendar days before the bid response due date stated in this document or as amended by any addenda issued. The City shall review the request and accompanying literature/specifications and issue a response no later than five (5) calendar days from receiving the request.

Requests will be accepted ONLY from parties intending to submit a bid response. Requests will NOT be accepted from manufacturers of dock systems.

ST-8. **DESIGNATED PROCUREMENT REPRESENTATIVE**

Questions concerning any portion of this solicitation shall be directed in writing [fax and e-mail accepted] to the below named individual who shall be the official point of contact for this solicitation. Questions should be submitted no later than five (5) working days before the bid opening date.

Lisa Wolfkill, Purchasing Representative
City of Leesburg | Purchasing Department
204 N. 5th Street, Leesburg, FL 34748
Phone: 352-728-9880 | E-mail: purch@leesburgflorida.gov

No answers given in response to questions submitted shall be binding upon this solicitation unless released in writing as an addendum to the solicitation by the Purchasing Division for the City of Leesburg.

ST-9. **RESTRICTED DISCUSSIONS**

From the date of issuance of this solicitation until final City action, vendors should NOT discuss the solicitation or any part thereof with any employee, agent, or any other representative of the City except as expressly authorized by the designated procurement representative. The only communications that shall be considered pertinent to this solicitation are appropriately signed written documents from the vendor to the designated procurement representative and any relevant written document promulgated by the designated procurement representative.

ST-10. **DELIVERY OF SOLICITATION RESPONSE**

To be considered for award, a complete bid response must be received and accepted in the Purchasing Division no later than the due date and time established within the solicitation. Allow sufficient time for transportation and inspection. Each package shall be clearly marked with the applicable solicitation number, title, and company name. Ensure that your bid is securely sealed in an opaque envelope/package to provide confidentiality of the bid prior to the solicitation closing.

Delivery IN PERSON	**THIRD PARTY CARRIER i.e., Fed-Ex, UPS**
PURCHASING DIVISION CITY OF LEESBURG 204 N. 5TH STREET LEESBURG, FLORIDA	PURCHASING DIVISION CITY OF LEESBURG 204 N. 5TH STREET LEESBURG, FLORIDA 34748

FACSIMILE (FAX) OR ELECTRONIC SUBMISSIONS (E-MAIL) WILL NOT BE ACCEPTED.

ST-11. **COMPLETION REQUIREMENTS FOR INVITATION TO BID**

Complete all forms and Item Bid Schedule. One (1) original of all forms and Item Bid Schedule must be returned submitted by the vendor shall be sealed and delivered to the Purchasing Division no later than the official bid opening date and time. Any bid received after this time will not be considered and will be returned unopened to the submitter. The City is not liable or responsible for any costs incurred by any Bidder in responding to this ITB including, without limitation, costs for product and/or service demonstrations if requested.

When you submit your bid, you are making a binding offer to the City and are agreeing to all of the terms and conditions in this Invitation to Bid. Use only the form(s) provided in this document. If you make any change to the content or format of any form, the City may disqualify your offer. All information shall be legible and either written in ink or typewritten. If you make a correction or change on any document, the person signing the bid or proposal must initial the change. The bid shall be manually signed by an official authorized to legally bind the Bidder to its provisions.

Specific Completion Directions - Pricing shall be completed using the provided Schedule of Bid Items in the Forms Section of this solicitation.

ST-12. **BID RESPONSE GUARANTEE**

Bid Response Guarantee – A certified or cashier's check on a national or state bank, or a bid bond executed by a surety acceptable to the Owner for not less than **five percent (5%)** of the amount of the bid, made payable to the City of Leesburg, shall accompany each Bid Response as guarantee that the Bidder will, if awarded the contract, promptly enter into agreement to do the work and furnish the required Performance and Payment Bond.

Liquidated Damages for Failure to Enter into Contract - The successful bidder, upon failure or refusal to execute and deliver the contract and bonds required within 10 days after receipt

of notice of the acceptance of the bid, shall forfeit to the City, as liquidated damages for such failure or refusal, the security deposited with the bid.

ST-13. **RETURN OF BID RESPONSE GUARANTEES**

As soon as the Bid Responses have been evaluated, the City of Leesburg may, at its discretion, return or release the guarantee deposits accompanying such Bid Responses, as in its judgment, would not likely be considered in making the award. All other Bid Response guarantees will be held until the contract and bond have been executed, after which any sums of money representing security deposits will be returned to the respective Bidders whose Bid Responses they accompanied. Bid Bonds will not be returned unless requested.

ST-14. **GUARANTY OF FAITHFUL PERFORMANCE AND PAYMENT**

Performance and Payment Bonds, written by a Surety firm satisfactory to the City of Leesburg which comply with Section 255.05(1), Florida Statutes, will be required of the successful Bidder to guarantee that he will deliver a complete project under his Contract in strict accordance with the Contract Documents and that he will pay promptly all persons supplying him with labor or materials for the work.

The Performance and Payment Bonds shall each be for an amount not less than the Total Contract Price as agreed to by both parties. The cost of this bond shall be included in the price bid in the Bid Response.

These bonds shall be substantially in the form provided herein and written by a qualified Surety firm and through a reputable and responsible surety bond agency licensed to do business in the State of Florida and Lake County and meet the following requirements:

The Surety must be rated as "A" or better as to strength by Best's Insurance Guide, published by Alfred M. Best Company, Inc., 75 Fulton Street, New York, New York.

Bonding Limit - Any One Risk: The Bonding Limit of the Surety shall not exceed ten (10) percent of the policy holders' surplus (capital and surplus) as listed by the aforementioned Best's Insurance Guide. The completed Bond shall be executed in four (4) counterparts and delivered to the City of Leesburg with the required Power-of-Attorney and executed contract.

ST-15. **POWER OF ATTORNEY**

Attorneys-in-Fact, who sign Bid Bonds and Performance or Payment Bonds, must file with such bonds a certified copy of their power of attorney to sign such bonds.

ST-16. **BID OPENING**

This project is considered a Construction Project. All bids that have been received in a timely manner will be opened in a Public Meeting in accordance with Chapter 255.0518 Florida Statute. The names of the bidders submitting bids will be read aloud and recorded with the bid amounts for each of the base bid items. The bids will be available for inspection in the Purchasing Division during normal business hours.

ST-17. **LOCAL VENDOR PREFERENCE**

(Applicable to projects whose cost is $25,000 or greater.)

The City of Leesburg applies a Local Vendor Preference (LVP) for the purchase of personal property, general services, and professional services where the total purchase cost is $25,000 and greater by means of competitive bid, request for proposals, qualifications or other submittals and competitive negotiation and selection. Except where federal or state law/requirements mandate to the contrary, preference shall be given to Local Vendors in the following manner:

a. **"Tier I Local Vendor"** shall be defined as the primary Business Office or a Full Time Sales Office of the vendor being located within the City of Leesburg or the vendor receiving one or more Utility Services from the City of Leesburg.
    i. **Tier I Local Vendor** - Under a Competitive Solicitation, the City may give a preference to a Tier I Local Vendor in the amount of five percent (5%) of the bid price or $25,000, whichever is less.

b. **"Tier II Local Vendor"** shall be defined as the primary Business Office or a Full Time Sales Office of the vendor not meeting the definition of a Tier I Local Vendor but nonetheless being located within the 20-Mile Radius as defined in this policy.
    i. **Tier II Local Vendor** - Under a Competitive Solicitation, the City may give a preference to a Tier II Local Vendor in the amount of two percent (2%) of the bid price or $10,000, whichever is less.

The Local Vendor preference will be applied only to the items/amount used for purposes of bid evaluation and determining award.

Bidders wanting a copy of the entire policy can receive one by making a request by e-mail to purch@leesburgflorida.gov or by calling the purchasing office at (352) 728-9880.

ST-18. **METHOD OF AWARD**

TO A SINGLE VENDOR IN THE AGGREGATE. Recommendation of Award will be to the responsible bidder submitting the lowest responsive bid and holding the necessary licenses, certifications and experience. Determination of low bid amount will be made using the total bid for the Base Bid Items only and will not consider additional contract items. Local Vendor Preference will be considered when applicable in determining the low bid amount.

ST-19. **QUANTITIES**

Measurements and quantities which may be given are estimates only, given for informational purposes. Bidders are encouraged to visit the sites to verify measurements and quantities.

The City reserves the right to alter the quantities of work to be performed at any time when necessary and the Contractor shall perform the work as altered, increased or decreased. Payment for such altered increased or decreased quantity will result in an Equitable Adjustment for changed work. Equitable Adjustments can result in price increases for the Contractor for increased work, or price reductions for the City for reduced work. No allowance will be made for any change in anticipated profits nor shall such changes be considered as waiving or invalidating any conditions or provisions of the Contract and Bond.

ST-20. **CONTRACT**

The City intends to execute a Firm-Fixed Price Construction Services Agreement prepared by the City with the awarded company as a result of this solicitation.

ST-21. **TERM OF CONTRACT**

The performance period under this contract shall commence upon the date of the Notice To Proceed and shall remain in effect until such time as the commodities, equipment and/or services acquired in conjunction with this solicitation and resulting contract have been delivered and/or completed, and accepted by the City's authorized representative, and will then remain in effect until completion of the expressed and/or implied warranty periods.

ST-22. **START AND COMPLETION OF WORK**

Work performed under the resulting agreement shall commence upon issuance of a Notice to Proceed and City purchase order. Notice to Proceed shall state the completion date of the ordered work.

All work shall be performed in accordance with good commercial practice. The work schedule and completion dates shall be adhered to by the vendor(s); except in such cases where the completion date will be delayed due to acts of God, strikes, or other causes beyond the control of the vendor. In these cases, the vendor shall notify the City of the delays in advance of the original completion so that a revised delivery schedule can be appropriately considered by the City.

Should the vendor(s) to whom contract(s) is/are awarded fail to complete the work within the number of days stated in its bid, or the "not-to-exceed timeframe cited above, it is hereby agreed and understood that the City reserves the authority to terminate the contract with the vendor and to secure the services of another vendor to complete the work. If the City exercises this authority, the City shall be responsible for reimbursing the vendor for work which was completed and found acceptable to the City in accordance with the contract specifications. The City may, at its option, demand payment from the vendor, through an invoice or credit memo, for any additional costs over and beyond the original contract price which were incurred by the City as a result of having to secure the services of another vendor. If the incumbent vendor fails to honor this invoice or credit memo, the City may terminate the contract for default.

ST-23. **METHOD OF PAYMENT**

i. All invoices shall contain the purchase order number, date and location of delivery or service, and confirmation of acceptance of the goods or services by the appropriate City representative.
ii. Failure to submit invoices in the prescribed manner will delay payment.
iii. The project is considered a construction project and retainage may be withheld according to State of Florida Statute.

ST-24. **PERMITS**

The Contractor shall obtain and pay for all permits and inspection fees required for this project and shall comply with all laws, ordinances, regulations and building code requirements applicable to the work contemplated herein. Damages, penalties and/or fines

imposed on the City or the vendor for failure to obtain required permits, inspection fees, or inspections shall be borne by the Contractor.

The City knows the following listed permits shall be required for this project. Should the requirement for permits from any other government agency be identified after bids are received, the Contractor shall obtain and pay for said permits. The Contractor will be reimbursed at actual cost for all permits required for this project.

i. Permits – The only known permits are as follows:
   - **a. Boat Ramp and Floating Docks**
     - i. Marine Permit - $0.16 per square foot x 4,472 square feet = $715.52
   - **b. Total Costs**
     - i. Total Permit Fees = $715.52
     - ii. Plan Review Fee = 50% of Total Permit Fees = $357.76
     - iii. **Total Cost of Permits and Plan Review = $1,073.28**

ii. Permit and plan review fees are reflected in the Schedule of Bid Items as an allowance. Should the allowance amount differ (higher or lower) from the actual cost of permits and plan review, City shall reimburse contractor for actual cost of permits and plan review.

iii. All permits will be obtained by and paid for by the Contractor. Permits will be applied for through the City of Leesburg Building Services Department.

iv. Contractor Registration – The awarded Contractor shall be required to register with the City of Leesburg Building Services Department if they are not already registered with the City. The cost of the registration is $20.00. Registration does not have to be completed until after contract award but before permits can be pulled.

ST-25. **ACCEPTANCE OF GOODS OR SERVICES**

The goods delivered as a result of an award from this solicitation shall remain the property of the Contractor, and services rendered under the contract will not be deemed complete, until a physical inspection and actual usage of the product(s) and/or service(s) is (are) accepted by the City and shall be in compliance with the terms herein, fully in accord with the specifications and of the highest quality.

Any goods and/or services purchased as a result of this solicitation and/or contract may be tested and/or inspected for compliance with specifications. In the event that any aspect of the goods or services provided is found to be defective or does not conform to the specifications, the City reserves the right to terminate the contract or initiate corrective action on the part of the vendor, to include return of any non-compliant goods to the vendor at the vendor's expense, requiring the vendor to either provide a direct replacement for the item, or a full credit for the returned item. The vendor shall not assess any additional charge(s) for any conforming action taken by the City under this clause. The City will not be responsible to pay for any product or service that does not conform to the contract specifications.

In addition, any defective product or service or any product or service not delivered or performed by the date specified in the purchase order or contract, may be procured by the City on the open market, and any increase in cost may be charged against the awarded Contractor. Any cost incurred by the City in any re-procurement plus any increased product

or service cost shall be withheld from any monies owed to the Contractor by the City for any contract or financial obligation.

This project will be inspected by an authorized representative of the City. This inspection shall be performed to determine acceptance of work, appropriate invoicing, and warranty conditions.

ST-26. **ACCIDENT PREVENTION AND BARRICADES**

Precautions shall be exercised at all times for the protection of persons and property. All vendors performing services under this contract shall conform to all relevant OSHA, State, County, and City regulations during the course of such effort. Any fines levied by the above mentioned authorities for failure to comply with these requirements shall be borne solely by the responsible vendor. Barricades shall be provided by the vendor when work is performed in areas traversed by persons, or when deemed necessary by the City's Project Manager.

ST-27. **LABOR, MATERIALS, AND EQUIPMENT SHALL BE SUPPLIED BY THE VENDOR**

Unless otherwise stated in this solicitation the vendor shall furnish all labor, material and equipment necessary for satisfactory contract performance. When not specifically identified in the technical specifications, such materials and equipment shall be of a suitable type and grade for the purpose. All material, workmanship, and equipment shall be subject to the inspection and approval of the City's Project Manager.

ST-28. **CLAIMS FOR EXTRA COST**

If the Contractor claims that any instructions by drawings or otherwise involve extra cost under this contract, he shall give the Project Representative written notice thereof within ten (10) days after the receipt of such instructions, and in any event before proceeding to execute the work, except in emergency endangering life or property, the procedure shall then be as provided for changes in the work. No such claim will be valid unless so made.

ST-29. **CONTRACTORS ACCEPTANCE OF CONDITIONS**

The Contractor hereby agrees that he has carefully examined the surface of the site and surrounding areas to fully satisfy himself that such site is a correct and suitable one for this work and he assumes full responsibility therefore. The provisions of this contract shall control any inconsistent provisions contained in the specifications. All Drawings and Specifications have been read and carefully considered by the Contractor, who understands the same, and agrees to their sufficiency for the work to be done. It is expressly agreed that under no circumstances, conditions or situations shall this contract be more strongly construed against the City than against the Contractor and his Surety.

Any ambiguity or uncertainty in the Drawings or specifications shall be interpreted and constructed by the Engineer of Record and his decision shall be final and binding upon all parties.

It is distinctly understood and agreed that the passing, approval and/or acceptance of any part of the work or material by the City, the Engineer of Record, or by any agent or representative as in compliance with the terms of this contract and/or of the Drawings and

Specifications covering said work, shall not operate as a waiver by the City of strict compliance with the terms of this Contract, and/or the Drawings and Specifications covering said work; and the City may require the Contractor and/or his surety to repair, replace, restore and/or make to comply strictly and in all things with this Contract and the Drawings and Specifications any and all of said work and/or materials which within a period of one (1) year from and after the date of the passing, approval, and/or acceptance of such work or material, are found to be defective or to fail in any way to comply with this contract or with the Drawings and Specifications. This provision shall not apply to materials or equipment normally expected to deteriorate or wear out and become subject to normal repair and replacement before the condition is discovered. The Contractor shall not be required to do normal maintenance work under the guarantee provisions. Failure on the part of the Contractor and/or his surety, immediately after notice to either, repair or replace any such defective materials and workmanship shall entitle the City, if it sees fit, to replace or repair the same and recover the reasonable cost of such replacement and/or repair from the Contractor and/or his surety, who shall in any event be jointly and severally liable to the City for all damage. Loss and expenses caused to the City by Reason for the Contractor's breach of this contract and/ or his failure to comply strictly and in all things with this Contract and with the Drawings and Specifications.

ST-30. **FAILURE TO COMPLETE THE WORK ON TIME/LIQUIDATED DAMAGES**

The Contractor shall take into account all contingent work which has to be done by other parties arising from any cause whatsoever, and shall not plead his need of knowledge of said contingent work as an excuse for delay in his work or for non-performance.

If the work is not completed in full by the deadline specified, then for each day thereafter on which the work has not been completed, Contractor shall pay to the Owner liquidated damages in the amount of **Two Hundred Fifty Dollars ($250.00)** per calendar day, which Owner is hereby authorized to deduct from the final draw before paying any remaining amount to Contractor. The parties agree that it would be impossible or extremely difficult to compute the actual damages suffered by the Owner due to late completion of the work, that it is therefore appropriate to provide for liquidated damages in this Contract, and that the amount of liquidated damages specified is reasonable and bears a substantial relationship to the probable amount of actual damages the Owner would suffer, and therefore does not constitute a penalty or forfeiture. Contractor acknowledges that this provision is material to the Owner and that the Owner would not have entered into this Contract but for this provision and that as a result of the Owner's reliance on this provision, the Contractor shall be stopped to deny or dispute the validity or enforceability of this liquidated damage clause.

Nothing shall be construed as limiting the right of the Owner to declare the Contract forfeited, or to take over the work, or to claim damages for the failure of the Contractor to abide by each and every one of the terms of the Contract Documents. The completion date shall be construed as being the date on which the work is fully accepted by the Owner.

ST-31. **WARRANTY**

Contractors material and workmanship is warranted for a period of one (1) year from acceptance by the City. City shall notify Contractor of any defects in material or workmanship. Contractor shall coordinate with City any warranted repairs.

ST-32. **MATERIAL STORAGE**

Contractor is responsible for coordinating material and equipment storage for the duration of the project.

ST-33. **RISK OF LOSS**

The vendor assumes the risk of loss of damage to the City's property during possession of such property by the vendor, and until delivery to, and acceptance of, that property to the City. The vendor shall immediately repair, replace or make good on the loss or damage without cost to the City, whether the loss or damage results from acts or omissions (negligent or not) of the vendor or a third party.

The vendor shall indemnify and hold the City harmless from any and all claims, liability, losses and causes of action which may arise out of the fulfillment of any subsequent contract. The vendor shall pay all claims and losses of any nature whatsoever in connection therewith, and shall defend all suits, in the name of the City when applicable, and shall pay all costs and judgments which may issue thereon.

ST-34. **INSURANCE AND INDEMNITY REQUIREMENTS**

a) **Scope of Insurance** - The Contractor shall procure and maintain at its own expense, the following minimum insurance coverage, unless otherwise specified in the agreement, contract or lease.

   i. All required insurance shall be provided by insurers acceptable to the City with an A.M. Best rating of at least A: VII.

   ii. The Contractor shall require, and shall be responsible for assuring that any and all of its subcontractors secure and maintain such insurance that are required by law to be provided on behalf of their employees and others until the completion of that subcontractors work.

   iii. The required insurance shall be secured and maintained for not less than the limits required by the City, or as required by law, whichever is greater.

   iv. The required insurance shall not limit the liability of the Contractor. The City does not represent these coverages or amounts to be adequate or sufficient to protect the Contractor's interests or liabilities, but are merely required minimums.

   v. The provisions of the required insurance are subject to the approval of the City's Risk Manager, and upon request, the Contractor shall make available certified copies of the various policies for inspection.

   vi. All liability insurance, except professional liability, shall be written on an occurrence basis.

   vii. The Contractor waives its right of recovery against the City to the extent permitted by its insurance policies.

   viii. Insurance required of the Contractor, or any other insurance of the Contractor shall be considered primary, and insurance of the City, if any, shall be considered excess as applicable to any claims which arise out of the agreement, contract or lease.

b) **Indemnification** - The Contractor shall indemnify and hold harmless the City and its officers and employees, from liabilities, damages, attorneys' losses, and costs, including,

but not limited to, reasonable fees, to the extent caused by the negligence, recklessness, or intentionally wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of the contract.

c) **Certificate of Insurance** - The Contractor shall provide evidence of required minimum insurance by providing the City an ACORD or other Certificate of Insurance in forms acceptable to the Risk Manager for the City, before any work under the agreement, contract or lease begins.

   i. Except for workers' compensation and professional liability, the Contractor's insurance policies shall be endorsed to name the City of Leesburg as additional insured to the extent of the agreement, contract or lease.

   ii. The Certificate(s) of Insurance shall designate the City as certificate holder as follows: City of Leesburg, Attn: Purchasing Manager, P.O. Box 490630, Leesburg, Florida 34749-0630.

   iii. The Certificate(s) of Insurance shall include a reference to the project and/or purchase order number.

   iv. The Certificate(s) of Insurance shall indicate that the City shall be notified at least thirty (30) days in advance of cancellation.

   v. The Certificate(s) of Insurance shall include all deductibles and/or self-insurance retentions for each line of insurance coverage.

   vi. The Contractor, at the discretion of the Risk Manager for the City, shall provide information regarding the amount of claims payments or reserves chargeable to the aggregate amount of the Contractor's liability coverage(s).

d) **Comprehensive General Liability** - The Contractor shall purchase and maintain Commercial General Liability coverage on forms no more restrictive than the latest editions of the Commercial General Liability policies of the Insurance Services Office (ISO). The Commercial General Liability policy shall provide minimum limits of $1,000,000 per occurrence combined single limit that includes coverage for bodily and personal injury and property damage liability for premises, operations, products and completed operations*, independent contractors, contractual liability covering the agreement, contract or lease, broad form property damage coverage, and property damage resulting from explosion, collapse or underground exposures (x, c, u).

   i. For remodeling and construction projects, the Contractor shall purchase and maintain products and completed operations coverage for a minimum of three (3) years beyond the City's acceptance of the project.

e) **Business Automobile Liability** - The Contractor shall purchase and maintain Business Automobile Liability coverage on forms no more restrictive than the latest editions of the Business Automobile Liability policies of the Insurance Services Office (ISO). The Business Automobile Liability policy shall provide minimum limits of $1,000,000 per occurrence combined single limit that includes coverage for claims for bodily injury and property damage arising from the use of motor vehicles, including on-site and off-site operations, and owned, non-owned and hired vehicles, and employee non-ownership use.

f) **Workers' Compensation** - The Contractor shall purchase and maintain Workers' Compensation insurance for all workers' compensation obligations imposed by state law

and with employers liability limits of at least $100,000 each accident and $100,000 each employee with $500,000 policy limit for disease.

CONTRACTORS exempt from maintaining Workers' Compensation insurance must provide a valid certificate of exemption issued by the State of Florida.

g) **Should Lake Harris be considered a Navigable Waterway; Longshore and Harbor Workers' Compensation Act (LHWCA) (33 USC, Chapter 18, §§ 901—950)** – The CONTRACTOR shall purchase and maintain LHWCA insurance for all workers' compensation obligations imposed by federal or state law to meet workers' compensation for federal maritime employment in navigable waters of the United States. Lake Harris is considered as navigable waters of the United States and therefore LHWCA insurance requirements would apply.

ST-35. **ILLEGAL ALIEN LABOR**

Contractor shall comply with all provisions of the Federal Immigration and Control Act of 1986 (8 U.S. Code § 1324 a) and any successor federal laws, as well as all provisions of Section 448.09, Florida Statutes, prohibiting the hiring and continued employment of aliens not authorized to work in the United States. Contractor shall not knowingly employ or contract with an illegal alien to perform work under this contract or enter into a contract with a subcontractor that fails to certify to the contractor that the subcontractor is in compliance with the terms stated within. The General Contractor nor any subcontractor employed by him shall not knowingly employ or contract with an illegal alien to perform work under this contract. Contractor agrees that it shall confirm the employment eligibility of all employees through participation in E-Verify or an employment eligibility program approved by the Social Security Administration and will require same requirement to confirm employment eligibility of all subcontractors. All cost incurred to initiate and sustain the aforementioned programs shall be included in contract price. Failure to meet this requirement may result in contract termination by the City.

ST-36. **FAIR LABOR STANDARDS ACT**

No contractor or subcontractor holding a service contract with the City for any dollar amount shall pay any of its employees working on the contract less than the minimum wage specified in section 6(a)(1) of the Fair Labor Standards Act 29 U.S.C. 206. Failure to meet this requirement may result in contract termination by the City.

[END OF SECTION]

SECTION 2 – SCOPE OF WORK

SW-1. **BACKGROUND**

The purpose of this project is to construct approximately 2,000 linear feet of 20-foot wide paved roadway, sidewalk with curb and gutter, a two lane boat ramp with floating dock and trailer parking areas.

1.1. **SCOPE OF WORK**

Scope of Work for this element is detailed in the plans and specifications located in Section 6. Bidders shall refer to Engineer Drawings titled "SKI BEACH PLANS" consisting of thirty-six (36) drawing sheets.

1.2. Disregard any reference to a restroom facility in the bid document and/or the Engineer Drawings. The restroom facility originally planned to be constructed near the boat ramp has been relocated. The restroom will be bid separately and constructed by others under a separate construction services agreement. The restroom is shown or referenced on:

1.2.1. Drawing Sheet No. 8 specifically called out.
1.2.2. Drawing Sheet No. 15 as a rectangle
1.2.3. Drawing Sheet S1-6 as a rectangle

Disregard these references. The sidewalk connected to the restroom shall be field adjusted by the Contractor and City during forming.

SW-2. **SITE SECURITY**

Contractor shall secure the site or construction area against persons entering. Security shall consist of a temporary chain link fence or fence panels with a lockable gate, chain acceptable.

SW-3. **TIME FOR COMPLETION**

The City desires the construction final completion to take no more than one hundred and fifty (150) continuous calendar days from the date of the Notice to Proceed.

SW-4. **GEO-TECHNICAL REPORTS**

The City has included the geo-technical report for the project area in this solicitation.

[END OF SECTION]

SECTION 3 - GENERAL TERMS & CONDITIONS (ITB)

GT-1. **DEFINITIONS**

1.1. **Addendum:** A written change to a Solicitation.

1.2. **Bid, Offer, or Response:** Shall refer to any bid, offer, or response submitted in regard to this Invitation to Bid that if accepted would bind the Contractor to perform the resultant contract.

1.3. **Bidder:** A general reference to any entity responding to this solicitation and must be the party entering into the Agreement with the City; also includes bidder, contractor, company, respondent, vendor, etc.

1.4. **Contract:** The Agreement to provide the goods or perform the services set forth in this solicitation.

1.4.1. **Purchase of Goods -** The contract will be comprised of the solicitation document signed by the vendor with any addenda and other attachments specifically incorporated and a City purchase order.

1.4.2. **Performance of Services –** The contract will be comprised of the Agreement between the City and the vendor, the solicitation document, any addenda, and other attachments incorporated into the agreement.

1.5. **Contractor:** The vendor to whom award has been made.

1.6. **City:** Shall refer to City of Leesburg, Florida.

1.7. **In Writing –** Unless otherwise designated 'In Writing' includes submitting documents or questions through the electronic bid system, *Vendor Registry*, currently used by the City.

1.8. **Invitation to Bid (ITB):** Shall mean this solicitation document, including any Addenda, used to communicate City requirements to prospective bidders and to solicit bid responses from them.

1.9. **Language:** The City has established for purposes of this solicitation that the words "shall", "must", or "will" are equivalent in this solicitation and indicate a mandatory requirement or condition, the material deviation from which shall not be waived by the City. A deviation is material if, in the City's sole discretion, the deficient response is not in substantial accord with this ITB's mandatory requirements. The words "should" or "may" are equivalent in this solicitation and indicate very desirable conditions or requirements, but are permissive in nature. The masculine pronoun shall include the feminine and neuter and the singular shall include the plural.

1.10. **Official Purchasing Time:** The Official Purchasing Time shall be that time reflected on the digital clock located in the Purchasing Office and labeled 'Official Purchasing Time'. This clock shall be used for all time deadlines related to City purchasing solicitations.

1.11. **Owner:** Shall refer to City of Leesburg, Florida.

1.12. **Responsible:** Refers to a vendor that has the capacity and capability to perform the work required under a Solicitation and is otherwise eligible for award.

1.13. **Responsive:** Refers to a Bidder that has taken no exception or deviation from the terms, conditions, and specifications set forth in an ITB. Their bid, offer or response conforms to the instructions and format specified in the solicitation document.

1.14. **Solicitation**: The written document detailing the solicitation requirements and requesting bids, offers or submittals from Bidders.

GT-2. **INSTRUCTIONS TO BIDDERS**

2.1. **Addenda** – The Purchasing Division may issue an addendum in response to any inquiry received, prior to the deadline for questions which changes, adds to, or clarifies the terms, provisions, or requirements of the solicitation. The Bidder should not rely on any representation, statement or explanation whether written or verbal, regardless of the source, other than those made in this solicitation document or in any addenda issued. Where there appears to be a conflict between this solicitation and any addenda, the last addendum issued shall prevail.

2.1.1. **Bidders Responsibility** - It is the Bidders responsibility to ensure receipt of all addenda and any accompanying documentation. The Bidder is required to Acknowledge receipt of the addenda issued on the appropriate bid form. Failure to acknowledge each addendum may cause the bid to be deemed non-responsive and not be considered for award.

2.2. **Contents of Solicitation and Bidders Responsibilities** – It is the responsibility of the Bidder to become thoroughly familiar with the requirements, terms, and conditions of this solicitation. Pleas of ignorance of these matters by the Bidder will not be accepted as a basis for varying the requirements of the City of the amount to be paid to the vendor.

2.3. **Request for Additional Information/Questions -** Any communication or inquiries, except for clarification of process or procedure already contained in the solicitation, are to be made in writing to the attention of the

Procurement Representative identified in Section 1 of the solicitation no later than **SEVEN (7) DAYS** prior to the bid opening date. Oral answers given by anyone shall not be authoritative.

Vendors are encouraged to submit their questions electronically through *Vendor Registry*. If this is not possible questions may submitted via e-mail at purch@leesburgflorida.gov. You must reference the solicitation number in the subject line. All requests for information or questions should be clearly marked and must be received no later than the cutoff for questions.

GT-3. **Award –** Award may be made to the Bidder which offers the best value to the City. The City reserves the right to reject any and all offers, to waive non-material irregularities or technicalities and to re-advertise for all or any part of this solicitation as deemed in its best interest. The City shall be the sole judge of its best interest.

GT-4. **Assignment –** The Contractor shall not assign or transfer any contract resulting from this solicitation, including any rights title or interest therein, or its power to execute such contract to any person, company or corporation without the prior written consent of the City.

GT-5. **Basis for Bidding -** The total amount bid shall be based on quantities, unit prices and/or lump sum(s) according to the Schedule of Bid Items form provided. Any quantities shown in the Schedule of Bid Items Form are estimates for the purpose of arriving at a total bid price for comparison of Bid Responses.

A Bidders bid prices shall be firm for ninety (90) calendar days after the solicitation opening date, unless stated differently in the Special Terms and Conditions. In the case of a discrepancy between the unit cost and extended cost the unit cost quoted will take precedence and the Purchasing Division shall make and note the correction on the Final Bid Tabulation.

GT-6. **Bidder Eligibility –** It is the policy of the City to encourage full and open competition among all available qualified vendors. All vendors regularly engaged in the type of work specified in the solicitation are encouraged to submit bids. Eligibility requirements for contract award are:

6.1. Have NO delinquent indebtedness to the City of Leesburg or other federal, state, or municipal agencies;
6.2. Shall be regularly and consistently engaged in providing services the same or similar to those being requested in the solicitation;
6.3. Have adequate financial resources, or the ability to obtain such resources as required during performance of the contract;
6.4. Be able to comply with the required or proposed delivery or performance schedule;
6.5. Have a satisfactory record of performance. Vendors who are or have been deficient in current or recent contract performance (when the number of contracts and the extent of the deficiency of each are considered, in the absence of evidence to the contrary or circumstances properly beyond the control of the contractor) shall be presumed unable to meet this requirement. Past unsatisfactory performance will ordinarily be sufficient to justify a finding of non-responsibility;
6.6. Vendors performing work for the City at the time responses to this solicitation are received may be deemed non-responsible and not considered for award of this solicitation should their current performance be rated as less than satisfactory by the City's designated representative. Previous award of work does not guarantee future award(s). The Vendor must perform satisfactorily and professionally on all City work undertaken;
6.7. Have a satisfactory record of integrity and business ethics;
6.8. Be properly licensed by the appropriate regulatory agency for the work to be performed;
6.9. Not have any previous or current investigations, regardless of disposition or outcome, by the regulatory agency responsible for licensing Contractors; and
6.10. Be otherwise qualified and eligible to receive an award under applicable laws and regulations.

GT-7. **Cancellation of Solicitation** – The City reserves the right to cancel, in whole or in part, any solicitation when it is in the best interest of the City. Availability of all information related to a cancelled solicitation is subject to Chapter 119, Florida Statutes.

GT-8. **Changing of Forms** – If the City discovers any bid forms submitted by a bidder in response to this solicitation have been altered the City may, at its discretion, disqualify the Bidder and not consider their bid for award.

GT-9. **City is Tax Exempt** - The City is generally exempt from Federal Excise Taxes and all State of Florida sales and use taxes. The City will provide a tax exemption certificate upon request. Contractors doing business with the

City are not exempt from paying sales tax to their suppliers for materials to fulfill contractual obligations with the City, nor shall any contractor be authorized to use any of the City's Tax Exemptions in securing such materials.

GT-10. **Collusion Among Firms -** Where two (2) or more related parties, as defined herein, each submit a bid for the same contract, such bids shall be presumed to be collusive. The foregoing presumption may be rebutted by the presentation of evidence as to the extent of ownership, control and management of such related parties in preparation of such submittals. Related parties shall mean an interested party or the principals thereof which have a direct or indirect ownership interest in another interested party for the same contract or in which a parent company or the principals thereof of one interested party have a direct or indirect ownership interest in another interested party for the same contract. Furthermore, any prior understanding, agreement, or connection between two (2) or more corporations, firms, or persons submitting a response for the same materials, supplies, services, or equipment shall also be presumed to be collusive. The relationship of manufacturer or their representative(s) providing pricing to distributors while each party submits a bid for the same materials, supplies, services, or equipment shall be presumed to be collusive. Responses found to be collusive shall be rejected. Respondents which have been found to have engaged in collusion may be considered non-responsible, and may be suspended or debarred, and any contract resulting from collusive actions may be terminated for default.

GT-11. **Conflict of Interest -** The award hereunder is subject to Chapter 112, Florida Statutes. All respondents must disclose with their response the name of any officer, director, or agent who is also an employee of the City of Leesburg. Further, all respondents must disclose the name of any City of Leesburg employee who owns, directly or indirectly, an interest of five percent (5%) or more of the Bidders firm or any of its branches.

GT-12. **Conflicts within the Solicitation –** Where there appears to be a conflict between the General Terms and Conditions, Special Terms and Conditions, the Supplemental Terms & Conditions the Statement of Work, the Schedule of Bid Items, or any addendum issued, the order of precedence shall be the last addendum issued, the Schedule of Bid Items, the Statement of Work, the Special Terms & Conditions, the Supplemental Terms & Conditions and then the General Terms & Conditions. In addition, in the case of a conflict between any term or provision contained in contract documents which cannot be resolved by the order of precedence set forth previously, the term or condition that is more stringent and/or specific shall govern and apply.

GT-13. **Continuation of Work** – Any work that commences prior to and will extend beyond the expiration date of the current contract period shall, unless terminated by mutual written agreement between the City and the vendor, continue until completion without change to the then current prices, terms and conditions.

GT-14. **Contract Documents** – Following City Commission approval of the execution of a Construction Services Agreement, the Contract Documents shall consist of the following:

14.1. The Construction Services Agreement;
14.2. This Solicitation issued by the City;
14.3. Any Addendum to the Solicitation issued by the City;
14.4. Applicable Engineer Drawings, Design and Specifications;
14.5. The Contractors Bid Response;
14.6. The Notice to Proceed issued by the City and acknowledged by the Contractor.

GT-15. **Contingent Fees Prohibited -** The CONTRACTOR warrants that he or she has not employed or retained any company or person, other than a bona fide employee working solely for the CONTRACTOR, to solicit or secure this Agreement and that he or she has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the Bidder any fee, commission, percentage, gift, or other consideration contingent upon or resulting from the award or making of this Agreement. In the event of a breach of this provision, the CITY shall have the right to terminate this Agreement without further liability and at its discretion, deduct from the contract price, or otherwise recover, the full amount of any such fee, commission, percentage, gift or consideration paid in breach of this Agreement.

GT-16. **Copeland "Anti-Kickback" Act -** The Contractor must comply with the Copeland "Anti-Kickback" Act, 18 USC 874 as supplemented in Department of Labor regulations, 29 CFR Part 3, prohibiting employers from inducing any person employed to give up any part of the compensation to which he or she is otherwise entitled.

GT-17. **Cost of Preparing Bid Response** - All costs incurred by the Bidder for proposal preparation and participation in this competitive procurement will be the sole responsibility of the Bidder. The City of Leesburg shall not reimburse any Bidder for any such costs.

GT-18. **Disputes -** In case of any doubt or differences of opinion as to the items to be furnished hereunder, the decision of the City of Leesburg Purchasing Manager shall be final and binding on both parties.

GT-19. **Execution of Contract –** The Contractor to whom the City intends to award a Contract will be required to execute an Agreement within **ten (10) days** from the date of the Notice of Recommendation for Award, and deliver these executed instruments as instructed to the City of Leesburg Purchasing Division.

GT-20. **Governing Law/Jurisdiction** – The interpretation, effect, and validity of any contract(s) resulting from this solicitation shall be governed by the laws and regulations of the State of Florida. Venue of any court action shall be in Lake County, Florida. In the event that a suit is brought for the enforcement of any term of the contract(s).

GT-21. **Interpretation of Contract Documents -** Each Bidder shall thoroughly examine the Forms Response Form, and all other papers comprising the Contract Documents. He shall also examine and judge for himself all matters relating to the location and the character of the proposed work. If the Bidder should be of the opinion that the meaning of any part of the specifications is doubtful or obscure, or that they contain errors or reflect omissions, he should report such opinion or opinions in writing for an interpretation to the Purchasing Division at 204 N. 5th Street Leesburg, Florida 34748 or by electronic mail to: purch@leesburgflorida.gov. Such notification should be done immediately, but in no case no later than **seven (7) business days** before the due date and time of Bid Responses.

The City shall not be responsible for oral interpretation given by any City representative, the issuance of a written addendum being the only official method whereby such an interpretation will be given. The failure of the Bidder to direct the attention of the Purchasing Representative to errors or discrepancies will not relieve the Bidder, should he be awarded the contract, of responsibility of performing the work to the satisfaction of the City of Leesburg in accordance with the specifications.

GT-22. **Liability -** The Contractor shall hold and save the City of Leesburg, its officers, agents, and employees harmless from liability of any kind in the performance of or fulfilling the requirements of a Contract resulting from this solicitation.

GT-23. **Notice to Proceed** – Following contract award the City shall schedule with Contractor a pre-construction meeting. At that meeting the parties will mutually agree on a projects start date which will be used as the Notice to Proceed date. The City shall provide the Notice to Proceed (NTP0 to the Contractor. Contractor shall sign NTP acknowledging receipt and agreeing to the dates. The performance period will be defined in the NTP using the NTP date with the days stated in the Time of Completion paragraph of the Contract Documents.

GT-24. **Price Bid -** The unit prices, lump sum(s) and total price bid for the work shall be stated in figures in the appropriate places on the prescribed form(s), and shall be firm for ninety (90) calendar days after the solicitation opening date, unless stated differently in the Special Terms and Conditions. In the case of a discrepancy between the unit cost and extended cost the unit cost quoted will take precedence.

GT-25. **Protests** – Protests can only be made by Interested Parties. Protests must be submitted in writing to the Purchasing Manager at 204 N. 5th Street, Leesburg, FL 32748, no later than three (3) business days after the day the Notice of Recommendation to Award is posted to Vendor Registry, the City's official on-line bid management and vendor notification system. The written protest must specifically state the reason for the protest and exactly what is being protested. Protests received after the deadline will not be considered. The Purchasing Manager will respond to protests no later than seven (7) business days from the day it is received. In case of a protest the determination and decision of the City of Leesburg Purchasing Manager shall be final.

GT-26. **Public Entity Crimes –** Pursuant to Section 287.133(12)(a) of the Florida Statutes, a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a Bid Response on a contract to provide any goods or services to a public entity, may not submit a bond on a contract with a public entity for the construction or repair of a public building or public work, may not submit Bid Responses on leases of real property to a public entity may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant

under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017 for Category Two ($25,000) for a period of 36 months from the date of being placed on the convicted vendor list."

GT-27. **Public Records Law –** The State of Florida has a very broad public records law. Florida Statute Chapter 119 will apply to all bid responses.

GT-28. **Qualifications of Respondents -** The City of Leesburg reserves the right before awarding the contract, to require the Bidder to submit such evidence of his qualifications and experience as it may deem necessary, and may consider any evidence available to it of the financial, technical and other qualifications and abilities of a respondent.

28.1. The Bidder is assumed to be familiar with all Federal, State or local laws, codes, ordinances, rules and regulations that in any manner affect the work, and to abide thereby if awarded the Contract. Ignorance of legal requirements on the part of the Bidder will in no way relieve him of responsibility.

28.2. Any Bidder may be required to show to the complete satisfaction of the City of Leesburg that he has the necessary personnel, facilities, abilities, and financial resources to perform the work in a satisfactory manner and within the time specified.

28.3. Bidder must possess any and all required licenses to perform and complete the work necessary in this project. The Bidder must be licensed at the time of submitting their bid and the license must be in effect for the entire period of the project.

GT-29. **Quantities –** The City reserves the right to adjust quantities stated in this solicitation. Available funding versus prices bid may affect actual quantities ordered. The City may choose to increase or decrease quantities stated in the documents depending on the circumstance. The City is not obligated to place any order for a given amount subsequent to the award of this Solicitation. The City may use any stated estimated quantities in the award evaluation process. Estimated quantities do not contemplate or include possible additional quantities that may be ordered by other government, quasi-governmental or non-profit entities utilizing this contract. In no event shall the City be liable for payments in excess of the amount due for quantities of goods or services actually ordered.

GT-30. **Registration –** Any vendor receiving an award or purchase from this solicitation is required to register with the City's on-line bid/vendor management system. That on-line system is Vendor Registry (www.vendorregistry.com). There is no cost to register. Following issuance of the Notice of Recommendation for Award (NORA), the recommended vendor will be provided instructions on how to register with Vendor Registry. Registration must be completed prior to any work or purchases be made under the Contract.

GT-31. **Responsibility of Respondent to Inform Himself as to All Conditions Relating To Project -** The respondent, by and through the submission of his bid response, agrees that he shall be held responsible for having theretofore examined the site, the location and/or route of all proposed work and for having satisfied himself as to the character of such location and/or route of surface and underground obstructions, the nature of the ground and water table conditions and all other physical characteristics of the job, in order that he may include in the prices which he proposes, all costs pertaining to the work and thereby provide for the satisfactory completion thereof, including the removal, relocation or replacement of any objects or obstructions which will be encountered in doing the proposed work.

GT-32. **Responsiveness** (**Bids/Proposals**) – Responses shall conform in all material respects to the solicitation in order to be considered for award. Any response which fails to conform to the solicitation's essential requirements may be rejected.

32.1. An effective bid/proposal will be formatted to the solicitation specifically with particular attention paid to providing the information necessary to meet the evaluation factors in detail. The bid/proposal must demonstrate to the City that the respondent is highly qualified with regard to each requirement in the solicitation.

GT-33. **Right to Accept or Reject Submittals –** Submittals which are incomplete, unbalanced, conditional, obscure or which contain additions not required, or irregularities of any kind, or which do not comply in every respect with the solicitation, and the Contract Documents, may be rejected at the option of the City of Leesburg (also see the solicitation Definitions).

33.1. The City of Leesburg does not bind itself to accept the lowest price for the minimum specifications stated herein, but reserves the right to accept any response which in the judgment of the City will best serve the needs and interests of the City of Leesburg.

33.2. If, at the time this contract is to be awarded, the lowest Cost Response submitted by a responsible Bidder having acceptable qualifications and abilities to perform the work, does not exceed the amount of funds then estimated by the City as available to fund the work under the contract; the contract may be awarded to that Bidder.

33.3. If such lowest Cost exceeds the available funding for the work, the City may reject all Bids or may award the contract to the lowest Cost Bid less such deductible alternates or schedules of work which are listed in the Bid, as produces a net amount which is within the available funds.

GT-34. **Rules, Regulations and Licenses** – The Contractor shall comply with all federal, state, county, and local laws ordinances, rules and regulations applicable to the provision of the services specified in this solicitation. Lack of knowledge by the Bidder will in no way be relief from responsibility.

GT-35. **Signature of Bidder -** The Bidder shall sign the Bidders Certification Form in the space provided for the signature. If the vendor is an individual, the words, "Doing Business As (business name)", or "Sole Owner"' shall appear beneath his signature. In the case of partnership, the signature of at least one of the partners shall follow the firm name and the words, "Member of Firm", should be written beneath such signature. If the vendor is a corporation, the title of the office signing the Response in behalf of the corporation shall be stated and evidence of his authority to sign the Response shall be submitted.

GT-36. **State Registration Requirements** – Any corporation submitting a bid in response to this Solicitation shall either be registered or have applied for registration with the Florida Department of State in accordance with the provisions of Chapter 607, Florida Statutes. A copy of the registration/application may be required prior to award of a contract. Any partnership submitting a response to this Solicitation shall have complied with the applicable provisions of Chapter 620, Florida Statutes. For additional information on these requirements, please contact the Florida Secretary of State's Office, Division of Corporations, (800) 755-5111 (http://www.dos.state.fl.us).

GT-37. **State Professional Licenses –** The Bidder shall hold all required Professional Licenses as issued by the State of Florida Department of Business and Professional Regulation at the time their bid is submitted and maintain said licenses for the duration of the Contract.

GT-38. **Subcontracting –** Unless otherwise specified in this solicitation or Contract Documents, the Contractor shall not change subcontractors from those listed on their Subcontractor Listing form provided in advance of the Notice to Proceed being issued. Changes to Subcontractors may only be made following Contractor submitting a revised Subcontractor Listing and written approval by the City of the requested change in the subcontractor(s).

GT-39. **Time Allowed –** Contractor will start and complete the work in an expeditious manner which meets the mutually agreed upon schedule and Performance Period as set in the Contract Documents.

GT-40. **Warranty -** All warranties express and implied, shall be made available to the City for goods and services covered by this solicitation All goods furnished shall be fully guaranteed by the vendor against factory defects and workmanship. At no expense to the City, the vendor shall correct any and all apparent and latent defects that may occur within the manufacturer's standard warranty period. The special conditions of the solicitation may supersede the manufacturer's standard warranty. This paragraph does not apply to Solicitations for professional services covered by Chapter 287.055, Florida Statutes.

GT-41. **Withdrawal of Bids -** Any response to this solicitation may be withdrawn **prior** to the due date and time specified in the solicitation document or as revised by an addenda.

[END OF SECTION]

SECTION 4 - SUPPLEMENTAL CONDITIONS – CONSTUCTION

SC-1. **DEFINITIONS** - The following definitions shall apply. Whenever the following terms (or pronouns in place of them) are used in the Contract Documents, the intent and meaning of such terms shall be interpreted as follows:

1.1. **City Project Representative:** There shall be authorized representative(s) of the City assigned to make all necessary inspections of the work performed by the Contractor and for such other purposes as outlined in the Contract Documents.

1.2. **City Technical Representative**: There may be a designated Project Representative assigned by the City to inspect the technical aspects of the project. To insure the project is being constructed as designed.

1.3. **Engineer of Record:** The Engineer of Record designated by the City following Contract Execution.

1.4. **Engineer:** The design professional (engineer, architect, landscape architect or surveyor) designated by the City to serve as the design professional representing the City.

1.5. **Notice to Proceed (NTP):** The official Notice from the City to the Contractor providing the date work may begin and the date the performance period begins. The NTP date will be mutually agreed to at or following the pre-construction meeting. Contractor shall sign the acknowledgement section of the NTP and return to the Purchasing Division. The NTP shall become a part of the Contract Documents.

1.6. **Subcontractor:** Includes only those having a direct contract with the Contractor and it includes one who furnished material worked to a special design according to the plans or specifications of this work, but does not include one who merely furnishes material not so worked.

1.7. **Work:** The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.8. **Manual(s)**: Equipment documentation meant for the end user/consumer of the equipment. Contractor shall provide all Manuals to the City upon substantial completion. Retainage may not be released until the City has received all Manuals relevant to the equipment incorporated into the project.

1.9. **Surety:** The corporate body which is bound with and for the contractor which is primarily liable and which guarantees the faithful performance of the bid and/or agreement.

1.10. **Plans, Drawings and/or Sketches:** Graphic representations of the work to be performed or reproductions thereof.

1.11. **Specifications:** Broadly defined, the specifications include all data bound together herein or referenced on the plans, including, but not limited to, General Conditions, Technical Specifications, Special Conditions, Geotechnical Investigation, Supplemental Conditions (if any), other detailed technical specifications, exhibits and all addenda.

1.12. **Defective:** An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by City at Substantial Completion or City has taken beneficial use of completed portions.

1.13. **Shop Drawings:** All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by Contractor to illustrate material or equipment for some portion of the Work.

1.14. **Substantial Completion:** The Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

1.15. **Underground Facilities:** All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electriCity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

SC-2. **INSPECTION OF WORK -** The Project Representative and his representatives shall, at all times, have access to the work whenever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for inspection. The work will be conducted under the general direction of the Project Representative of the City and is subject to inspection by his appointed inspectors to insure compliance with the terms of the contract. No inspector is authorized to change any provisions of the specifications without written authorization of the City, nor shall the presence or absence of an inspector relieve the Contractor from any requirements of the contract.

If the specifications, the Project Representative's instructions, laws, ordinances or any public authority require any work to be specifically tested or approved, the Contractor shall give the City timely notice of its readiness for inspection, and if the inspection is by another authority than the Project Representative, of the date fixed for such inspection. Inspections by the Project Representative will be promptly made, and where practicable at the source of supply. If any work should be covered up without approval or consent of the City, it shall, if required by the Project Representative, be uncovered for examination at the Contractor's expense.

Re-examination of questioned work may be ordered by the Project Representative and, if so ordered, the work shall be uncovered by the Contractor. If such work is found in accordance with the contract documents, the City will pay the cost of re-examination and replacement. If such work is found not in accordance with the contract documents, the Contractor shall pay such cost.

SC-3. **TESTS -** The Project Representative will have the right to require all materials to be submitted to test prior to incorporation in the work. In some instances, it may be expedient to make these tests at the source of supply and for this reason it is requested that the Contractor furnish the source before incorporating material in the work. This does not in any way obligate the Project Representative to perform tests for acceptance of material and does not relieve the Contractor of his responsibility to furnish satisfactory material. The Contractor shall furnish two copies of

manufacturer's certificate of compliance with these specifications covering manufactured items incorporated in the work.

All field tests for compaction of earthwork and of material incorporated in the sub grade and base will be performed by technicians of a materials testing laboratory approved by the City. All tests performed by the laboratory to ascertain that the material, as placed, meets the required specification will be at the expense of the Contractor and should be included in the bid items as such.

SC-4. **TOOLS, PLANT AND EQUIPMENT** - If any time before the commencement or during the progress of the work, tools, plant or equipment appears to the Project Representative to be insufficient, inefficient or inappropriate to secure the quality of work required, or the proper rate of progress, the Project Representative will notify the City of such conditions. The Engineer will provide written notification to the Contractor of City's quality and/or schedule concerns. The Contractor will respond in writing within 5 business days of receiving the City's notice and will propose remedial actions to address the quality and/or schedule concerns.

SC-5. **COLLECTION AND DISPOSAL OF WASTE -** The Contractor shall collect waste from construction areas and elsewhere; handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly; dispose of material in a lawful manner. The Contractor shall be responsible for the transportation and disposal costs of all waste construction materials.

SC-6. **BURNING OF DEBRIS -** For any areas where the burning of debris is permitted, the Contractor will be required to request a permit therefore, from the fire authority having jurisdiction in the area in due advance time, and if such permission is granted he shall rigidly abide by all provisions and requirements of such permit. In no case will burning be permitted until the fire authorities have adequately checked the size of the pile to be burned, the weather conditions and any other factors which might affect the proper control of the burning operation.

SC-7. **MAINTENANCE OF TRAFFIC -** Where construction is located in public right of ways, traveled streets and roads, the Contractor shall exercise extreme care in seeing that sufficient area is provided and kept open for police, fire, ambulance, mail and private vehicular traffic.

The Contractor shall ensure that each person supervising the selection, placement and maintenance of Traffic Control Devices in the FDOT Work Zone shall be certified by attending an FDOT approved MOT training course. A copy of these certifications shall be submitted to the City of Leesburg upon request.

SC-8. **PROTECTION AGAINST POLLUTION -** The Contractor shall comply with all legal regulations pertaining to pollution as are applicable to the site and he shall take all measures necessary to assure that no pollution, temporary or permanent, occurs to any lakes or other water areas as a result of runoff from the areas within which he is working.

This shall include the installation of temporary construction turbidity screens or hay bales along the edge of existing wetlands prior to the start of construction. These areas shall be as shown on the plans.

Contractor shall maintain the fuel storage area in accordance with local, state and federal regulations. Refueling vehicles and refueling techniques shall also comply with all applicable regulations. Clean-up of the fuel storage area shall be as required by the regulations and in accordance with these regulations.

SC-9. **TEMPORARY FENCING AND BARRICADES -** The Contractor shall at his cost erect barricades sufficient to prevent injury to persons or damage to property, including the Contractor's personal property and materials. The City shall not be held responsible for the loss, theft, or vandalism of the Contractor's equipment or other personal property, including construction materials and supplies. Fences shall be constructed to prevent entry of unauthorized persons; cover trenches and holes when not in use; erect barriers at sharp changes in plane more than four (4) feet high. Should construction operations temporarily obstruct road passage, the Contractor shall at his cost provide suitable flagmen to control vehicular traffic on the road. Permits to use construction equipment on Florida Department of Transportation Right-of-Way shall be secured by the Contractor prior to actual beginning of work. The Contractor shall, at his cost, remove all temporary protection from the work site upon completion of the work.

SC-10. **WORKMANSHIP, MATERIALS, APPLIANCES, AND EMPLOYEES -** All work will be done in a competent and workmanlike manner. All materials, equipment and supplies furnished by the Contractor for permanent incorporation in the work shall be new and of quality standards specified. Workmanship shall be first class and the finished product equal to the best-accepted standards of the trade for the category of work performed. It is the City's intent to obtain a high quality job that will operate and function with least maintenance costs. The Contractor shall, if requested by City, furnish satisfactory evidence as to the kind and quality of materials.

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation and other facilities necessary for the execution and completion of the work.

The Contractor shall, at all times, enforce strict discipline and good order among his employees and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

Neither party shall employ or hire any employees of the other party without his consent.

SC-11. **GENERAL QUALITY AND STANDARDS -** To facilitate rapid examination, detailed specifications concerning basic requirements for labor, materials, equipment and/or incidentals to be used on the project are included under the various divisions in as brief a form as is consistent with clarity. The primary concern of the detailed specifications is for standards of performance expected for the finished work.

When in the detailed specifications reference is made to a particular code or specification, the latest edition of said code or specification shall apply.

The interests of the City, the Contractor and others concerned with the work require the inclusion of certain general governing requirements and standards, as a precaution against

contingency and to provide for the conditions under which the construction and the administration of the work will be carried out.

General requirements for the quality of the work, when not otherwise covered in more specific detail in the specifications, will be governed by acceptable standards of the trade.

These specifications consider the project as a whole and assume it's completion under a general contract. Further, the scope of subcontracts and the quantities of materials and labor supplied to the Contractor by others are assumed to be matters governed by agreement between the Contractor and his Subcontractors and suppliers and not by agreement between the City and any Subcontractor or suppliers.

Various sections of the construction specifications are intended to govern only the quality of work and/or materials incidental to the particular branch of work mentioned in the section title. Sections are not intended as itemizations of the work materials to be furnished or to limit or define the scope of any subcontract or agreement to furnish material and labor.

The furnishing of all items of material, labor, equipment and/or incidentals necessary to the completion of the work as a whole will be expected when such items are called for on the drawings by diagram, note or schedule, are listed in the specifications, or are reasonably inferred by either or a combination of both.

During the construction operations under this contract, the City may elect to contract other work for the project. The Contractor shall coordinate his operations with those of any other such Contractors as well as any work of constructing or adjusting utilities by any other authorities, to the end that the least practical handicap to the work of all such Contractors or authorities will result.

SC-12. **PROJECT COORDINATION -** The Contractor shall coordinate construction operations that are dependent upon each other for proper installation, connection and operation. The Contractor shall make adequate provisions to accommodate items scheduled for later installation.

The Contractor shall inspect both the substrate and conditions under which the work is to be performed. The Contractor shall not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

The Contractor shall inspect materials or equipment immediately upon delivery and again prior to installation. The Contractor shall reject damaged and defective items.

The Contractor shall supervise construction activities to ensure that no part of the construction is subject to deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following: Unprotected storage, Improper shipping and handling, Theft, Vandalism.

SC-13. **COORDINATION WITH UTILITY COMPANIES -** Contractor shall coordinate with all utility installations. Contractor shall notify the appropriate utility companies, in writing, adequately in advance of the time frame set aside for such utility installation. The utility

companies referred to herein shall include, but not be limited to, Power, Gas, Telephone, and Cable Television. Contractor shall coordinate the installation of "sleeves" for the utility companies as may be required.

Contractor shall supply the City with copies of all correspondence notifying the utility companies of his intended schedule of construction and the expected date for their respective utility installations. Written notices shall be sent to the utility companies at sixty (60) days, thirty (30) days and two (2) weeks prior to the time at which the utility installation should begin.

SC-14. **SUPERVISION -** Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

If the Contractor, in the course of the work, finds any discrepancy between the drawings and the physical conditions of the locality, or any errors or omissions in the drawing or in layout as given by points and instructions, it shall be his duty to immediately inform the Project Representative, in writing, and the Project Representative will promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractors' risk.

SC-15. **CONSTRUCTION SUPERINTENDENT -** Contractor shall employ a Construction Superintendent who shall be present on-site or available throughout the duration of the project and shall remain associated with the project until completion unless otherwise requested to be replaced by the City. The superintendent shall be experienced in the work required and perform all coordination activities generally conducted by project superintendents including, but not limited to, subcontractor coordination, utility installations, inspections, testing, material deliveries, etc. The superintendent shall be present at the pre-construction meeting and shall remain on the project until completion. The owner reserves the right to request a resume of experience for the superintendent including, but not limited to, requesting references from recent projects. Substitution of superintendents after the start of the work shall be approved by the owner in advance. All communications given to the superintendent shall be as binding as if given to Contractor.

SC-16. **WAGE RATES/EQUAL EMPLOYMENT OPPORTUNITY -** Wage rates for laborers, mechanics and apprentices shall not be less than those established by the Florida Department of Labor and Employment Security and/or the United States Department of Labor for this work, as may be attached hereto. The Contractor must insure Equal Employment Opportunity as part of the awarded contract and also subcontracts awarded by the contractor.

SC-17. **SUBCONTRACTS -** The Contractor shall, as soon as practicable after signing the contract, notify the Project Representative in writing of any changes in the names of subcontractors proposed for the work as listed on the bid form. The Contractor shall not employ subcontractors, unless they are approved by the Project Representative.

The Contractor agrees that he is as fully responsible to the City for the acts and omissions of his subcontractors and of persons, either directly or indirectly, employed by them, as he is for the acts and omissions of persons directly employed by him.

Nothing contained in the contract documents shall create any contractual relation between any subcontractors and the City.

SC-18. **PRE-CONSTRUCTION MEETING -** The City shall schedule a meeting after the Notice of Award. The Project Representative, Engineer, and Contractor shall attend this mandatory meeting. The following items shall be completed:

18.1. Submission of list of Subcontractors, Schedule of Values and Progress Schedule.
18.2. Designation of Personnel representing the parties in Contract, and the Engineer.
18.3. Use of premises by City and the Contractor.
18.4. Survey layout and scheduling.
18.5. Security and housekeeping procedures.
18.6. Requirements for start-up of equipment.
18.7. Inspection and acceptance of equipment put into service during construction period.

At least ten (10) days before submission of the first Application for Payment a conference attended by Contractor, Engineer and others as appropriate will be held to finalize the schedules submitted by Contractor. The finalized progress schedule will be acceptable to Engineer as providing an orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on Engineer responsibility for the progress or scheduling of the Work nor relieve Contractor from full responsibility thereto. The finalized schedule of Shop Drawing submissions will be acceptable to Engineer as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to Engineer as to form and substance.

SC-19. **ORDER OF COMPLETION -** The Contractor shall submit at such times as may be requested by the Project Representative, schedules which shall show the order in which the Contractor proposes to carry on the work with dates on which the Contractor will start the several parts of the work and estimated dates of completion of the several parts. The City retains the right to dictate to the Contractor the order of completion of the work.

SC-20. **MATERIALS AND EQUIPMENT SCHEDULES -** As soon as practicable and within ten (10) days after the date of award of contract and before any material or equipment is purchased, the Contractor will submit to the City for approval a complete list, in triplicate, of materials to be incorporated in the work and samples of each listed material. The list shall include catalog numbers, cuts, diagrams; drawings and such other descriptive data as may be required. No consideration will be given to partial lists submitted from time to time. Approval of materials will be based on manufacturers' published ratings. Any materials listed that are not in accordance with the specification requirements may be rejected.

When one or more manufacturer's items are specified, it shall be understood that the item(s) so specified are hereby approved as to suitability and no substitutions will be permitted unless followed by such qualifying phrases as equal "approval equal" or "as approved" in which case the approval of the City for items not specified shall be obtained before they may be used.

SC-21. **CONTRACTOR'S REQUESTS FOR INTERPRETATION (RFIs) –** Should Contractor be unable to determine from the Contract Documents the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of Work is described differently at more than one place in the Contract Documents; the Contractor shall request that the Architect/Engineer (AE), or City Representative, make an interpretation of the requirements of the Contract Documents to resolve such matters. Contractor shall comply with procedures specified herein to make Requests for Interpretation (RFIs).

21.1. Submission of RFIs: RFIs shall be prepared and submitted on a form provided by the City.

21.1.1. Forms shall be completely filled in, and if prepared by hand, shall be fully legible after copying by xerographic process.

21.1.2. Each RFI shall be given a discrete, consecutive number.

21.1.3. Each page of the RFI and each attachments to the RFI shall bear the City's project name, project number, date, RFI number and a descriptive title.

21.1.4. Contractor shall sign all RFIs attesting to good faith effort to determine from the Contract Documents the information requested for interpretation. Frivolous RFIs shall be subject to reimbursement from Contractor to City for fees charged by A/E, A/E consultants and other design professionals engaged by the City.

21.2. Subcontractor-Initiated and Supplier-Initiated RFIs: RFIs from subcontractors and material suppliers shall be submitted through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor. RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.

21.2.1. Contractor shall review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.

21.2.2. RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without interpretation. Such issues are solely the Contractor's responsibility.

21.2.3. Contractor shall be responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.

21.3. Requested Information: Contractor shall carefully study the Contract Documents to ensure that information sufficient for interpretation of requirements of the Contract Documents is not included. RFIs that request interpretation of requirements clearly indicated in the Contract Documents will be returned without interpretation.

21.3.1. In all cases in which RFIs are issued to request clarification of issues related to means, methods, techniques and sequences of construction, for example, pipe and duct routing, clearances, specific locations of Work shown diagrammatically, apparent interferences and similar items, the Contractor shall furnish all information required for the A/E or City's Representative to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to how the Contractor shall proceed.

21.3.2. If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.

21.4. Unacceptable Uses for RFIs: RFIs shall not be used to request the following::

21.4.1. Approval of submittals

21.4.2. Approval of substitutions

21.4.3. Changes that entail change in Contract Time and Contract Sum

21.4.4. Different methods of performing Work than those indicated in the Contract Drawings and Specifications

21.5. Disputed Requirements: In the event the Contractor believes that a clarification by the City's A/E, or Representative, results in additional cost or time, Contractor shall comply with the method for requesting a Change Order.

21.6. RFI Log: Contractor shall prepare and maintain a log of RFIs, and at any time requested by the City's Representative, the Contractor shall furnish copies of the log showing all outstanding RFIs.

21.7. Review Time: Architect/Engineer or City Representative (City) shall return RFIs to Contractor and within five (5) calendar days of receipt. RFIs received after 12:00 noon shall be considered received on the next regular working day for the purpose of establishing the start of the five-calendar day response period.

SC-22. **SUBMITTAL REQUIREMENTS OF CONTRACTOR -** After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, Contractor shall submit to Engineer for review in accordance with the accepted schedule of Shop Drawing submissions, or for other appropriate action if so indicated in the Special Conditions, five copies (unless otherwise specified in the General Requirements) of all Shop Drawings, which will bear a stamp or specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as Engineer may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable Engineer to review the information as required.

Contractor shall also submit to Engineer for review with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that Contractor has satisfied Contractor's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

Before submission of each Shop Drawing or sample Contractor shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

At the time of each submission, Contractor shall give Engineer specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and in addition, shall cause a specific notation to be made on each Shop Drawing submitted to Engineer for review of each such variation.

Engineer will review with reasonable promptness Shop Drawings and samples, but Engineer's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method,

technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate review of the assembly in which the item functions. Contractor shall make corrections required by Engineer, and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

Engineer's review of Shop Drawings or samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to each such variation at the time of submission as required by this Article and Engineer has given written review each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample review; nor will any review by Engineer relieve Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions herein.

Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to Engineer's review of the pertinent submission will be the sole expense and responsibility of Contractor.

SC-23. **CHANGES IN THE WORK -** Any Change in the Work will be documented in writing and approved by the City in writing. Changes that increase the cost of the work may need to be approved by City Commission depending on the dollar value of the increase change order. No work may be performed prior to the change being approved by City.

The Contract Price constitutes the total compensation payable to the Contractor for performing the work. All duties, responsibilities and obligations assigned to or undertaken by the Contractor shall be at his expense without change in the Contract Price.

The Contract Price may only be changed by a Change Order. Any claim for an increase in the Contract Price, shall be delivered in writing to the City and the Engineer within fifteen days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrence unless the Engineer allows an additional period of time to ascertain accurate cost data. All claims for adjustments in the Contract Price shall be determined by the Engineer if the City and Contractor cannot otherwise agree on the amount involved. The Engineer(s) decision shall be final and binding. Any change in the Contract Price resulting from any such claim shall be incorporated in a Change Order.

The value of any work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

i. where the work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved, or
ii. by mutual acceptance of a lump sum, or
iii. on the basis of the cost of the work plus a Contractor's fee for overhead and profit.

SC-24. **DETAIL DRAWINGS AND INSTRUCTIONS -** The City will furnish, with reasonable promptness, additional instructions by means of drawings or otherwise, necessary for the proper

execution of the work. All such drawings and instructions will be consistent with the contract documents, true developments thereof and reasonably inferable therefrom.

SC-25. **OWNERSHIP OF DRAWINGS -** All drawings, specifications and copies thereof furnished by the City are the property of the City. They are not to be used on other work and, with the exception of the signed contract set, are to be returned to the City, at the request of the City upon the completion of the work.

SC-26. **SURVEYS, PERMITS AND REGULATIONS -** The City will furnish horizontal and vertical control necessary to layout the work in an orderly and workmanlike manner.

Horizontal Control furnished by the City shall consist of adequately marked property corners or offset corners, with dimensions as shown on the drawings. Vertical Control will consist of benchmarks established within the immediate area of the work.

It shall be the responsibility of the Contractor to furnish all construction layout of the work, including, but not limited to, layout and elevations for the construction and final grade of the site.

The Contractor shall maintain and preserve all stakes and marks established by the City and should such stakes or marks be carelessly or willfully destroyed or damaged by the Contractor, said stakes or marks shall be replaced by the City at the expense of the Contractor.

The Contractor will set the horizontal and vertical control only at the beginning of the job as specified above. Interim staking during the job and all staking and layout work not furnished by the City as specified above shall be the responsibility of the Contractor.

The City will furnish all personnel and equipment and materials to make such surveys as are necessary to determine the quantities of work performed.

The City will furnish environmental permits unless otherwise specified. The Contractor shall obtain any and all required permits from all appropriate government agencies.

Work permits and licenses necessary for the prosecution of the work shall be secured and paid for by the Contractor. Easements for permanent structures or permanent changes in existing facilities will be secured and paid for by the City unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the City in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the Contractor performs work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notice to the City, he shall bear all cost arising there from.

SC-27. **ROYALTIES AND PATENTS -** There may be a design, device, material or process included in these plans and specifications which may be covered by letters, patent or copyright. Prior to use of any design, device, material or process, or its incorporation into the construction, the Contractor shall secure indemnity from his subcontractors or material suppliers that will protect and save harmless the City from all loss on account thereof.

The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the City harmless from loss on account thereof, except that the City shall be responsible for all such loss when a particular process or the product of a particular manufacturer or manufacturers is specified, but if the Contractor has information that the process or article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the City.

SC-28. **PROTECTION OF WORK AND PROPERTY -** The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the City's property from injury or loss arising in connection with this contract. The Contractor shall at all times protect all public and privately owned property, structures, utilities, and work of any kind against damage or interruption of service which may result from the operations of the Contractor. Damage or interruption to service resulting from failure to do so shall be repaired or restored by or at the expense of the Contractor except such as may be directly due to errors in the contract documents or caused by the agents or employees of the City.

SC-29. **DEDUCTIONS FOR UNCORRECTED WORK -** If the Project Representative deems it inexpedient to correct work injured or done, not in accordance with the contract, an equitable deduction from the contract price will be made therefore.

SC-30. **DELAYS AND EXTENSION OF TIME -** If the Contractor be delayed at any time, in the progress of the work by an act of neglect of the City or of his employees, or by any other contractor employed by the City or by Changes ordered in the work or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes beyond the Contractor's control, or by delay authorized by the Project Representative, or by any cause which the Project Representative may decide to justify the delay, then the time of completion will be extended for any such reasonable time as the Project Representative may decide.

No such extension will be made for delay occurring more than seven (7) days before claim therefore is made in writing to the City. In the case of a continuing cause or delay, only one claim is necessary.

If no schedule or agreement stating the dates upon which drawings shall be furnished is made, then no claim for delay will be allowed on account of failure to furnish drawings until two weeks after demand for such drawings and not then unless such claims be reasonable.

SC-31. **CORRECTION OF WORK BEFORE FINAL PAYMENTS -** The Contractor shall promptly remove from the premises all materials condemned by the Project Representative as failing to conform to the contract, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the contract and without expense to the City and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal or replacement.

If the Contractor does not correct such condemned work and material within a reasonable time fixed by written notice, the City may correct it at the expense of the Contractor. If the Contractor does not pay the expense of such correction within three (3) days thereafter, the City

may, upon three (3) days written notice, deduct all the cost and expenses that should have been borne by the Contractor.

SC-32. **THE CITY'S RIGHT TO DO WORK -** If the Contractor should neglect to prosecute the work properly or fail to perform any provision of this contract, the City after three (3) days written notice to the Contractor, may, without prejudice to any other remedy he may have, make good such deficiencies at the Contractor's expense.

SC-33. **SUSPENSION OF WORK -** The City may at any time suspend the work or any part thereof by giving five (5) days notice to the Contractor in writing. The work shall be resumed by the Contractor within ten (10) days after the date fixed in a written notice to resume work from the City to the Contractor. The City will reimburse the Contractor for expense incurred by the Contractor in connection with the work under this contract as a result of such suspension unless the suspension was recommended to the City by the Project Representative to enforce the contract or for any violation of the contract.

SC-34. **THE CITY'S RIGHT TO TERMINATE FOR CAUSE OR CONVENIENCE -** Any Agreement executed as a result of his solicitation may be terminated in whole or in part in writing by either party in the event of substantial failure by the other party to fulfill its obligations under the Agreement through no fault of the terminating party, provided that no termination may be effected unless the other party is given:

i. not less than ten (10) calendar days written notice (delivered by certified mail, return receipt requested) of intent to terminate; and
ii. an opportunity for consultation with the terminating party prior to termination.

The Agreement may be terminated in whole or in part in writing by the City for its convenience, provided the other party is afforded the same notice and consultation opportunity specified.

If termination for default is effected by the City, an equitable adjustment in the price for this contract shall be made, but no amount shall be allowed for anticipated profit on unperformed services or other work, and any payment due to the Contractor at the time of termination may be adjusted to cover any additional costs to the City because of the contractor's default.

If termination for convenience is effected by the City, the equitable adjustment shall include a reasonable profit for services or other work performed for which profit has not already been included in an invoice.

For any termination, the equitable adjustment shall provide for payment to the contractor for services rendered and expenses incurred prior to receipt of the notice of intent to terminate, in addition to termination settlement costs reasonably incurred by the contractor relating to commitments (e.g., suppliers, subcontractors) which had become firm prior to receipt of the notice of intent to terminate.

Upon receipt of a termination action under the paragraphs above, the Contractor shall (1) promptly discontinue all affected work (unless the notice directs otherwise) and (2) deliver or otherwise make available to the City all data, drawings, reports specifications, summaries and other such information, as may have been accumulated by the Contractor in performing this contract, whether completed or in process.

Upon termination, the City may take over the work and may award another party a contract to complete the work described in the Agreement.

If, after termination for failure of the Contractor to fulfill contractual obligations, it is determined that the Contractor had not failed to fulfill contractual obligations, the termination shall be deemed to have been for the convenience of the City. In such event, adjustment of the contract price shall be made as provided above.

SC-35. **CITY'S RIGHT TO TERMINATE FOR DEFAULT -** If, through any cause, the Contract shall fail to fulfill in a timely and proper manner its obligations under this Agreement, other than for the instances listed below due to "Force Majeure," the City shall thereupon have the right to terminate this Agreement by providing a written notice (show cause notice) to the Contractor requiring a written response due within five (5) calendar days from receipt of the written notice as to why the Agreement should not be terminated for default. The City's show cause notice shall include an Agreement termination date at least seven (7) calendar days subsequent to the due date for the Contractor's response. Should the Contractor fail to respond to such show cause notice, or if the City determines that the reasons provided by the Contractor for failure of the Contractor to fulfill its contractual obligations do not justify continuation of the contractual relationship, the Agreement shall be considered to have been terminated for default on the date indicated in the show cause notice. Should the City determine that the Contractor provided adequate justification that a termination for default is not appropriate under the circumstances; the City shall have a unilateral option to either continue the Agreement according to the original contract provisions or to terminate the contract for convenience. In the event that the City terminates the contract for default, all finished or unfinished deliverable items under this contract prepared by the Contractor shall, at the option of the City, become City property, and the Contractor shall be entitled to receive just and equitable compensation for any satisfactory work completed on such materials. Notwithstanding this compensation, the Contractor shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of this Agreement, and the City may withhold any payment due the Contractor for the purpose of set-off until such time as the exact amount of damages due the City from such breach can be determined.

In case of default by the Contractor, the City may procure the services from other sources and hold the Contractor responsible for any excess cost occasioned thereby. The City reserves the right to require a performance bond or other acceptable alternative performance guarantees from the successor Contractor without expense to the City.

In addition, in the event of default by the Contractor under this Agreement, the City may immediately cease doing business with the Contractor, immediately terminate for cause all existing Agreements the City has with the Contractor, and debar the Contractor from doing future business with the City.

Upon the Contractor filing a petition for bankruptcy or the entering of a judgment of bankruptcy by or against the Contractor, the City may immediately terminate, for cause, this Agreement and all other existing agreements the Contractor has with the City, and debar the Contractor from doing future business with the City.

The City may terminate this Agreement for cause without penalty or further obligation at any time following Agreement execution, if any person significantly involved in initiating, negotiating, securing, drafting, or creating the Agreement on behalf of the City is at any time while the Agreement or any extension thereof is in effect, an employee or agent of any other party to the Agreement in any capaCity or consultant to any other party of the Agreement with respect to the subject matter of the Agreement. Additionally, the City may recoup any fee or commission paid or due to any person significantly involved in initiating, negotiating, securing, drafting or creating the Agreement on behalf of the City from any other party to the Agreement.

SC-36. **REMOVAL OF EQUIPMENT -** In the case of annulment of this contract before completion, from any cause whatever, the Contractor, if notified to do so by the City, shall promptly remove any part or all of his equipment and supplies from the property of the City, failing which, the City will have the right to remove such equipment and supplies at the expense of the Contractor.

SC-37. **USE OF COMPLETED PORTIONS -** Use by City of any finished part of the Work, which has specifically been identified in the Contract Documents, or which City, Engineer and Contractor agree constitutes a separately functioning and useable part of the Work that can be used by City without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

City at any time may request Contractor in writing to permit City to use any such part of the Work which City believes to be ready for its intended use and substantially complete. If Contractor agrees, Contractor will certify to City and Engineer that said part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work. Contractor at any time may notify City and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, City, Contractor and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify City and Contractor in writing giving the reasons therefore. If Engineer considers that part of the Work to be substantially complete, the provisions of Substantial Completion will apply with respect to certification of that part of the Work and the division of responsibility in respect thereof and access thereto.

City may at any time request Contractor in writing to permit City to take over operation of any such part of the Work although it is not substantially complete. A copy of such request will be sent to Engineer and within a reasonable time thereafter City, Contractor and Engineer shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If Contractor does not object in writing to City and Engineer that such part of the Work is not ready for separate operation by City , Engineer will finalize the list of items to be completed or corrected and will deliver such list to City and Contractor together, with a written recommendation as to the division of responsibilities pending final payment between City and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties and guarantees for that part of the Work, which will become binding upon City and Contractor

at the time when City takes over such operation (unless they shall have otherwise agreed in writing and so informed Engineer). During such operation and prior to Substantial Completion of such part of the Work, City shall allow Contractor reasonable access to complete or correct items on said list and to complete other related Work.

If City finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with this Article; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or lapse on account of any such partial use or occupancy.

SC-38. **PROMPT PAYMENT -** It is the policy of the City that payment for all purchases by the City shall be made in a timely manner and that interest payments will be made on late payments in accordance with Part VII, Chapter 218, Florida Statutes, known as the Florida Prompt Payment Act.

SC-39. **APPLICATION FOR PAYMENT -** The Contractor shall submit to the City, at least 20 days before the date established for each progress payment (but not more often than once a month), an Application for Payment filled out and signed by Contractor covering the work completed as of the date of the Application. Upon review and approval by the City and Engineer (if applicable).

The retained percentage (retainage) amount with respect to the progress payments shall initially be 10% unless stated otherwise in the Construction Services Agreement. Retainage amounts and retainage process shall be governed by Florida Statute 255.078 – Public Construction Retainage.

Contractor shall, before any draw is issued, provide a sworn statement to City attesting that all services, materials and labor, furnished to the project to the date of the draw request have been paid for in full, or listing the amounts due for such services, materials and labor, and if any amounts are listed as being due, the City shall have the right to pay those amounts directly to the persons to whom they are due, with the balance of the draw amount to be paid to Contractor, and if the draw is insufficient to pay the amounts then due for services, materials and labor, the City shall pay those to whom such amounts are due on a pro rata basis until the draw is exhausted, and any remaining amounts due others shall be paid first out the next draw due.

The City shall not be required to issue progress payments pursuant to the draw schedule until the City has verified, by on-site inspection, that construction has in fact progressed to the stage at which a draw is required and that the work done and materials furnished are in compliance with the Contract Documents, and all applicable technical codes. The final draw due upon "completion" shall not be payable until the City, it's Project Representative or Engineer of Record has determined the work has been completed in accordance with the Contract Documents and a Certificate of Completion has been issued by the City.

SC-40. **PAYMENTS WITHHELD -** The City may withhold or, on account of subsequently discovered evidence, recover the whole or part of any payment to such an extent as may be necessary to protect the City from loss on account of—

i. Defective work not remedied.
ii. Claims filed or reasonable evidence indicating probable filing of claims.
iii. Failure of the Contractor to make payments properly to subcontractors or for materials or labor.
iv. The Project Representative's opinion that the contract cannot be completed for the balance then unpaid.
v. Damage to another contractor.
vi. Failure to maintain adequate progress.
vii. Damage to the building resulting from the negligence of the Contractor.

When the above grounds are removed, payment will be made for amounts withheld because of them.

SC-41. **FINAL PAYMENT APPLICATION -** Administrative actions and submittals that must precede or coincide with submittal of the final payment Application for Payment include the following:

i. Completion of Project closeout requirements.
ii. Completion of items specified for completion after Substantial Completion.
iii. Assurance that unsettled claims will be settled.
iv. Transmittal of required project construction records to City.
v. Final Clean Up as outlined in these General Conditions

Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will make a final inspection with City and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or *defective*. Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

After Contractor has completed all such corrections to the satisfaction of Engineer and delivered all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, marked-up record documents and other documents--all as required by the Contract Documents, and after Engineer has indicated that the Work is acceptable (subject to the provisions under Waiver of Claims), Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to City) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by City, Contractor may furnish receipts or releases in full; an affidavit of Contractor that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which City or City's property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to furnish a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to City to indemnify City against any Lien.

If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation--all as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application to City for payment. Thereupon Engineer will give written notice to City and Contractor that the Work is acceptable subject to the provisions found under "Waiver of Claims". Otherwise, Engineer will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. Thirty days after presentation to City of the Application and accompanying documentation, in appropriate form and substance, and with Engineer's recommendation and notice of acceptability, the amount recommended by Engineer will become due and will be paid by City to Contractor.

If, through no fault of Contractor, final completion of the Work is significantly delayed and if Engineer so confirms, City shall, upon receipt of Contractor's final Application for Payment and recommendation of Engineer, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by City for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

SC-42. **CONTRACTOR'S CONTINUING OBLIGATION** - Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by Engineer, nor the issuance of a certificate of Substantial Completion, nor any payment by City to Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by City, nor any act of acceptance by City nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by Engineer, nor any correction of *defective* Work by City will constitute an acceptance of Work not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents (except as provided under Waiver of Claims)

SC-43. **DAMAGES** - Any claim for damage arising under a resulting Agreement shall be made in writing to the party liable within ten (10) days after the first observance of such damage and not later than the time of final payment, except as expressly stipulated otherwise in the case of faulty work or materials.

SC-44. **EQUIPMENT STARTUP** - Equipment startup shall be in accordance of the manufacturer's recommendations, and as required to demonstrate performance to the Engineer and City in accordance with the specifications. The Contractor shall provide 30-days notice to the Engineer and City of the date on which all equipment and systems will be ready for startup. The startup date shall be arranged as required by the City's operational schedule with consideration of the schedule needs of the Engineer and Contractor.

SC-45. **COMPLETION OF WORK** - The Contractor shall be considered "substantially complete" when the equipment and systems have been used without failure for seven (7) continuous days, and in the opinion of the City, it's Project Representative or Engineer of Record, all work has been completed in general accordance with the plans and specifications and all test reports, inspections, etc. have been completed and delivered to the Engineer. Substantial completion shall also mean that degree of completion which allows the City to occupy and use the facilities. When the Engineer deems the work to be "substantially complete" he shall indicate this to the City in writing with copies to the Contractor. The date of contract completion shall be the same date at which the Contractor is considered substantially complete by the Engineer.

SC-46. **ACCEPTANCE OF FINISHED WORK -** The City shall make final acceptance inspection of the Project covered by this Contract when the Project is completed and finished in all respects in accordance with the Contract Documents. Contractor shall furnish to the Engineer or City Representative a complete set of As-Built drawings. These drawings shall be prepared by a licensed Surveyor in the State of Florida and shall be submitted to the Engineer within five (5) days following the completion of the work.

SC-47. **FINAL CLEAN UP -** The Contractor shall complete all cleaning operations before requesting final inspection.

The Contractor shall, as directed by the Project Representative, remove from the City's property and from all public and private property, at his own expense, all temporary structures, rubbish, and waste materials resulting from his operation.

The Contractor shall remove temporary protection and facilities installed for protection of the work during construction.

The Contractor shall comply with all regulations of authorities having jurisdiction and safety standards for cleaning. The Contractor shall not burn waste materials. The Contractor will not discharge volatile, harmful or dangerous materials into drainage systems. The Contractor will remove all waste materials from the site and dispose of in a lawful manner. Materials of value remaining after completion of associated work will become the owner's property. The Contractor will arrange for the disposition of these materials as directed by the City.

The Contractor shall rake the grounds that are neither paved nor planted to a smooth, even-textured surface.

SC-48. **TREES -** It shall be the responsibility of the Contractor to protect all trees within the limits of the work and as designated by the Project Representative.

SC-49. **GUARANTY -** Contractor warrants and guarantees to City that all Work will be in accordance with the Contract Documents and will not be *defective*. Prompt notice of all defects shall be given to Contractor. All *defective* Work, whether or not in place, may be rejected, corrected or accepted as provided in the paragraph in this section labeled 'Inspections, Correction, Removal Of Defective Work'.

All equipment, materials and installation and workmanship furnished by the Contractor under the terms of the Contract, shall be guaranteed by the Contractor against defective workmanship, mechanical and physical defects, leakage, breakage and other damages and failure, under normal

operation for a period of two (2) years or as otherwise specified in the Technical Specifications and after the date of acceptance thereof by the City, and each item of equipment or materials and installation proving to be defective within the specified period of guaranty shall be replaced, without cost to the City, by the Contractor or by the Surety. The period of guaranty of such replacement shall be from and after the date of final acceptance of the Project by the City, provided however, that where any item or equipment or material comes with a manufacturer's warranty of two (2) years or longer**,** that warranty shall take precedence over the warranty of Contractor hereunder.

SC-50. **INDEMNITY -** The Contractor agrees to make payment of all proper charges for labor required in the aforementioned work and defend, indemnify, and save harmless the City and Engineer or any of their officers, agents, or servants and each and every one of them against and from all claims, suits, and costs of every kind and description, including attorney's fees, and from all damages to which the City and Engineer or any of their officers, agents, or servants may be put by reason of injury to the persons or property of others resulting from the performance of Contractor's duties under the Contract, or through the negligence of the Contractor in the performance of its duties under this Contract, or through any act or omission on the part of the Contractor, his agents, employees, or servants or subcontractors.

Provided, however, if this Contract is deemed, by a court of competent jurisdiction, to be a construction contract for the purposes of Section 725.06, Florida Statutes, any obligation of the Contractor to defend, indemnify or hold harmless an City and Engineer shall be limited to an obligation to indemnify and hold harmless the City and Engineer, and its officers and employees, from liabilities, damages, losses, and costs, including, but not limited to, reasonable attorneys' fees, to the extent caused by the negligence, recklessness, or intentionally wrongful conduct of the Contractor and persons employed or utilized by the Contractor in the performance of this Contract.

SC-51. **ASSIGNMENT -** Neither party to the contract shall assign the contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due, or to become due to him hereunder, without the previous written consent of the Project Representative.

SC-52. **RIGHTS OF VARIOUS INTERESTS -** Wherever work being done by the City's forces, or by the other contractors, is contiguous to work covered by this contract, the respective rights of the various interests involved will be established by the Project Representative, to secure the completion of the various portions of the work in general harmony.

SC-53. **SEPARATE CONTRACTS -** The City reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly conduct and coordinate his work with theirs.

If any part of the Contractor's work depends, for proper execution or results upon the work of any other contractor, the Contractor shall inspect and promptly report to the Project Representative any defects in such work that render it unsuitable for such proper execution and results. His failure to so inspect and report shall constitute an acceptance of the other

contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other contractor's work after the execution of the work.

To insure the proper execution of his subsequent work, the Contractor shall measure work already in place and shall at once report to the Project Representative any discrepancy between the executed work and the drawings.

SC-54. **LANDS FOR WORK -** The City will provide the lands upon which the work under this contract is to be done, except that the Contractor shall provide land required for the erection of temporary construction facilities and storage of his material, together with right of access to same.

SC-55. **ACCESS TO RECORDS -** The City, the Florida Department of State, or any of their duly authorized representatives shall have access to any books, documents, papers or any other records prepared by the Contractor that are directly pertinent to the work produced under this Agreement for making audit, examination, excerpts and transcription. Such records will be maintained for five (5) years after the completion of the work and until claims or audit findings have been resolved which were initiated prior to the expiration of the five (5) year period.

SC-56. **EXECUTION, CORRELATION AND INTENT OF DOCUMENTS -** The Agreement shall be signed in quadruplicate by the City and the Contractor. The Contract Documents comprise the entire agreement between City and Contractor concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment, such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of City, Contractor or Engineer, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Engineer, or any of Engineer's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of these Supplemental Conditions. Clarifications and interpretations of the Contract Documents shall be issued by Engineer.

If, during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, Contractor shall so report to Engineer in writing at once and before

proceeding with the Work affected thereby shall obtain a written interpretation or clarification from Engineer; however, Contractor shall not be liable to City or Engineer for failure to report any conflict, error or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof or should reasonably have known thereof.

SC-57. **CONTRACTOR'S UNDERSTANDING -** Contractor has visited the site, has called for utility locates and has familiarized itself with the local conditions under which the work is to be performed, both underground and above ground and both on and off premises and has correlated these observations with the requirements of the proposed contract documents; all as considered necessary or pertinent to the work, and any failure to thus make all such prior investigations and studies shall in no way act as a waiver of any of the terms of the contract. No verbal agreement or conversation with any officer, agent or employee of the City, either before or after the execution of this contract, shall affect or modify any of the terms or obligations herein contained

SC-58. **FAMILIARITY WITH LAWS -** The Contractor is required to be familiar with all Federal, State and Local laws, ordinances, rules and regulations that in any manner affect the work. Ignorance on the part of the Contractor will in no way relieve him from responsibility.

SC-59. **SALES TAX -** The Contractor is required to pay Florida sales and use taxes on all materials purchased for this project unless otherwise specified in the document. All Florida sales and use taxes will be included in the submitted bid price(s).

SC-60. **CLARIFICATIONS AND INTERPRETATIONS OF CONTRACT DOCUMENTS -** It is the duty of the Contractor to notify the Engineer, in writing, in the event of any doubt or question as to the true meaning of any provision in the Contract Documents. The Engineer's decision thereon shall be final. Annotated dimensions on drawings shall govern and work not dimensioned shall be as clarified by the Engineer. Work not particularly shown or specified shall be the same as similar parts that are shown or specified. Materials or work described in words which have a well-known technical or trade meaning shall be deemed to refer to such recognized standard.

Engineer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time then Contractor shall notify City in accordance with the Agreement.

Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work there under. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims in respect of changes in the Contract Price or Contract Time will be referred initially to Engineer in writing with a request for a formal decision in accordance with this paragraph, which Engineer will render writing within a reasonable time. Written notice of each such claim, dispute and other matters will be delivered by the claimant to Engineer and the other party to the Agreement promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and

written supporting data will be submitted to Engineer and the other party within sixty days after such occurrence unless Engineer allows an additional period of time to ascertain more accurate data in support of the claim.

When functioning as interpreter and judge under this Article, Engineer will not show partiality to City or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Engineer pursuant this Article with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as permitted by the Agreement.) will be a condition precedent to any exercise by City or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter.

SC-61. **LIMITATIONS ON ENGINEER'S RESPONSIBILITIES -** Neither Engineer's authority to act nor any decision made by Engineer in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of Engineer to Contractor, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of Engineer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating other-wise). The use of any such term or adjective shall not be effective to assign to Engineer any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of this Article.

Engineer will not be responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and Engineer will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

SC-62. **SAFETY AND PRECAUTION -** Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

i. all employees on the Work and other persons and organizations who may be affected thereby;
ii. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

iii. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph caused, directly or in this Article directly, in whole or in part, by Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of City or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor). Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to City and Contractor that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be Contractor's superintendent unless otherwise designated in writing by Contractor to City.

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or City, is obligated to act to prevent threatened damage, injury or loss. Contractor shall give Engineer prompt written notice that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Engineer determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a Work Directive Change or Change Order will be issued to document the consequences of the changes or variations.

SC-63. **RECORD DOCUMENTS** - Contractor shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, reviewed Shop Drawings, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications in good order and annotated to show all changes made during construction. These record documents together with all reviewed samples and a counterpart of all reviewed Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents or as-builts, samples and Shop Drawings will be delivered to Engineer for City. Upon delivery of such documents to Engineer, the Contractor shall provide a written certification, signed and dated, that all documents accurately and completely reflect all deviations from or changes in the original Contract Documents made during construction of the project.

Record documents shall be up-to-date and available for review by the resident project representative prior to each application for progress payment. Payment will not be made for construction of items not shown on the record documents.

These requirements also supplement those of Item 68. Not less than two percent (2%) of the contract price shall be retained until correct record drawings, specifications, addenda, modifications and shop drawings are delivered to and reviewed by the Engineer.

SC-64. **PHYSICAL CONDITIONS-UNDERGROUND FACILITIES -** *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site are based on information and data furnished to City or Engineer by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

i. City and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

ii. Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

The word facility as used in this subsection titled "Utilities" includes any pipe conveying gases or liquids and appurtenances attached thereto; cables, conduits, wires, ducts and appurtenances; poles and appurtenances; any of which may be buried below grade or installed at or above grade level. A facility excludes irrigation pipes, service connections and traffic signal wiring. A service connection is a pipe (excluding irrigation pipes), cable, wire, duct or conduit that is intended to connect a facility with a user. The word Utility as used in this subsection titled "Utilities" refers to the entity having legal owner-ship of the facility, service connection, irrigation pipe, or traffic signal wiring.

The Engineer has endeavored to determine the existence of underground facilities at the site of the work from the records of the utilities with known facilities in the vicinity of the work. The position of these facilities as derived from such records is shown on the plans. Service connections, irrigation pipes, and traffic signal wiring may not be shown on the plans. The Contractor shall make his own investigations, including exploratory excavations and contact with Utilities, to determine the exact locations and type of existing facilities, service connections, irrigation pipes, and traffic signal wiring prior to commencing work in the area and shall be responsible for any damage thereto.

Damage, injury, or loss resulting in whole or in part from the Contractor's failure to locate and preserve a facility, service connection, irrigation pipe, or traffic signal wiring shall under no circumstances be deemed attributable to the fault of the Drawings or Specifications or to the acts or omissions of the City or Engineer or anyone employed by either of them or anyone for whose acts either of them may be liable.

With respect to underground facilities, no claim for a change in the contract price may be allowed unless the Contractor discovers an underground facility which is not indicated or

referred to in the Contract Documents or which is in a position differing materially and significantly from that indicated or referred to in the Contract Documents. If such discovery is made, the Contractor shall promptly notify in writing the City, Engineer and the Utility. The City may make changes in the alignment and grade of the work.

At no additional cost to the City, the Contractor shall replace, remove, relocate, protect, or temporarily maintain a facility which is not in a position differing materially and significantly from that indicated or referred to in the Contract Documents. At no additional cost to the City, the Contractor shall adjust the top elevation of all valve boxes and manholes to match the finish grade or pavement surface and shall replace, remove, relocate, protect, or temporarily maintain all service connections, irrigation pipes, and traffic signal wiring. The work on the facility, service connection, irrigation pipe or traffic signal wiring shall be done in a manner satisfactory to the Utility, it being understood that the Utility has the option of doing such work with his own forces, or permitting the work to be done by the Contractor.

SC-65. **PHYSICAL CONDITIONS**

65.1. Exploration and Reports: Reference is made in the Special Conditions to those reports of exploration and tests of subsurface conditions at the site that have been utilized by Engineer in preparation of the Contract Documents. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents.

65.2. Unforeseen Conditions: Contractor shall promptly notify City and Engineer in writing of any subsurface or latent physical conditions at the site or in an existing structure differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise City in writing if further investigation or tests are necessary.

Promptly thereafter, City shall obtain the necessary additional investigations and tests and furnish copies to Engineer and Contractor. If Engineer finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by Contractor, a Change Order shall be issued incorporating the necessary revisions.

SC-66. **REVIEW OF APPLICATION FOR PROGRESS PAYMENT -** Engineer will, within ten days after receipt of each Application for Payment, to either indicate in writing a recommendation of payment and present the Application to City, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application. Ten (10) days after presentation of the Application for Payment with Engineer's recommendation, the amount recommended will become due and when due will be paid by City to Contractor.

Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to City, based on Engineer's on-site observations of the Work in progress as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated; that, to the best of Engineer's knowledge, information and

belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work, and to any other qualifications stated in the recommendation); and that Contractor is entitled to payment of the amount recommended. However, by recommending any such payment Engineer will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents or that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by City or City to withhold payment to Contractor.

Engineer's recommendation of final payment will constitute an additional representation by Engineer to City that the conditions precedent to Contractor's being entitled to final payment have been fulfilled.

Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make such representations to City. Engineer may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or test, nullify any such payment previously recommended; to such extent as may be necessary in Engineer's opinion to protect City from loss.

City may refuse to make payment of the full amount recommended by Engineer because claims have been made against City on account of Contractor's performance or furnishing of the Work or Liens have been filed in connection with the Work or there are other items entitling City to a set-off against the amount recommended, but City must give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action.

SC-67. **SUBSTANTIAL COMPLETION -** When Contractor considers the entire Work ready for its intended use, Contractor shall notify City and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion. Within a reasonable time thereafter, City, Contractor and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefore. If Engineer considers the Work substantially complete, Engineer will prepare and deliver to City a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. City shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within fourteen days after submission of the tentative certificate to City notify Contractor in writing, stating the reasons therefore. If, after consideration of City's objections, Engineer considers the Work substantially complete, Engineer will within said fourteen days execute and deliver to City and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from City. At the time of delivery of the tentative certificate of Substantial

Completion, Engineer will deliver to City and Contractor a written recommendation as to division of responsibilities pending final payment between City and Contractor with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties. Unless City and Contractor agree otherwise in writing and so inform Engineer prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendations will be binding on City and Contractor until final payment.

City shall have the right to exclude Contractor from the Work after the date of Substantial Completion, but City shall allow Contractor reasonable access to complete or correct items on the tentative list.

SC-68. **INSPECTIONS, CORRECTION, REMOVAL OF DEFECTIVE WORK -** Engineer and Engineer's representatives, other representatives of City, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. Contractor shall provide proper and safe conditions for such access.
Contractor shall give Engineer timely notice of readiness of the Work for all required inspections or tests.

If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, Contractor shall assume full responsibility therefore, pay all costs in connection therewith and furnish Engineer the required certificates of inspection, testing or approval. Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with City's or Engineer's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by City (unless otherwise specified).

All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to City and Contractor (or by Engineer if so specified).

If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

Neither observations by Engineer nor inspections, tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract Documents.

If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose or

otherwise make available for observation, inspection or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals), and City shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefore as provided in Special Conditions. If, however, such Work is not found to be *defective*, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefore as provided in Special Conditions.

If the Work is *defective*, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, City may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of City to stop the Work shall not give rise to any duty on the part of City to exercise this right for the benefit of Contractor or any other party.

If required by Engineer, Contractor shall promptly either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer, remove it from the site and replace it with *non-defective* Work. Contractor shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

SC-69. **ACCEPTANCE OF DEFECTIVE WORK; CORRECTION OF DEFECTIVE WORK BY THE City -** If, instead of requiring correction or removal and replacement of *defective* Work, City (and, prior to Engineer's recommendation of final payment) prefers to accept it, City may do so. Contractor shall bear all direct, indirect and consequential costs attributable to City's evaluation of and determination to accept such *defective* Work (such costs to be approved by Engineer as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and City shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, City may make a claim. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to City.

If Contractor fails within a reasonable time after written notice of Engineer to proceed to correct and to correct *defective* Work or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, City may, after seven days' written notice to Contractor, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph City shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, City may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equip-

ment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which City has paid Contractor but which are stored elsewhere. Contractor shall allow City, City's representatives, agents and employees such access to the site as may be necessary to enable City to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of City in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Engineer, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and City shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, City may make a claim. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's *defective* Work. Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by City of City's rights and remedies hereunder.

SC-70. **ARBITRATION -** Before bringing any action in any court of competent jurisdiction pertaining to any claim, dispute or other matter in question arising out of or relating to the Contract Documents or the breach thereof, in an amount less than $25,000, except for claims which have been waived by the making and acceptance of final payment, the claimant/objector (Party A) shall first offer to arbitrate the question(s) with the other party to the contract (Party B) by notifying him in writing and setting forth in such notice the question(s) to be arbitrated.

Party B can select to arbitrate or not. If Party B agrees to arbitrate he shall so advise Party A in writing within ten days after receipt of Party A's notice. Notice by Party B that he does not wish to arbitrate or failure of Party B to notify Party A within the ten-day period will give Party A the right to institute a court action.

If Party B agrees to arbitrate, the arbitration shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association except as modified herein. In such event, the agreement to arbitrate shall be specifically enforceable under the provisions of the Florida Arbitration Code, S682, Fla. Stat., as it may be from time to time amended. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

If Party B agrees to arbitrate, then Party A shall file its notice of demand for arbitration in writing with Party B and with the American Arbitration Association, and a copy shall be filed with the Engineer. Notice of demand for arbitration shall be served on the parties referred to herein no later than thirty days from the date Party B agrees to arbitrate the issues in question. Failure to serve the notice of demand for arbitration shall constitute a waiver and abandonment of the claims for which arbitration is sought. Notice of demand for arbitration shall in no event be made on any claim, dispute or other matter in questions which would be barred by the applicable statute of limitations.

If the dollar amount of the claim exceeds $25,000, arbitration may only be utilized if both Party A and party B agree to arbitrate.

The Contractor shall carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

The Florida Rules of Civil Procedure pertaining to discovery shall apply to both parties during arbitration, and, at the City's sole option, any and all arbitration arising out of or relating to any of the Contract Documents or any breach thereof shall include by consolidation, joinder, or joint filing any additional person or entity not a party to this Agreement to the extent necessary for the final resolution of the matter in controversy.

At least one of the members of the arbitration panel must be an attorney licensed to practice law in the State of Florida.

The surety shall be bound by the arbitration award to the same extent as the Contractor is bound.

The arbitration panel shall submit a written opinion with findings of fact and conclusions of law stating the basis for the decision made, and including an award of arbitration that may be confirmed by a court of competent jurisdiction.

Unless City agrees to the contrary, the location of any and all arbitration proceedings shall be in Lake County, Florida.

[END OF SECTION]

Complete ALL the forms in this section and submit them in a sealed envelope as your bid response.

General Vendor Information			
Company Name:			
Physical Address:			
Mailing Address:			
Phone No.:		FEIN No.:	
Email Address:			
Financial Status: ☐Poor ☐ Good ☐ Excellent		No. of Years in Business:	
No. of Personnel Currently Employed:		No. of Personnel Available for this Project:	
Principal Name		**Title**	
Describe the type of work normally performed by your company:			

Provide information regarding who may be contacted regarding this bid response.

Primary Contact			
Name:			
Title:			
Address:			
Phone No.:		Mobile Phone No.:	
Email Address:			

ITB 170461

SCHEDULE OF BID ITEMS

Your Bid MUST BE submitted on this form. Double check the Bid prices.
Amounts cannot be changed following the Bid due date and time.

Submitting Vendor Name: _____

ITEM NO.	ITEM DESCRIPTION	UNIT	QTY	UNIT COST	EXTENDED BID PRICE
BID ITEM 1 - GENERAL					
1.1	GENERAL CONDITIONS – Mobilization, demobilization, insurance, bonds, administration, etc . . .	LS	1		**$**
1.2	ALLOWANCE – Permit Fees and Plan Review Fee	LS	1		**$ 1,073.28 (Allowance)**
BID ITEM 2 – ROADWAY/HARDSCAPE					
2.1	SITE WORK, ROADWAY, CURB-GUTTER, SIDEWALKS as specified in the bid documents.	LS	1		**$**
BID ITEM 3 – BOAT RAMP AND FLOATING DOCK SYSTEM					
3.1	BOAT RAMP as specified in the bid documents.	LS	1		**$**
3.2	FLOATING DOCK SYSTEM as specified in the bid documents.	LS	1		**$**
				TOTAL BASE BID AMOUNT:	**$**

Time for Completion

Completion of project is desired within **150 calendar days** from Notice to Proceed (NTP). Bids which do not indicate a completion time that is within this delivery time may be deemed as non-responsive.

Number of CALENDAR DAYS to begin work after receipt of NTP: _____ Calendar Days

Number of CALENDAR DAYS to completion after receipt of NTP: _____ Calendar Days

Bidders State of Florida Contractor License Number: _____

BIDDER'S CERTIFICATION

- I have carefully examined the Invitation to Bid, Instructions to Bidders, General and/or Special Conditions, Specifications, the Bid submitted and any other documents accompanying or made a part of this invitation.
- I hereby promise to furnish the goods or services specified in the Invitation to Bid at the prices or rates set forth in my bid. I agree that my bid will remain firm for the period established in the bid document in order to allow the City adequate time to evaluate the bids and make award. Furthermore, I agree to abide by all conditions of the bid.
- I certify that all information contained in this bid is truthful to the best of my knowledge and belief. I further certify that I am duly authorized to submit this bid on behalf of the vendor / contractor as its act and deed and that the vendor / contractor is ready, willing and able to perform if awarded the bid.
- I further certify that this bid is made without prior understanding, agreement, connection, discussion, or collusion with any person, firm or corporation submitting a bid for the same product or service; no officer, employee or agent of the City of Leesburg or of any other bidder interested in said bid; and that the undersigned executed this Bidder's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.
- I further certify that having read and examined the specifications and documents for the designated services and understanding the general conditions for contract under which services will be performed, does hereby propose to furnish all labor, equipment, and material to provide the services set forth in the Solicitation.
- I hereby declare that the following listing states any clarifications, any and all variations from and exceptions to the requirements of the specifications and documents. The undersigned further declares that the "work" will be performed in strict accordance with such requirements, and understands that any exceptions to the requirements of the specifications and documents may render the bidder's submission non-responsive.

NO EXCEPTIONS WILL BE ALLOWED AFTER THE BID IS SUBMITTED.

Please check one:

___ I take NO exceptions

I take the exceptions listed here:

___ (If more space is needed, please indicate exceptions here and attach additional pages as needed)

ADDENDUM ACKNOWLEDGMENT

☐ No Addendum were issued.

The undersigned acknowledges receipt of the following addenda to the Invitation to Bid (indicate number and date of each):

Addendum No.	Dated:	Addendum No.	Dated:
Addendum No.	Dated:	Addendum No.	Dated:

FAILURE TO SUBMIT ACKNOWLEDGEMENT OF ANY ADDENDUM THAT AFFECTS THE BID PRICES IS CONSIDERED A MAJOR IRREGULARITY AND MAY BE CAUSE FOR REJECTION OF THE BID.

LOCAL VENDOR STATUS DECLARATION

The responding firm and firm that will enter into an agreement with the City, if selected, declares the following selected Local Vendor status.

Provide Physical Address of Business Office or Full Time Sales Office:

☐ **My Firm Qualifies as a Tier I - Local Vendor for this solicitation**
"Tier I Local Vendor" shall be defined as the primary Business Office or a Full Time Sales Office of the vendor being located within the City of Leesburg or the vendor receiving one or more Utility Services (excluding communications/Internet) from the City of Leesburg.

☐ **My Firm Qualifies as a Tier II - Local Vendor for this solicitation**
"Tier II Local Vendor" shall be defined as the primary Business Office or a Full Time Sales Office of the vendor not meeting the definition of a Tier I Local Vendor but nonetheless being located within the 20-Mile Radius as defined in this policy.

☐ **My Firm does not qualify as a local vendor**

BID CERTIFICATION SIGNATURES
(this section must be signed and completed.)

Name of Business	**Telephone Number**
By: _____ **Signature**	**e-mail Address**
Printed Name	**Mailing Address**
Title	**City, State, Zip Code**

SUB-CONTRACTOR LISTING

Bidders using their own forces for the work may skip Section I. If subcontractors are listed below, the Bidder acknowledges that they have fully investigated each subcontractor listed and has in their files evidence each subcontractor has engaged successfully in his line of work for a reasonable period of time, and that the subcontractor maintains a fully equipped organization capable, technically and financially, of performing the work required. The City reserves final approval of any subcontractors listed. Following award of contract the City reserves the right for approval of future subcontractors and refusal of existing or future subcontractors providing work under this contract. If more space is needed use copies of this form.

Section I - Sub-Contractors

O **My company will not use any sub-contractors.**

Sub-Contractor Name and Address	How long have you used this subcontractor?

Section II – Equipment Listing
Provide a list of all equipment your firm has available for this contract. Attaching a listing of all equipment owned by your company is unacceptable. List only the equipment that will be assigned to this contract.

Equipment Description	Equipment Description

STATEMENT OF EXPERIENCE - "SIMILAR" PROJECTS

List all SIMILAR projects your firm has completed. Copy this sheet if additional pages are needed. You must use this form. Attaching a separate listing may cause your bid to be deemed non-responsive and rejected.

Project Name/Location:		
Project Owner:		**Date Completed:**
Project Description and Specific Scope: Be Descriptive. Use additional pages.		
Contract Amounts:	**Original $**	**At Completion $**
Briefly Explain Any Variance:		
Contact Person:		
Contact e-mail:		
Phone Number:		
Project Name/Location:		
Project Owner:		**Date Completed:**
Project Description and Specific Scope: *Be Descriptive.* **Use additional pages.**		
Contract Amounts:	**Original $**	**At Completion $**
Briefly Explain Any Variance:		
Contact Person:		
Contact e-mail:		
Phone Number:		
Project Name/Location:		
Project Owner:		**Date Completed:**
Project Description and Specific Scope: *Be Descriptive.* **Use additional pages.**		
Contract Amounts:	**Original $**	**At Completion $**
Briefly Explain Any Variance:		
Contact Person:		
Contact e-mail:		
Phone Number:		

ATTACHMENTS

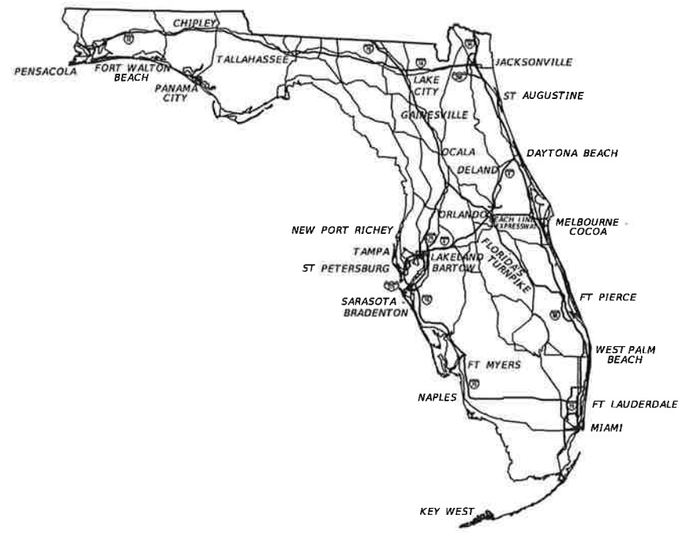
Roadway & Boat Ramp Drawings
"SKI BEACH PLANS"

Geotechnical Report for Project Site

CITY OF LEESBURG

CONTRACT PLANS

SKI BEACH PLANS



COMPONENTS OF CONTRACT PLANS SET

ROADWAY PLANS
STRUCTURES PLANS

INDEX OF ROADWAY PLANS

SHEET NO.	*SHEET DESCRIPTION*
1	KEY SHEET
2 - 3	TYPICAL SECTIONS
4	PROJECT LAYOUT
5	CURVE AND COORDINATE DATA
6	GENERAL NOTES
7- 10	ROADWAY PLAN SHEETS
11 - 12	PROFILE SHEETS
13	DRAINAGE DETAILS
14	SPECIAL DETAILS
15	EROSION CONROL PLAN
16-20	CROSS SECTIONS
21-24	SIGNING AND PAVEMENT MARKING SHEETS

INDEX OF STRUCTURE PLANS

SHEET NO.	*SHEET DESCRIPTION*
S1-1 - S1-5	STRUCTURES NOTES
S1-6 -S1-7	PLAN AND ELEVATION SHEETS
S1-8	FOUNDATION LAYOUT
S1-9 - S1-10	DETAIL SHEETS
S1-11 - S1-12	EROSION AND SEDIMENT CONTROL

GOVERNING STANDARDS AND SPECIFICATIONS:
FLORIDA DEPARTMENT OF TRANSPORTATION, DESIGN STANDARDS FISCAL YEAR 2017, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION DATED 2017, AND THE LATEST EDITIONS OF THE CITY OF LEESBURG STANDARD DETAILS, AS AMENDED BY CONTRACT DOCUMENTS.

For Design Standards click on the "Design Standards" link at the following web site:
http://www.dot.state.fl.us/rddesign/

STEVEN D. WATERSTON
LICENSE
NO. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
7/24/17

PLANS PREPARED BY:

HDR ENGINEERING, INC.
315 E. ROBINSON ST. , SUITE 400
ORLANDO, FL 32801-1949
(407) 420-4200

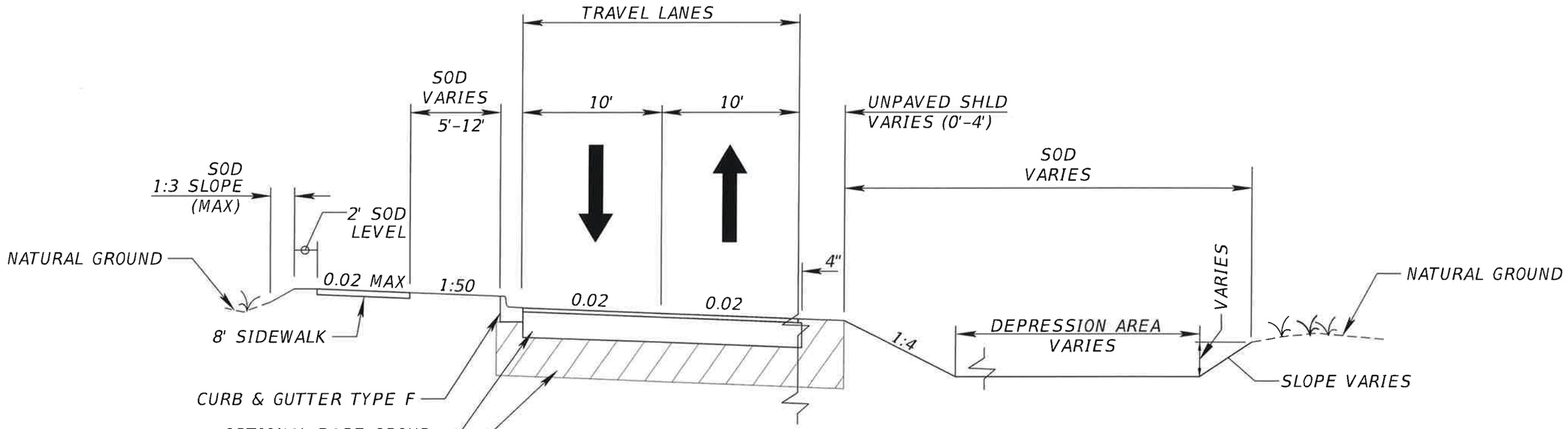
NOTE: THE SCALE OF THESE PLANS MAY HAVE CHANGED DUE TO REPRODUCTION.

JULY 21, 2017

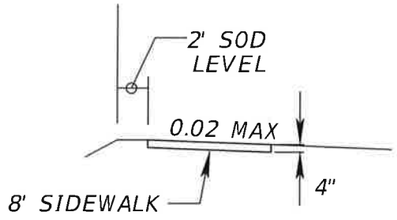
ROADWAY PLANS ENGINEER OF RECORD: STEVEN D. WATERSTON

P.E. NO.: 60298

CONSTRUCTION CONTRACT NO.	*FISCAL YEAR*	*SHEET NO.*
	17	1

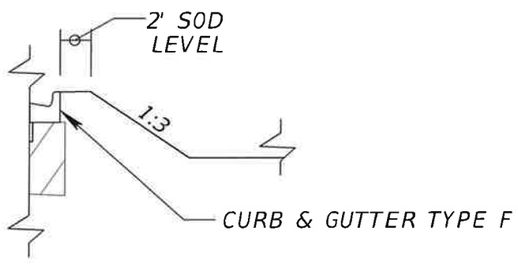


TYPICAL SECTION
STA. 10+00.00 TO STA. 21+40.00



SIDEWALK DETAIL

NOTE: SEE FDOT DESIGN STANDARD 310
FOR ADDITIONAL SIDEWALK DETAILS.



STA. 21+40.00 TO STA. 29+61.63

PAVEMENT DESIGN - TRAVEL LANES

TYPE B STABILIZATION (LBR 40) 12"
FDOT OPTIONAL BASE GROUP 03 (5 1/2" LIMEROCK)
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1-1/2")

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

TYPICAL SECTION (01)

SHEET NO. 2

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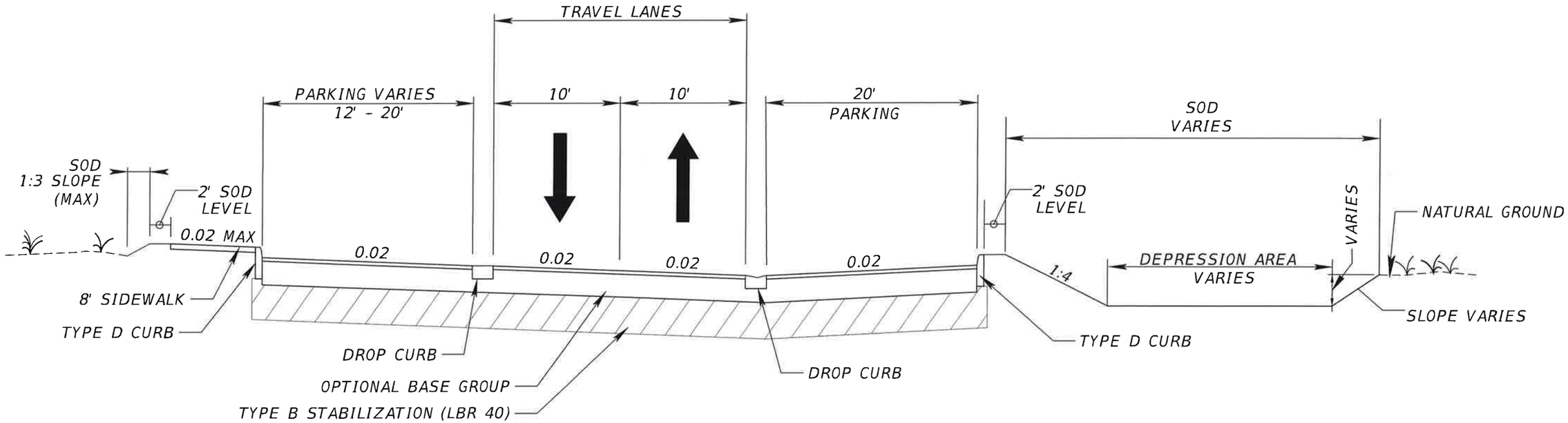


TYPICAL SECTION
PARKING DETAIL

STEVEN D. WATERSTON
LICENSE NO. 60298
STATE OF FLORIDA
PROFESSIONAL ENGINEER
7/24/17

PAVEMENT DESIGN - TRAVEL LANES

TYPE B STABILIZATION (LBR 40) 12"
FDOT OPTIONAL BASE GROUP 03 (5 1/2" LIMEROCK)
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1-1/2")

PAVEMENT DESIGN - PARKING AREAS

TYPE B STABILIZATION (LBR 40) 12"
FDOT OPTIONAL BASE GROUP 01 (OBG 3) (5 1/2" LIMEROCK)
TYPE SP STRUCTURAL COURSE (TRAFFIC B) (1-1/2")

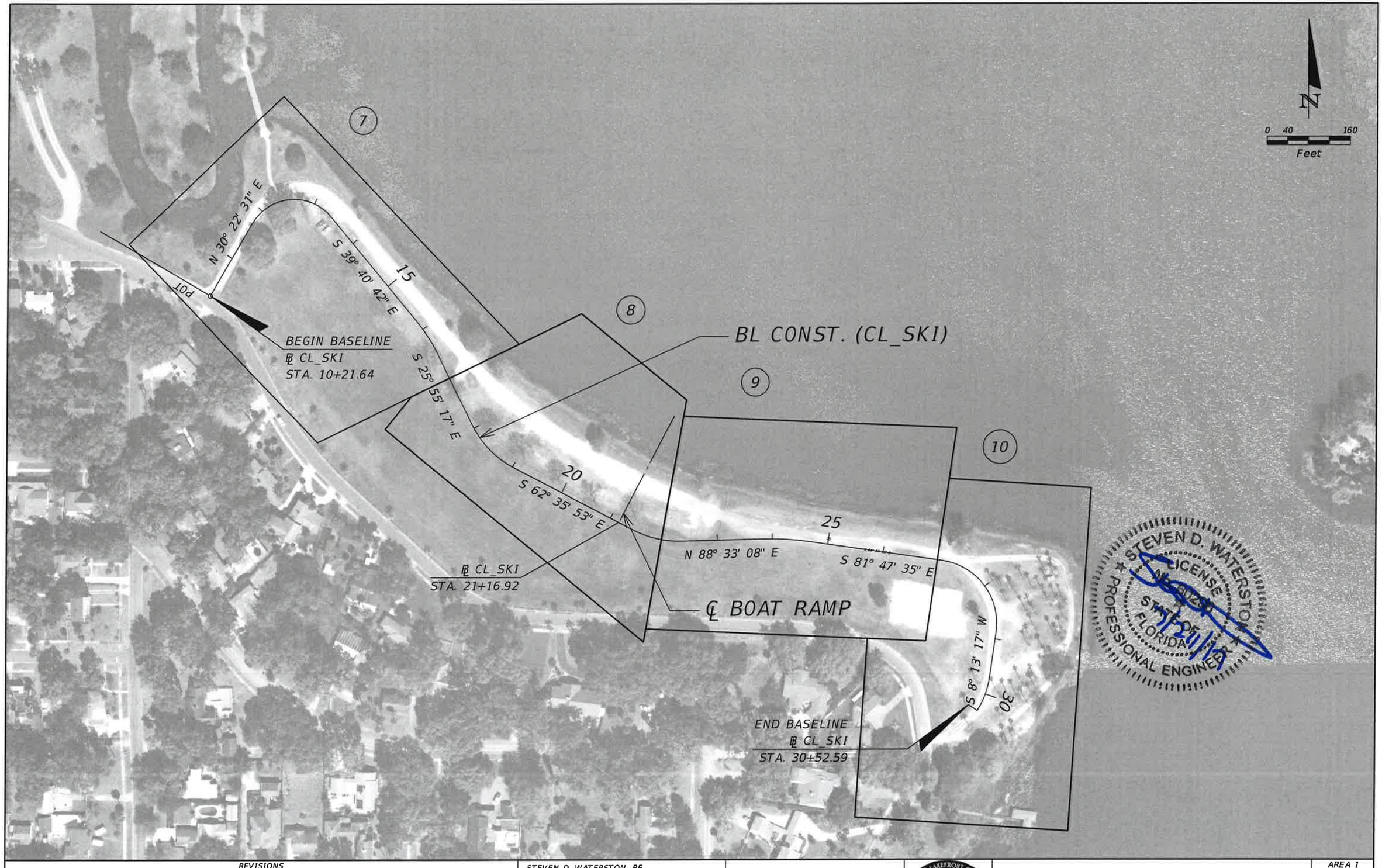
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

TYPICAL SECTION (02)

SHEET NO. 3



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
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CITY OF LEESBURG

PROJECT LAYOUT

AREA 1
SHEET NO.
4

COORDINATE AND CURVE DATA

Baseline Name:	CL_SKI		Coordinates		Bearings		Curve/Spiral Data					Superelevation		
Segment Name	Control	Station	Northing	Easting	Back	Ahead	Delta	D	T	L	R	Design Speed	e_max	e
Point: 20	P.I.	10+21.64	1,625,198.6665	375,155.6587		N 30° 22' 30.63" E								
Curve: CL_SKI1	P.I.	12+95.17	1,625,434.6422	375,293.967	N 30° 22' 30.63" E	S 39° 40' 41.94" E	109° 56' 47.43" (RT	67° 24' 24.48	121.272	163.108	85.000			
	P.C.	11+73.89	1,625,330.0168	375,232.645										
	P.T.	13+37.00	1,625,341.3062	375,371.396										
	C.C.		1,625,287.0357	375,305.977										
Curve: CL_SKI2	P.I.	16+18.82	1,625,124.4101	375,551.328	S 39° 40' 41.94" E	S 25° 55' 17.40" E	13° 45' 24.54" (RT	22° 02' 12.62	31.364	62.426	260.000			
	P.C.	15+87.45	1,625,148.5492	375,531.303										
	P.T.	16+49.88	1,625,096.2015	375,565.039										
	C.C.		1,624,982.5453	375,331.196										
Curve: CL_SKI3	P.I.	18+50.12	1,624,916.1067	375,652.572	S 25° 55' 17.40" E	S 62° 35' 53.48" E	36° 40' 36.08" (LT	31° 49' 51.56	59.663	115.223	180.000			
	P.C.	17+90.46	1,624,969.7672	375,626.491										
	P.T.	19+05.68	1,624,888.6482	375,705.541										
	C.C.		1,625,048.4523	375,788.382										
Curve: CL_SKI4	P.I.	21+92.37	1,624,756.7058	375,960.064	S 62° 35' 53.48" E	N 88° 33' 08.23" E	28° 50' 58.29" (LT	31° 49' 51.56	46.299	90.633	180.000			
	P.C.	21+46.07	1,624,778.0139	375,918.959										
	P.T.	22+36.70	1,624,757.8755	376,006.348										
	C.C.		1,624,937.8180	376,001.800										
Curve: CL_SKI5	P.I.	24+26.98	1,624,762.6828	376,196.566	N 88° 33' 08.23" E	S 81° 47' 35.35" E	9° 39' 16.42" (RT	11° 27' 32.96	42.225	84.251	500.000			
	P.C.	23+84.76	1,624,761.6160	376,154.354										
	P.T.	24+69.01	1,624,756.6552	376,238.360										
	C.C.		1,624,261.7756	376,166.986										
Curve: CL_SKI6	P.I.	28+23.02	1,624,706.1216	376,588.742	S 81° 47' 35.35" E	S 8° 13' 17.26" W	90° 00' 52.61" (RT	50° 15' 34.04	114.029	179.099	114.000			
	P.C.	27+08.99	1,624,722.3990	376,475.880										
	P.T.	28+88.09	1,624,593.2645	376,572.436										
	C.C.		1,624,609.5664	376,459.607										
Curve: CL_SKI7	P.I.	30+03.06	1,624,476.4705	376,555.995	S 81° 47' 35.35" E	S 8° 13' 17.26" W	24° 33' 19.20" (RT	40° 55' 32.00	30.468	60.000	140.000			
	P.C.	29+72.59	1,624,509.6251	376,560.351										
	P.T.	30+32.59	1,624,453.8536	376,539.500										
	C.C.		1,624,609.5664	376,459.607										
Point: 22	P.I.	30+52.59	1,624,464.6809	376,522.6846	N 57° 13' 23.54" W									

STEVEN D. WATERSTON
LICENSE
NO. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
5/24/17

REVISIONS			
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PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

THE LAKEFRONT CITY LEESBURG EST. 1857

CURVE & COORDINATE DATA

SHEET NO. 5

GENERAL NOTES

1. GRADES SHOWN ARE FINISHED GRADES.
2. B.M. DATUM IS NORTH AMERICAN VERTICAL DATUM (NAVD-'88).
3. EXISTING DRAINAGE STRUCTURES WITHIN CONSTRUCTION LIMITS SHALL BE REMOVED UNLESS OTHERWISE NOTED.
4. ANY NGVD-'29 OR NAVD-'88 MONUMENT WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHOULD NOTIFY:
   GEODETIC INFORMATION CENTER
   ATTN: MARK MAINTENANCE SECTION N/CG-162
   6001 EXECUTIVE BOULEVARD
   ROCKVILLE, MARYLAND 20852
   TELEPHONE' (301)443-8319
5. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A CORNER MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE CONTRACTOR SHOULD NOTIFY THE CITY PROJECT ENGINEER WITHOUT DELAY BY TELEPHONE.
6. DURING CONSTRUCTION, CONTRACTOR SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN THE 2017 FDOT DESIGN STANDARDS. 2017 FDOT STANDARD SPECIFICATIONS AND THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
7. TEMPORARY DRAINAGE SHALL BE PROVIDED DURING CONSTRUCTION TO ELIMINATE ANY FLOODING OF PRIVATE PROPERTY.
8. THE UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE LOCATION ONLY AND ARE INTENDED ONLY TO SHOW THE UTILITIES LIKELY TO BE ENCOUNTERED DURING CONSTRUCTION. PRIOR TO CONSTRUCTION, ALL EXISTING UTILITIES, PUBLIC OR PRIVATE, SHALL BE LOCATED BY THE CONTRACTOR IN AREAS OF CONSTRUCTION AND OWNERS OF SAID MENTIONED UTILITIES NOTIFIED PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL COORDINATE WITH UTILITY OWNERS FOR ANY ADJUSTMENTS AND RELOCATIONS.
9. ALL PARKING AREAS SHALL BE CONSTRUCTED WITH TYPE D CURB.
10. ALL TREES ARE TO REMAIN UNLESS OTHERWISE NOTED.
11. ALL CONCRETE HARDSCAPE PADS SHALL BE 8'X5' IN SIZE.

LEGEND

- 6W — PAVEMENT MARKINGS, WHITE, SOLID, 6"
- 6B — PAVEMENT MARKINGS, BLUE, SOLID, 6"
- 24W — PAVEMENT MARKINGS, WHITE, SOLID, 24"
- 6DY — PAVEMENT MARKINGS, YELLOW, DOUBLE, SOLID, 6"
- LXW — LADDER STYLE CROSSWALK
- CR-_ — CURB RAMP PROFILE PER FDOT STANDARD, INDEX 304
- DENOTES PARKING AREAS
- GRASS AREA
- DENOTES TREE TO BE REMOVED

STEVEN D. WATERSTON
LICENSE
No. 60298
STATE OF FLORIDA
PROFESSIONAL ENGINEER
6/29/17

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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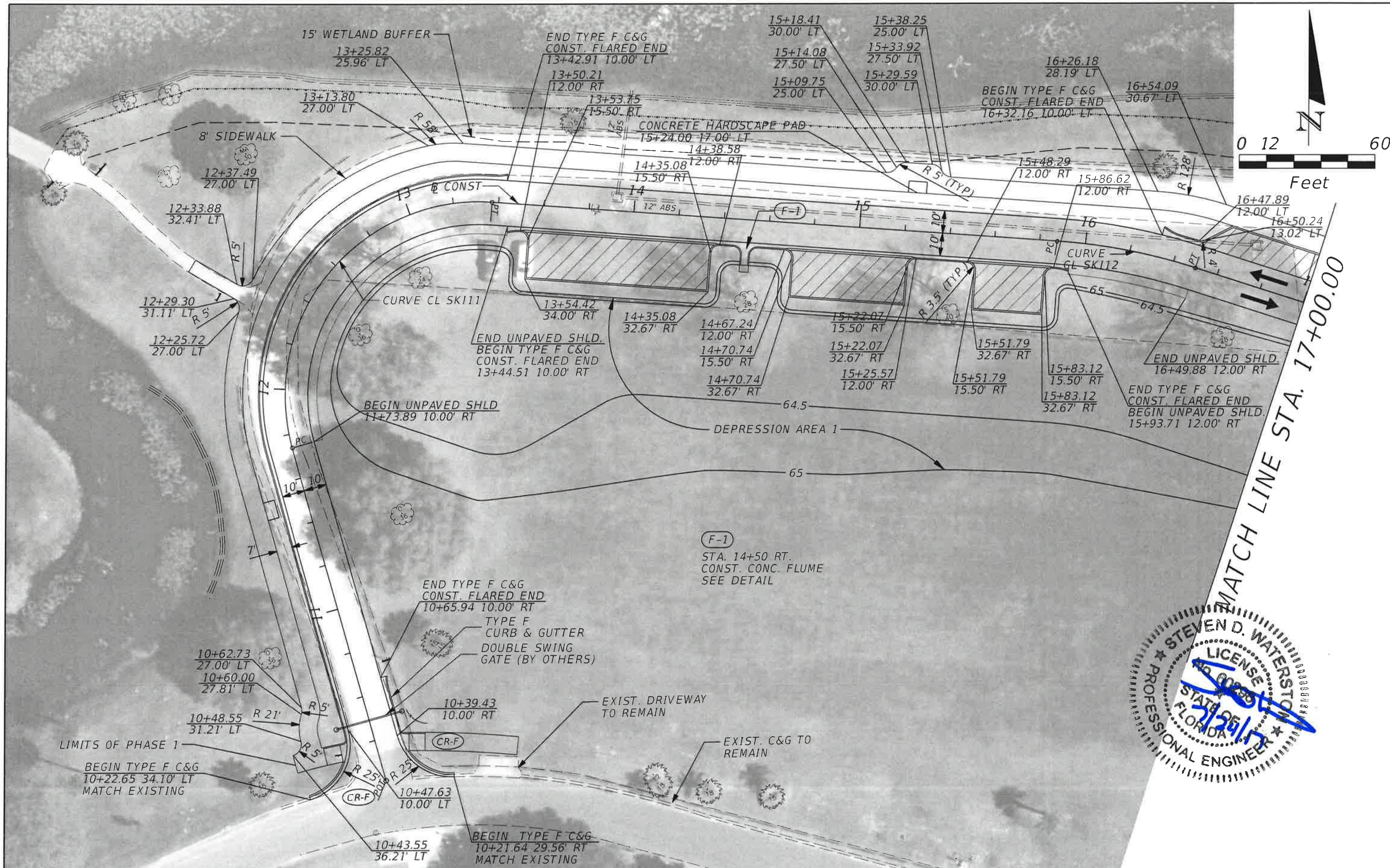
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

GENERAL NOTES

SHEET NO. 6


15' WETLAND BUFFER
13+25.82
25.96' LT
13+13.80
27.00' LT
R 58'
END TYPE F C&G
CONST. FLARED END
13+42.91 10.00' LT
13+50.21
12.00' RT
13+53.75
15.50' RT
8' SIDEWALK
CONCRETE HARDSCAPE PAD
15+24.00 17.00' LT
14+38.58
12.00' RT
14+35.08
15.50' RT
15+18.41
30.00' LT
15+14.08
27.50' LT
15+09.75
25.00' LT
15+38.25
25.00' LT
15+33.92
27.50' LT
15+29.59
30.00' LT
R 5' (TYP)
16+26.18
28.19' LT
BEGIN TYPE F C&G
CONST. FLARED END
16+32.16 10.00' LT
16+54.09
30.67' LT
R 128'
0 12 60
Feet
12+37.49
27.00' LT
12+33.88
32.41' LT
R 5'
CONST
13
14
12' ABS
F-1
15
15+48.29
12.00' RT
15+86.62
12.00' RT
16
16+47.89
12.00' LT
16+50.24
13.02' LT
R 4'
CURVE
CL SKI12
PC
PT
65
64.5
12+29.30
31.11' LT
R 5'
12+25.72
27.00' LT
CURVE CL SKI11
13+54.42
34.00' RT
14+35.08
32.67' RT
14+67.24
12.00' RT
14+70.74
15.50' RT
14+70.74
32.67' RT
15+22.07
15.50' RT
15+22.07
32.67' RT
15+25.57
12.00' RT
R 3.5' (TYP)
15+51.79
32.67' RT
15+51.79
15.50' RT
15+83.12
15.50' RT
15+83.12
32.67' RT
END UNPAVED SHLD.
16+49.88 12.00' RT
END TYPE F C&G
CONST. FLARED END
BEGIN UNPAVED SHLD.
15+93.71 12.00' RT
END UNPAVED SHLD.
BEGIN TYPE F C&G
CONST. FLARED END
13+44.51 10.00' RT
12
BEGIN UNPAVED SHLD
11+73.89 10.00' RT
PC
64.5
DEPRESSION AREA 1
65
10'
10'
7'
MATCH LINE STA. 17+00.00
F-1
STA. 14+50 RT.
CONST. CONC. FLUME
SEE DETAIL
END TYPE F C&G
CONST. FLARED END
10+65.94 10.00' RT
TYPE F
CURB & GUTTER
DOUBLE SWING
GATE (BY OTHERS)
10+62.73
27.00' LT
10+60.00
27.81' LT
R 5'
10+48.55
31.21' LT
R 21'
10+39.43
10.00' RT
EXIST. DRIVEWAY
TO REMAIN
LIMITS OF PHASE 1
CR-F
R 5'
BEGIN TYPE F C&G
10+22.65 34.10' LT
MATCH EXISTING
R 25'
R 25'
CR-F
10+47.63
10.00' LT
EXIST. C&G TO
REMAIN
10+43.55
36.21' LT
BEGIN TYPE F C&G
10+21.64 29.56' RT
MATCH EXISTING
STEVEN D. WATERSTON
LICENSE
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

REVISIONS			
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CITY OF LEESBURG

THE LAKEFRONT CITY
LEESBURG
EST. 1857

PLAN SHEET 01

SHEET NO.
7

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

INSET A

R 25'
19+06.49
54.00' LT
R 2'
19+15.92
61.00' LT
19+14.19
58.00' LT
19+06.49
36.00' LT
19+33.57
24.43' LT
R 5.5'
R 20'
19+29.68
16.26' LT

INSET B

CR-F
20+75.50
81.00' LT
R 20'
20+95.92
61.00' LT
R 5'
R 5'
20+63.50
69.00' LT
5.5'
5.0'
20+95.92
28.53' LT
R 2'
R 5'
CR-E
R 12'
20+73.62
24.02' LT

P-1
INSTALL 192' OF 15" PIPE

P-2
INSTALL 136' OF 15" PIPE

P-3
INSTALL 36' OF 15" PIPE

S-4
STA. 19+46 (139.70' LT.)
CONST. MITERED END SECTION 1:2
FDOT DESIGN STANDARD
INDEX 272
FL. EL. 60.00

N

0 12 60
Feet

S-EX1
STA. 19+96.24 (51.21' LT.)
ADJUST EXIST. INLET TOP
REMOVE GRATE & CONST. MH. TOP TYPE 7
INDEX 201
MATCH PROPOSED PAVT. GRADE EL. 66.54

℄ BOAT RAMP

PROP. BOAT RAMP AND DOCKS
(SEE STRUCTURES PLANS)
21+37.92
120.99' LT
BEGIN TYPE F C&G
21+32.92 121.00' LT
END TYPE F C&G
21+00.92 121.00' LT

4' SIDEWALK

MATCHLINE 17+00.00

MATCHLINE 22+00.00

15' WETLAND BUFFER

R 10'

R 20'

9.5'

21+49.60
110.99' LT

REST ROOM
BUILDING

TO REMAIN

15" PVC

R 30'

R 25

8' SIDEWALK

12" ABS

21+42.42
37.53' LT

21+33.92
25.01' LT

R 10'

R 15'

17+93.01
30.67' LT

17+90.07
13.04' LT

17+92.74
12.00' LT

R 12

CR-E

18+06.40
18.50' LT

R 30'

INSET A

INSET B

BL SKI
21+16.92

21+48.22
10.00' LT

CL SKI14

8' SIDEWALK

18+40.09
10.00' LT

℄ CONST.

CURVE CL SKI13

DEPRESSION
AREA 1

BOLLARD
(TYPICAL)

DEPRESSION
AREA 1

64.5

65

R 12'

18+09.33
27.00' RT

R 190'

17+98.29
15.77' RT

2' DETECTABLE
WARNING

R 20'
(TYP.)

18+89.28
30.87' RT
EL. 65.60

CONST. 6" CONC.
TURNOUT

20'
GRASS
DRWY.

STA. 18+99.06, 69.80' RT.
MATCH NAT. GRD. EL. 65.60

19+06.50
30.00' RT
EL. 65.60

65

64.7

DEPRESSION
AREA 2

TO REMAIN

BOLLARD
(TYPICAL)

8' SIDEWALK

R 20' (TYP.)

21+06.92
30.00' RT

20'
GRASS
DRWY.

21+26.92
30.00' RT
EL. 67.16

CONST. 6" CONC.
TURNOUT

A 21+78.38 35.21' LT
B 21+84.57 35.48' LT
C 21+77.06 27.27' LT
D 21+85.38 21.54' LT
E 21+92.09 18.57' LT

STA 21+16.93, 109.40' RT.
MATCH NAT. GRD. EL. 66.20

S-1
STA. 17+70 (30.00' RT.)
CONST. DBI TYPE E
WITH PAVEMENT
FDOT DESIGN STANDARD
INDEX 232
GRATE EL. 64.83
FL. EL. 61.50

S-2
STA. 19+46 (37.50' RT.)
CONST. DBI TYPE E
WITH PAVEMENT
FDOT DESIGN STANDARD
INDEX 232
GRATE EL. 65.00
FL. EL. 60.75 (W. & N.)

S-3
STA. 19+46 (100.54' LT.)
CONST. DBI TYPE F
FDOT DESIGN STANDARD
INDEX 233
GRATE EL. 65.49
FL. EL. 60.18 (S. & N.)

STEVEN D. WATERSTON
LICENSE NO. 60298
STATE OF FLORIDA
PROFESSIONAL ENGINEER
4/24/19

REVISIONS			
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315 E. ROBINSON STREET, SUITE 400
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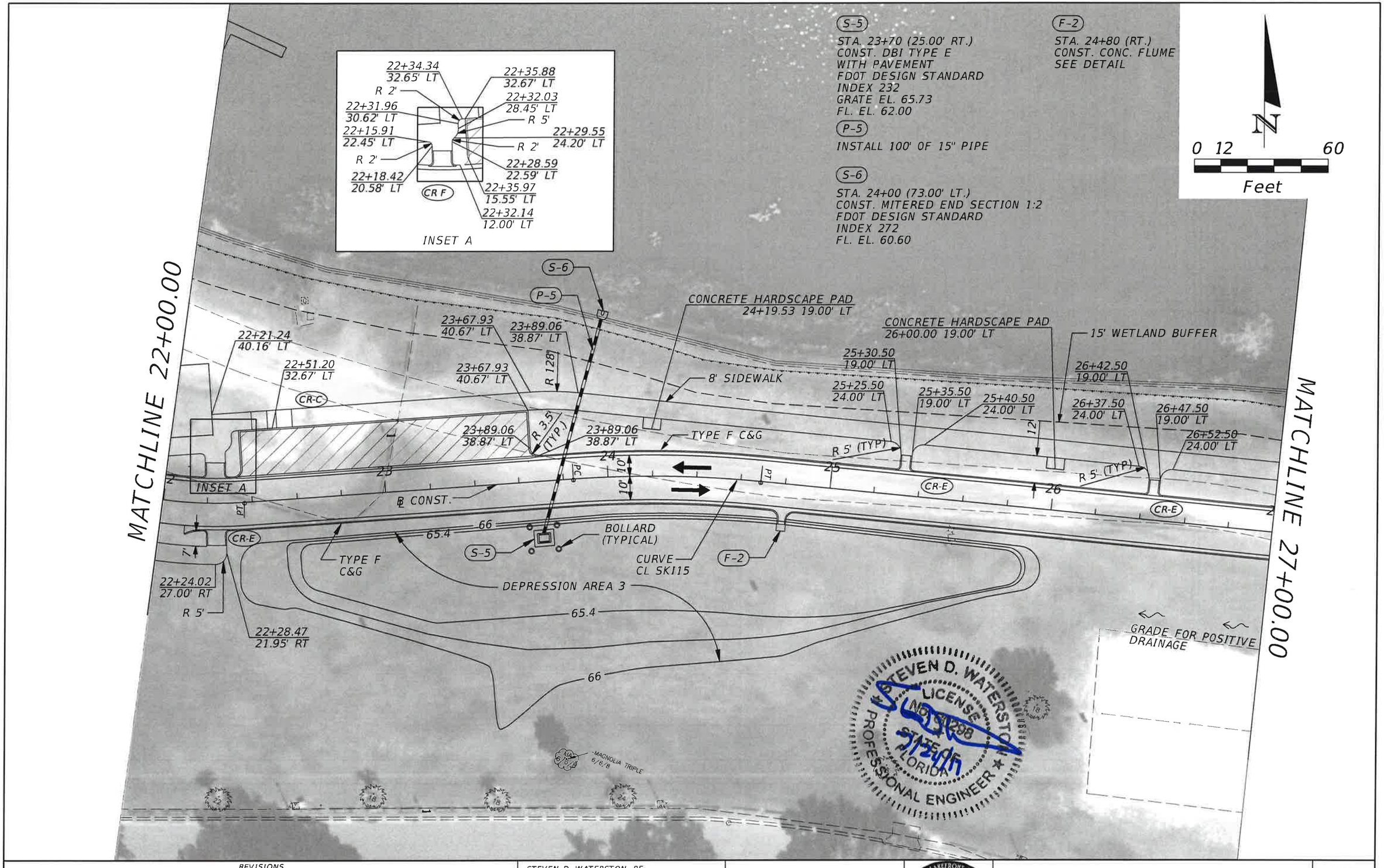
CITY OF LEESBURG

PLAN SHEET 02

SHEET NO. 8



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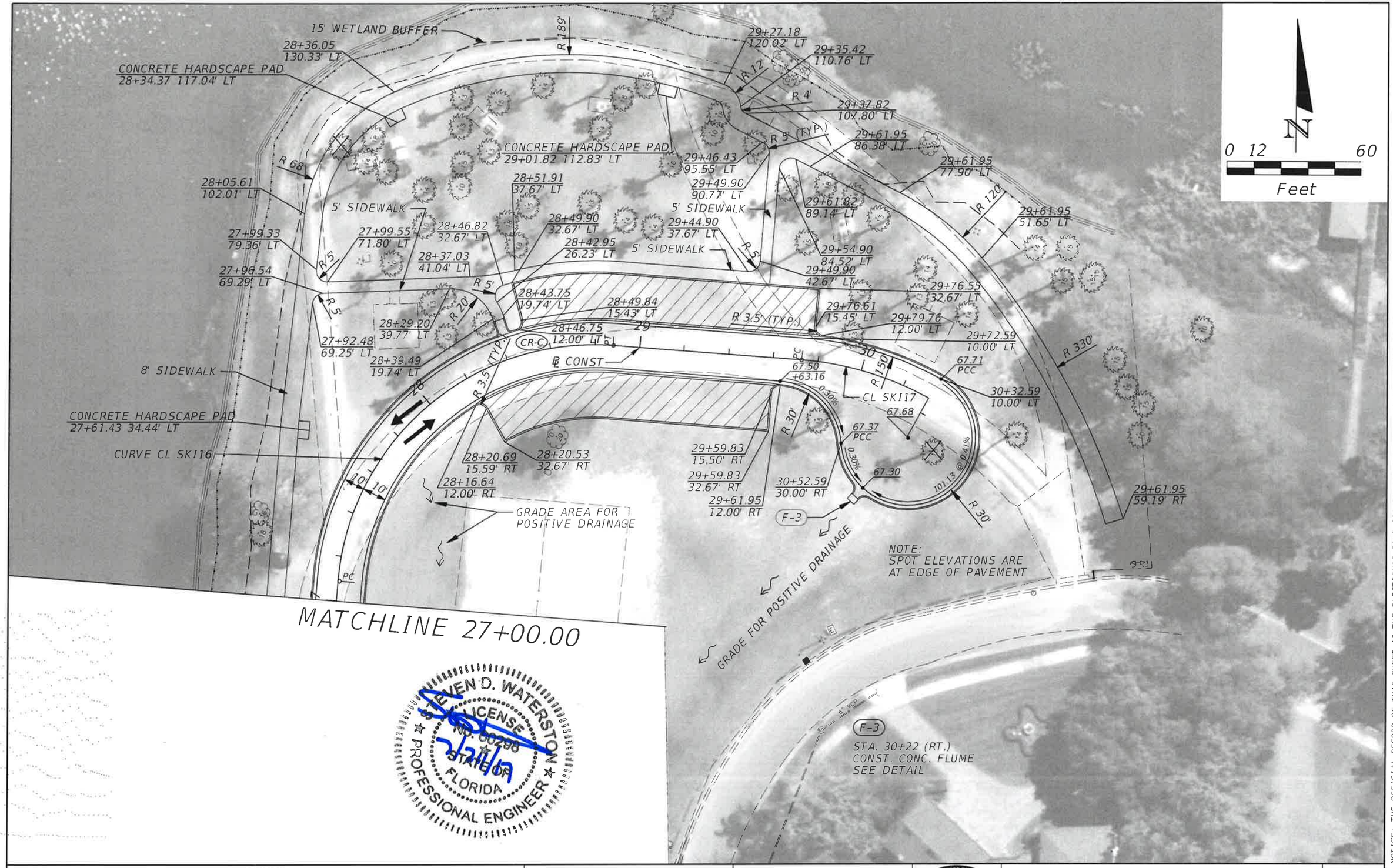
CITY OF LEESBURG

PLAN SHEET 03

SHEET NO. 9

CHUMPHRE 7/24/2017 9:58:58 AM PW:\27279\10049342\6.0_CAD_BIM\6.2_Work_In_Progress\TWO_01_Ski_Beach\roadway\PL



MATCHLINE 27+00.00

STEVEN D. WATERSTON
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STATE OF
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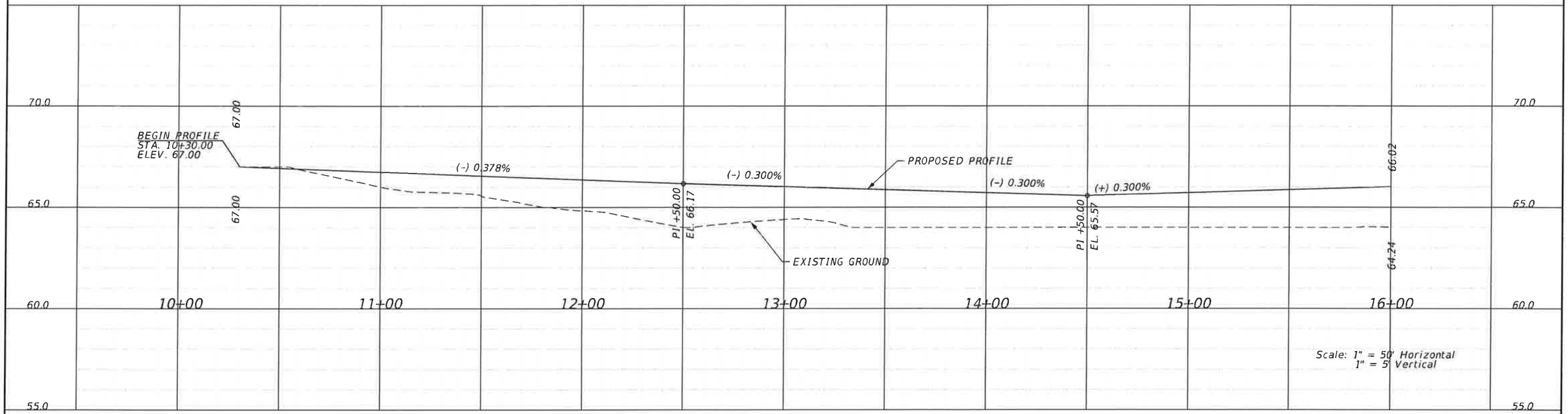
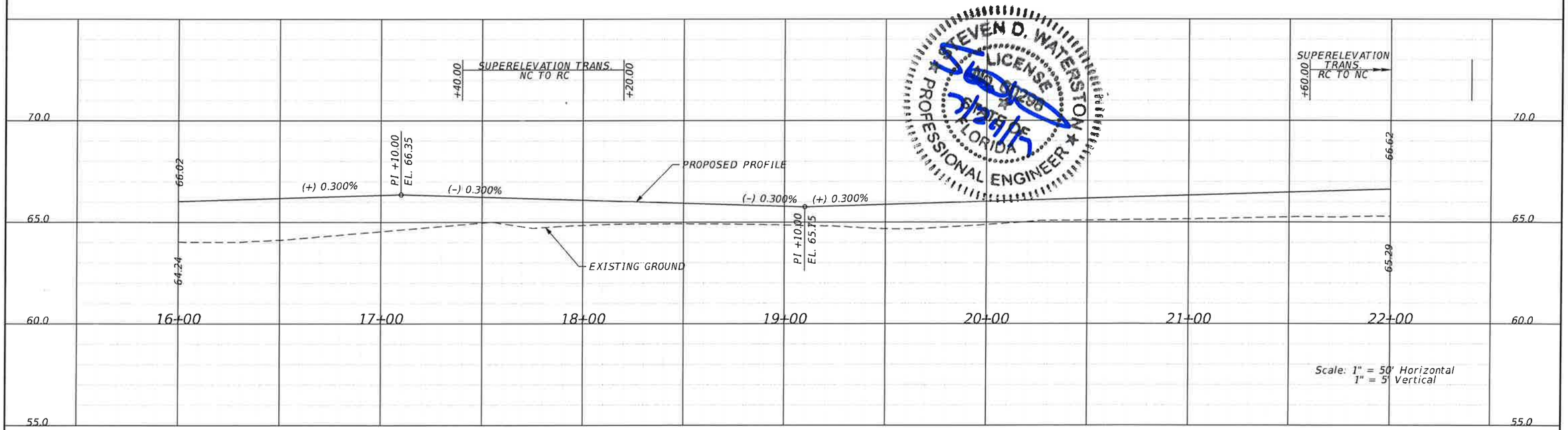
PLAN SHEET 04

SHEET NO. 10





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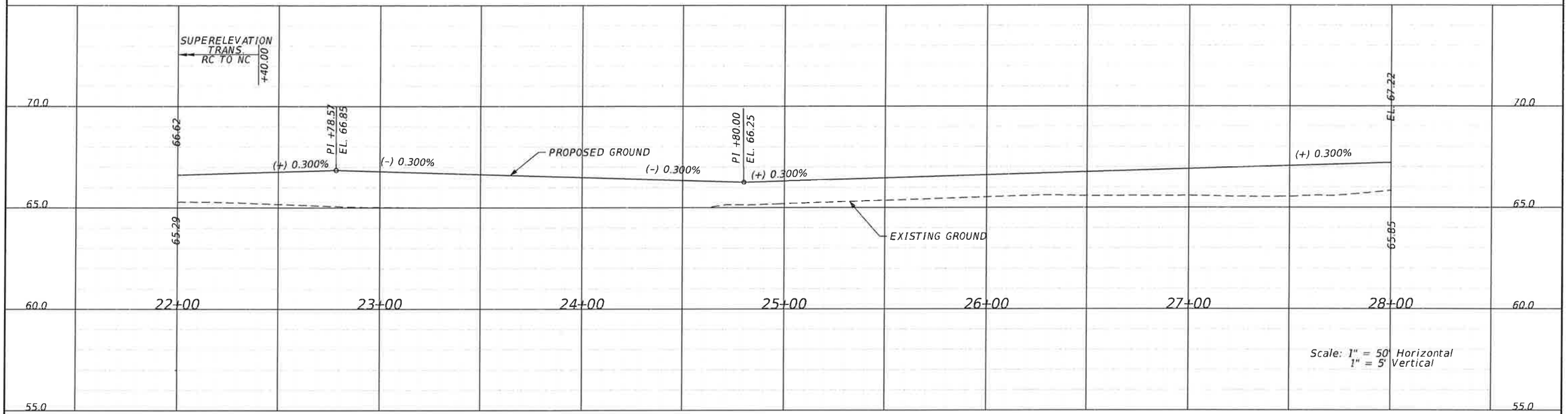
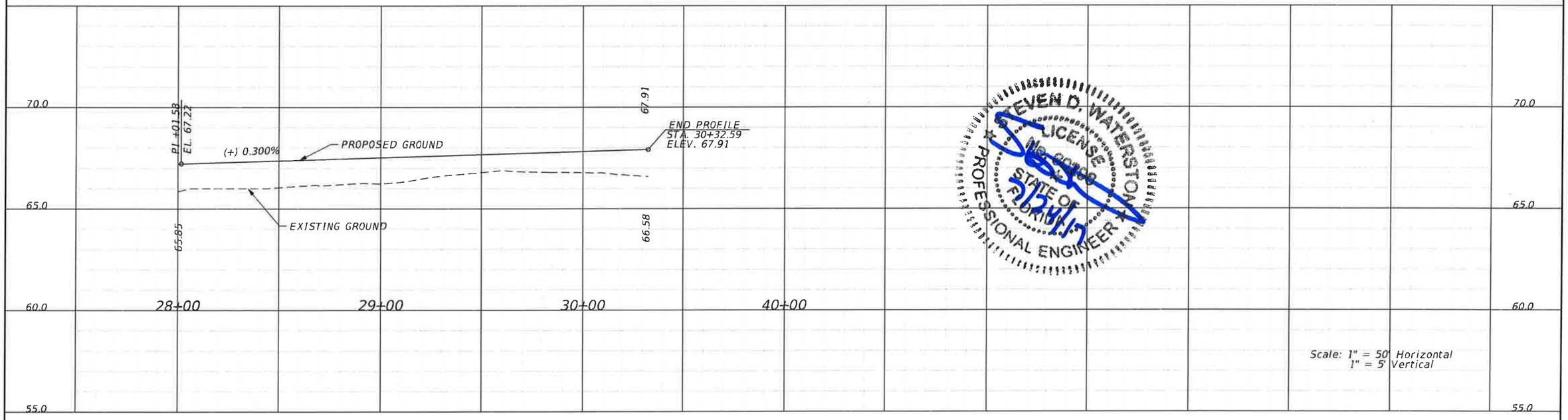
CITY OF LEESBURG

PROFILE SHEET 01

SHEET NO. 11





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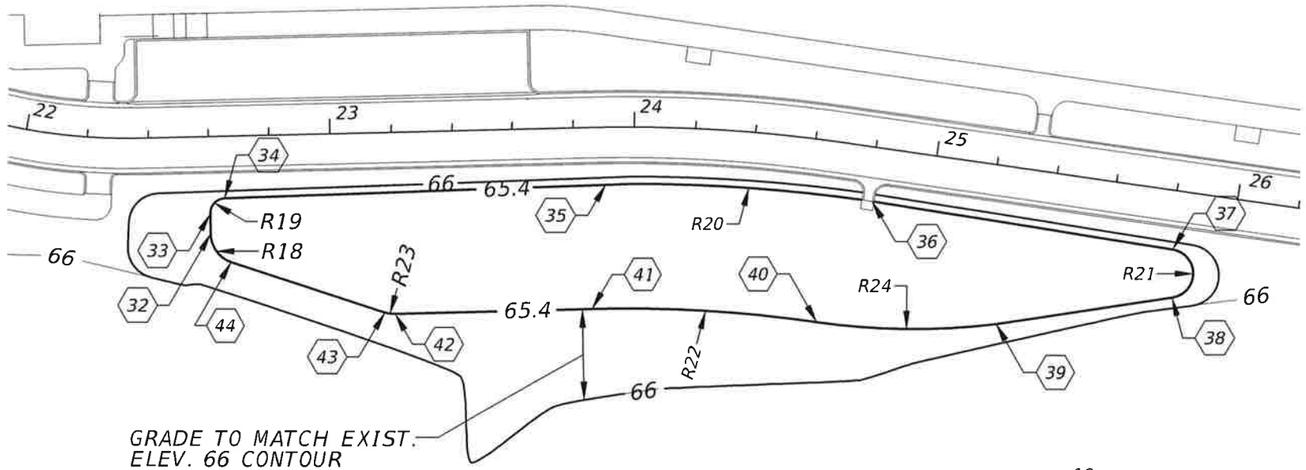
CITY OF LEESBURG

PROFILE SHEET 02

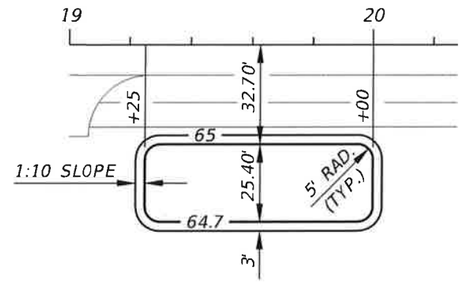
SHEET NO. 12

CHUMPHRE 6/29/2017 4:19:07 PM PW:\27279\10049342\6.0_CAD_BIM\6.2_Work_In_Progress\TWO_01_Ski_Beach\roadway\PR



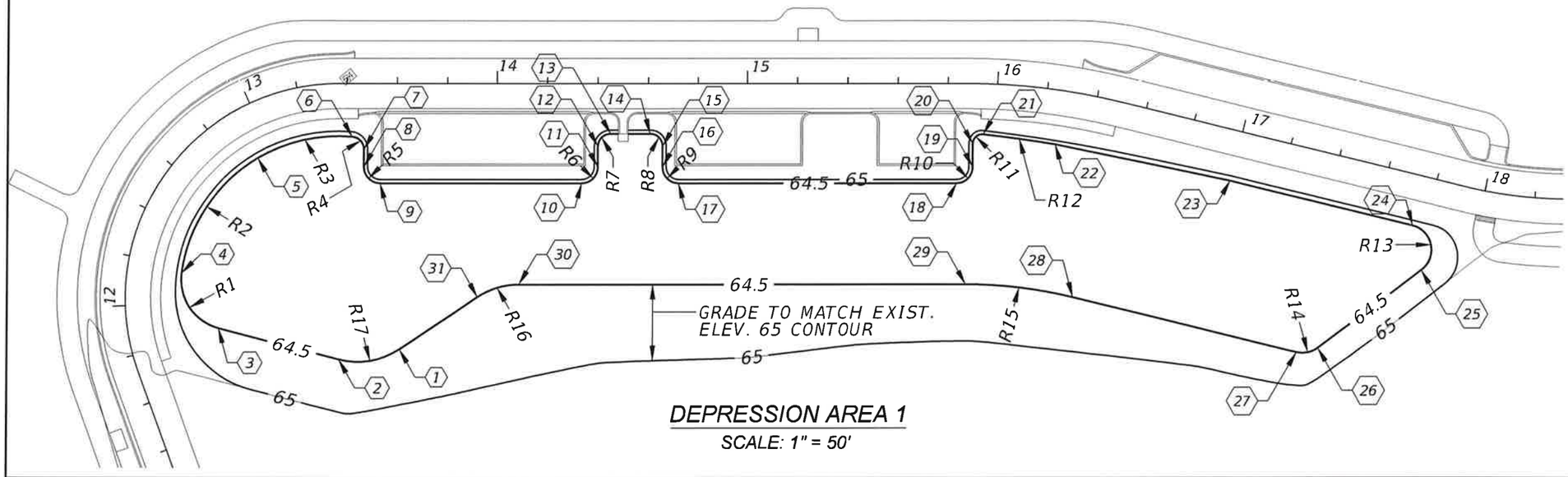
DEPRESSION AREA 3

SCALE: 1" = 50'



DEPRESSION AREA 2

SCALE: 1" = 50'



DEPRESSION AREA 1

SCALE: 1" = 50'

No.	STATION	DIST. RT.	No.	STATION	DIST. RT.
1	11+46.22	100.64'	23	16+99.85	20.00'
2	11+50.63	76.61'	24	17+74.75	20.00'
3	11+81.98	35.60'	25	17+82.48	36.34'
4	12+46.34	21.61'	26	17+49.83	76.17'
5	12+91.96	20.93'	27	17+42.10	79.82'
6	13+42.16	21.18'	28	16+49.71	79.86'
7	13+46.75	26.17'	29	15+87.37	79.86'
8	13+46.75	33.17'	30	14+08.96	79.94'
9	13+53.25	39.67'	31	13+92.38	84.94'
10	14+33.58	39.67'	32	22+60.22	31.93'
11	14+40.08	33.17'	33	22+60.22	25.39'
12	14+40.08	25.00'	34	22+65.16	20.39'
13	14+45.08	20.00'	35	23+90.45	20.04'
14	14+60.73	20.00'	36	24+81.32	17.67'
15	14+65.73	25.00'	37	25+81.44	19.26'
16	14+65.73	33.17'	38	25+83.61	34.92'
17	14+72.23	39.67'	39	25+27.47	51.76'
18	15+83.62	39.67'	40	24+69.24	59.49'
19	15+90.51	33.15'	41	23+85.02	59.55'
20	15+90.39	23.94'	42	23+20.27	59.58'
21	15+94.78	20.13'	43	23+16.93	59.01'
22	16+26.44	21.59'	44	22+66.89	41.35'

No.	STATION	DIST. RT.	RADIUS
R1	12+17.26	41.61'	20.00'
R2	12+89.61	83.09'	62.16'
R3	12+35.03	84.91'	64.00'
R4	13+41.75	26.17'	5.00'
R5	13+53.25	33.17'	6.50'
R6	14+33.58	33.17'	6.50'
R7	14+45.08	25.00'	5.00'
R8	14+60.73	25.00'	5.00'
R9	14+72.23	33.17'	6.50'
R10	15+83.62	33.17'	6.50'
R11	15+94.51	23.86'	3.75'
R12	15+24.53	621.21'	605.02'
R13	17+74.75	30.00'	10.00'
R14	17+42.10	69.82'	10.00'
R15	15+76.94	260.07'	180.00'
R16	14+08.97	109.94'	30.00'
R17	13+44.55	80.68'	30.00'
R18	22+70.22	31.92'	10.00'
R19	22+65.22	25.39'	5.00'
R20	24+74.20	467.62'	450.00'
R21	25+81.31	27.26'	8.00'
R22	24+69.36	499.49'	440.00'
R23	23+20.26	49.58'	10.00'
No.	STATION	DIST. LT.	RADIUS
R24	24+69.01	165.51'	225'

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

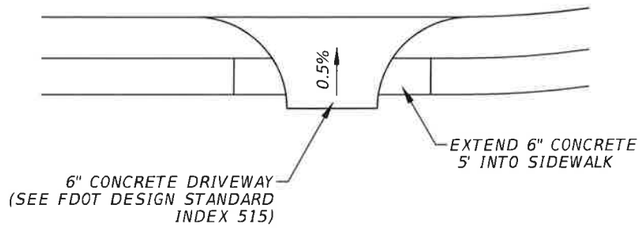
CITY OF LEESBURG

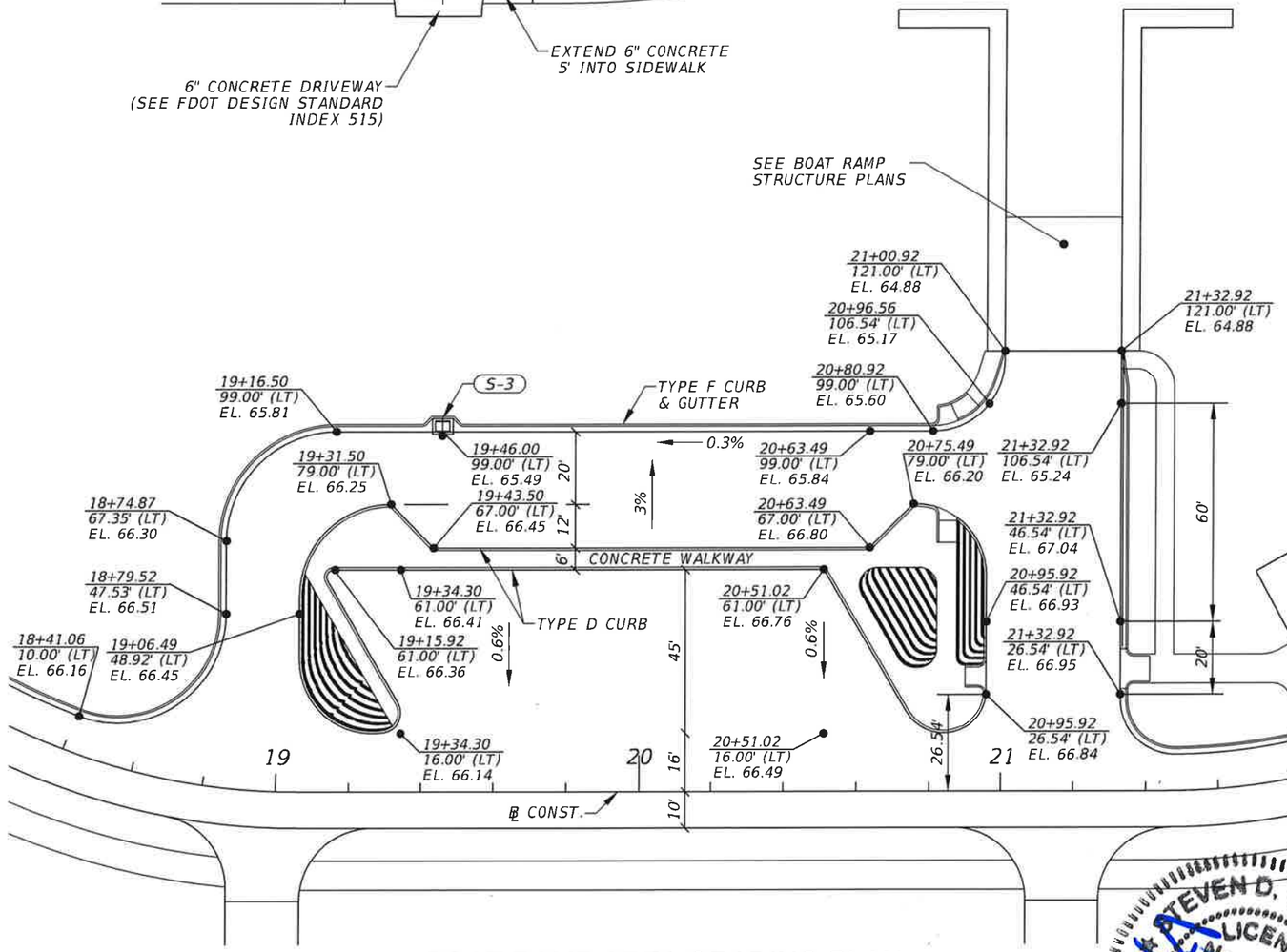
DRAINAGE DETAILS

SHEET NO. 13

DRIVEWAY DETAIL

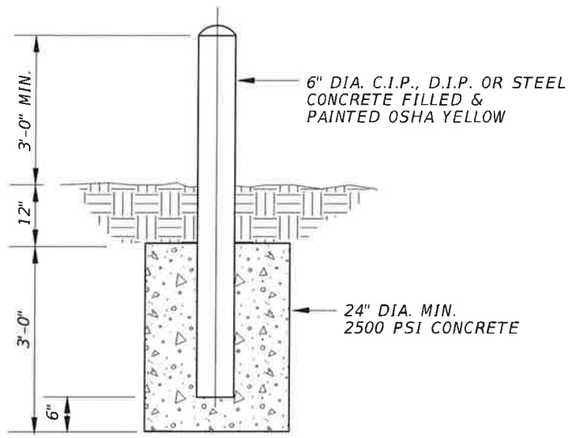
N.T.S.





BOAT RAMP AREA GRADING PLAN

SCALE: 1" = 40'



BOLLARD DETAIL

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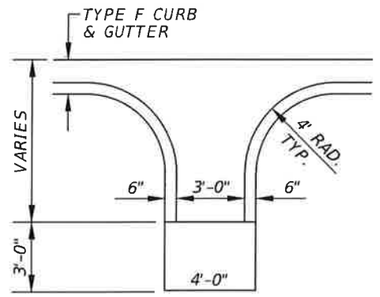
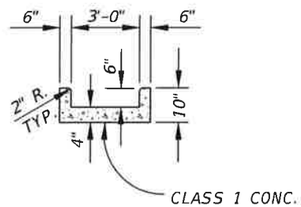


PLAN



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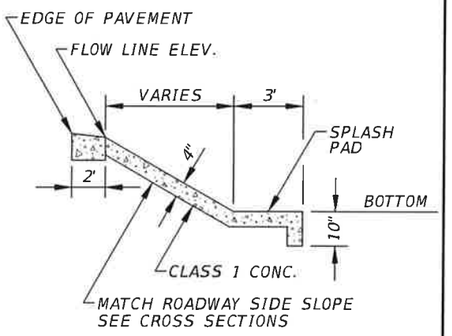

PROFILE

FLUME ELEVATION TABLE			
No.	STATION	FLOW LINE	BOTTOM
F-1	14+50 RT.	65.19	64.50
F-2	24+80 RT.	65.87	65.40
F-3	30+22 RT.	67.12	66.60

CONCRETE FLUME DETAIL

N.T.S.

STEVEN D. WATERSTON
LICENSE
No. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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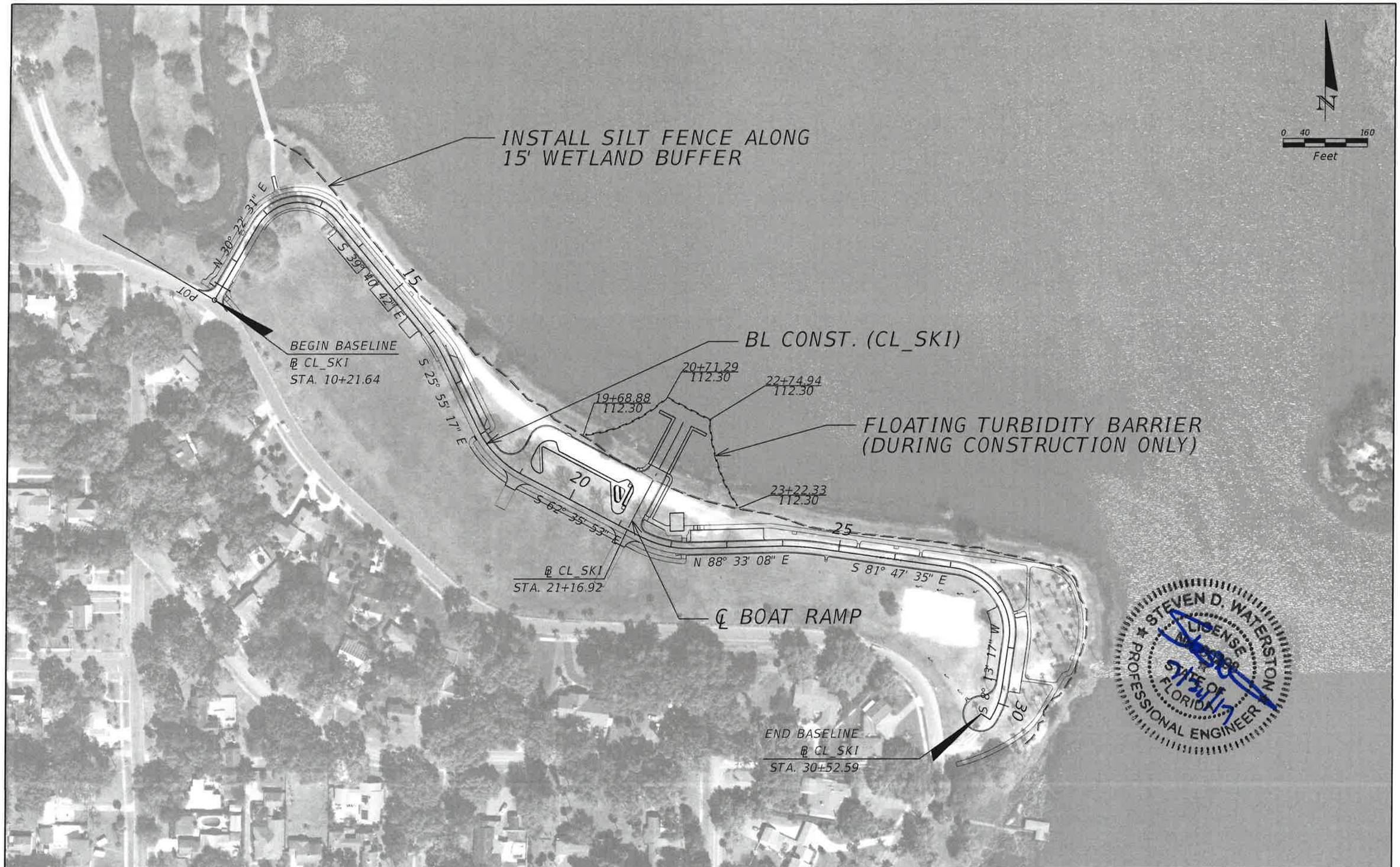
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

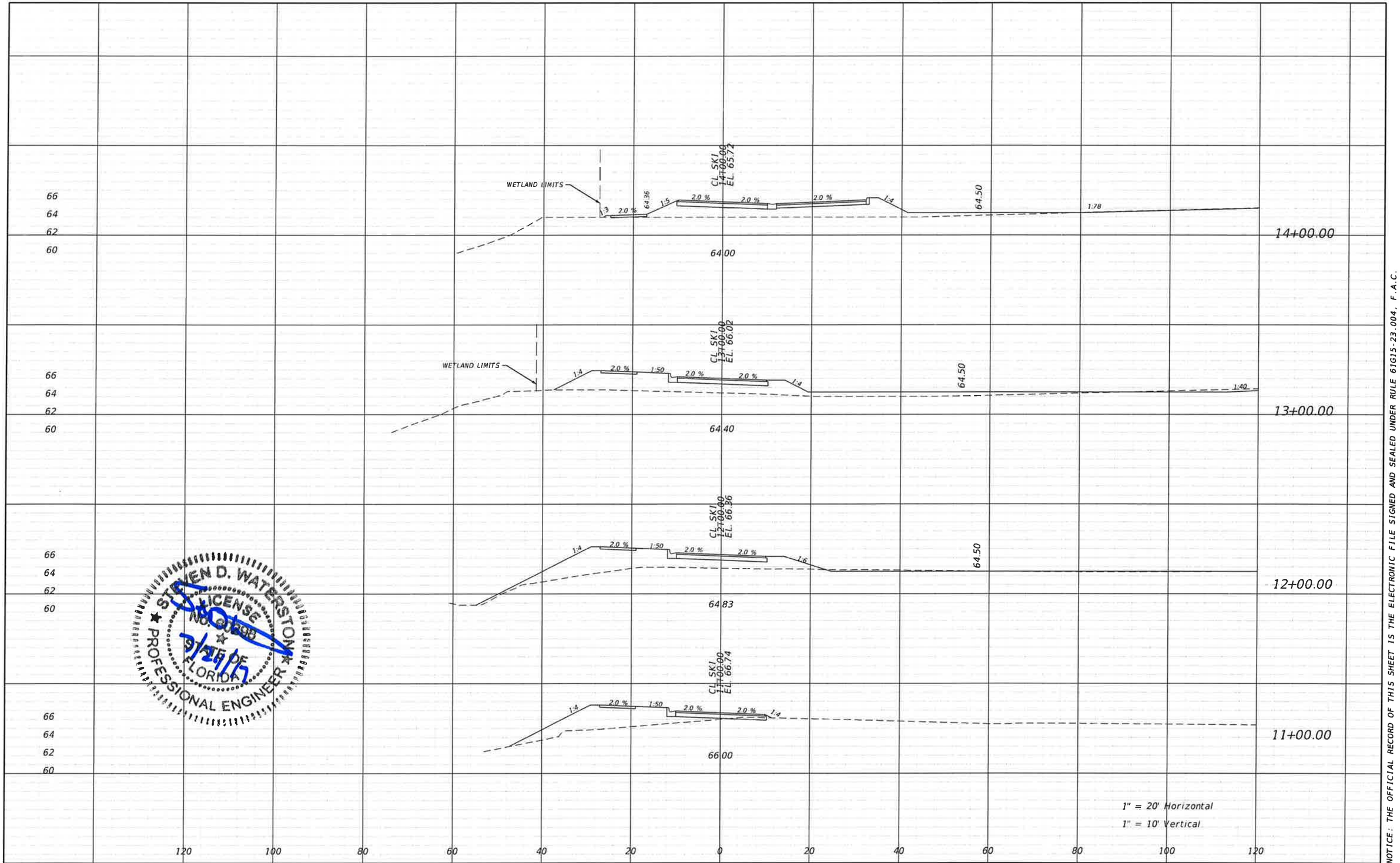
SPECIAL DETAILS

SHEET NO. 14



REVISIONS						
DATE	DESCRIPTION	DATE	DESCRIPTION	STEVEN D. WATERSTON, PE PE LICENSE NUMBER 60298 HDR ENGINEERING, INC. 315 E. ROBINSON STREET, SUITE 400 ORLANDO, FL 32801-1949 CERTIFICATE OF AUTHORIZATION 4213	CITY OF LEESBURG	EROSION CONTROL PLAN	AREA 1 SHEET NO. 15

CHUMPHRE 7/24/2017 10:18:05 AM PW:\27279\10049342\6.0_CAD_BIM\6.2_Work_In_Progress\TWO_01_Ski_Beach\roadway\PL



STEVEN D. WATERSTON
LICENSE
NO. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
9/29/17

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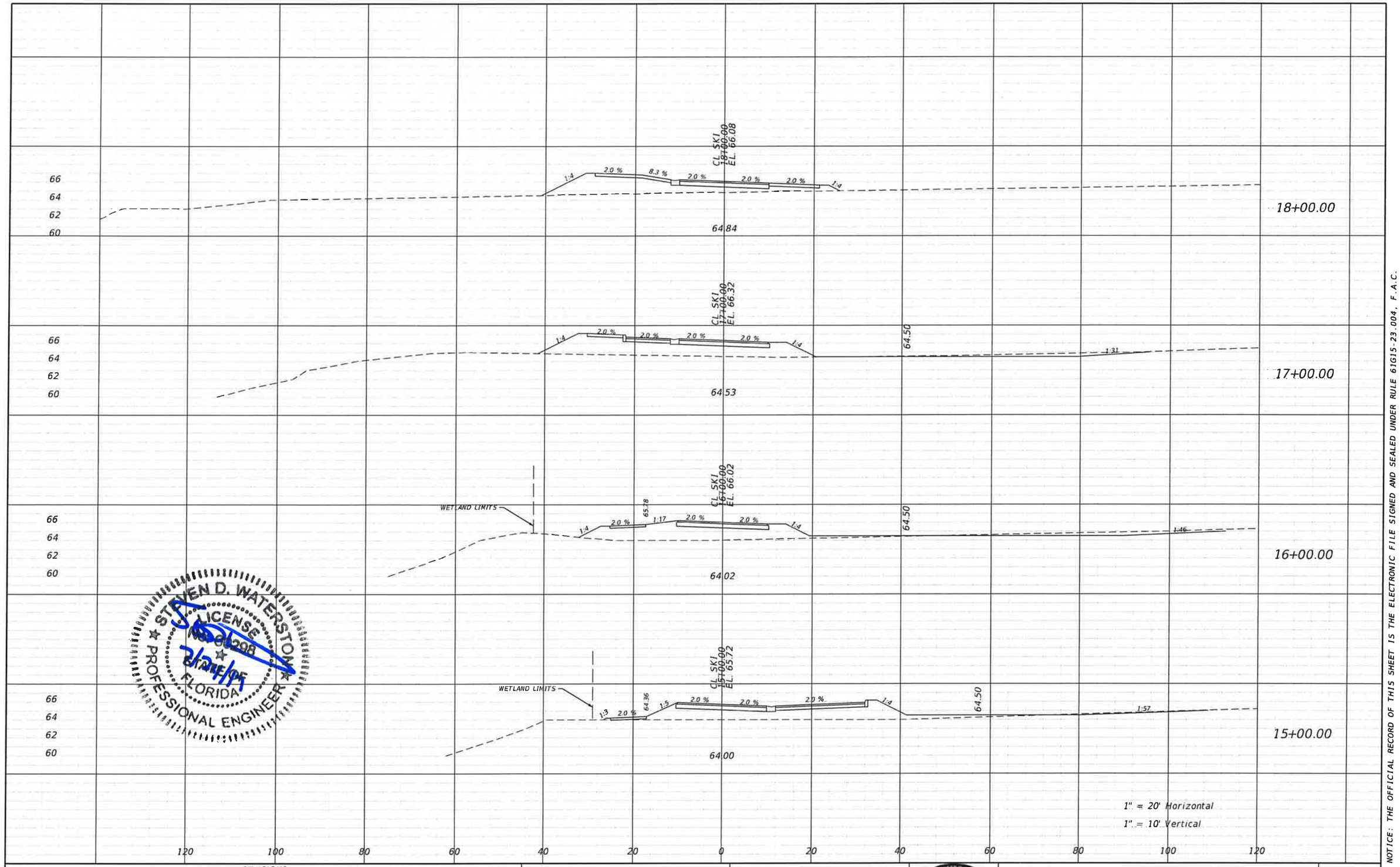
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

CROSS SECTIONS

SHEET NO. 16



STEVEN D. WATERSTON
LICENSE
NO. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
3/27/17

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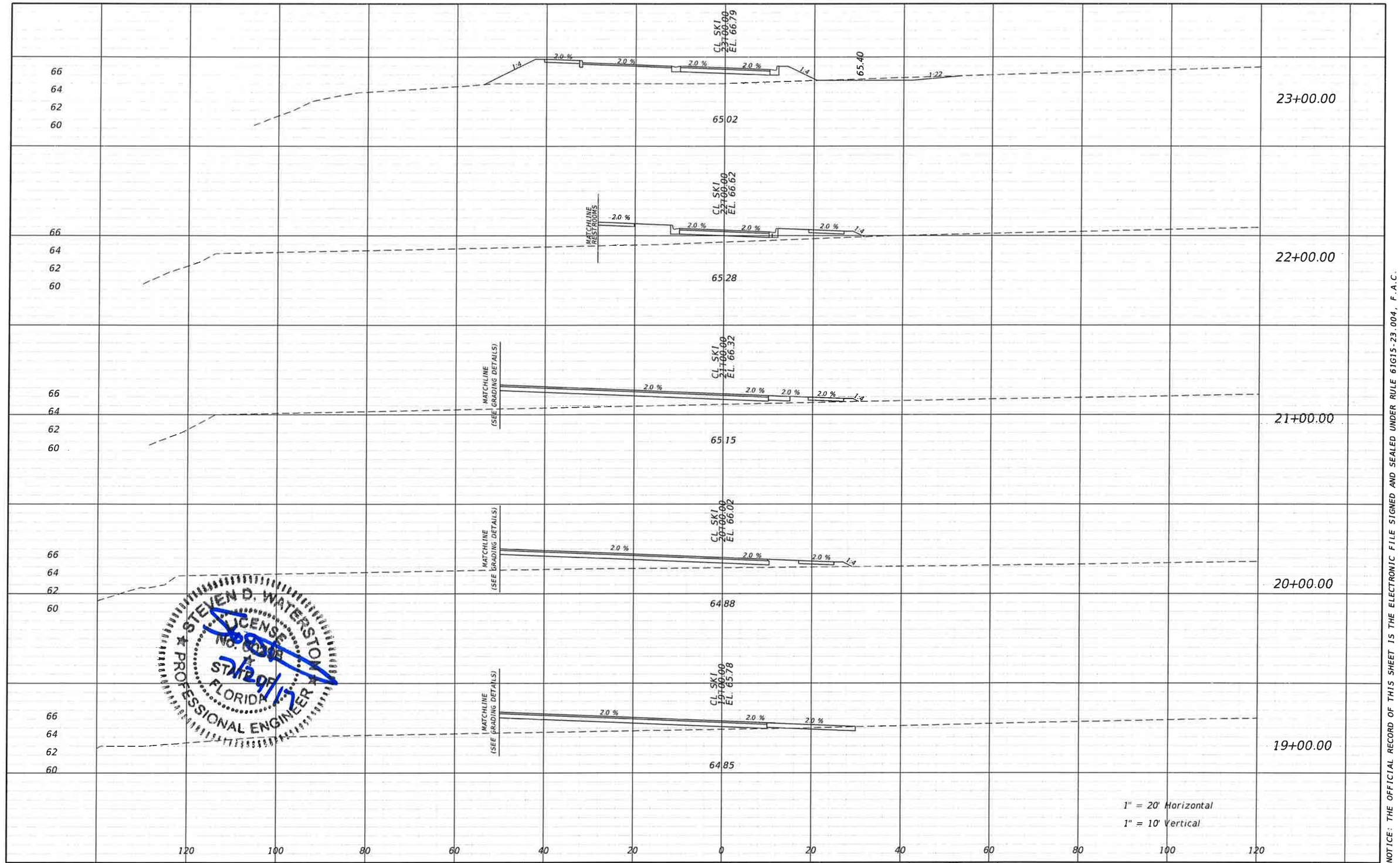
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

CROSS SECTIONS

SHEET NO. 17



STEVEN D. WATERSTON
LICENSE
No. 60298
STATE OF
FLORIDA
PROFESSIONAL ENGINEER
3/12/17

REVISIONS			
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STEVEN D. WATERSTON, PE
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315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

CROSS SECTIONS

SHEET NO. 18

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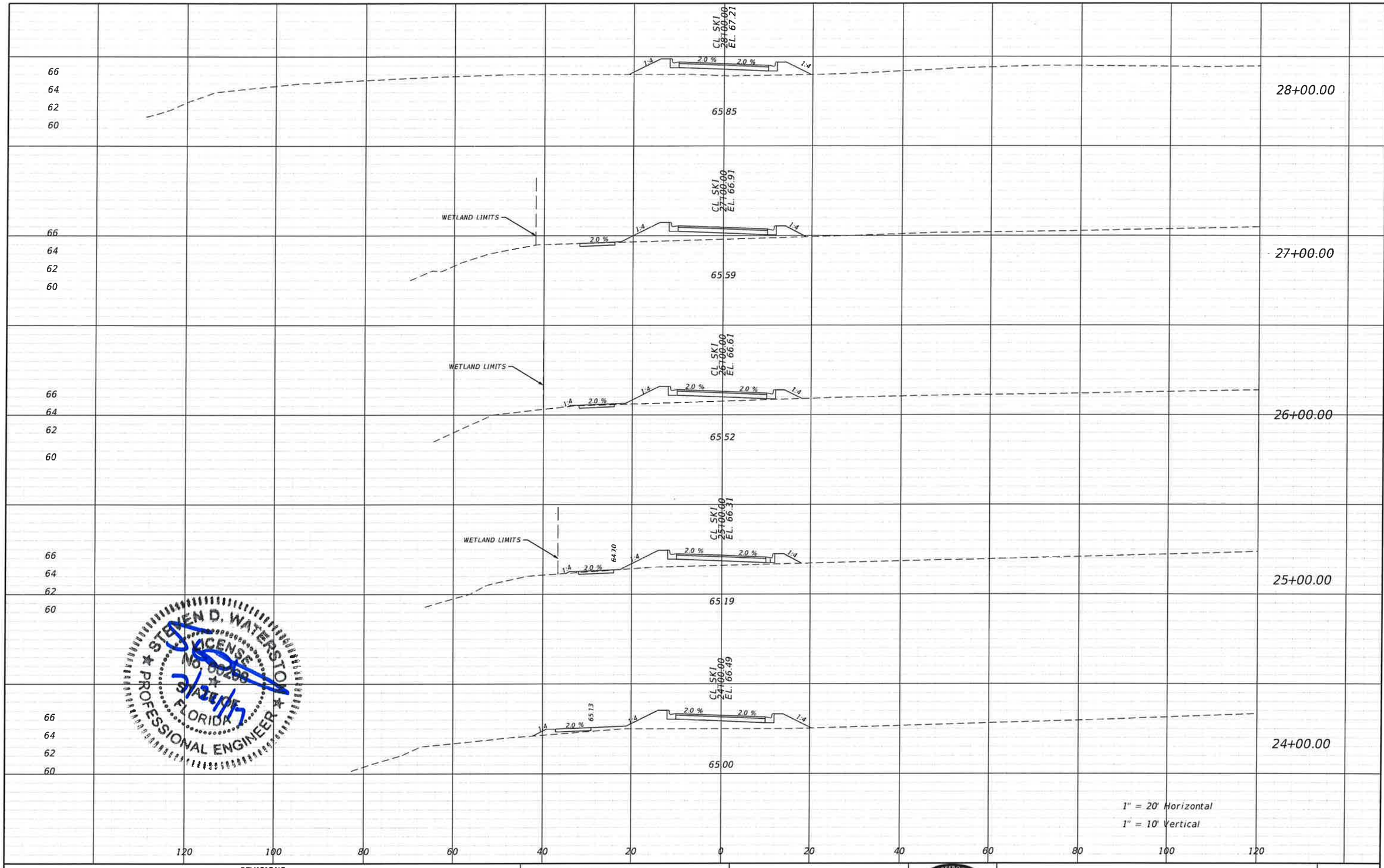

STEVEN D. WATERSTON
LICENSE
No. 60298
STATE OF FLORIDA
PROFESSIONAL ENGINEER

5/26/17

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STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

CROSS SECTIONS

SHEET NO. 19

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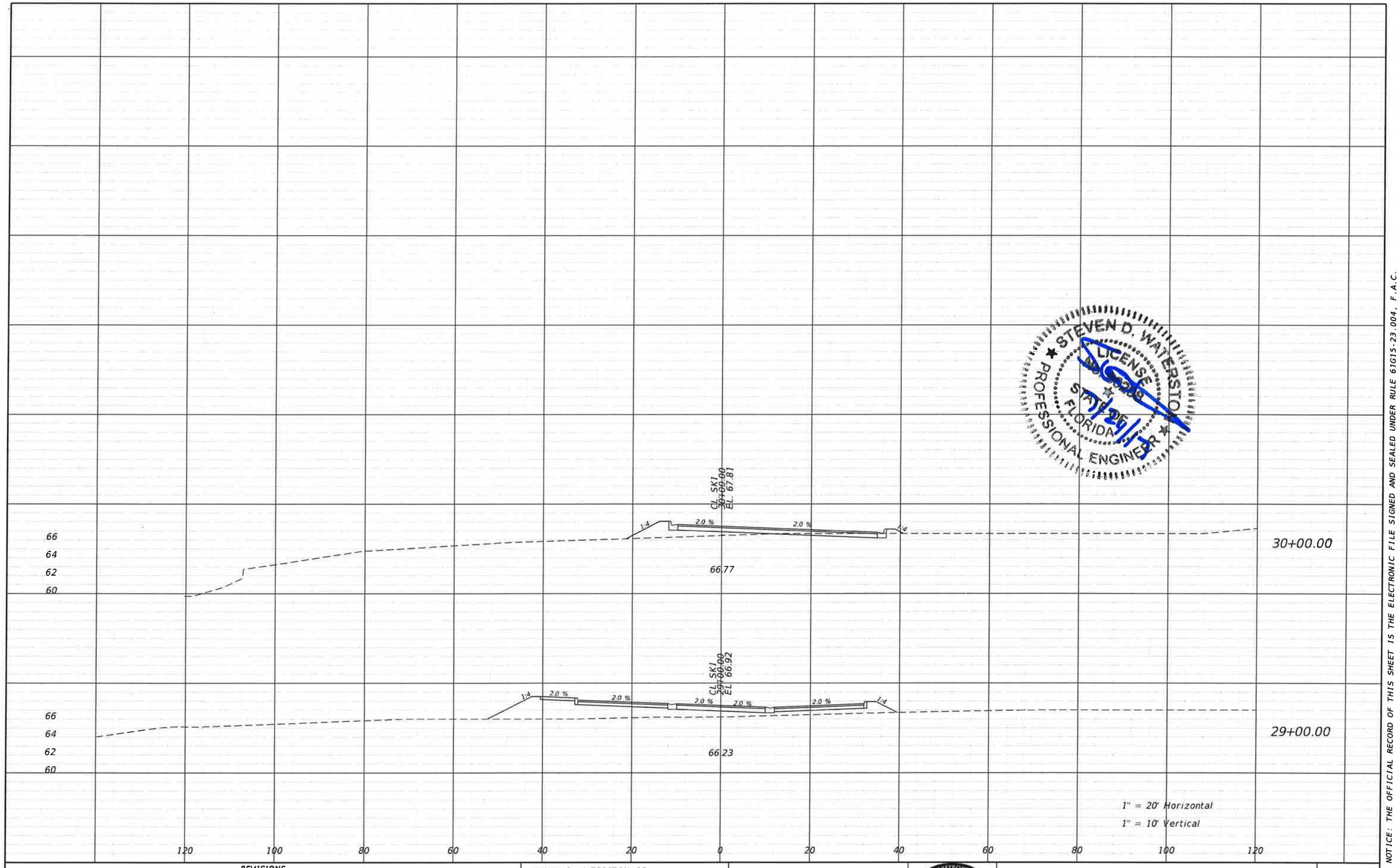

STEVEN D. WATERSTON
LICENSE NUMBER 60298
STATE OF FLORIDA
PROFESSIONAL ENGINEER

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

CROSS SECTIONS

SHEET NO. 20

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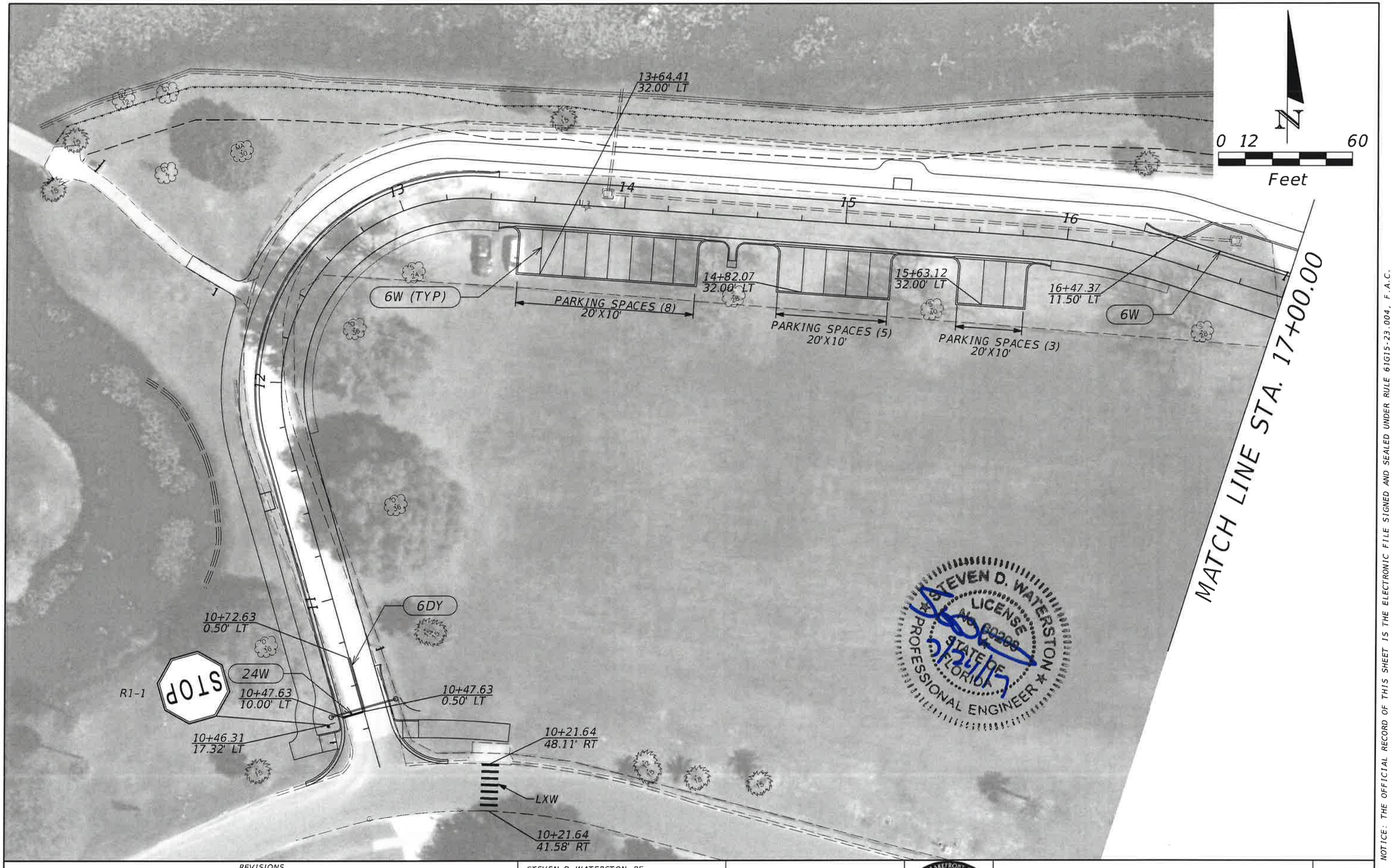

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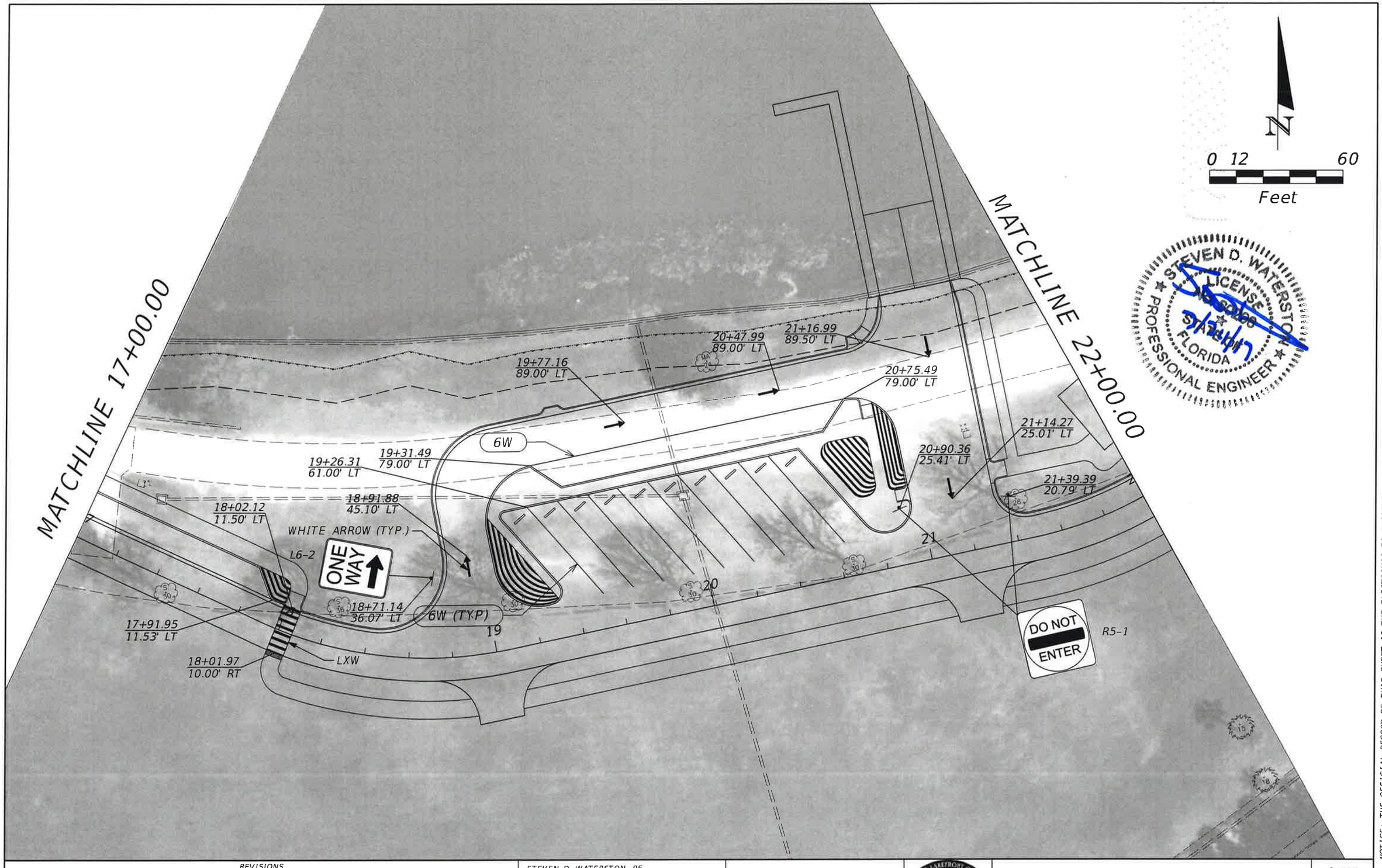
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

SIGNING AND PAVEMENT MARKING PLAN (01)

SHEET NO. 21



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ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

SIGNING AND PAVEMENT MARKING PLAN (02)

SHEET NO. 22

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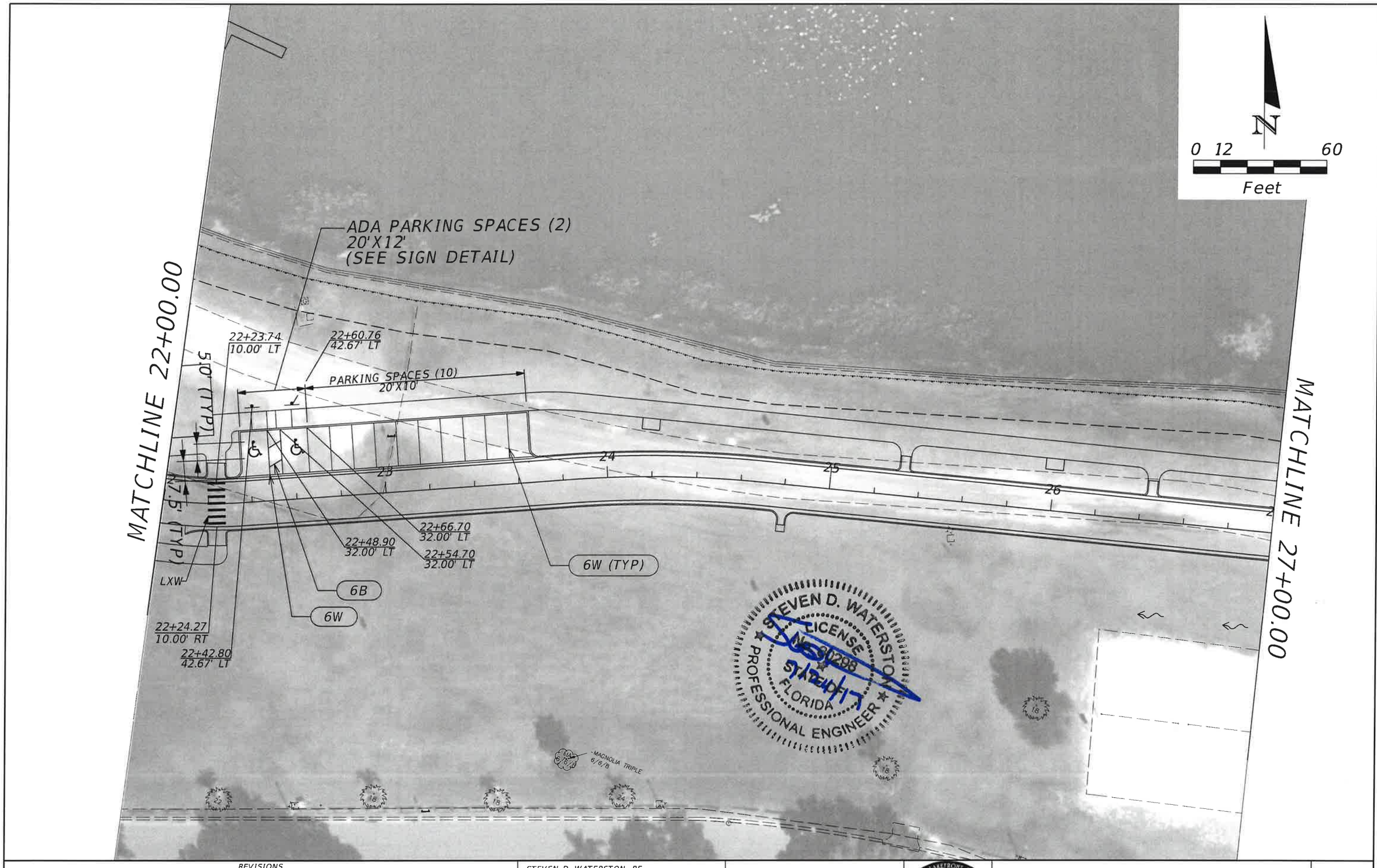

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REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

SIGNING AND PAVEMENT MARKING PLANS (03)

SHEET NO. 23

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SIGN DETAIL (TYP)

STEVEN D. WATERSTON LICENSE No. 60298 STATE OF FLORIDA PROFESSIONAL ENGINEER

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STEVEN D. WATERSTON, PE
PE LICENSE NUMBER 60298
HDR ENGINEERING, INC.
315 E. ROBINSON STREET, SUITE 400
ORLANDO, FL 32801-1949
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

SIGNING AND PAVEMENT MARKING PLAN (04)

SHEET NO. 24

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NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

GENERAL NOTES

1. ALL WORK AND MATERIALS SHALL BE IN COMPLETE ACCORDANCE WITH ALL RELATIVE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP), AND CITY OF LEESBURG STANDARD, SPECIFICATIONS, AND REQUIREMENTS, INCLUDING CURRENT ADA STANDARDS FOR ACCESSIBLE DESIGN.

2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS AND INSURANCE REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT.

3. THE LOCATION OF ALL STRUCTURES, FEATURES, AND UTILITIES SHOWN ON THE DRAWINGS ARE FROM INFORMATION MADE AVAILABLE TO THE ENGINEER BY THE OWNER AND FIELD OBSERVATIONS. IF CONDITIONS DIFFER FROM THOSE REPRESENTED HEREIN, THE CONTRACTOR SHALL CONTACT THE OWNER AND THE ENGINEER OF RECORD IMMEDIATELY BEFORE PROCEEDING WITH CONSTRUCTION.

4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND VERIFYING ALL EXISTING UNDERGROUND UTILITIES SHOWN OR NOT SHOWN ON THE PLANS PRIOR TO CONSTRUCTION.

5. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO PERFORMING ANY PILE INSTALLATION OR EXCAVATION AND TAKE ALL MEASURES NECESSARY TO PROTECT UTILITIES DURING CONSTRUCTION. IN THE INSTANCE OF ANY DAMAGE TO EXISTING UTILITY OR REQUIRED RELOCATION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE RESPONSIBLE UTILITY COMPANY, THE OWNER, AND THE ENGINEER OF RECORD.

6. THE CONTRACTOR SHALL PROTECT EXISTING FEATURES, STRUCTURES, UTILITIES, MONUMENTS, SURVEY MARKERS, ETC. DURING CONSTRUCTION. THE CONTRACTOR SHALL RESTORE / REPLACE TO THE OWNER'S SATISFACTION ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES.

7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL LOCATIONS, FEATURES, STRUCTURES, AND ELEVATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

8. THE CONTRACTOR SHALL PROVIDE NOTIFICATION OF IMPENDING CONSTRUCTION IN ACCORDANCE WITH CONTRACT REQUIREMENTS. WHERE NOT SPECIFIED, THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 48 HOURS ADVANCE NOTICE TO THE OWNER AND THE ENGINEER OF RECORD PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

9. THE CONTRACTOR IS RESPONSIBLE FOR CLEARLY IDENTIFYING THE AREA OF CONSTRUCTION AND FOR SAFELY ROUTING ALL PEDESTRIAN TRAFFIC AROUND THE CONSTRUCTION AREA. THE CONSTRUCTION AREA SHALL BE CLEARLY MARKED AT ALL TIMES.

10. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE PERMITTED CONSTRUCTION DOCUMENTS. ANY DEVIATION FROM THE APPROVED CONSTRUCTION DOCUMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION TO UPDATE OR REPLACE ANY DEFICIENT MATERIALS AND WILL PROVIDE EQUIPMENT AND LABOR TO BRING THE FINAL PRODUCT TO THE STANDARDS OF THE PERMITTED CONSTRUCTION DOCUMENTS. EXISTING PERMIT DOCUMENTATION WILL BE PROVIDED TO THE CONTRACTOR AT CONTRACTOR'S REQUEST.

11. THE CONTRACTOR SHALL SUBMIT AN ELECTRONIC COPY AND FIVE (5) SETS OF SHOP DRAWINGS FOR ALL STRUCTURES, EQUIPMENT, AND MATERIAL SPECIFICATIONS TO THE OWNER FOR APPROVAL PRIOR TO THE PURCHASE AND / OR INSTALLATION OF STRUCTURES, EQUIPMENT, AND / OR MATERIAL.

12. ALL DISTURBED AREAS INCIDENTAL TO CONSTRUCTION TO BE RETURNED TO PRE-CONSTRUCTION CONDITIONS AND ALL REMOVED MATERIAL SHALL BE TRANSPORTED AND DISPOSED OF BY THE CONTRACTOR IN A LEGAL MANNER.

13. ALL CONSTRUCTION LINES AND GRADES SHALL BE ESTABLISHED AND MAINTAINED BY THE CONTRACTOR.

14. THE CONTRACTOR SHALL BE AWARE THAT THE SITE IS A RECREATIONAL FACILITY AND MUST COORDINATE ACCESS WITH THE CITY OF LEESBURG. THE CONTRACTORS MEANS OF ACCESS TO JOB SITE AREAS SHALL NOT CONTACT WET LANDS, NOR DAMAGE THE EXISTING SHORE SLOPES. STORAGE OF MATERIALS SHALL NOT DAMAGE THE EXISTING VEGETATION, AND THERE WILL BE NO ADDITIONAL PAYMENT FOR OFFSITE STORAGE. THERE ARE NO MOORING FACILITIES AT THE SITE, AND THERE WILL BE NO ADDITIONAL PAYMENT FOR MULTIPLE MOBILIZATIONS. CONTRACTOR SHALL SUBMIT FOR APPROVAL, PRIOR TO CONSTRUCTION, THE FOLLOWING:
    a. PLAN OF PROPOSED CONTRACTOR WORK AREA AND CONTRACTOR STAGING AND LAYDOWN.
    b. SEQUENCE OF CONSTRUCTION AND CONSTRUCTION SCHEDULE.
    c. SITE SAFETY PLAN.
    d. STORMWATER POLLUTION PREVENTION AND EROSION CONTROL PLAN.

15. ALLOW A MINIMUM OF 15 DAYS, UPON RECEIPT, FOR REVIEW OF SUBMITTALS. ALLOW A MINIMUM OF 10 DAYS, UPON RECEIPT, FOR REVIEW OF RESUBMITTALS. SCHEDULE WORK IN ACCORDANCE WITH REQUIRED REVIEW PERIODS. NO CONTRACT EXTENSION WILL BE PROVIDED DUE TO DELAYS TO WORK AS A RESULT OF REVIEWS PERFORMED WITHIN THE SPECIFIED TIME.

16. WETLAND & WATERWAY AREAS: THE CONTRACTOR SHALL RIGOROUSLY COMPLY WITH ALL GENERAL AND SPECIFIC PROVISIONS OF PERMITS ISSUED BY THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND THE U.S. ARMY CORPS OF ENGINEERS COPIES OF WHICH SHALL BE KEPT ON SITE. THE CONTRACTOR SHALL CLEARLY DESIGNATE ON-SITE THE SPECIFIC LIMITS OF CONSTRUCTION. THE ENGINEER'S APPROVAL OF THIS DESIGNATION IS REQUIRED PRIOR TO COMMENCEMENT OF ANY CLEARING, CONSTRUCTION STAGING AND CONSTRUCTION WORK. NEITHER CLEARING OR CONSTRUCTION WORK ARE AUTHORIZED OUTSIDE OF THE SPECIFIC LIMITS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL PROVISIONS OF THESE AND OTHER PERMITS ISSUED TO THIS PROJECT.

17. UPON COMPLETION OF THE WORK AND BEFORE FINAL INSPECTION, THE CONTRACTOR SHALL CLEAN THE WORK SITE AND ALL GROUNDS OCCUPIED BY HIM IN CONNECTION WITH THE WORK OF ALL RUBBISH, SURPLUS AND DISCARDED MATERIAL, EQUIPMENT AND DEBRIS.

18. UPON SUBSTANTIAL COMPLETION OF THE WORK AN INSPECTION SHALL BE CONDUCTED BY THE OWNER. THIS INSPECTION SHALL IDENTIFY ANY REMAINING WORK, MISSING PARTS AND DEFECTS. THE CONTRACTOR'S INSPECTOR IS TO ACCOMPANY THE OWNER DURING THIS INSPECTION. A PUNCH LIST WILL BE COMPILED BY THE OWNER INDICATING ITEMS IDENTIFIED DURING THE INSPECTION, FINAL ACCEPTANCE AND PAYMENT WILL BE DETERMINED BY THE OWNER FOLLOWING COMPLETION WORK TO REMEDY PUNCH LIST ITEMS.

GENERAL SPECIFICATIONS

1. FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (JANUARY 2017 EDITION).

2. CITY OF LEESBURG STANDARD CONSTRUCTION SPECIFICATIONS (2004)

3. FLORIDA DEPARTMENT OF TRANSPORTATION DESIGN STANDARDS (2017).

DESIGN SPECIFICATIONS

1. PROVISIONS OF THE FLORIDA BUILDING CODE, 5th EDITION (2014).

2. AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318-14) AND COMMENTARY (ACI 318-14).

ELEVATIONS

1. ALL ELEVATIONS ARE IN FEET AND HUNDREDTHS AND ARE REFERENCED TO NAVD 88.

2. DESIGN HIGH WATER (DHW) = EL. +62.61

3. DESIGN LOW WATER (DLW) = EL. +58.67

DESIGN LOADING

27,500 LB - LIFT TRUCK AXLE LOAD STATIC REACTION.
100 PSF - CONSTRUCTION UNIFORM SURCHARGE.

DESIGN METHOD

1. CAST-IN-PLACE SLAB IS DESIGNED BASED ON ALLOWABLE STRESS DESIGN USING ACI 360R-10 WITH A FACTOR OF SAFETY OF 2.0.

2. PRECAST CONCRETE PANELS ARE DESIGNED USING LOAD AND RESISTANCE FACTOR DESIGN. AN IMPACT FACTOR OF 1.0 TIMES THE WEIGHT OF THE PANEL IS CONSIDERED DURING CONSTRUCTION WHEN LIFTING THE PANEL.

ENVIRONMENT

EXTREMELY AGGRESSIVE.

STORMWATER POLLUTION PREVENTION & EROSION CONTROL

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE EROSION AND TURBIDITY CONTROLS DURING AND FOLLOWING CONSTRUCTION UNTIL ALL DISTURBED AREAS HAVE BEEN STABILIZED TO AVOID ADVERSE ENVIRONMENTAL IMPACTS TO OFF-SITE PROPERTY AND DRAINAGE SYSTEMS.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREVENTION OF DOWNSTREAM TURBIDITY / SILTATION / OR EROSION THROUGH THE USE OF HAY BALES, SCREENS, SILTATION BASINS, CHEMICAL FLOCCULATION AND / OR ANY OTHER SUITABLE MEANS REQUIRED TO MEET FLORIDA STREAM STANDARDS. THESE CONTROLS MUST BE CONSTRUCTED PRIOR TO CLEARING OR GRADING OF ANY PORTIONS OF THE SITE. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED.

3. THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND ENGINEER OF RECORD A METHOD OF STATEMENT PLAN FOR ENSURING THE BEST MANAGEMENT PRACTICES (BMP'S) AND THE NECESSARY EROSION AND SEDIMENT CONTROL MEASURES TO BE USED MEET WATER QUALITY STANDARDS REQUIRED BY THE STATE OF FLORIDA AND ARE SUFFICIENT TO PREVENT BANK EROSION CAUSED BY CONSTRUCTION ACTIVITIES.

DEWATERING

IT IS THE INTENT OF THESE PLANS THAT CONSTRUCTION MAY TAKE PLACE IN THE "WET". GROUT FOR FILLERS BETWEEN PRECAST PANELS SHALL BE PLACED USING A TREMIE PIPE. ANY REINFORCING STEEL EXPOSED TO SALT WATER SHALL BE CLEANED WITH A MINIMUM 1500 PSI FRESH WATER BLAST IMMEDIATELY BEFORE CONCRETE PLACEMENT.

JOSIAH M. BERG
LICENSE
69024
STATE OF FLORIDA
PROFESSIONAL ENGINEER
7/21/2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JOSIAH BERG, PE
PE LICENSE NUMBER 69024
HDR ENGINEERING, INC.
15450 NEW BARN ROAD, SUITE 304
MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

STRUCTURE NOTES
BOAT RAMP (1 OF 2)

SHEET NO.
S1-1

CONCRETE

CONCRETE SHALL HAVE MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF F'c = 5500 PSI AND SHALL COMPLY WITH THE REQUIREMENTS OF CLASS IV CONCRETE IN THE FDOT STANDARD SPECIFICATIONS.

GROUT

GROUT SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS OF F'c 6000 PSI. A NON-SHRINK GROUT SHALL BE USED THAT IS APPROPRIATE TO THE CONSTRUCTION METHOD THE CONTRACTOR CHOOSES. THE PRODUCT SHALL BE LISTED ON THE FDOT APPROVED PRODUCT LIST.

REINFORCING STEEL

STEEL FOR ALL REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60. ALL DIMENSIONS ASSOCIATED WITH THE REINFORCEMENT LOCATION ARE TO CENTERLINE OF BARS EXCEPT WHERE THE CLEAR DIMENSION IS SHOWN TO FACE OF CONCRETE OR OTHER SURFACES. REINFORCING BARS MAY BE FIELD ADJUSTED FOR CONSTRUCTION PURPOSES.

REINFORCEMENT CLEARANCE

CONCRETE COVER FOR CAST IN PLACE SLAB SHALL BE 4½" AND FOR PRECAST SLAB SHALL BE 4", UNLESS OTHERWISE NOTED.

SHOP DRAWINGS

PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS THAT INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

a. FLOATING DOCK SYSTEM WITH GANGWAY.
b. PRECAST SLAB PANELS.
c. KAYAK LAUNCH AND ANCHORING DETAILS.

SUPPLEMENTAL INFORMATION

THE FOLLOWING INFORMATION WILL BE MADE AVAILABLE TO THE CONTRACTOR, IN HARD COPY, AT THE CONTRACTOR'S REQUEST:

a. BORING LOGS AND SOILS INVESTIGATION REPORT, ENTITLED "REPORT OF GEOTECHNICAL ENGINEERING, INVESTIGATION SKI BEACH AT LAKE HARRIS, LAKE COUNTY FLORIDA GEC PROJ. NO. 40024"

CLEARING AND GRUBBING

1. ALL CLEARING AND GRUBBING SHALL CONFORM TO THE FDOT 2017 STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION - SECTION 110, EXCEPT AS NOTED HEREIN.

2. ALL TREES TO ARE TO BE PRESERVED AND PROTECTED UNLESS MARKED FOR REMOVAL IN THE CONTRACT DRAWINGS.

3. THE CONTRACTOR SHALL TRIM TREE BRANCHES EXTENDING OVER THE AREA OF PATHWAYS AND STRUCTURES TO PROVIDE A CLEAR HEIGHT OF 10 FEET.

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STRUCTURE NOTES BOAT RAMP (2 OF 2)

SHEET NO.
S1-2

FLOATING DOCK SYSTEM

1. CONTRACTOR SHALL PROVIDE AN ALUMINUM FLOATING DOCK SYSTEM BY RAVENS MARINE, OR APPROVED EQUAL. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR OWNER APPROVAL PRIOR TO PURCHASING DOCK.

2. THE FLOTATION SYSTEM SHALL CONSIST OF MODULAR SECTIONS DESIGNED IN SUCH A MANNER THAT MODULES MAY BE REPLACED WITH STANDARD MODULES IN CASE OF REPAIRS.

3. SUFFICIENT FLOTATION SHALL BE PROVIDED TO SUPPORT A LIVE LOAD OF 100 PSF OF DECK AREA WITH A MINIMUM FREEBOARD OF 8 INCHES.

4. FREEBOARD UNDER DEAD LOAD ONLY SHALL NOT EXCEED 18 INCHES.

5. CONTRACTOR SHALL EXERCISE CAUTION TO INSURE THAT ALL DEAD LOADS ARE ACCURATELY DETERMINED AND INCLUDED IN BUOYANCY CALCULATIONS. THESE LOADS SHOULD INCLUDE APPROPRIATE SAFETY FACTORS AND ANY SPECIFIC MANUFACTURING CONSIDERATIONS THAT WILL AFFECT THE FINAL FREEBOARD.

6. SPECIAL FLOATS MUST BE DESIGNED TO SUPPORT THE ADDITIONAL CONCENTRATED LOADS AS IMPOSED BY GANGWAYS. FLOATS WITH SPECIAL LOADINGS SHALL HAVE THE SAME FREEBOARD AS FLOATS WITH NO SUCH LOADING, SO THAT THERE WILL BE NO RESIDUAL STRESSES OR TILTING WHEN SUCH FLOATS ARE INTERCONNECTED.

7. WALKING SURFACE OF FLOATS SHALL BE LEVEL AND FLUSH WITH RESPECT TO THE ADJACENT FLOATS.

8. FLOATS SHALL BE DESIGNED TO FLOAT LEVEL UNDER DEAD LOAD ONLY. THE DECKS OF THE FLOATS SHALL BE WITHIN THE FOLLOWINGS TOLERANCES OF BEING LEVEL:
   a. MAXIMUM TRANSVERSE SLOPE FOR MAIN FLOATS: 1 INCH PER 10 FEET OF WIDTH.
   b. MAXIMUM LONGITUDINAL SLOPE: 1 INCH PER 10 FEET.

9. FLOTATION UNITS SHALL BE LOCATED WITHIN THE STRUCTURE SO AS TO BE CAPABLE OF SUPPORTING A 300-POUND POINT LOAD MOVING IN ANY AREA ON A FLOAT WITHOUT EXCESSIVE ROLLING OR TILTING ON THE DOCK. THIS SHOULD BE DONE ONCE THE SYSTEM IS TOTALLY CONNECTED AND IN ITS FINAL INTENDED CONDITION.

10. FLOATS, FRAMING, CONNECTIONS AND ANCHORAGE SYSTEMS SHALL BE DESIGNED FOR THE FOLLOWING LOAD CASES AS A MINIMUM:
    a. WIND PRESSURE OF 15 PSF (77 MPH FASTEST MILE WIND AT 33 FEET STANDARD ELEVATION, EXPOSURE C, PER ASCE 7-10) ACTING ON THE PROJECTED AREA OF ALL DOCKS AND MOORED VESSELS ASSUMING FULL OCCUPANCY OF THE DOCK.
    b. WIND PRESSURE OF 20 PSF (110 MPH FASTEST MILE WIND AT 33 FEET STANDARD ELEVATION, EXPOSURE C, PER ASCE 7-10) ACTING ON THE PROJECTED AREA OF ALL DOCKS AND NO MOORED VESSELS.
    c. MINIMUM CURRENT PRESSURE DUE TO A 3.9 FEET PER SECOND CURRENT VELOCITY ACTING ON THE PROJECTED AREA OF ALL DOCKS AND MOORED VESSELS ASSUMING FULL OCCUPANCY.
    d. MINIMUM CURRENT PRESSURE DUE TO A 6.7 FEET PER SECOND CURRENT VELOCITY ACTING ON THE PROJECTED AREA OF ALL DOCKS AND NO MOORED VESSELS.
    e. LATERAL WAVE LOADS FOR WAVES HAVING A 2-FOOT WAVE HEIGHT.
    f. LOAD CASES SHOULD BE COMBINED BASED UPON THE PROBABILITY OF SIMULTANEOUS OCCURRENCE OF THE EVENTS.
    g. DESIGN PARAMETERS:
       i. DESIGN VESSEL TO BE A MOTORIZED PLEASURE CRAFT OR FISHING VESSEL OF LENGTH NOT TO EXCEED 30 FEET, WHICHEVER RESULTS IN HIGHER LOADING.
       ii. WIND LOAD CALCULATIONS SHALL BE BASED ON AN AVERAGE VESSEL PROFILE HEIGHT EQUAL TO 15% OF THE SLIP LENGTH.
       iii. CURRENT DESIGN LOAD CALCULATIONS SHALL BE BASED ON THE AVERAGE VESSEL DRAFT.
       iv. CALCULATIONS ARE TO BE PERFORMED FOR WIND AND CURRENT LOADS BOTH PARALLEL TO AND PERPENDICULAR TO THE SLIPS.
       v. FULL WIND AND CURRENT LOADS SHALL BE APPLIED TO ALL EXPOSED VESSELS. TO ACCOUNT FOR SHELTERING EFFECTS, 15% OF THE FULL LOAD SHALL BE APPLIED TO ALL VESSELS SHELTERED BY THE EXPOSED VESSEL.
       vi. CALCULATIONS SHALL ASSUME THAT ANY GIVEN SLIP MAY BE EXPOSED TO THE LOADS CREATED BY A DESIGN EVENT.
       vii. ALLOWABLE MATERIAL STRESSES SHALL BE BASED ON THE LATEST EDITION OF THE FLORIDA BUILDING CODE (AISC, ACI, ETC.).
       viii. MINIMUM EVALUATION OF THE DESIGN WAVE ENVIRONMENT SHALL INCLUDE IDENTIFYING THE SIGNIFICANT WAVE HEIGHT, PEAK SPECTRAL WAVE LENGTH, WAVE PERIOD AND WAVE APPROACH ANGLE.

DOCK SYSTEM SHOP DRAWINGS AND CALCULATIONS

1. CONTRACTOR TO PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR OWNER APPROVAL PRIOR TO PURCHASING DOCK SYSTEM.

2. ALL DESIGN CALCULATIONS SHALL ASSUME THAT ALL SLIPS ARE OCCUPIED, THAT ANY INDIVIDUAL SLIP MAY BE EXPOSED DURING A DESIGN EVENT AND THAT ALL REASONABLE DEAD LOADS HAVE BEEN INCORPORATED INTO THE SYSTEM.

3. ONCE THE LOADS ARE DETERMINED BY THE APPLICABLE CODES LISTED ABOVE, THE DESIGN AND CALCULATIONS SHALL BE PREPARED IN ACCORDANCE WITH AISI AND AISC SPECIFICATIONS AND GUIDELINES. IN ADDITION TO SIZING ALL MEMBERS FOR THESE CODES AND SPECIFICATIONS, THE FOLLOWING CALCULATIONS SHALL BE SUBMITTED AS A MINIMUM FOR THE DOCK SYSTEM:
   a. ANCHORAGE ATTACHMENT POINTS TO INSURE REACTIONS SHALL BE APPROPRIATELY AND RATIONALLY DISTRIBUTED THROUGHOUT THE SYSTEM.
   b. ANCHORAGE ATTACHMENT POINTS SYSTEM CAPACITY FOR INDIVIDUAL AND OVERALL LOAD CONSIDERATIONS.

4. ALL ENGINEERING AND CALCULATIONS SHALL BE DONE IN ACCORDANCE WITH THESE GUIDELINES USING THE APPROPRIATE ALLOWABLE CAPACITIES AND SAFETY FACTORS. CALCULATIONS AND DRAWINGS ARE TO BE STAMPED BY A FLORIDA REGISTERED PROFESSIONAL ENGINEER, MAINTAINING PROFESSIONAL LIABILITY INSURANCE WITH A MINIMUM POLICY LIMIT OF $2,000,000. THE ENGINEER OF RECORD SHALL SEAL ALL CALCULATIONS AND DRAWINGS. THE ENGINEER SHALL HAVE DESIGNED AT LEAST FIVE PREVIOUS MARINA PROJECTS OF A SIZE AND FUNCTION SIMILAR TO THIS PROJECT THAT HAVE BEEN IN USE FOR A MINIMUM OF FIVE YEARS.

5. SHOP DRAWINGS SHALL SHOW THE LAYOUT OF THE DOCK SYSTEM, LAYOUT OF COMPLETE MOORING/ANCHORING SYSTEM, DETAILS OF ALL CONNECTIONS, WALER SIZING AND SPLICE PATTERN, ANCHORAGE CONNECTIONS, AND ALL OTHER DETAILS NECESSARY AND PERTINENT TO THE CONSTRUCTION OF THE FLOATING DOCK SYSTEM.

DOCK SYSTEM QUALITY ASSURANCE

1. THE MANUFACTURER MUST HAVE AN ONGOING QUALITY MANAGMENT SYSTEM. AT THE OPTION OF THE OWNER, THE MANUFACTURER SHALL SUBMIT A COPY OF THEIR OPERATIONAL QUALITY ASSURANCE PROGRAM AND SHALL NOT MANUFACTURE FLOATS UNTIL THE OWNER HAS APPROVED THIS QUALITY ASSURANCE PROGRAM.

2. THIS QUALITY SYSTEM MUST BE REGULARLY ASSESSED AND CURRENTLY CERTIFIED AS MEETING THE ISO 9001 STANDARD. THE SCOPE OF THIS CERTIFICATION MUST BE FOR THE DESIGN AND MANUFACTURE OF FLOATING DOCKS AND PERTAIN TO THE COMPANY OR PORTION OF THE COMPANY PROVIDING THE PRODUCTS AND SERVICES FOR THE PROJECT.

3. ALL ALUMINUM WELDING SHALL BE COMPLETED IN ACCORDANCE WITH REQUIREMENTS OF ANSI/AWS D1.2 STRUCTURAL WELDING-ALUMINUM, UTILIZING 3/64" ER4043 WELDING WIRE, ANSI/AWS A5.10.

DOCK SYSTEM CONSTRUCTION

1. GENERAL
   a. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE OWNER, ALL ITEMS HE INTENDS ON USING FOR THE CONSTRUCTION OF THIS PROJECT, AS WELL AS ANY ALTERNATE MATERIALS.
   b. THE OWNER WILL BE ALLOWED ACCESS TO ALL SITES WHERE MATERIALS PERTAINING TO THIS CONTRACT ARE MANUFACTURED OR CONSTRUCTED FOR PURPOSES OF INSPECTION.
   c. MATERIALS DELIVERED AND STORED AT EITHER THE MANUFACTURING FACILITY, STAGING AREA, OR JOBSITE SHALL BE PROPERLY STORED ON DUNNAGE OR BY OTHER APPROPRIATE MEANS TO PREVENT DIRECT CONTACT WITH THE GROUND AND UNNECESSARY DAMAGE.

2. MANUFACTURING
   a. THE DOCK MANUFACTURER HAS A MINIMUM OF 10 CONSECUTIVE YEARS EXPERIENCE IN THE DESIGN AND MANUFACTURING OF ALUM. FLOATING DOCKS AS THEIR PRIMARY BUSINESS.
   b. THE FACILITY SHALL BE DESIGNED TO PROVIDE THE PROPER ENVIRONMENT AND PHYSICAL CONDITIONS NECESSARY FOR FLOAT MANUFACTURING. THE FACILITY SHALL PROVIDE ADEQUATE WORK SPACE, EQUIPMENT AND PROTECTION FROM DIRECT SUNLIGHT, WIND, MOISTURE AND FREEZING.
   c. FLOAT MODULES SHALL BE SEALED POLYETHYLENE TUBS MIN. 12 INCHES DEEP.

3. DECK FINISH
   a. DECKING MATERIAL SHALL BE TREX OR APPROVED EQUAL.
   b. CONTRACTOR SHALL ESTABLISH MANUFACTURING METHODS AND PROCEDURES TO INSURE (EVEN AND CONSISTENT) FINISH ON ALL DECK SURFACES.
   c. ALL WORK SHALL BE PERFORMED BY PERSONS EXPERIENCED AND SKILLED IN THEIR TRADE.

4. HANDLING AND STORAGE
   a. CONTRACTOR SHALL TAKE CARE IN ESTABLISHING HANDLING METHODS TO AVOID DAMAGE TO DOCKS DURING TRANSPORT, STORAGE, ASSEMBLY, AND INSTALLATION. STORAGE OF FLOTATION UNITS SHALL BE ON LEVEL SURFACES, AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE HOW HIGH TO STACK UNITS TO AVOID DAMAGE. CARE SHALL BE TAKEN TO AVOID DAMAGE CAUSED BY OVER-STACKING.
   b. DOCKS SHALL BE PROTECTED AGAINST DAMAGE FROM ANY CAUSE.
   c. ANY DAMAGED UNITS SHALL BE REJECTED AND REMOVED FROM THE ASSIGNED JOB.

5. FLOAT WEIGHT
   a. THE WEIGHT OF THE COMPLETE FLOTATION UNITS SHALL NOT VARY FROM THE THEORETICAL WEIGHT OR MEAN WEIGHT OF ALL SIMILAR UNITS BY MORE THAN 6 PERCENT.
   b. SUBMIT PROGRAM TO VERIFY ACTUAL FLOAT WEIGHTS, QUANTITY TO BE WEIGHED, AND METHOD OF RECORD KEEPING.

6. FLOAT IDENTIFICATION
   a. ALL FLOATS ARE TO BE CLEARLY IDENTIFIED ON ONE SIDE AND ONE END BETWEEN THE BOTTOM OF THE WALER AND THE WATERLINE WITH THE DATE OF MANUFACTURE, SPECIFIC FLOAT TYPE, AND JOB NUMBER.

7/21/2017

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DATE	DESCRIPTION	DATE	DESCRIPTION				

7. STEEL
   a. ALL STRUCTURAL STEEL CHANNELS, ANGLES, AND PLATES SHALL BE FABRICATED FROM MILD STEEL CONFORMING TO ASTM A-36, AND SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

8. GALVANIZED COATING
   a. A HOT DIPPED GALVANIZED COATING SHALL BE REQUIRED ON ALL MISCELLANEOUS HARDWARE, CLEATS, STEEL PLATES, ANGLES, AND SHAPES IN ACCORDANCE WITH EITHER ASTM A-123 OR ASTM A-153 AS THE PROCESS APPLIES TO THE SPECIFIC MATERIAL.
   b. ZINC COATING THICKNESS TO BE A MINIMUM OF THREE (3) MILS.

9. HARDWARE
   a. BOLTS, NUTS, WASHERS, AND THRU-RODS SHALL BE ALLOY 316 STAINLESS STEEL, AND HAVE A MINIMUM OF 1-1/2 INCH OF THREAD.
   b. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM A-123.
   c. WASHERS SHALL BE USED WITH ALL NUTS AND BOLTS, WHICH BEAR ON WOOD OR STEEL. ROUND PLATE WASHERS SHALL BE USED ON ALL THRU-RODS BEARING ON WOOD SURFACES. CUT WASHERS SHALL BE USED ON ALL SURFACES BEARING ON STEEL SURFACES.

10. GUIDE PILES
   a. ALL PILING SHALL CONFORM TO 2014 FDOT DESIGN STANDARDS, INDEX NO. 20600.
   b. PAYMENT FOR PILING SHALL BE LUMP SUM BASED ON THE ORDER LENGTH SHOWN AND THE PER-FOOT CONTRACT UNIT RATE FOR PRESTRESSED CONCRETE PILES. THE PAYMENT WILL COMPENSATE THE CONTRACTOR FOR ALL COSTS ASSOCIATED WITH DRIVING PILING, INCLUDING BUT NOT LIMITED TO, ORDERING, DELIVERY, STORAGE, INSTALLATION, CUTOFF, AND SURVEY COSTS. ORDER LENGTHS TO BE APPROVED BY ENGINEER.
   c. PRIOR TO DRIVING PILES, HORIZONTAL LINES SHALL BE MARKED ON THE FACE SUFFICIENT FOR INDICATING DRIVEN TIP ELEVATION. MARKINGS TO BE REMOVED AFTER SUBSTANTIAL COMPLETION.
   d. PILES SHALL BE INSTALLED WITHIN SPECIFIED TOLERANCE. MAINTAIN AND CHECK AXIAL ALIGNMENT OF PILE AND DRIVING EQUIPMENT AT ALL TIMES. BUTTS SHALL BE WITHIN 1 1/2 INCHES OF LOCATION INDICATED ON THE DRAWINGS, AS MEASURED AT THE PILE CUT-OFF ELEVATION AFTER DRIVING. PILES SHALL BE DRIVEN TO WITHIN 2% OF PLUMB. IF ANY PILE IS DRIVEN OUTSIDE TOLERANCE THE CONTRACTOR SHALL REMOVE THE PILE BY PULLING. THE PILE SHALL BE INSPECTED FOR DAMAGE BY THE OWNER'S ENGINEER. IF DEEMED UNACCEPTABLY DAMAGED, THE CONTRACTOR SHALL REPLACE THE PILE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PULLING, DRIVING AND POSSIBLY REPLACING THE OUT OF TOLERANCE PILE(S). IF DEEMED NECESSARY BY THE ENGINEER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADDITIONAL COSTS RELATED TO REDESIGN AND CONSTRUCTION OF AFFECTED DOCKS, INCLUDING REPLACEMENT OR RECONFIGURING DOCK ELEMENTS AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL MAKE NO CLAIM OF DELAY AGAINST THE OWNER DUE TO OUT TOLERANCE INSTALLATION.
   e. NO PAYMENT WILL BE MADE FOR PILE EXTRACTION FOR NEW PILES DAMAGED OR MISLOCATED BY THE CONTRACTOR THAT ARE ORDERED TO BE EXTRACTED BY THE OWNER OR ENGINEER.
   f. PRE-DRILLING OR JETTING OF PILES IS NOT PERMITTED WITHOUT PRIOR APPROVAL BY THE ENGINEER.
   g. REFUSAL SHALL BE 20 BLOWS/INCH.
   h. ADDITIONAL PILE INSTALLATION NOTES AND REQUIREMENTS ARE LOCATED ON SHEET S1-4.

KAYAK LAUNCH DOCK

1. CONTRACTOR SHALL PROVIDE AND INSTALL (1) FLOATING KAYAK LAUNCH DOCK WITH APPROPRIATE CONNECTIONS TO OTHER DOCK SYSTEM.
2. KAYAK LAUNCH SHALL BE MANUFACTURED BY EZ-DOCK OR APPROVED EQUAL.
3. DOCK SHALL BE COMPOSED OF 1-PIECE POLYETHEYNE CONSTRUCTION.
4. DOCK SHALL HAVE INTEGRATEDPADDLE NOTCHES AND V-SHAPED ENTRY/EXIT TO FACILITATE LAUNCHING OPERATIONS.

ALUMINUM GANGWAY RAMP SYSTEM

1. THE CONTRACTOR SHALL PROVIDE AN ALUMINUM GANGWAY RAMP. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR OWNER APPROVAL PRIOR TO PURCHASE OF GANGWAY RAMP.
2. ALL CONSTRUCTION IS TO BE IN ACCORDANCE WITH THE MINIMUM PROVISIONS OF THE ASCE 7- 2010. WHERE THESE SPECIFICATIONS DO NOT STATE OTHERWISE THE PROVISIONS OF THE ASCE 7 SHALL APPLY.
3. DESIGN OF THE ALUMINUM GANGWAY SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE ALUMINUM DESIGN MANUAL PUBLISHED BY THE ALUMINUM ASSOCIATION. ANALYSIS OF TRUSS TYPE GANGWAYS SHALL UTILIZE HOLT'S METHOD FOR DETERMINING TOP CHORD BUCKLING AS OUTLINED IN "GUIDE TO STABILITY DESIGN CRITERIA FOR METAL STRUCTURES", 4TH EDITION, BY THEODORE B. GALAMBOS, OR SIMILAR ANALYSIS METHOD.
4. THE GANGWAY SHALL BE DESIGNED FOR THE FOLLOWING LOAD CASES AS A MINIMUM:
   a. GANGWAY DECK AND STRUCTURAL COMPONENTS SHALL BE DESIGNED TO SUPPORT THE DEAD WEIGHT OF THE GANGWAY PLUS A DISTRIBUTED LIVE LOAD OF 100 POUNDS PER SQUARE FOOT OF DECK AREA. MAXIMUM DEFLECTION UNDER THIS LOAD SHALL NOT EXCEED L/360.
   b. THE DECK AND STRUCTURAL COMPONENTS SHALL BE DESIGNED TO SUPPORT A CONCENTRATED LOAD OF 400 POUNDS APPLIED TO A SIX INCH BY SIX INCH AREA ANYWHERE ON THE DECK SURFACE.
   c. LATERAL DESIGN WIND LOAD USED IN COMBINATION WITH LIVE LOAD AND DEAD LOAD SHALL BE 77 MPH, EXPOSURE 'C' PER ASCE 7-2010.
   d. LATERAL DESIGN WIND LOAD USED IN COMBINATION WITH DEAD LOAD SHALL BE 110 MPH, EXPOSURE 'C' PER ASCE 7-2010.
5. HANDRAILS
   a. THE GANGWAY SHALL HAVE CONTINUOUS HANDRAILS ALONG BOTH SIDES OF THE WALKING SURFACE AND SHALL EXTEND A MINIMUM OF ONE FOOT BEYOND THE PRIMARY WALKING SURFACE AT EACH END. THE TOP OF THE HANDRAILS SHALL BE NOT LESS THAN 34 INCHES OR MORE THAN 38 INCHES ABOVE THE WALKING SURFACE. ENDS SHALL BE RETURNED OR SHALL TERMINATE IN SAFETY TERMINALS.
   b. THE HANDGRIP PORTION OF THE HANDRAILS SHALL BE NOT LESS THAN 1-1/4 INCHES NOR MORE THAN 2 INCHES IN CROSS-SECTIONAL DIMENSION, OR THE SHAPE SHALL PROVIDE AN EQUIVALENT GRIPPING SURFACE. THE HANDGRIP PORTION OF THE HANDRAILS SHALL HAVE A SMOOTH SURFACE WITH NO SHARP CORNERS. A MINIMUM OF 1-1/2 INCHES CLEARANCE SHALL BE PROVIDED BETWEEN THE GANGWAY STRUCTURE AND THE HANDRAIL.
   c. THE MOUNTING OF HANDRAILS SHALL BE SUCH THAT THE COMPLETED HANDRAIL AND SUPPORTING STRUCTURE ARE CAPABLE OF WITHSTANDING A LOAD OF AT LEAST 200 POUNDS APPLIED IN ANY DIRECTION AT ANY POINT ON THE RAIL. THIS LOAD SHALL NOT BE ASSUMED TO ACT CONCURRENTLY WITH THE GUARDRAIL LOADS.
6. GUARDRAILS
   a. CONTINUOUS GUARDRAILS MEETING THE FOLLOWING REQUIREMENTS SHALL BE PROVIDED ALONG BOTH SIDES OF THE GANGWAY. THE TOP CHORDS OF TRUSS TYPE GANGWAYS MAY BE CONSIDERED TO ACT AS GUARDRAILS PROVIDED THEY MEET THE SAME REQUIREMENTS.
   b. THE TOP OF THE GUARDRAILS SHALL NOT BE LESS THAN 42 INCHES ABOVE THE WALKING SURFACE OF THE GANGWAY.
   c. GUARDRAILS SHALL BE CAPABLE OF SUPPORTING A HORIZONTAL LOAD OF 20 POUNDS PER LINEAL FOOT APPLIED TRANSVERSE TO THE RAIL.
   d. INTERMEDIATE RAILS SHALL BE PROVIDED SUCH THAT A SPHERE 4 INCHES IN DIAMETER MAY NOT PASS THROUGH ANY POINT BELOW THE GUARDRAILS. INTERMEDIATE RAILS AND THEIR CONNECTIONS SHALL BE CAPABLE OF WITHSTANDING A LOAD OF 25 POUNDS PER SQUARE FOOT APPLIED HORIZONTALLY AT RIGHT ANGLES OVER THE ENTIRE TRIBUTARY AREA, INCLUDING OPENINGS AND SPACES BETWEEN RAILS.
7. RUN-OFF PLATE (TOE RAMP)
   a. THE TOE RAMP SHALL PROVIDE A SMOOTH TRANSITION BETWEEN THE GANGWAY DECK AND THE DOCK WALKING SURFACE. THE TOE RAMP SHALL BE THE FULL WIDTH OF THE GANGWAY DECK AND BE LONG ENOUGH TO PROVIDE A MAXIMUM SLOPE OF 5%.
8. WHEEL/ROLLER GUIDES
   a. THE GANGWAY MANUFACTURER SHALL PROVIDE WHEELS OR SKIDS AT THE GANGWAY LANDING THAT WILL ALLOW QUIET LONGITUDINAL MOVEMENT ALONG THE FLOATING DOCK FOR THE FULL RANGE OF WATER ELEVATIONS INCLUDING GUIDES TO RESTRICT THE LATERAL MOVEMENT OF THE GANGWAY AT THE LANDING.
9. SHOREMOUNT
   a. THE HINGED CONNECTION AT THE DOCK END OF THE GANGWAY SHALL ACCOMMODATE THE FULL RANGE OF VERTICAL AND LATERAL GANGWAY MOTION DUE TO WATER ELEVATION CHANGES AND WIND, WAVE AND IMPACT LOADING. ANY GAPS BETWEEN THE PLATFORM AND GANGWAY WALKING SURFACE SHALL BE COVERED BY A HINGED TRANSITION PLATE. THE TRANSITION PLATE SHALL BE CONSTRUCTED OF MATERIALS SIMILAR TO THE GANGWAY, AND SHALL HAVE A NON-SKID SURFACE.
10. SUBMITTALS
   a. SHOP DRAWINGS, SEALED BY A REGISTERED STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA, EXPERIENCED IN THE DESIGN OF ALUMINUM STRUCTURES, AND SHALL BE SUBMITTED FOR WRITTEN APPROVAL PRIOR TO FABRICATION.
   b. SEALED CALCULATIONS SHOWING ANALYSIS AND DESIGN SHALL BE PROVIDED BY A REGISTERED STRUCTURAL ENGINEER LICENSED IN THE STATE OF FLORIDA, EXPERIENCED IN THE DESIGN OF ALUMINUM STRUCTURES, AND SHALL BE SUBMITTED WITH THE SHOP DRAWINGS.
   c. CERTIFICATES OF COMPLIANCE SHALL BE PROVIDED FOR ALL STRUCTURAL METALS.
11. MATERIALS
   a. ALL STRUCTURAL ALUMINUM, INCLUDING TUBES, PLATES, ANGLES AND PIPE SHALL BE ALLOY 6061-T6 PER ASTM B308. ALL BOLTS SHALL BE STAINLESS STEEL APPROPRIATE FOR USE WITH ALUMINUM IN MARINE ENVIRONMENTS. ISOLATORS SHALL BE USED WHEN CONNECTING DISSIMILAR MATERIALS.
   b. DECKING - GANGWAY DECKING SHALL BE AGGRESSIVELY SLIP AND SKID RESISTANT AND MADE FROM ALUMINUM OR OTHER MARINE GRADE MATERIAL APPROPRIATE FOR THIS USE. SAMPLES AND/OR CUT SHEETS OF THE DECKING MATERIAL SHALL BE PROVIDED FOR APPROVAL PRIOR TO FABRICATION. OPEN GRATE OR 'GRIP STRUT' TYPE MATERIALS SHALL NOT BE ACCEPTABLE UNLESS SPECIFICALLY APPROVED IN ADVANCE.
   c. STRUCTURAL STEEL - ALL STRUCTURAL STEEL (IF USED) SHALL BE ASTM A36, HOT DIPPED GALVANIZED PER ASTM A123 OR A153 AFTER FABRICATION.

JOSIAH M. BERG
7/20/2017

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15450 NEW BARN ROAD, SUITE 304
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CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

STRUCTURE NOTES FLOATING DOCKS (2 OF 3)

SHEET NO. S1-4

d. PROVIDE NEOPRENE BEARING PAD BETWEEN ANY POINTS OF CONTACT BETWEEN ALUMINUM AND ACQ-TREATED LUMBER.

e. RUB STRIP AROUND PERIMETER OF FLOATING DOCK SHALL BE 1 1/2" THICK (MIN) X 3 1/2" WIDE UHMW-PE, UV STABILIZED. COLOR SHALL BE BLACK.

12. FABRICATION AND WORKMANSHIP

a. FABRICATION, DELIVERY AND INSTALLATION OF THE ALUMINUM GANGWAY SHALL CONFORM TO THE LATEST REVISIONS OF THE ALUMINUM CONSTRUCTION MANUAL AND ALL APPLICABLE STANDARDS AND DATA AS SET FORTH BY THE ALUMINUM ASSOCIATION. EDGES SHALL BE CUT TRUE, SMOOTH AND FREE FROM BURRS. CORNER EDGES SHALL BE GROUND SMOOTH. WELD SPLATTER AND WELD FLASH SHALL BE REMOVED FROM ALL EXPOSED SURFACES. MILL STAMPS SHALL BE REMOVED.

b. MATERIALS DELIVERED AND STORED AT EITHER THE MANUFACTURING FACILITY, STAGING AREA, OR JOBSITE SHALL BE PROPERLY STORED ON DUNNAGE OR BY OTHER APPROPRIATE MEANS TO PREVENT DIRECT CONTACT WITH THE GROUND AND UNNECESSARY DAMAGE.

c. WELDING - PARTS TO BE WELDED SHALL BE FREE OF DIRT, GREASE AND OTHER CONTAMINANTS, AND SHALL FIT PROPERLY FOR SOUND WELDING. ALL WELDING SHALL BE PERFORMED BY A.W.S OR W.A.B.O. CERTIFIED STRUCTURAL WELDERS. WELDS WILL BE SPOT TESTED BY VT OR UT AND ANY FAILING WELDS WILL BE REPAIRED AND RETESTED AT THE FABRICATORS EXPENSE.

d. INSTALLATION - THE ALUMINUM GANGWAY SHALL BE INSTALLED ACCORDING TO THE RECOMMENDATIONS OF THE MANUFACTURER. THE GANGWAY SHALL BE INSTALLED ON THE FLOATING DOCK AND POSITIONED AS TO ALLOW THE DOCK SYSTEM TO TRAVEL THE FULL RANGE OF WATER LEVELS WITHOUT BINDING OR STRESSING THE GANGWAY OR DOCK SYSTEM.

JOSIAH M. BERG LICENSE NO. 69024
2/23/2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JOSIAH BERG, PE
PE LICENSE NUMBER 69024
HDR ENGINEERING, INC.
15450 NEW BARN ROAD, SUITE 304
MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

STRUCTURE NOTES
FLOATING DOCKS (3 OF 3)

SHEET NO. S1-5

DIRECTION OF STATIONING

S 62°35'53" E

℄ CONST.
STA. 21+16.92

℄ CONST. (CL_SKI)

℄ BOAT RAMP

N 27°24'06" E

90°00'00"

PC STA. 21+46.07

CURVE CL_SKI4

30

21

28

22

KAYAK LAUNCH

12" PRESTR. CONC. PILE (TYP.)

CLEATS TO BE INSTALLED AT 15'-0" O.C. (TYP.)

℄ CONST.
STA. 21+01.92
OFFSET 121.00' (LT)

℄ CONST.
STA. 21+01.92
OFFSET 203.83' (LT)

A

B

FLOATING DOCK (TYP.)

B-2

2:1

6'-6"

15'-0" LANE

15'-0" LANE

43'-0"

6'-6"

CAST-IN-PLACE CONCRETE RAMP

4' X 21'-6" PRECAST CONCRETE PLANK (TYP.)

CONSTRUCTION JOINT

GANGWAY (TYP.)

B-3

C

D

℄ CONST.
STA. 21+31.92
OFFSET 121.00' (LT)

℄ CONST.
STA. 21+31.92
OFFSET 203.83' (LT)

RIPRAP STABILIZED TOE (TYP.)

40'-0" (TYPICAL)

22'-10"

59'-5"

21'-7"

LAKE HARRIS

64 63 62 61 60 59 58 57 56 55 54 53 52 51

PLAN

LEGEND

CORE BORING LOCATION
(APPROXIMATE LOCATION, SEE GEOTECHNICAL REPORT FOR AERIAL ACTUAL LOCATION)

NOTES:

1. FOR SECTIONS A-A, B-B, C-C AND D-D, SEE BOAT RAMP DETAILS SHEETS.
2. FOR CORE BORING INFORMATION, SEE PROJECT GEOTHECNICAL REPORT BY GEC.
3. FOR ADDITIONAL NOTES, SEE PLAN AND ELEVATION (2 OF 2) - BOAT RAMP SHEET.
4. FOR ROADWAY GEOMETRICS, SEE CURVE AND COORDINATION SHEET IN ROADWAY PLANS.
5. MOORING CLEATS SHALL BE 10 INCH "S" CLEATS BY INTERNATIONAL DOCK PRODUCTS. CLEATS AND MOUNTING HARDWARE TO BE HOT-DIPPED GALVANIZED.

JOSIAH M. BERG LICENSE 69024 STATE OF FLORIDA

7/21/2017

REVISIONS			
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CITY OF LEESBURG

THE LAKEFRONT CITY LEESBURG EST. 1857

PLAN AND ELEVATION (1 OF 2) BOAT RAMP

SHEET NO. S1-6

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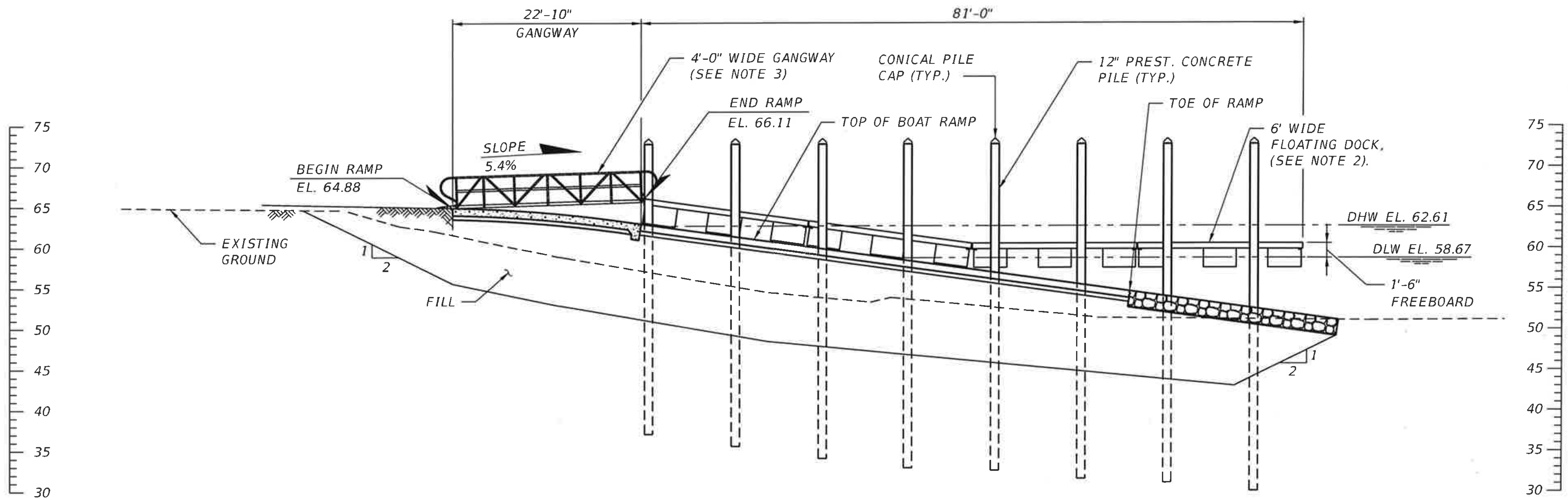

ELEVATION

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

NOTES:

1. ELEVATIONS SHOWN ON THESE PLANS ARE REFERENCED USING NAVD 88.
2. PROVIDE FLOATING DOCK SYSTEM BY RAVENS MARINE OR APPROVED EQUAL, CONTAINING THE FOLLOWING ELEMENTS:
   a. TREX DECKING.
   b. ALUMINUM FRAMING SYSTEM.
   c. POLYETHYLENE ENCASED EPS FOAM FILLED FLOATS.
   d. 10" LONG GALV. STEEL CLEATS.
   e. GROUND-OUT FRAMING SYSTEM TO PROTECT SECTIONS OF DOCK THAT MAY REST ON BOAT RAMP DURING CERTAIN LOW WATER CONDITIONS.
3. PROVIDE GANGWAY BY RAVENS MARINE OR APPROVED EQUAL, CONTAINING THE FOLLOWING ELEMENTS:
   a. TREX DECKING.
   b. ALUMINUM FRAMING SYSTEM.
4. PILES SHALL BE CAPPED WITH A MINIMUM ⅛" THICKNESS POLYETHYLENE OR FIBERGLASS WHITE CONICAL SQUARE PILE CAP (BIRD CAP). THE PILE CAP SHALL BE HEAVY DUTY CONSTRUCTION AND PERMANENTLY SECURED TO THE PILE.

JOSIAH M. BERG LICENSE No. 69024 STATE OF FLORIDA PROFESSIONAL ENGINEER

7/21/2017

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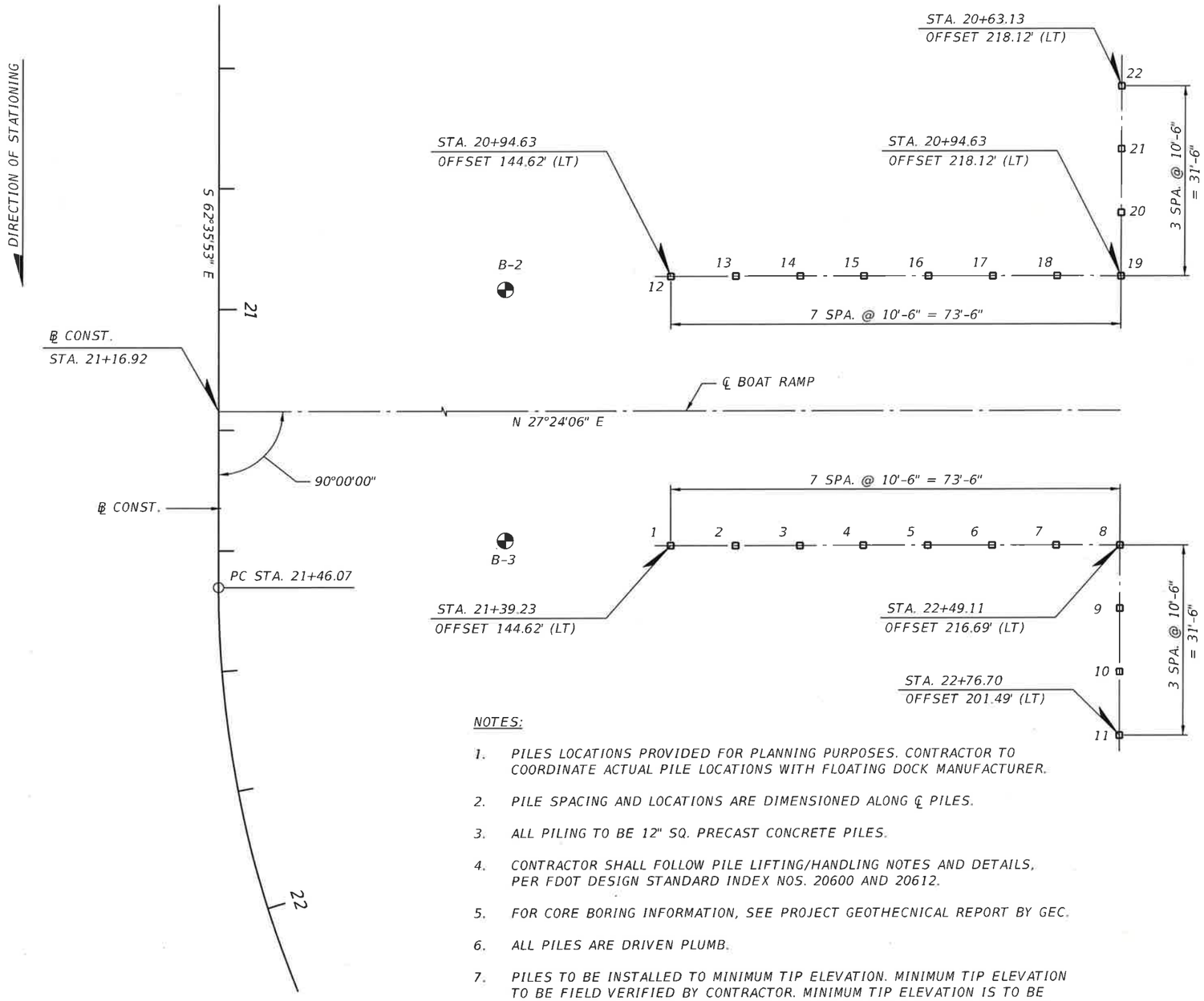
CITY OF LEESBURG

PLAN AND ELEVATION (2 OF 2)
BOAT RAMP

SHEET NO. S1-7



PILE DATA TABLE				
PILE NUMBER	STATION	OFFSET	ESTIMATED MINIMUM TIP ELEVATION (ft.)	PILE CUT-OFF ELEVATION (ft.)
1	21+39.23	144.62' LT	37.0	72.7
2	21+39.23	155.12' LT	35.5	72.7
3	21+39.23	165.62' LT	34.0	72.7
4	21+39.23	176.12' LT	32.8	72.7
5	21+39.23	186.62' LT	32.5	72.7
6	21+39.23	197.12' LT	31.5	72.7
7	22+44.04	207.49' LT	31.0	72.7
8	22+49.11	216.69' LT	30.0	72.7
9	22+58.31	211.62' LT	30.0	72.7
10	22+67.50	206.56' LT	30.0	72.7
11	22+76.70	201.49' LT	30.0	72.7
12	20+94.63	144.62' LT	37.0	72.7
13	20+94.63	155.12' LT	36.0	72.7
14	20+94.63	165.62' LT	35.0	72.7
15	20+94.63	176.12' LT	34.0	72.7
16	20+94.63	186.62' LT	32.7	72.7
17	20+94.63	197.12' LT	32.1	72.7
18	20+94.63	207.62' LT	31.8	72.7
19	20+94.63	218.12' LT	31.5	72.7
20	20+84.13	218.12' LT	31.5	72.7
21	20+73.63	218.12' LT	31.5	72.7
22	20+63.13	218.12' LT	31.5	72.7

NOTES:

1. PILES LOCATIONS PROVIDED FOR PLANNING PURPOSES. CONTRACTOR TO COORDINATE ACTUAL PILE LOCATIONS WITH FLOATING DOCK MANUFACTURER.
2. PILE SPACING AND LOCATIONS ARE DIMENSIONED ALONG ℄ PILES.
3. ALL PILING TO BE 12" SQ. PRECAST CONCRETE PILES.
4. CONTRACTOR SHALL FOLLOW PILE LIFTING/HANDLING NOTES AND DETAILS, PER FDOT DESIGN STANDARD INDEX NOS. 20600 AND 20612.
5. FOR CORE BORING INFORMATION, SEE PROJECT GEOTHECNICAL REPORT BY GEC.
6. ALL PILES ARE DRIVEN PLUMB.
7. PILES TO BE INSTALLED TO MINIMUM TIP ELEVATION. MINIMUM TIP ELEVATION TO BE FIELD VERIFIED BY CONTRACTOR. MINIMUM TIP ELEVATION IS TO BE LOCATED 20 FT. BELOW EXISTING MUDLINE. IF FOR INSTALLATION PURPOSES A LONGER PILE LENGTH IS REQUIRED FROM WHAT IS SHOWN, THE CONTRACTOR SHALL ALLOW FOR IT IN HIS BID.
8. PILES SHALL BE DRIVEN ACCORDING TO FOOT INSTALLATION PROCEDURES.
9. PILES TO BE CUT-OFF FLUSH TO WITHIN 1" OF CUT-OFF ELEVATION, CUT STRANDS MIN. 2" BELOW PILE SURFACE AND GROUT HOLES FLUSH.

LEGEND

- CORE BORING LOCATION
- 12" SQ. PRESTRESSED CONCRETE PILE

JOSIAH M. BERG LICENSE 69024 STATE OF FLORIDA
7/25/2017

REVISIONS			
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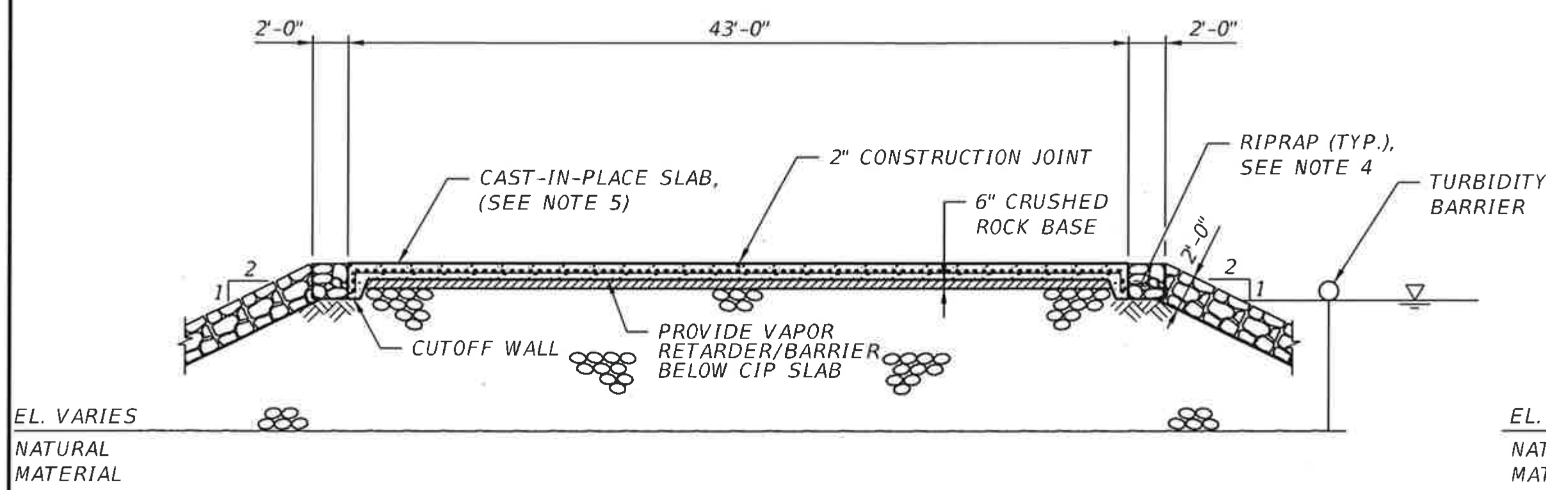
JOSIAH BERG, PE
PE LICENSE NUMBER 69024
HDR ENGINEERING, INC.
15450 NEW BARN ROAD, SUITE 304
MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

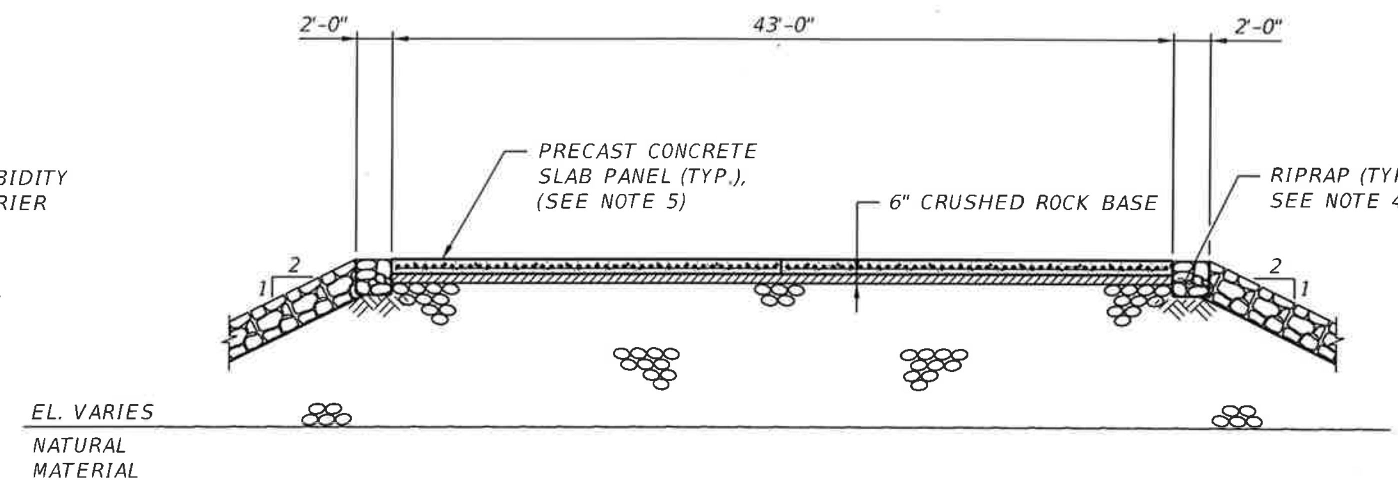
CITY OF LEESBURG

FOUNDATION LAYOUT BOAT RAMP

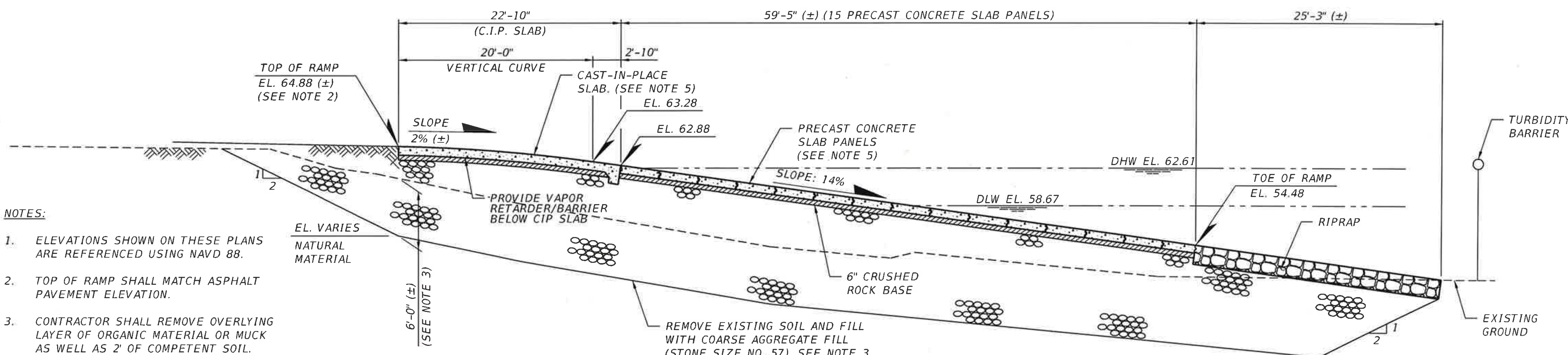
SHEET NO. S1-8



SECTION A-A



SECTION B-B



SECTION C-C

NOTES:

1. ELEVATIONS SHOWN ON THESE PLANS ARE REFERENCED USING NAVD 88.
2. TOP OF RAMP SHALL MATCH ASPHALT PAVEMENT ELEVATION.
3. CONTRACTOR SHALL REMOVE OVERLYING LAYER OF ORGANIC MATERIAL OR MUCK AS WELL AS 2' OF COMPETENT SOIL. CONTRACTOR MAY OPT FOR DEWATERING PRIOR TO BACKFILLING. OVER EXCAVATION IS NOT REQUIRED IF REMOVAL OF MUCK IS VERIFIED BY VISUAL INSPECTION.
4. SLOPED RIPRAP EMBANKMENT SHOULD EXTEND TO THE EXISTING TERRAIN BESIDE RAMP.
5. FOR CAST-IN-PLACE SLAB AND PRECAST CONCRETE SLAB PANEL DETAILS, SEE BOAT RAMP DETAILS (2 OF 2) SHEET.

7/21/2017

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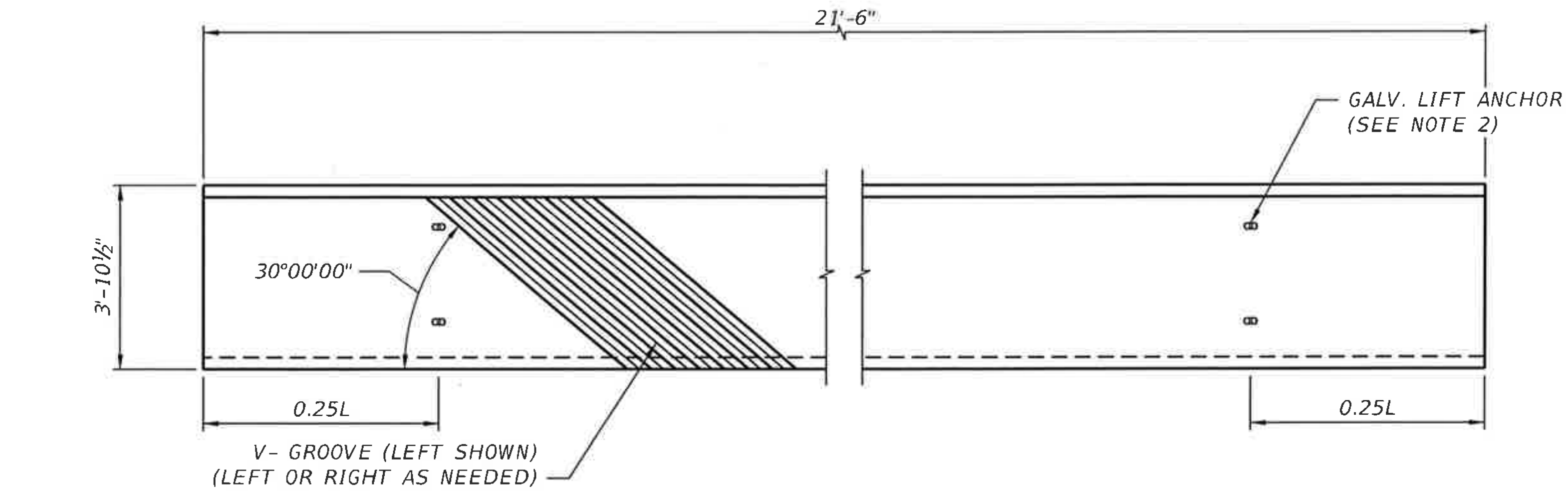
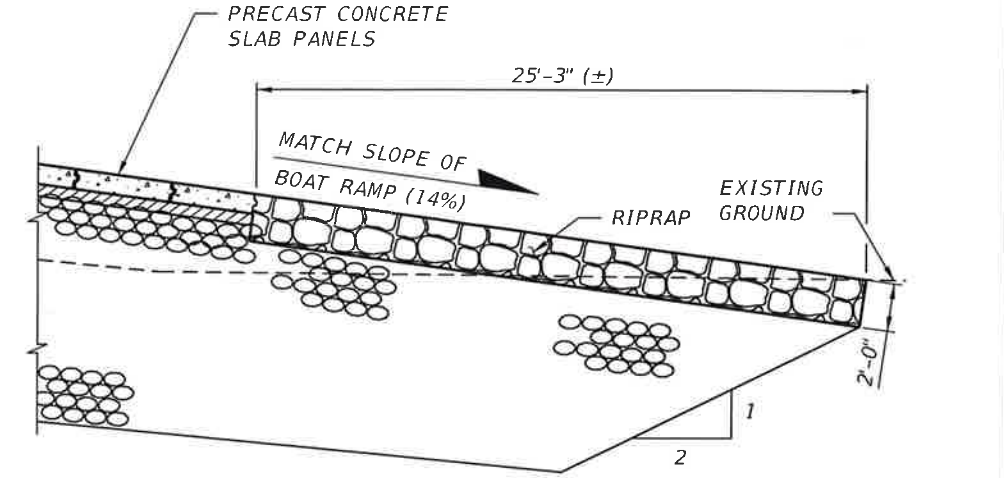
CITY OF LEESBURG

BOAT RAMP DETAILS (1 OF 2)

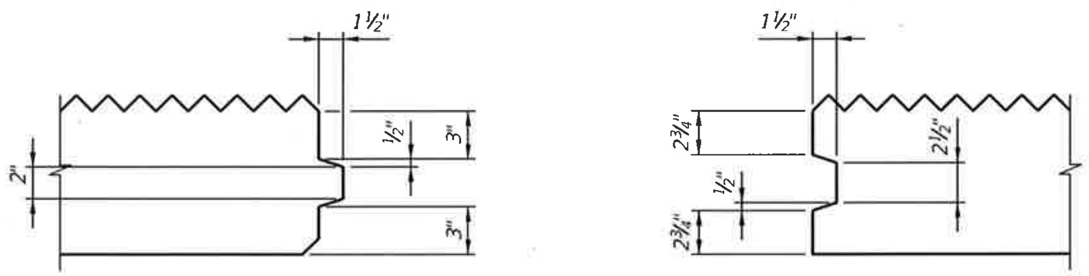
SHEET NO. S1-9



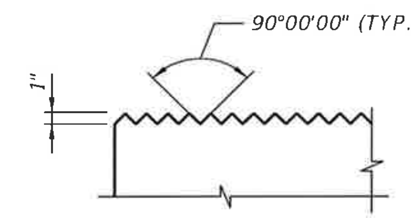
PRECAST CONCRETE SLAB PANEL PLAN



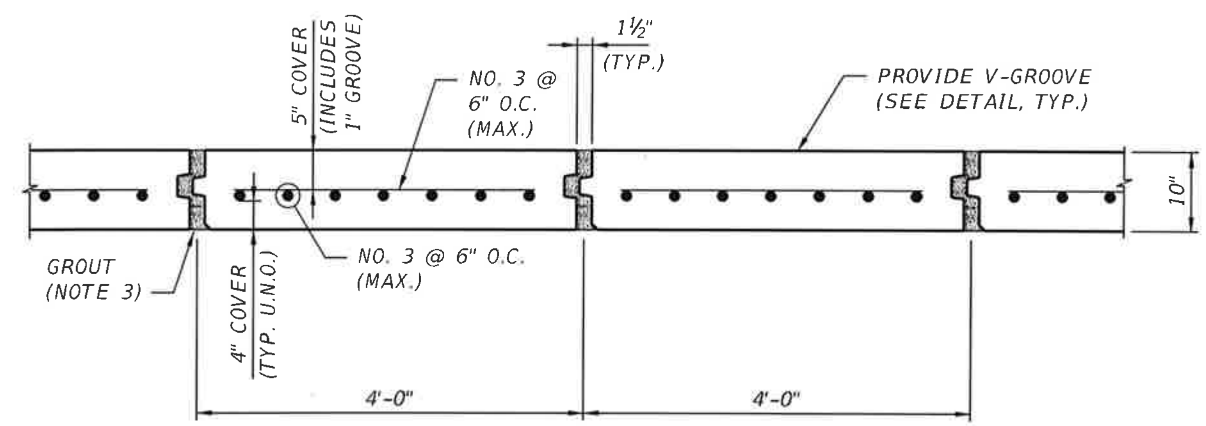
SECTION D-D



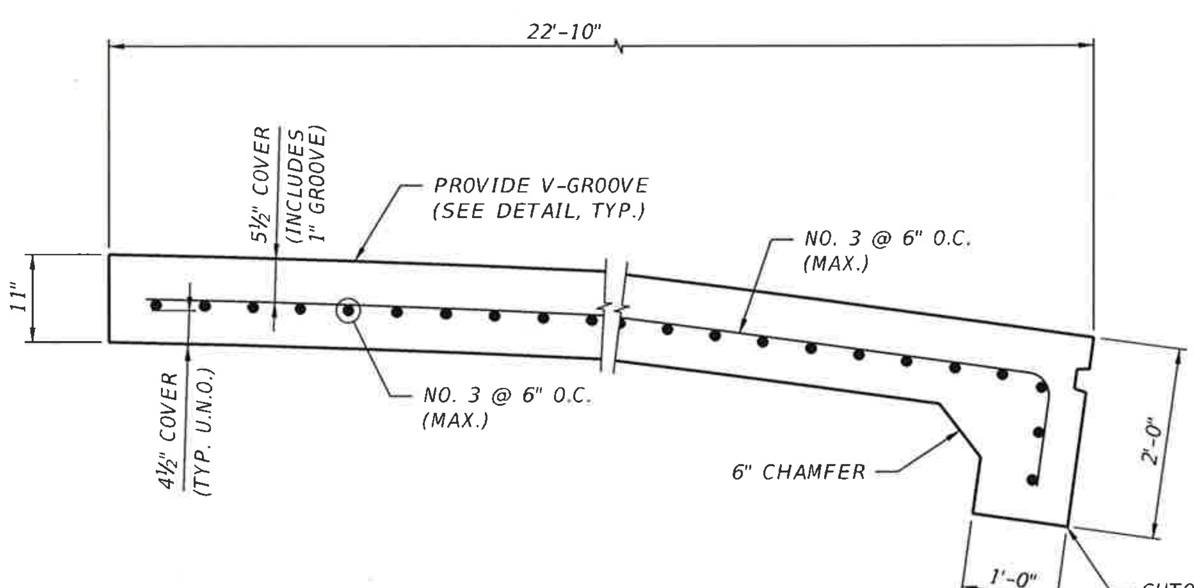
KEYWAY DETAIL



V-GROOVE DETAIL



PRECAST CONCRETE SLAB
REINFORCING DETAIL



C.I.P. CONCRETE SLAB
REINFORCING DETAIL

NOTES:

1. CONTRACTOR SHALL PROVIDE LIFTING LOOPS TO LIFT PRECAST SLAB PANELS AND SHALL BE DESIGNED TO RESIST TWICE THE SLAB PANEL SELFWEIGHT. LIFTING LOOPS SHALL BE FILLED WITH EPOXY GROUT AFTER SLAB PANELS ARE SET IN PLACE.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS INDICATING LIFTING LOOP LOCATIONS AND DETAILS.
3. SPACE BETWEEN PRECAST SLAB PANELS SHALL BE FILLED WITH 6000 PSI GROUT. FOR REQUIREMENTS, SEE STRUCTURE NOTES - BOAT RAMP SHEET.
4. CAST-IN-PLACE AND PRECAST SLAB SHALL BE 5500 PSI CONCRETE. FOR REQUIREMENTS, SEE STRUCTURE NOTES - BOAT RAMP SHEET.

2/21/2017

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MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

BOAT RAMP DETAILS (2 OF 2)

SHEET NO. S1-10

SEDIMENT AND EROSION CONTROL NOTES

1. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SILT FROM SITE IF NOT REUSABLE ON-SITE AND ASSURING PLAN ALIGNMENT AND GRADE IN ALL DITCHES AND SWALES AT COMPLETION OF CONSTRUCTION.

2. THE SITE CONTRACTOR IS RESPONSIBLE FOR REMOVING THE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER COMPLETION OF CONSTRUCTION AND ONLY WHEN AREAS HAVE BEEN STABILIZED.

3. ADDITIONAL PROTECTION - ON-SITE PROTECTION IN ADDITION TO THE ABOVE MUST BE PROVIDED THAT WILL NOT PERMIT SILT TO LEAVE THE PROJECT CONFINES DUE TO UNSEEN CONDITIONS OR ACCIDENTS.

4. BALES SHALL BE EITHER WIRE-BOUND OR STRING-TIED WITH THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN OVER AND UNDER THE BALES.

5. THE FILTER BARRIER SHALL BE ENTRENCHED AND BACKFILLED. A TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF 4 INCHES. AFTER THE BALES ARE STAKED, THE EXCAVATED SOIL SHALL BE BACKFILLED AND COMPACTED AGAINST THE FILTER BARRIER.

6. EACH BALE SHALL BE SECURELY ANCHORED AND HELD IN PLACE BY AT LEAST TWO STAKES OR REBARS DRIVEN THROUGH THE BALE.

7. LOOSE STRAW SHOULD BE WEDGED BETWEEN BALES TO PREVENT WATER FROM ENTERING BETWEEN BALES.

8. STRAW BALE BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

9. CLOSE ATTENTION SHALL BE GIVEN TO THE REPAIR OF DAMAGED BALES, END RUNS AND UNDERCUTTING BENEATH BALES.

10. NECESSARY REPAIRS TO BARRIERS OR REPLACEMENT OF BALES SHALL BE ACCOMPLISHED PROMPTLY.

11. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH RAINFALL. IT MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

12. ANY SEDIMENT DEPOSITS REMAINING IN PLACE, AFTER THE STRAW BALE OR FILTER BARRIERS, AND OR SILIT FENCES ARE NO LONGER REQUIRED, SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

13. SILT FENCES AND FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

14. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL BE NECESSARY, THE FABRIC SHALL BE REPLACED IMMEDIATELY.

15. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.

16. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

17. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS, SPECIFICATIONS AND ST. JOHNS RIVER WATER MANAGEMENT DISTRICT SPECIFICATIONS AND CRITERIA.

18. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION (F.D.E.R.) CHAPTER 6.

19. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION. SEE DETAILS (THIS SHEET) FOR TYPICAL CONSTRUCTION.

20. SOD SHALL BE PLACED IN AREAS WHICH MAY REQUIRE IMMEDIATE EROSION PROTECTION TO ENSURE WATER QUALITY STANDARDS ARE MAINTAINED.

21. ANY DISCHARGE FROM DEWATERING ACTIVITY SHALL BE FILTERED AND CONVEYED TO THE OUTFALL IN A MANNER WHICH PREVENTS EROSION AND TRANSPORTATION OF SUSPENDED SOLIDS TO THE RECEIVING OUTFALL.

22. DEWATERING PUMPS SHALL NOT EXCEED THE CAPACITY OF THAT WHICH REQUIRES A CONSUMPTIVE USE PERMIT FROM THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT.

23. ALL DISTURBED AREAS SHALL BE GRASSED, FERTILIZED AND MULCHED UNTIL A PERMANENT VEGETATIVE COVER IS ESTABLISHED. CONTRACTOR SHALL USE ADDITIONAL MEASURES TO STABLIZE DISTRUREB AREAS THROUGH COMPACTION, SILT SCREENS, HAY BALES, AND GRASSING. ALL FILL SLOPES 3:1 OR STEEPER TO RECEIVE STAKED SOLID SOD.

24. ALL DEWATERING, EROSION, AND SEDIMENT CONTROL SHALL REMAIN IN PLACE UNTIL AFTER COMPLETION OF CONSTRUCTION, AND REMOVED ONLY WHEN AREAS HAVE BEEN STABILIZED.

25. THIS PLAN INDICATES THE MINIMUM EROSION AND SEDIMENT MEASURES REQUIRED FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR MEETING ALL APPLICABLE RULES, REGULATIONS AND WATER QUALITY GUIDELINES AND MAY NEED TO INSTALL ADDITIONAL CONTROLS.

26. THE CONTRACTOR SHALL BE REQUIRED TO RESPOND TO ALL WATER MANAGEMENT DISTRICT INQUIRIES, RELATIVE TO COMPLIANCE OF SJRWMD FOR EROSION AND SEDIMENTATION CONTROL. THE COST OF THIS COMPLIANCE SHALL BE PART OF THE CONTRACT.

27. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING THE BEST EROSION AND SEDIMENT CONTROL PRACTICES AS OUTLINED IN THE PLANS AND SPECIFICATIONS AND THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT RULES AND REGULATIONS.

28. EROSION AND SEDIMENT CONTROL BARRIERS SHALL BE PLACED ADJACENT TO ALL WETLAND AREAS AND PRESERVATION EASEMENTS WHERE THERE IS POTENTIAL FOR DOWNSTREAM WATER QUALITY DEGRADATION.

29. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING A PERMANENT STAND OF SOD AND/OR GRASS PER THE CONTRACT DOCUMENTS THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT AND ST. JOHNS COUNTY STANDARDS AND MEETING THE NPDES FINAL STABILIZATION REQUIREMENTS.

30. THESE PLANS INCLUDING THE POLLUTION PREVENTION PLAN INDICATE THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES REQUIRED FOR THIS PROJECT. FOR ADDITIONAL INFORMATION ON SEDIMENT AND EROSION CONTROL REFER TO "THE FLORIDA DEVELOPMENT MANUAL - A GUIDE TO SOUND LAND AND WATER MANAGEMENT" FROM THE STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (F.D.E.P.) CHAPTER 6. CONTRACTOR SHALL PROVIDE EROSION PROTECTION AND ,TURBIDITY CONTROL AS REQUIRED TO INSURE CONFORMANCE TO STATE AND FEDERAL WATER QUALITY STANDARDS AND MAY NEED TO INSTALL ADDITIONAL CONTROLS TO CONFORM TO AGENCIES REQUIREMENTS. IF A WATER QUALITY VIOLATION OCCURS, THE CONTRACTOR SHALL BE WHOLLY RESPONSIBLE FOR ALL DAMAGE AND ALL COSTS WHICH MAY RESULT INCLUDING LEGAL FEES, CONSULTANT FEES, CONSTRUCTION COSTS, AND FINES.

31. 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A "NOTICE OF INTENT" TO THE EPA IN ACCORDANCE WITH NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM RULES AND REGULATIONS. (FOR ANY CONSTRUCTION NOT COVERED BY THE OWNER'S "NOTICE OF INTENT" PERMIT)

JOSIAH M. BERG LICENSE NO. 69024 STATE OF FLORIDA PROFESSIONAL ENGINEER
7/21/2017

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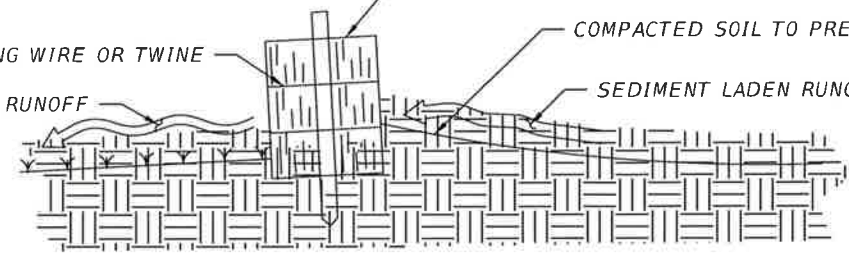
HDR ENGINEERING, INC.
15450 NEW BARN ROAD, SUITE 304
MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

EROSION AND SEDIMENT CONTROL DETAILS (1 OF 2)

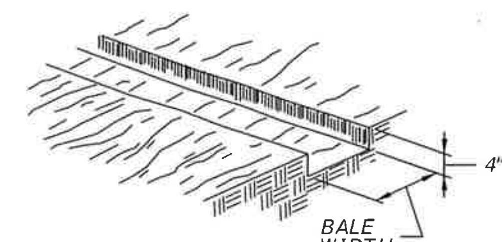
SHEET NO. S1-11



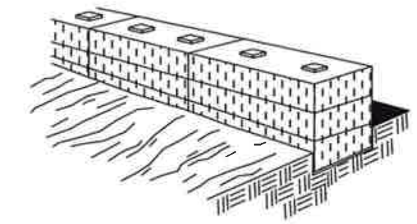
CROSS-SECTION OF A PROPERLY INSTALLED STRAW BALE

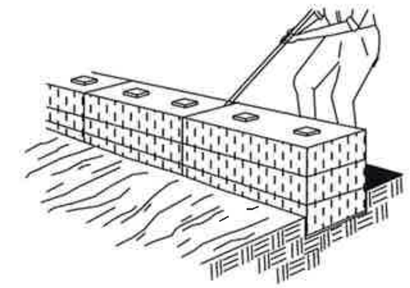
N.T.S

1. EXCAVATE THE TRENCH

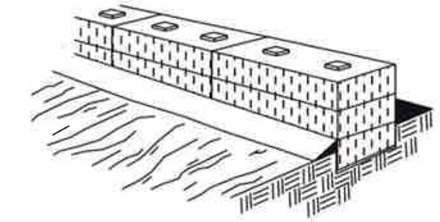


2. PLACE AND STAKE STRAW BALES.





3. WEDGE LOOSE STRAW BETWEEN BALES.

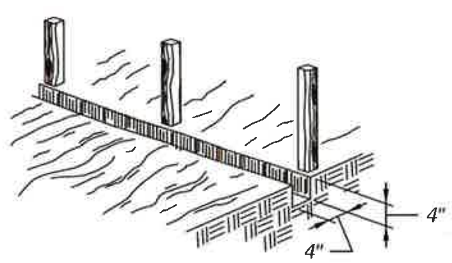


4. BACKFILL AND COMPACT THE EXCAVATED SOIL.

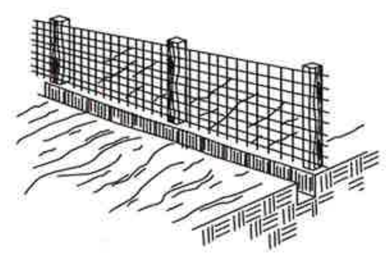
CONSTRUCTION OF A STRAW BALE BARRIER

N.T.S

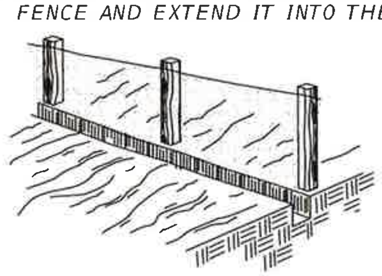
1. SET POSTS AND EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF POSTS.



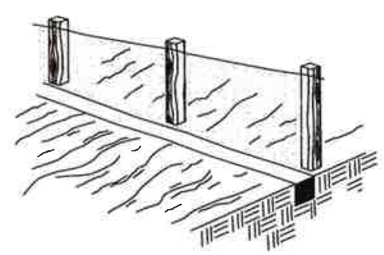
2. STAPLE WIRE FENCING TO THE POSTS.



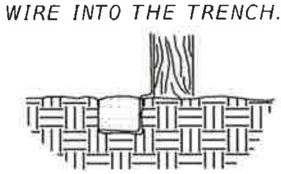
3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



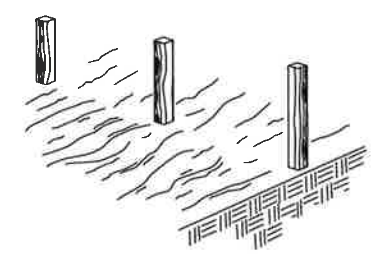
EXTENSION OF FABRIC AND WIRE INTO THE TRENCH.



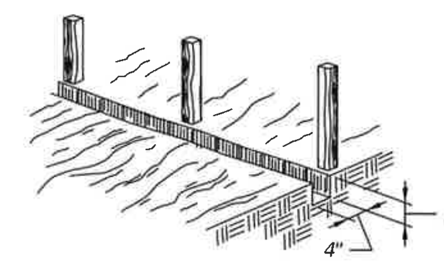
CONSTRUCTION OF SILT FENCE

N.T.S

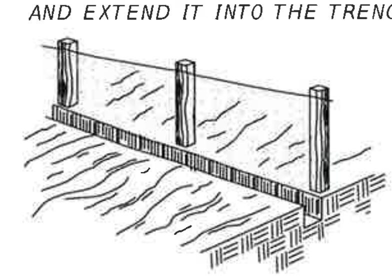
1. SET THE STAKES.



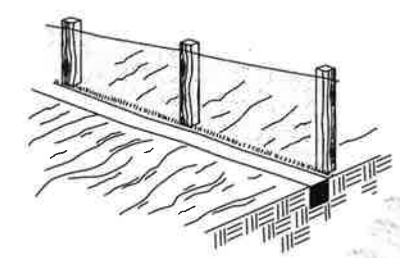
2. EXCAVATE A 4" X 4" TRENCH UPSLOPE ALONG THE LINE OF STAKES



3. STAPLE FILTER MATERIAL TO STAKES AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL



CONSTRUCTION OF A FILTER BARRIER

N.T.S

7/27/2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

JOSIAH BERG, PE
PE LICENSE NUMBER 69024
HDR ENGINEERING, INC.
15450 NEW BARN ROAD, SUITE 304
MIAMI LAKES, FL. 33014
CERTIFICATE OF AUTHORIZATION 4213

CITY OF LEESBURG

EROSION AND SEDIMENT CONTROL DETAILS (2 OF 2)

SHEET NO. S1-12

Report of Geotechnical Engineering Investigation

SKI BEACH AT LAKE HARRIS

Lake County, Florida

GEC Project No. 4002G

Geotechnical and Environmental Consultants, Inc.

At the very foundation of our community

June 1, 2017

HDR
315 East Robinson Street
Suite 400
Orlando, Florida 32801

Attention: Mr. Stephen Waterson, P.E.

Subject: Report of Geotechnical Engineering Investigation
SKI BEACH AT LAKE HARRIS
Lake County, Florida
GEC Project No. 4002G

Dear Mr. Waterson,

Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Report of Geotechnical Engineering Investigation for the above-referenced project. This study was performed in general accordance with our Proposal No. 8834G dated November 7, 2016. The purpose of this study was to explore soil and groundwater conditions at the site and to use the information obtained to develop geotechnical engineering recommendations regarding the design of the pedestrian bridges, boat ramp, boat docks and paved parking/drive areas. This report describes our exploration procedures, exhibits the data obtained and presents our conclusions and recommendations regarding the geotechnical engineering aspects of the project.

GEC appreciates the opportunity to be of service to you on this project and trusts that the information contained herein is sufficient for your current needs. Should you have any questions concerning the contents of this report, or if we may be of further assistance, please contact us.

Very truly yours,

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
Certificate of Authorization No. 5882

V. Eugene Williford IV, P.E.
Geotechnical Engineer
Florida License No. 82275

Daniel C. Stanfill, P.E.
Senior Project Manager
Florida License No. 42763

VEW/DCS/dbj

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APPENDIX

1.0 SITE AND PROJECT DESCRIPTION

The project site is located in west Lake County, in Leesburg, Florida. More specifically, the project site is located in the existing Venetian Gardens Park on the west side of Lake Harris. The project site is currently developed with wooden pedestrian bridges to access walking trails through the park and paved parking/drive areas to access the different park amenities.

…the project consists of the construction of a wooden pedestrian bridge… new 2 slip boat ramp and boat docks… new paved drive and parking areas…

GEC understands that the project consists of the construction of a new wooden pedestrian bridge located approximately 250 feet south of the intersection of West Dixie Avenue and Venetian Park Drive as well as new sidewalks that will parallel Venetian park drive, Lake Shore Drive and Lake Harris Drive. In addition, a new 2 slip boat ramp and boat docks are proposed for access to Lake Harris. The boat ramp and docks will be located approximately 800 feet southeast of the intersection of Lake Shore Drive and Lake Harris Drive. In association with the new boat ramp, new paved drive and parking areas are proposed along the approximate alignment of the existing Lake Harris Drive. We understand that the pedestrian bridge and boat dock structures will be supported on timber piles.

Based on a review of the USGS Leesburg West and Leesburg East, Florida Quadrangle maps, the approximate ground surface elevation at the project site ranges from approximately +62 to +69 feet NGVD. The project site is shown on an excerpt of the United States Geological Survey (USGS) Leesburg East and Leesburg East, Florida Quadrangle maps on **Figure 1** in the **Appendix**.

2.0 NRCS SOIL SURVEY

The Natural Resources Conservation Service (NRCS) (formerly SCS) Soil Survey of Lake County, Florida was reviewed for near-surface soil and groundwater information within the vicinity of the project area. The NRCS Soil Survey map with the project site is shown on **Figure 1** in the **Appendix**. The NRCS soil units in the vicinity of the project site are summarized on the following table:

Table 1
NRCS Soil Survey Information

Unit No.	Soil Name	Depth (in.)	Soil Description	Unified Soil Classification Symbol	Depth to Seasonal High Groundwater (feet)	Hydrologic Group
17	Arents	0 - 80	Sandy clay loam, fine sandy loam, sandy loam	SC, SC-SM, SM	2.5 - 5.0	B
45	Tavares sand, 0 to 5 percent slopes	0 - 7 7 - 80	Sand Sand	SM, SP-SM SP-SM, SM	3.5 - 6.0	A

The NRCS soil survey map depicts Arents soils (Soil Unit 17) as the predominant soil type within the area of the proposed improvements. Arents soils are the result of numerous earthmoving and filling activities, which result in non-indigenous soils with high variability in physical and chemical properties. In addition, the NRCS soil survey map depicts Tavares sand (Soil Unit 45) in the area of the proposed improvements. The soil unit consists of sands with varying silt content (SP-SM, SM) and is generally suitable for the proposed construction. The NRCS predicts that seasonal high groundwater levels will range from 2.5 to 6 feet below the existing ground surface in natural conditions.

Information contained in the NRCS Soil Survey is very general and may be outdated. Therefore, it may not be reflective of actual soil and groundwater conditions, particularly if recent development in the site vicinity has modified soil conditions or surface/subsurface drainage. The information obtained from the soil borings provides a better characterization of actual site conditions.

3.0 SUBSURFACE EXPLORATION

In addition to consulting the sources of information previously discussed for regional and site-specific soils data, GEC conducted a subsurface exploration to evaluate soil and groundwater conditions at the boat dock location.

3.1 Pedestrian Bridge

GEC explored subsurface conditions at the pedestrian bridge by performing one Standard Penetration Test (SPT) boring (B-1) to a depth of 30 feet below the existing ground surface on land adjacent to the proposed pedestrian bridge and one hand auger boring (HA-1) to a depth of 3.5 feet below the existing ground surface on the island side of the bridge. GEC also performed manual muck probes at approximate 20-foot intervals along the pedestrian bridge alignment.

3.2 Boat Ramp and Boat Docks

GEC explored subsurface conditions at the boat ramp and boat docks by performing two Standard Penetration Test (SPT) borings (B-2 and B-3) to depths of 40 to 50 feet below the existing ground surface on land adjacent to the proposed ramp and docks. GEC also performed manual muck probes at approximate 20-foot intervals along the dock and ramp alignments.

3.3 Sidewalks and Paved Drive/Parking Areas

GEC explored subsurface conditions at the pedestrian bridge by performing 14 auger borings to depths ranging from 4 to 15 feet below the existing ground surface along the sidewalk and paved parking/drive areas. Borings HA-2 through HA-7 were performed along the sidewalk alignment and borings HA-8 through HA-15 were performed along the paved drive/parking alignments.

3.4 Boring Locations

The approximate locations of the borings and manual muck probes performed for this study are shown on **Figure 2** in the **Appendix**. The boring locations were not surveyed, but were located using a sub-meter accuracy GPS unit. Although the boring locations are given only approximately, the methods used to locate them are, in GEC's opinion, sufficient to meet the intent of our study.

3.5 SPT Borings

Standard Penetration Test (SPT) borings were drilled in general accordance with ASTM Procedure D-1586. The boreholes were advanced by the rotary wash method with bentonite-based mud used as the circulating fluid to help remove cuttings and to help stabilize the borehole. GEC's field crew obtained SPT samples continuously in the borings to a depth of 10 feet and at 5-foot depth intervals thereafter. A GEC engineering technician supervised the drilling operation, and collected, examined and visually classified each sample. Our technician completed field SPT boring logs that described the soils penetrated, reported the SPT blow counts for each 6-inch increment tested, recorded the groundwater (if encountered), included other details of the boring methods used, and detailed other boring and/or site conditions at the time of drilling. Our technician collected representative samples for further visual examination and classification in our laboratory.

3.6 Machine Auger Borings

Machine auger borings were performed in general accordance with ASTM Procedure D-4700. Machine auger borings were performed by hydraulically turning continuous flight, solid-stem, auger into the ground in 5-foot increments until the desired boring termination depth was achieved. The auger flights were retrieved in 5-foot increments, without further rotation of the auger, and the retrieved soil was examined by our technician prior to collection of representative samples. A field auger boring log was prepared that detailed the soils penetrated, records the groundwater depth at the time of drilling, if encountered, and includes other details of the boring, methods used, and selected other boring and/or site conditions at the time of drilling. The samples were placed in sealed jars and transported to GEC's laboratory for further examination and limited laboratory testing as needed.

3.7 Manual Muck Probes

Manual muck probes were performed by pushing a slender metal rod through the surface water and into the soil below the bay bottom and evaluating the relative resistance of the soil to manual penetration. Highly organic soils, such as muck and/or peat, are characteristically very soft and will easily yield to the manual probe. Manual probes, however, cannot detect peat or muck layers which are present beneath layers of sand or dense soils which cannot be penetrated by the probe.

The probes can also penetrate to some extent in very loose sands which may be present beneath peat or muck layers. No soil samples are obtained for visual examination or laboratory testing when using this exploratory technique. The soil type being penetrated is inferred solely by evaluating the relative resistance of the soil to penetration. These limitations can lead to some under-estimation or over-estimation of peat or muck layer thicknesses. The probe data presented in this report should be evaluated with these limitations in mind.

3.8 Groundwater Measurement

A GEC engineering technician measured the depth to groundwater in the boreholes at the time of drilling and again after approximately 24 hours. Once the 24-hour groundwater measurement was recorded, the boreholes were then backfilled with soil cuttings to the prevailing ground surface.

4.0 LABORATORY TESTING

Selected soil samples retrieved from the borings were tested in accordance with Florida Standard Testing Methods (FM). Florida Standard Testing Methods are adaptations of recognized standard methods, e.g., ASTM and AASHTO, which have been modified to accommodate Florida's geological conditions. The GEC laboratory is reviewed annually by the Construction Materials Engineering Council, Inc. (CMEC) to verify compliance with FM. Our laboratory testing program is summarized on the following table:

Table 2
Summary of Laboratory Testing Program

Type of Test	Number of Tests
Percent Fines (FM 1 - T88)	23
Organic Content (FM 1-T267)	14
Atterberg Limits (FM 1 - T89/90)	3
Natural Moisture Content (FM 1-T265)	16

The results of the laboratory tests performed on the boring samples are shown adjacent to the soil profiles on the **SPT Boring Results** and **Auger Boring Results** sheets (**Figures 3** and **4**) in the **Appendix**.

5.0 DESCRIPTION OF SUBSURFACE CONDITIONS

Subsurface conditions encountered at the boring locations are shown on the **SPT Boring Results** and **Auger Boring Results** sheets (**Figures 3** and **4**) in the **Appendix.** The soils encountered were classified using the Unified Soil Classification System (USCS) symbol (SP, SP-SM, etc.). All soils encountered in the borings were also classified using the ASTM soil descriptions (e.g., sand with

silt). We based our soil classifications and descriptions on visual examination and the limited laboratory testing performed.

The boring results indicate subsurface conditions only at the specific locations at the time of our field exploration. Subsurface conditions, including groundwater levels, at other locations of the site may differ from conditions we encountered at the boring locations. Moreover, conditions at the boring locations can change over time. Groundwater levels fluctuate seasonally, and soil conditions can be altered by earthmoving operations.

The depths and thicknesses of the subsurface strata indicated on the boring logs were interpolated between samples obtained at different depths in the borings. The actual transition between soil layers may be different than indicated. *These stratification lines were used for our analytical purposes. Construction quantity estimates based on the results of the borings/probes will vary from the actual quantities measured during construction.*

5.1 Pedestrian Bridge Boring Results

The SPT boring performed for the pedestrian bridge encountered the general subsurface profile summarized on the following table:

Table 3A
Pedestrian Bridge Generalized Subsurface Profile
SPT Boring B-1

Approximate Layer Depth (feet)	Soil Description	Typical Range of N-Values (blows/foot)
0 to 4	Loose fine sand (SP) with trace organic material	4 to 6
4 to 18	Medium dense fine sand with silt to silty fine sand (SP-SM, SM)	9 to 22
18 to 30	Loose silty fine sand (SM)	4 to 5

A hand auger boring was performed on the island side of the pedestrian bridge to verify the shallow soil conditions due drill rig access issues. The hand auger boring performed on the island side of the pedestrian bridge encountered mucky fine sand (PT) from the ground surface to 2.5 feet below the ground surface, underlain by fine sand (SP) to the boring termination depth of 3.5 feet below the existing ground surface. The hand auger borings could not be advanced more than several feet below the encountered groundwater table due to limitations involved with manual auger borings.

Manual muck probes were performed along the pedestrian bridge alignment at approximate 20-foot intervals. The manual probes encountered 1.5 to 3 feet of standing water underlain by 0.5 to 2.5 feet of surficial muck or other deleterious material. The manual probes, however, cannot

detect peat or muck layers which may be present beneath layers of sand or dense soils which cannot be penetrated by the probe. The manual muck probe results are shown on the **Muck Probe Location Plan with Results** sheet (**Figure 5**) in the Appendix.

For detailed subsurface profiles encountered at each of the boring locations see the **SPT Boring Results** sheet (**Figures 3**) in the **Appendix**.

5.2 Boat Ramp and Dock Boring Results

The SPT borings performed for the boat ramp and docks encountered the general subsurface profile summarized on the following table:

Table 3B
Boat Ramp and Docks Generalized Subsurface Profile
SPT Borings B-2 and B-3

Approximate Layer Depth (feet)	Soil Description	Typical Range of N-Values (blows/foot)
0 to 8	Very loose to loose fine sand to fine sand with silt (SP, SP-SM), with occasional trace organic material	1 to 6
8 to 13	Very soft muck (PT)	1 to 3
13 to 50	Loose to medium dense silty fine sand to clayey fine sand (SM, SC)	4 to 15

Notable exceptions to the general profile are as follows:

- Boring B-3 encountered a loose layer (N-Value of 4) of surficial mucky fine sand (PT) 2 feet in thickness.
- Boring B-2 encountered a dense to very dense layer (N-Value of 25 to 47) silty fine sand from 18 to 40 feet below the existing ground surface.

Manual muck probes were performed along the boat ramp and dock alignments at approximate 20-foot intervals. The manual probes encountered 0.5 to 9 feet of standing water underlain by 1.5 to 4 feet of surficial muck or other deleterious material. The manual probes, however, cannot detect peat or muck layers which may be present beneath layers of sand or dense soils which cannot be penetrated by the probe. The manual muck probe results are shown on the **Muck Probe Location Plan with Results** sheet (**Figure 5**) in the Appendix.

For detailed subsurface profiles encountered at each of the boring locations see the **SPT Boring Results** sheet (**Figures 3**) in the **Appendix**.

5.3 Sidewalk and Paved Parking/Drive Areas Boring Results

The auger borings performed for the sidewalks and paved parking/drive areas generally encountered sand with varying amounts of silt content (SP, SP-SM, SM) from the existing grade to 3 feet underlain by mucky fine sand to sandy muck to muck (PT) at thickness ranging from 1 to 8 feet. The muck layer is generally followed by sand with varying amounts of silt content (SP, SP-SM, SM) to the boring termination depth of 4.5 to 15 feet below the existing ground surface. However, borings HA-4, HA-7, HA-11 and HA-13 did not encounter the muck layer. In addition, boring HA-10 encountered clayey fine sand (SC) from 10 to 15 feet below the existing ground surface.

For detailed subsurface profiles encountered at each of the boring locations see the **Auger Boring Results** sheet (**Figures 4**) in the **Appendix**.

5.4 Groundwater Levels

Encountered groundwater levels were measured in the auger and SPT boreholes at depths ranging from 0.7 to 4.8 feet below the existing ground surface during our field exploration. Encountered groundwater depths at all borehole locations are presented on **SPT Boring Results** and **Auger Boring Results** sheets (**Figures 3** and **4**) in the **Appendix**.

Groundwater levels can vary seasonally and with changes in subsurface conditions between boring locations. Alterations in surface and/or subsurface drainage brought about by site development can also affect groundwater levels. *Therefore, groundwater depths measured at different times or at different locations on the site can be expected to vary from those measured by GEC during this investigation.*

For purposes of this report, estimated seasonal high groundwater levels are defined as groundwater levels that are anticipated at the end of the wet season during a "normal rainfall" year under pre-development site conditions. We define a "normal rainfall" year as a year in which rainfall quantity and distribution were at or near historical averages.

GEC estimates the seasonal high groundwater levels will range from above the ground surface… to approximately 2.5 feet below the existing ground surface.

GEC estimates the seasonal high groundwater levels will range from above the ground surface, indicated by "AGS" shown adjacent to the boring profile, to approximately 2.5 feet below the existing ground surface. However, groundwater levels at the project site will be heavily dependent on water level fluctuations in the Lake Harris and may change dramatically depending on the time of year and storm conditions.

6.0 ANALYSIS AND DESIGN RECOMMENDATIONS

The analyses and recommendations contained in this report are based in part on the data obtained from a limited number of soil samples and groundwater measurements obtained from widely-spaced borings. The sampling methods used indicate subsurface conditions only at the specific boring locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Borings cannot be relied upon to accurately reflect the variations that usually exist between these locations and these variations may not become evident until construction.

If variations from the subsurface conditions described in this report do become evident during construction or if the project characteristics described in this report change, GEC should be retained to reevaluate this report's conclusions and recommendations and modify the recommendations included in this report, if needed, in light of such changes. We also recommend that GEC be allowed to review the construction plans prior to bidding so that we can verify that our recommendations were properly interpreted.

We also recommend that GEC be allowed to review the construction plans prior to bidding…

6.1 Pile Axial Capacity Analysis

GEC analyzed pile axial load capacities for 8-inch (minimum) tip diameter, round, tapered southern pine timber piles…

We understand that the proposed pedestrian bridge will be supported by timber piles, and the floating docks will be supported by 12-inch PPC piles. GEC analyzed pile axial load capacities for 8-inch (minimum) tip diameter, round, tapered southern pine timber piles with the computer model SPILE. This program uses the static analysis methods suggested by Nordlund (1963, 1979), Thurman (1964) and Tomlison (1979, 1980). The soil parameters used were derived from our SPT borings results.

The ultimate static pile capacity calculated in SPILE includes the ultimate end bearing capacity and side friction capacity. However, the Davisson pile capacity (used for LRFD) utilizes the mobilized end bearing capacity, which is 1/3 of the ultimate bearing capacity value. Therefore, the ultimate end bearing capacity calculated in SPILE was reduced accordingly to calculate Davisson capacity for the dock piles.

*The results of our computer a*nalyses for the timber piles are shown in the **Appendix**. The calculated Davisson capacities for various embedded pile lengths are summarized in the following table:

Summary of Davisson Timber Pile Capacity Analyses

Pile Embedded Length (ft)	Estimated Davisson Capacity (tons)
Pedestrian Bridge (B-1)	
10	5.5
15	12
20	17.5
25	25

Assuming the timber piles will not be tested during installation, we recommend a soil resistance factor of 0.55 be applied to the above estimated pile capacities to calculate the nominal bearing resistance (NBR) required for the piles. Based on the axial load (5.7 kips) provided by HDR and the lateral analysis performed for the 12-inch PPC piles at the floating docks, lateral stability will control the pile embedment depths. In addition, based on the organic soils encountered in our borings (B-2 and B-3) performed for the floating docks, we recommend a minimum tip for the timber piles at these locations of 15 feet below the lake bottom.

…we recommend a minimum tip for the timber piles… of 15 feet below the existing ground surface.

Timber piles should be inspected at the project site to assure that they meet project specification with respect to length, size (butt and toe diameter), sapwood, straightness, twist of grain, knots and pressure treatment. Timber piles should conform to ASTM D 25-99 Standard Specification for Round Timber Piles.

Jetting of piles will not be allowed without the prior approval of the Geotechnical Engineer of Record, GEC.

6.2 Lateral Load Analysis for Piles

Lateral loads acting of the foundations may be resisted by the lateral resistance of the piles. The main criteria for assessing the allowable lateral load per pile are the allowable bending moment and shear forces on the pile, and the allowable deflection of the pile.

The behavior of a single concrete 12-inch PPC pile, subjected to axial and lateral loads, was modeled using the computer program LPILE, Version 3.0. A lateral load of 4.5 kips and axial load of 5.7 kips was provided by HDR and was used in our lateral load analyses. We evaluated the PPC piles for a free head condition. The table below summarizes the results of our LPILE Analysis.

Table 5

Table 5
LPILE Analysis Results

Pile Type	Pile Tip Embedment Depth Below Mudline (ft)	Total Pile Length (ft)	Depth to Point of Fixity (ft)	Axial load (kips)	Lateral Load (kips)	Pile Head Deflection (in)
12-inch PPC	20	33	18	5.7	4.5	3

Our lateral load analysis results for the free head condition are presented in the **Appendix**. The curves and results should be used by the structural engineer when designing the pile and steel reinforcement.

6.3 Boat Ramp

We understand that the proposed boat ramp will consist of a 6-inch cast-in-place concrete slab, positioned on land, which will connect to 6-inch pre-cast concrete slabs below the water line. In addition, we understand that these concrete slabs will be supported on a compacted, crushed limerock base. Our SPT boring B-3 and manual muck probes performed for the proposed boat ramp encountered 2 to 4 feet of surficial muck or other deleterious material. We recommend that the organic materials encountered in our boring and probes be removed beneath the proposed boat ramp footprint. We also recommend that the boat ramp area be prepared in accordance with GEC's recommendations in the **General Site Preparation**; **Fill Selection, Placement and Compaction**; and **Pavement Subgrade Preparation** sections of this report.

We recommend that the organic materials… be removed beneath the proposed boat ramp footprint.

6.4 Pavements

Borings (HA-8, HA-9, HA-10, HA-12 and HA-15) performed along the proposed paved parking/drive areas encountered buried layers of organic soils at depths ranging from about 2 to 10 feet below existing ground surface. In addition, boring HA-14 encountered a 2.5-foot thick surficial layer of organic soil. These organic soil layers have relatively high organic contents (15% to 83%) and are considered highly compressible and can cause significant settlement of any new roadway if left untreated. The removal of the organic soils beneath the proposed pavement limits is typically the best way to remediate/design pavements to limit future settlement problems. Since the depth of the organic soils range from about 2 to 10 feet, total demucking will

…encountered buried layers of organic soils…are considered highly compressible and can cause significant settlement…

… we recommend that the surficial layer of organics encountered in boring HA-14 be removed to the full depth encountered of 2.5 feet below the existing ground surface

organics encountered in boring HA-14 be removed to the full depth encountered of 2.5 feet below the existing ground surface. Several alternatives for remediation of the remainder of the mucks are presented in the following report section for consideration.

Flexible pavements can incorporate a limerock base material if at least 1 foot of vertical separation is provided between the bottom of the stabilized subgrade and the seasonal high groundwater level. A soil-cement base, reclaimed concrete aggregate (RCA) base or asphalt base material (black base) should be used if this vertical clearance cannot be provided. Furthermore, pavement underdrains will be needed if seasonal high groundwater levels are within the proposed stabilized subgrade.

…removing and replacing any organic soils, if encountered within 2 feet of the bottom of the pavement base.

These conclusions are contingent upon preparation of proposed pavement areas in accordance with GEC's recommendations in the **General Site Preparation**; **Fill Selection, Placement and Compaction**; and **Pavement Subgrade Preparation** sections of this report. This includes removing and replacing any organic soils, if encountered within 2 feet of the bottom of the pavement

The following recommended minimum pavement sections are typical of similar projects in this area and are not based on any traffic loading information or formal pavement design, since such information is not available:

- For light duty usage, such as automobile parking stalls, we recommend the following minimum pavement section:

    - 1.5 inches of Structural Asphalt Surface Course.
    - 6 inches of limerock (minimum LBR 100) or 8 inches of soil-cement (minimum 300 psi) or 6 inches of RCA (minimum LBR 150) base course.
    - 12 inches of stabilized subgrade (LBR=40) if limerock or RCA is used.

- For heavy duty usage, such as interior parking lot driveways and perimeter roads, we recommend the following minimum pavement section:

    - 2 inches of Structural Asphalt Surface Course.
    - 8 inches of limerock (minimum LBR 100) or 10 inches of soil-cement (minimum 300 psi) or 8 inches of RCA (minimum LBR 150) base course.
    - 12 inches of stabilized subgrade (LBR=40) if limerock or RCA is used.

- For heavy duty usage requiring a concrete pavement section, such as loading docks, we recommend the following:
  - ♦ 6 inches of concrete, 4,000 psi (28-day minimum).
  - ♦ Compact the 12-inch subgrade beneath the concrete to a minimum of 98% of ASTM D-1557 maximum density.
  - ♦ Concrete pavement design, including jointing of the pavement, should comply with the specifications of the Portland Cement Association (PCA).
  - ♦ Well-drained soils (unified classification SP) must be utilized beneath the concrete pavement.
  - ♦ A minimum clearance of 18 inches must be maintained between the bottom of concrete pavement and the seasonal high water table.

Reclaimed concrete aggregate base material should meet the specifications of the state or local jurisdiction. If a specification for reclaimed concrete aggregate base is not available, GEC recommends the following minimum specifications be included in the project specifications:

- Reclaimed concrete aggregate base material should meet the following gradation requirement:

Sieve Size	Percent by Weight Passing
2 inch	100
3/4 inch	65 to 95
3/8 inch	40 to 85
No. 4	25 to 65
No. 10	20 to 50
No. 50	5 to 25
No. 200	0 to 10

- The reclaimed concrete aggregate base should consist of crushed concrete material derived from the crushing of hard Portland cement concrete.
- Reclaimed concrete aggregate base should not contain plastic soils (i.e.; the minus 0.425 mm (No. 40) sieve material should be non-plastic).
- Reclaimed concrete aggregate base should have a minimum limerock bearing ratio (LBR) of 120.
- Reclaimed concrete aggregate base should be free of all materials that fall under the category of solid waste or hazardous materials as defined by the state or local jurisdiction and should meet all Department of Environmental Protection (DEP) permit requirements which pertain to construction, demolition and recycling of these materials. Reclaimed concrete aggregate base should also be substantially free from other deleterious materials which are not classified as solid waste or hazardous materials and be asbestos free. The following limits should not be exceeded:

Deleterious Material	Percent by Weight
Bituminous Concrete	1
Bricks	1
Wood and other Organic Substances	0.1
Heavy Metals (except Lead)	0.1
Lead	5 ppm
Reinforcing Steel and Welded Wire Fabric	0.1
Plaster and Gypsum Board	0.1

- The reclaimed concrete aggregate base supplier should have DEP permit requirements section 62-701.730 or be qualified as a clean debris source under DEP rules.

6.5 Sidewalk Construction

…encountered buried layers of organic soils…are considered highly compressible and can cause significant settlement…

Borings (HA-2, HA-3, HA-5 and HA-6) performed along the proposed sidewalk encountered surficial and buried layers of organic soils at depths ranging from the ground surface to 9.5 feet below existing ground surface. These organic soil layers have relatively high organic contents (9% to 51%) and are considered highly compressible and can cause significant settlement of any new sidewalk if left untreated. The removal of the organic soils beneath the proposed sidwealk limits is typically the best way to remediate/design to limit future settlement problems. However, since the depth of the organic soils were encountered at depths up to 9.5 feet, total demucking will likely not be a practical or cost-effective alternative. Several alternatives for muck remediation are presented in the following report section for consideration.

…total demucking will likely not be a practical or cost-effective alternative.

6.6 Organic Soil Remediation

Areas of surficial and buried organic soils were encountered along the proposed pavement/drive areas and sidewalk alignments as summarized in the previous report section. These organic soil layers are highly compressible and if left in place these areas of pavement and sidewalk may require more frequent rehabilitation over time. The following summarizes potential mitigation alternatives for the buried organic soil areas:

- **Do-Nothing**: For the "Do Nothing" mitigation alternative the buried organic soils are allowed to remain in-place and as future settlement of the pavements and sidewalk occur, the repairs are made as needed. This mitigation alternative is the most economical solution in the short-term but future settlement of the pavement and sidewalk due to the remaining organic soils is to be anticipated and will require more frequent rehabilitation over time.

…future settlement of the pavement… is to be anticipated…

- **Organic Soil Removal:** The removal of organic soils beneath the pavement and sidewalk limits is typically the best way to remediate/design to limit future settlement problems. However, since the depth of the organic soils range from the ground surface to 10 feet, total demucking will likely not be a practical or cost-effective alternative. Total demucking would require extensive dewatering, deep temporary sheet piling and large quantities of fill for backfilling.

- **Surcharge:** Surcharging can be accomplished by placing additional fill slowly in stages to over-consolidate the compressible soils and allowing future settlements to decrease to tolerable limits prior to removal of the surcharge and initiation of final construction. This technique is sometimes constrained by the amount of time available to complete the surcharge period. However, it is typically the least expensive ground modification technique to improve the compressible soils. It also provides a way to monitor and measure the settlement to evaluate when it has reached tolerable limits for future settlement.

…we recommend a surcharge of the organic soils.

Based on the above alternatives, we recommend a surcharge of the organic soils. Construction of the surcharge requires the implementation of special design and construction techniques and procedures. Our recommendations for surcharge construction and detailed information concerning the surcharge program, monitoring instrumentation and surcharge construction over soft soils are contained in the **Technical Provisions** included in the **Appendix**. A plan view of the surcharge areas is presented on the **Surcharge Control** sheets in the **Appendix**. The surcharge should not be removed until the Engineer authorizes removal.

Our recommendations… concerning the surcharge program… are contained in the **Technical Provisions** included in the **Appendix**.

6.7 Surcharge Analyses

GEC conducted settlement analyses to calculate total embankment settlement due to primary consolidation of the organic soil layers using soil consolidation parameters developed from correlations based on our laboratory testing results and the computer program WINSAF-I. The WINSAF-I program output is included in the **Appendix**.

Primary consolidation settlement is only one portion of the total anticipated settlement of organic soils. It is important to realize that construction of embankments over organic soil deposits will result in long-term embankment settlement due to secondary consolidation of the organic material. Secondary consolidation occurs due to deformation of the soil structure after primary consolidation is complete. The results of our secondary compression settlement analyses are included in the following tables and our calculations are presented in the **Appendix**.

The settlement estimates below represent estimated maximum settlements based on the soil profiles and parameters used in our analyses. The actual quantity of both primary and secondary consolidation will vary significantly depending on multiple factors, including the thickness and composition of the muck. Therefore, the total settlement of the sidewalks and paved parking/drive areas placed over these organic soils could vary substantially, with significant variation both laterally and longitudinally along the alignments.

GEC analyzed a 3-foot high surcharge (3 feet above proposed final grades) along the proposed paved parking/drive area and sidewalk alignments. Settlement calculations were performed to evaluate the amount of time necessary to achieve about 100 percent of primary consolidation of the settlement estimated for the final roadway embankment geometry after the embankment and surcharge have been placed. Primary consolidation settlement is expected to begin during construction of the embankment and surcharge (we have assumed an embankment construction period of about 15 to 30 days), and to continue beyond fill placement into the surcharge program, at which point secondary settlement would begin to occur.

The surcharge program also reduces the anticipated quantity of secondary consolidation settlement of the organic soils. The following table presents the results of our settlement calculations showing the quantity of estimated settlement occurring both with and without the surcharge.

Table 6A
Summary of Estimated Settlements with Surcharge Program
3-Foot Surcharge - Sidewalks

Settlement Type	Settlement With No Surcharge (inches)	Settlement With 90 Day 3-ft Surcharge (inches)	Settlement Post Surcharge (inches)
Short-term Primary Elastic Sand Settlement	0.15	0.25	0.0
Short-term Primary Consolidation Muck Settlement	3.1	5.75	0.0
Long-term Secondary Consolidation Muck Settlement	1.5	1.4	0.1
Total Long and Short-term Settlement	4.75	7.4	0.1

Table 6B
Summary of Estimated Settlements with Surcharge Program
3-Foot Surcharge - Paved Parking/Drive Areas

Settlement Type	Settlement With No Surcharge (inches)	Settlement With 90 Day 3-ft Surcharge (inches)	Settlement Post Surcharge (inches)
Short-term Primary Elastic Sand Settlement	0.5	0.65	0.0
Short-term Primary Consolidation Muck Settlement	3.5	6.25	0.0
Long-term Secondary Consolidation Muck Settlement	1.0	0.9	0.1
Total Long and Short-term Settlement	5.0	7.8	0.1

The results of our settlement calculations and time rate settlement curves for primary settlement are included in the **Appendix**. The results of our settlement and time rate calculations are based on correlations between the laboratory test results and existing consolidation test parameters in the general area of the project. Therefore, the total estimated settlements and time for the settlements to occur should be considered approximate. Based on our calculations, we recommend a minimum surcharge duration of 90 days. Our recommendations for surcharge construction and detailed information concerning the surcharge program, monitoring instrumentation and surcharge construction over soft soils are contained in the **Technical Provisions** included in the **Appendix**. A plan view of the surcharge areas is presented on the **Surcharge Control** sheets in the **Appendix**.

…the total estimated settlements and time for the settlements to occur should be considered approximate.

Surcharging does not completely eliminate the risk of future settlement of organic soils. Additional settlement could occur over time in areas with deeper or more compressible muck then indicated by the soil borings. These additional settlements would typically be repaired by maintenance crews by re-leveling as needed.

7.0 CONSTRUCTION ISSUES

The following sections of this report include comments on issues related to the geotechnical aspects of the proposed construction. *These recommendations are not intended to dictate construction methods or sequences.* Instead, they are furnished as an aid to design professionals and to identify important construction issues related to foundation and earthwork plans and specifications. These recommendations may also be useful to personnel who observe construction activity.

Prospective contractors for this project should evaluate potential construction problems on the basis of their review of the contract documents, their own knowledge and experience in the local area, and on the basis of similar projects in other localities, taking into account their own proposed means and methods.

7.1 General Site Preparation

Our recommendations regarding routine site preparation of the pavement and structure areas can be summarized as follows:

- Remove all vegetation, organic topsoil, major root systems, buried utilities, and other deleterious materials from beneath and to a minimum of 5 feet beyond proposed structure and pavement limits. Standard clearing, grubbing, and topsoil stripping procedures should be appropriate for most of this site.

- Perform temporary dewatering as required to achieve proper site preparation, fill placement and compaction.

- Allow a Geotechnical Engineer to inspect the site after it has been stripped to verify adequate topsoil and vegetation removal and also to observe subsequent proofrolling.

- In pavement areas where fill is required, proofroll the stripped ground surface using a large vibratory roller (Dynapac CA-25 or equivalent). Proofroll cut areas after excavation to proposed grade to allow adequate compaction of the exposed subsoil.

- Exercise extreme caution when operating vibratory equipment near existing structures. Nearby structures may be adversely affected by vibratory rolling operations. Provisions should be made to monitor adjacent buildings for excessive vibrations. Operate roller in static mode if excessive vibrations are experienced by any nearby structures or if the soil subgrade becomes unstable.

- Proofroll pavement areas with a minimum of 10 overlapping passes in each of two perpendicular directions. Allow a Geotechnical Engineer, or his representative, to observe proofrolling operations. The purposes of the proofrolling will be to detect unstable soils that yield when subjected to compaction and to densify the near-surface loose sands for support of new pavements.

- Remove material that yields excessively during proofrolling and replace with fill selected and compacted as described in the next section of this report. The Geotechnical Engineer, based on his observations, should recommend the nature and extent of any remedial work. If the soil subgrade is saturated, or if fill is at a moisture content over "optimum", then instability may occur and the contractor will be required to implement remedial measures to successfully place and compact fill.

> The Geotechnical Engineer… should recommend the nature and extent of any remedial work.

- Silty sand (SM) may be exposed at the compaction surface during site preparation. These materials can be unstable during proofrolling if they contain excess moisture. The contractor should be prepared to manipulate the moisture content of unstable subgrade soils as necessary to achieve stability and compaction requirements.

- Continue proofrolling until the soil at a depth of 12 inches below the compaction surface has attained a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Specification D-1557.

- Allow an Engineering Technician, working under the direction of a Geotechnical Engineer registered in the State of Florida, to perform in-place density tests to verify the required degree of compaction has been achieved.

7.2 Fill Selection, Placement and Compaction

After the contractor proofrolls the site in accordance with the above recommendations, the contractor should place and compact fill required to bring the site to final grade. We recommend that all fill be selected, placed and compacted as follows:

- Use fill material comprised of non-plastic sands with less than about 12% fines content. The fill should not contain any significant amount of organic soil (less than 3% by weight) and should be substantially free from roots or other organic or deleterious materials.

- Sands excavated above the water table may have to be wetted to attain the moisture content needed to achieve the required degree of compaction.

- Place fill in level lifts no thicker than 12 inches. Thinner lifts may be needed to achieve compaction in the silty sand or if smaller, hand-held compaction equipment is used.

- Compact fill to a minimum of 95% of the soil's modified Proctor maximum dry density as determined by ASTM Standard D-1557 for each lift of fill placed.

- Allow an Engineering Technician, working under the direction of a registered Geotechnical Engineer, to perform in-place density tests to verify that the recommended degree of compaction has been achieved.

- Provide fill slopes no steeper than 2 horizontal to 1 vertical.

- Compact fill placed in utility trenches to the specifications stated above. However, in restricted working areas, where use of a large vibratory roller is not feasible, compact fill with lightweight, hand-guided compaction equipment and limit lift thicknesses to a maximum of 6 inches.

- All excavations including utility trenches, should comply with the recommendations included in the **Temporary Excavations** section of this report.

7.3 Pavement Subgrade Preparation

Our general recommendations for the pavement subgrade are as follows:

- Prepare pavement areas in accordance with the **General Site Preparation** and **Fill Selection, Placement and Compaction** sections of this report.

- Compact the 12-inch subgrade beneath the base to a minimum of 98% of ASTM D-1557 maximum density.

- Stabilize the subgrade beneath a limerock base to a minimum Limerock Bearing Ratio (LBR) of 40.

- Stabilization is not required beneath a soil-cement base or rigid (concrete) pavement. However, the lack of subgrade stabilization should be considered in the pavement design.

7.4 Temporary Dewatering

…temporary dewatering may be required to facilitate stable excavations.

Depending on groundwater levels at the time of construction and final design grades, temporary dewatering may be required to facilitate stable excavations. The contractor should be required to provide a dewatering system which maintains groundwater levels at least 2 feet below compaction surfaces, including the bottom of excavations. A system of ditches and sumps may be sufficient in some instances to achieve adequate dewatering, but the contractor should be prepared to install wellpoint

dewatering systems in deeper excavations as necessary. An experienced dewatering contractor should be retained to evaluate specific dewatering system requirements.

7.5 Temporary Excavations

The owner and the contractor should be familiar with local, state and federal safety regulations, including current Occupational Safety and Health Association (OSHA) excavation and trench safety standards. Construction site safety is the responsibility of the contractor. The contractor should also be responsible for the means, methods, techniques, sequences, and operations of the construction. Care should be taken to protect adjacent utilities, structures or pavements from loss of support due to excavation activities.

The contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should not exceed those specified in local, state, or federal safety regulations; e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926. *OSHA regulations are strictly enforced and, if not followed, the owner, contractor, earthwork subcontractor or utility subcontractor could be liable for substantial penalties.*

The soils encountered in the borings performed by GEC at this site are primarily sand with varying amounts of silt. We anticipate that OSHA will classify these materials as Type C. OSHA recommends a maximum temporary slope inclination of 1.5 horizontal to 1 vertical for this soil type. Soils encountered in the construction excavations may vary significantly across the site. Our soil classifications are based on the materials encountered in widely-spaced borings. The contractor should verify that similar conditions exist throughout the proposed excavation area. If different subsurface conditions are encountered at the time of construction, GEC should be contacted immediately to evaluate the conditions encountered.

8.0 QUALITY ASSURANCE

Materials testing and inspection services should be provided by Geotechnical and Environmental Consultants, Inc.

We recommend establishing a comprehensive quality assurance program to verify that all site preparation and foundation and pavement construction is conducted in accordance with the appropriate plans and specifications. Materials testing and inspection services should be provided by Geotechnical and Environmental Consultants, Inc. due to our familiarity with the site conditions and the intent of our recommendations.

As a minimum, an on-site engineering technician should monitor all stripping and grubbing to verify that all deleterious materials have been removed. In-situ density tests should be conducted during earthwork activities and below all footings and floor slabs to verify that the required densities have

been achieved. In-situ density values should be compared to laboratory Proctor moisture-density results for each of the different natural and fill soils encountered.

For the pavements, the results of stripping and grubbing should be verified by on-site inspections and observations. Subgrade and subbase densities and Limerock Bearing Ratio tests should be performed. The base course should be tested for density and thickness. Samples of the asphaltic concrete should be obtained and tested in the laboratory for Marshall stability, flow, asphalt content, and aggregate gradation. Also, the asphaltic concrete thickness should be verified in the field.

9.0 USE OF THIS REPORT

GEC has prepared this report for the use of our client, HDR, and for specific application to this project. GEC will not be held responsible for any third party's interpretation or use of this report's subsurface data or engineering analysis without our written authorization.

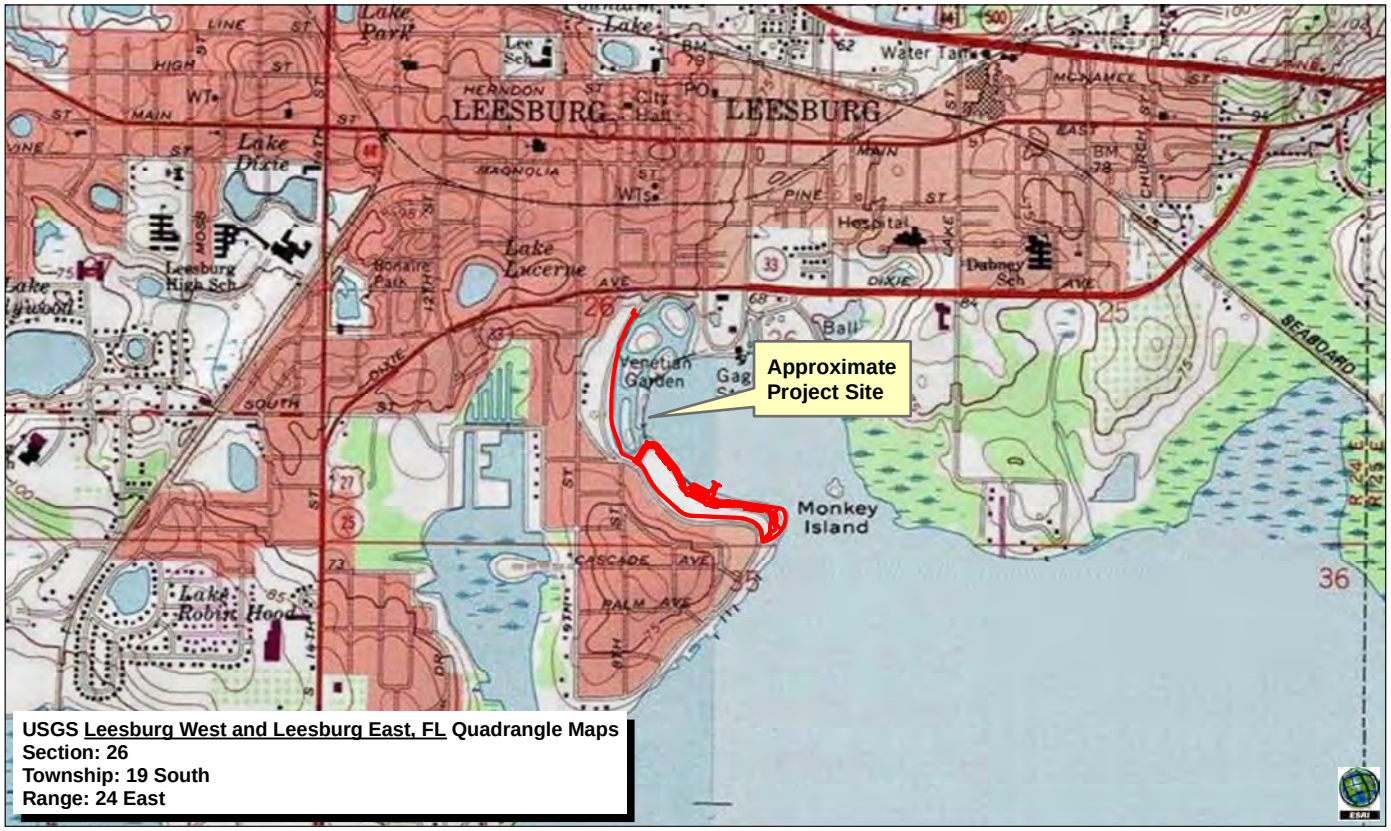
The sole purpose of the borings performed by GEC at this site was to obtain indications of subsurface conditions as part of a geotechnical exploration program. GEC has not subjected any soil samples to analysis for contaminants.

GEC has strived to provide the services described in this report in a manner consistent with that level of care and skill ordinarily exercised by members of our profession currently practicing in Central Florida. No other representation is made or implied in this document.

The conclusions or recommendations of this report should be disregarded if the nature, design, or location of the facilities is changed. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of proposed changes.

APPENDIX

USGS QUADRANGLE AND NRCS SOIL SURVEY MAPS



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Geotechnical and Environmental Consultants, Inc.
919 Lake Baldwin Lane
Orlando, FL 32814
PH (407) 898-1818 FAX (407) 898-1837
Certificate of Authorization No. 00005882
DANIEL C. STANFILL P.E. NO. 42763

GEC

PROJECT NO.	4002G
DATE	5/26/2017
DRAWN BY	BMM
CHECKED BY	VEW
CHECKED BY	DCS 42763

USGS QUADRANGLE AND NRCS SOIL SURVEY MAPS

SKI BEACH AT LAKE HARRIS

FIGURE NO.

1

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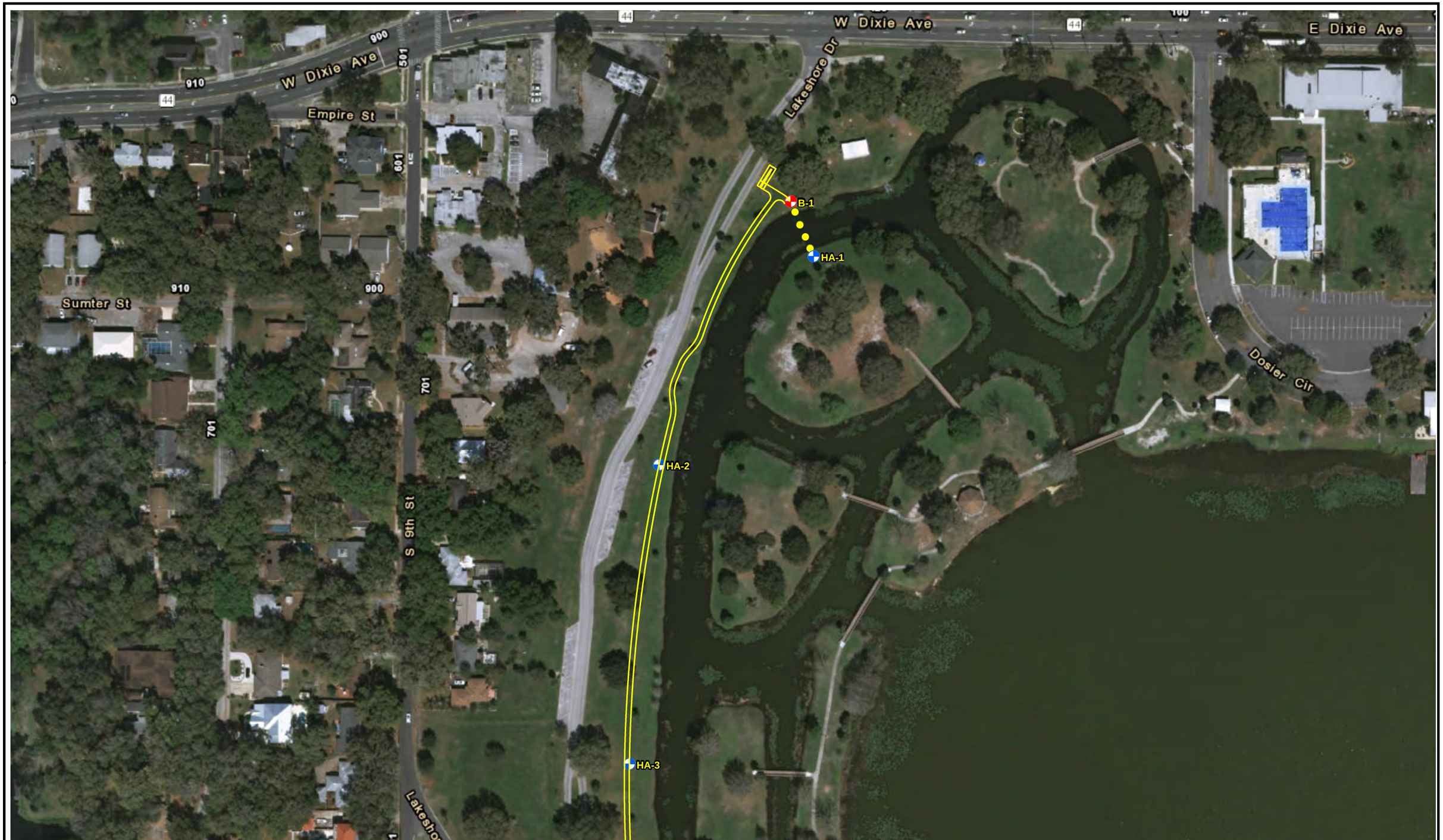
BORING AND PROBE LOCATION PLAN



APPROXIMATE SPT BORING LOCATION

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE MUCK PROBE LOCATION
MANUAL MUCK PROBES PERFORMED ON 3-17-17

0 75 150
Feet

N W E S

Geotechnical and Environmental Consultants, Inc.
919 Lake Baldwin Lane
Orlando, FL 32814
PH (407) 898-1818 FAX (407) 898-1837
Certificate of Authorization No. 00005882
DANIEL C. STANFILL P.E. NO. 42763

GEC

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DATE	5/26/2017
DRAWN BY	SKR
CHECKED BY	VEW 82275
CHECKED BY	DCS 42763

BORING AND PROBE LOCATION PLAN

SKI BEACH AT LAKE HARRIS

FIGURE NO.

2A

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APPROXIMATE SPT BORING LOCATION

APPROXIMATE AUGER BORING LOCATION

APPROXIMATE MUCK PROBE LOCATION
MANUAL MUCK PROBES PERFORMED ON 3-17-17

0 75 150
Feet

N W E S

Geotechnical and Environmental Consultants, Inc.
919 Lake Baldwin Lane
Orlando, FL 32814
PH (407) 898-1818 FAX (407) 898-1837
Certificate of Authorization No. 00005882
DANIEL C. STANFILL P.E. NO. 42763

GEC

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BORING AND PROBE LOCATION PLAN

SKI BEACH AT LAKE HARRIS

FIGURE NO.

2B

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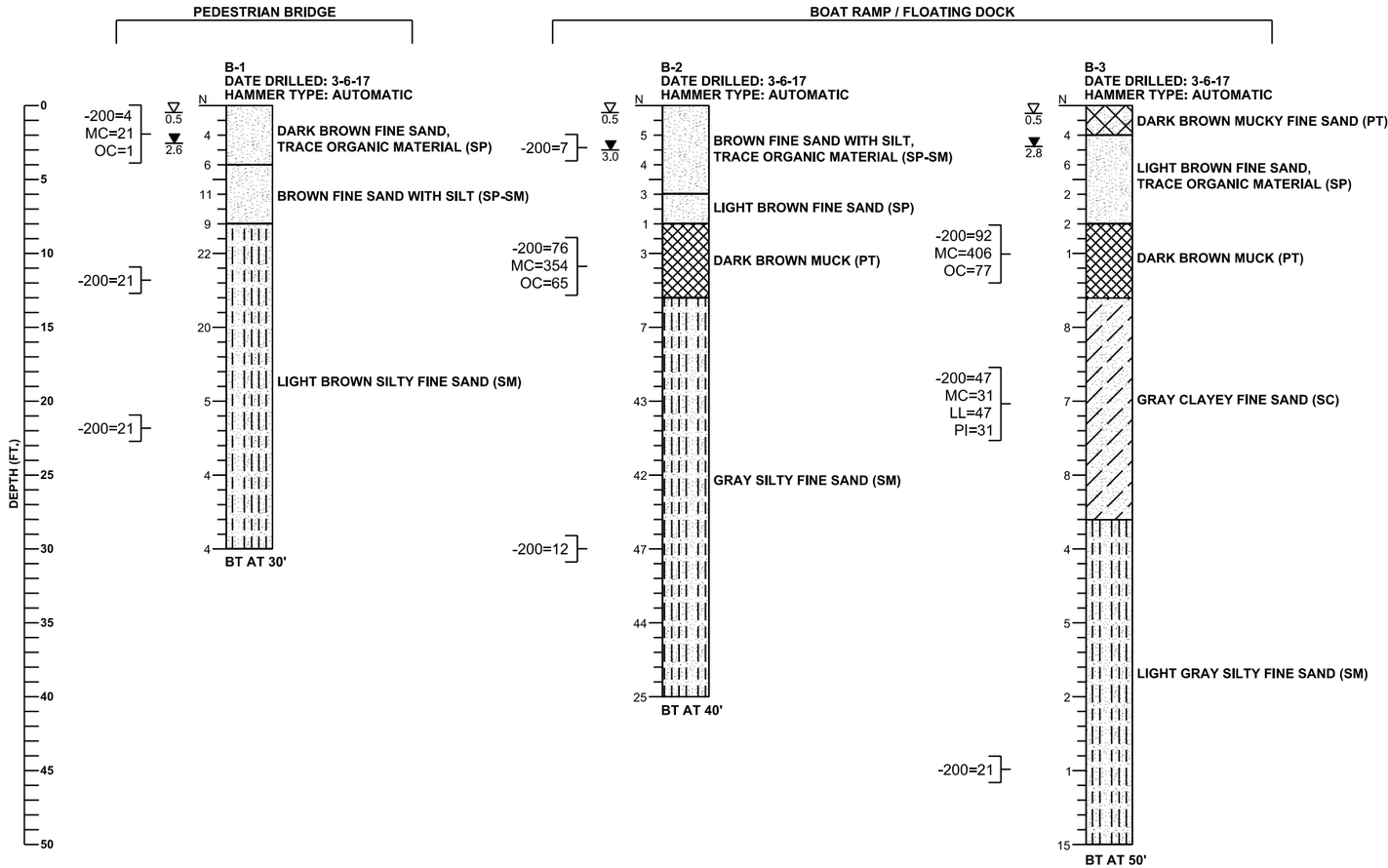
SPT BORING RESULTS



LEGEND

- N — STANDARD PENETRATION RESISTANCE, BLOWS PER FOOT
- ▽ 0.5 — ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- ▼ 2.6 — ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
- BT — BORING TERMINATED AT DEPTH INDICATED
- -200= — PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
- MC= — PERCENT NATURAL MOISTURE CONTENT
- LL= — LIQUID LIMIT
- PI= — PLASTICITY INDEX
- OC= — PERCENT ORGANIC CONTENT

SAND | SAND AND CLAY | MUCK | SAND AND SILT | SAND AND MUCK

GENERAL NOTES

SUBSURFACE CONDITIONS SHOWN ON THE BORINGS REPRESENT THE CONDITIONS ENCOUNTERED AT THE BORING LOCATIONS. ACTUAL CONDITIONS BETWEEN THE BORINGS MAY VARY FROM THOSE SHOWN. UNIFIED SOIL CLASSIFICATIONS SHOWN ON THE BORINGS ARE BASED ON VISUAL EXAMINATION AND THE LABORATORY TESTING SHOWN.

STANDARD PENETRATION TEST BORINGS WERE PERFORMED IN ACCORDANCE WITH ASTM D-1586. STANDARD PENETRATION RESISTANCES ARE SHOWN ON THE BORINGS AT THE TEST DEPTHS IN IN BLOWS PER FOOT UNLESS OTHERWISE NOTED.

BORING LOCATIONS WERE NOT SURVEYED. BORING LOCATIONS WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY GPS UNIT (TRIMBLE GEO XH).

SPLIT SPOON SAMPLER:
INSIDE DIAMETER: 1.375 IN.
OUTSIDE DIAMETER: 2.0 IN.
AVERAGE HAMMER DROP: 30 IN.
HAMMER WEIGHT: 140 LBS.

SECTION: 26
TOWNSHIP: 19 SOUTH
RANGE: 24 EAST

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY OF SOIL

GRANULAR SOILS	MANUAL HAMMER (SAFETY) N VALUE (blows per foot)	AUTOMATIC HAMMER N VALUE (blows per foot)	RELATIVE DENSITY
SANDS	0-4	0-3	VERY LOOSE
	4-10	3-8	LOOSE
	10-30	8-24	MEDIUM DENSE
	30-50	24-40	DENSE
	OVER 50	OVER 40	VERY DENSE

NON-GRANULAR SOILS	MANUAL HAMMER (SAFETY) N VALUE (blows per foot)	AUTOMATIC HAMMER N VALUE (blows per foot)	CONSISTENCY
SILTS, CLAYS, MUCK, PEAT	0-2	0-1	VERY SOFT
	2-4	1-3	SOFT
	4-8	3-6	FIRM
	8-15	6-12	STIFF
	15-30	12-24	VERY STIFF
	OVER 30	OVER 24	HARD

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882
DANIEL C. STANFILL PE NO. 42763

GEC

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SPT BORING RESULTS

SKI BEACH AT LAKE HARRIS

FIGURE NO. 3

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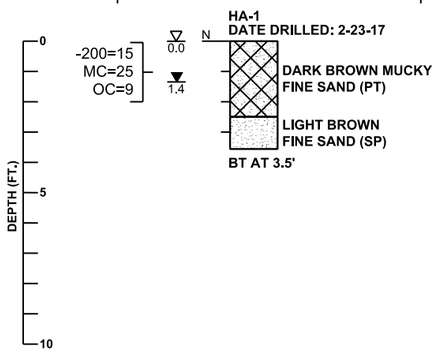
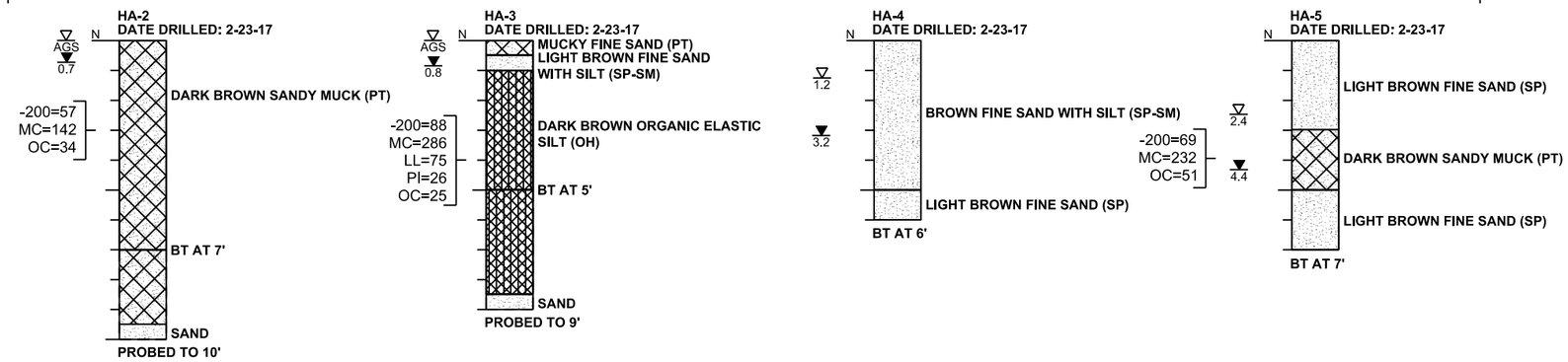
AUGER BORING RESULTS

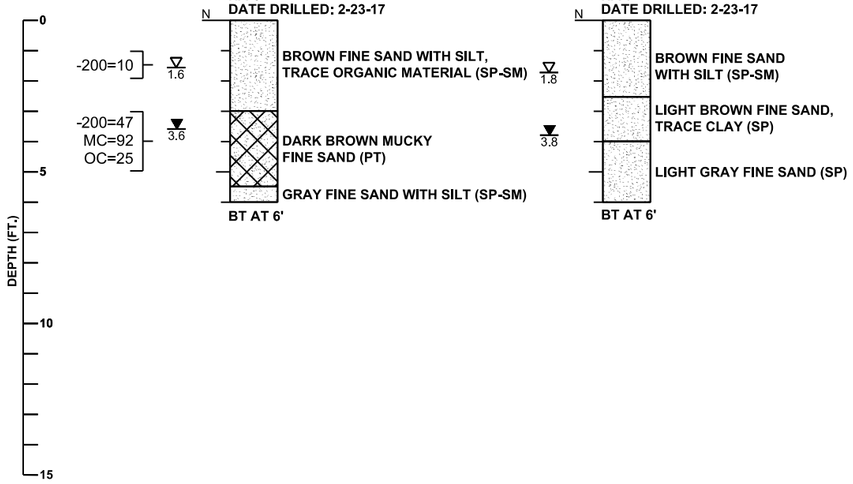
PEDESTRIAN BRIDGE



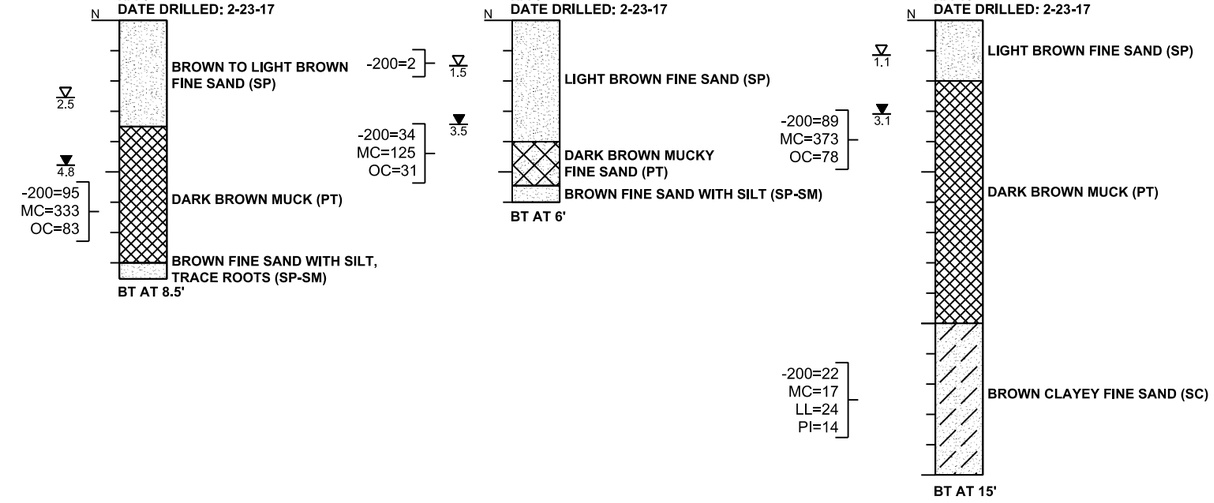
SIDEWALK



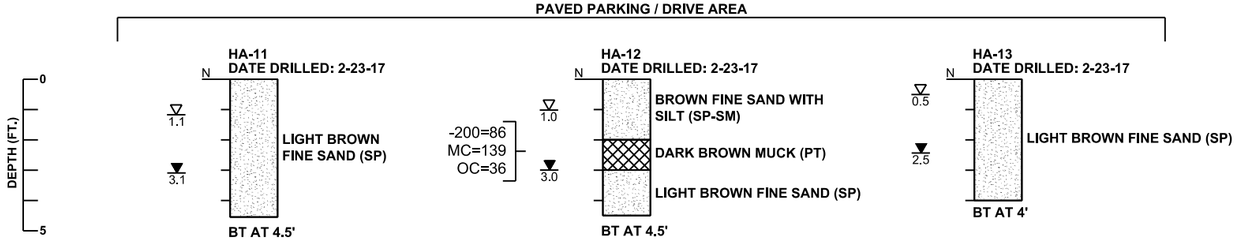
SIDEWALK



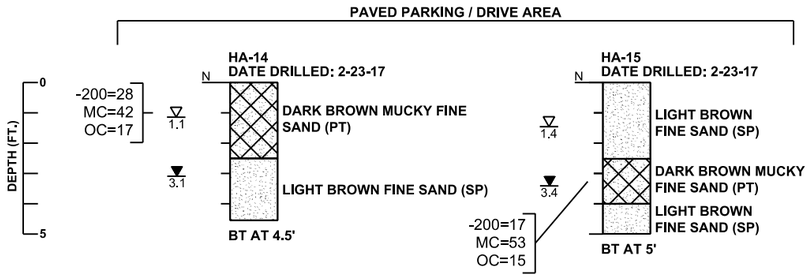
PAVED PARKING / DRIVE AREA



PAVED PARKING / DRIVE AREA



PAVED PARKING / DRIVE AREA



GENERAL NOTES

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BORING LOCATIONS WERE NOT SURVEYED. BORING LOCATIONS WERE ESTABLISHED IN THE FIELD USING A SUB-METER ACCURACY GPS UNIT (TRIMBLE GEO XH).

LEGEND

- ▽ XX — ESTIMATED SEASONAL HIGH GROUNDWATER DEPTH (FT.)
- ▼ 1.4 — ENCOUNTERED GROUNDWATER DEPTH (FT.) 24 HRS. AFTER DATE DRILLED
- BT — BORING TERMINATED AT DEPTH INDICATED
- -200= — PERCENT PASSING NO. 200 U.S. STANDARD SIEVE
- MC= — PERCENT NATURAL MOISTURE CONTENT
- LL= — LIQUID LIMIT
- PI= — PLASTICITY INDEX
- OC= — PERCENT ORGANIC CONTENT

SAND · SAND AND CLAY · ORGANIC SILT · SAND AND MUCK · MUCK

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882
GEC
DANIEL C. STANFILL PE NO. 42763

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AUGER BORING RESULTS

SKI BEACH AT LAKE HARRIS

FIGURE NO. 4

MUCK PROBE LOCATION PLAN
WITH RESULTS

N
W E
S

APPROXIMATE MUCK PROBE LOCATION
MANUAL MUCK PROBES PERFORMED ON 3-17-17

STANDING WATER LEVEL (FT.)
1.5 | 0.5
SURFICIAL MUCK THICKNESS (FT.)

0 10 20
Feet

Geotechnical and Environmental Consultants, Inc.
919 Lake Baldwin Lane
Orlando, FL 32814
PH (407) 898-1818 FAX (407) 898-1837
Certificate of Authorization No. 00005882
DANIEL C. STANFILL P.E. NO. 42763

GEC

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DATE	5/26/2017
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CHECKED BY	VEW 82275
CHECKED BY	DCS 42763

MUCK PROBE LOCATION PLAN WITH RESULTS

SKI BEACH AT LAKE HARRIS

FIGURE NO. 5

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SPILE RESULTS

+-------- ULTIMATE STATIC PILE CAPACITY/Federal Highway Administration --------+
Nordlund (1963, 1979) and Tomlinson (1979, 1980) methods

Project Name	: Ski Beach B-1	Client	: HDR
File Name	: 4002G B-1	Project Manager	: GW/DCS
Date	: 4/12/11	Computed by	: GW

Depth of Top of Pile = 0.00 ft. Pile length = 10.00 ft.
Depth to Water Table = 0.50 ft.
Diameter of pile tip = 8.00 in.
Type of Pile = Timber Pile
Taper of Pile = 0.48

SKIN FRICTION CONTRIBUTION

Layer	Soil Type	Thickness (ft)	Effective Stress (psf)	Internal Friction Angle	N-SPT	Pile Perimeter (ft)
1	Cohesionless	4.00	116.40	30.28*	10.94*	2.52
2	Cohesionless	6.00	374.40	34.93*	26.42*	2.25

Layer	Soil Type	Undrained Shear Strength (psf)	Adhesion	Pile Taper	Sliding Friction Angle	Skin Resistance (Kips)
1	Cohesionless	--	--------	0.48	15.76	0.72
2	Cohesionless	--	--------	0.48	16.34	5.15

Total Side Friction : 5.87

POINT RESISTANCE CONTRIBUTION

Effective Stress at pile Tip (psf)	Internal Friction Angle	SPT Value	Pile End Area (ft*ft)	Bearing Capacity Factor Nq	End Bearing Resistance (Kips)
547.20	38.54*	39.00	0.35	123.80	~~17.18~~ 5.72

Limiting End Bearing Resistance : 106.44

Ultimate Static Pile Capacity : ~~23.05~~ 11.59

+----- Hit arrow keys to display next screen. <F8> Print. <F10> Main Menu -----+

+-------- ULTIMATE STATIC PILE CAPACITY/Federal Highway Administration --------+

Nordlund (1963, 1979) and Tomlinson (1979, 1980) methods

Project Name	: Ski Beach B-1	Client	: HDR
File Name	: 4002G B-1	Project Manager	: GW/DCS
Date	: 4/12/11	Computed by	: GW

Depth of Top of Pile = 0.00 ft. Pile length = 15.00 ft.
Depth to Water Table = 0.50 ft.
Diameter of pile tip = 8.00 in.
Type of Pile = Timber Pile
Taper of Pile = 0.48

SKIN FRICTION CONTRIBUTION

Layer	Soil Type	Thickness (ft)	Effective Stress (psf)	Internal Friction Angle	N-SPT	Pile Perimeter (ft)
1	Cohesionless	4.00	116.40	30.28*	10.94*	2.78
2	Cohesionless	11.00	518.40	35.36*	27.87*	2.38

Layer	Soil Type	Undrained Shear Strength (psf)	Adhesion	Pile Taper	Sliding Friction Angle	Skin Resistance (Kips)
1	Cohesionless	--	--------	0.48	17.19	0.91
2	Cohesionless	--	--------	0.48	17.46	17.53

Total Side Friction : 18.44

POINT RESISTANCE CONTRIBUTION

Effective Stress at pile Tip (psf)	Internal Friction Angle	SPT Value	Pile End Area (ft*ft)	Bearing Capacity Factor Nq	End Bearing Resistance (Kips)
835.20	36.67*	32.22	0.35	86.68	~~17.73~~ 5.91

Limiting End Bearing Resistance : 65.20

Ultimate Static Pile Capacity : ~~36.17~~ 24.35

+----- Hit arrow keys to display next screen. <F8> Print. <F10> Main Menu -----+

+-------- ULTIMATE STATIC PILE CAPACITY/Federal Highway Administration --------+

Nordlund (1963, 1979) and Tomlinson (1979, 1980) methods

Project Name	: Ski Beach B-1	Client	: HDR
File Name	: 4002G B-1	Project Manager	: GW/DCS
Date	: 4/12/11	Computed by	: GW

Depth of Top of Pile = 0.00 ft. Pile length = 20.00 ft.
Depth to Water Table = 0.50 ft.
Diameter of pile tip = 8.00 in.
Type of Pile = Timber Pile
Taper of Pile = 0.48

SKIN FRICTION CONTRIBUTION

Layer	Soil Type	Thickness (ft)	Effective Stress (psf)	Internal Friction Angle	N-SPT	Pile Perimeter (ft)
1	Cohesionless	4.00	116.40	30.28*	10.94*	3.04
2	Cohesionless	14.00	604.80	35.36*	27.87*	2.57
3	Cohesionless	2.00	1050.60	28.89*	7.07*	2.15

Layer	Soil Type	Undrained Shear Strength (psf)	Adhesion	Pile Taper	Sliding Friction Angle	Skin Resistance (Kips)
1	Cohesionless	--	--------	0.48	18.62	1.12
2	Cohesionless	--	--------	0.48	18.73	31.22
3	Cohesionless	--	--------	0.48	12.87	1.79

Total Side Friction : 34.13

POINT RESISTANCE CONTRIBUTION

Effective Stress at pile Tip (psf)	Internal Friction Angle	SPT Value	Pile End Area (ft*ft)	Bearing Capacity Factor Nq	End Bearing Resistance (Kips)
1093.20	28.89*	7.07	0.35	25.99	~~4.85~~ 1.61

Limiting End Bearing Resistance : 4.65

Ultimate Static Pile Capacity : ~~38.79~~ 35.75

+----- Hit arrow keys to display next screen. <F8> Print. <F10> Main Menu -----+

+-------- ULTIMATE STATIC PILE CAPACITY/Federal Highway Administration --------+

Nordlund (1963, 1979) and Tomlinson (1979, 1980) methods

Project Name	: Ski Beach B-1	Client	: HDR
File Name	: 4002G B-1	Project Manager	: GW/DCS
Date	: 4/12/11	Computed by	: GW

Depth of Top of Pile = 0.00 ft. Pile length = 25.00 ft.
Depth to Water Table = 0.50 ft.
Diameter of pile tip = 8.00 in.
Type of Pile = Timber Pile
Taper of Pile = 0.48

SKIN FRICTION CONTRIBUTION

Layer	Soil Type	Thickness (ft)	Effective Stress (psf)	Internal Friction Angle	N-SPT	Pile Perimeter (ft)
1	Cohesionless	4.00	116.40	30.28*	10.94*	3.31
2	Cohesionless	14.00	604.80	35.36*	27.87*	2.83
3	Cohesionless	7.00	1157.10	28.61*	6.35*	2.28

Layer	Soil Type	Undrained Shear Strength (psf)	Adhesion	Pile Taper	Sliding Friction Angle	Skin Resistance (Kips)
1	Cohesionless	--	--------	0.48	19.88	1.35
2	Cohesionless	--	--------	0.48	20.41	39.29
3	Cohesionless	--	--------	0.48	13.53	7.70

Total Side Friction : 48.34

POINT RESISTANCE CONTRIBUTION

Effective Stress at pile Tip (psf)	Internal Friction Angle	SPT Value	Pile End Area (ft*ft)	Bearing Capacity Factor Nq	End Bearing Resistance (Kips)
1306.20	28.34*	5.63	0.35	24.03	~~4.95~~ 1.65

Limiting End Bearing Resistance : 4.65

Ultimate Static Pile Capacity : ~~52.99~~ 50.00

+----- Hit arrow keys to display next screen. <F8> Print. <F10> Main Menu -----+

LPILE RESULTS

LPILE Plus for Windows, Version 5.0 (5.0.47)

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

This program is licensed to:

Gene Williford
G.E.C., Inc.

Files Used for Analysis

Path to file locations: W:\Projects\J4002G Ski Beach\Geotechnical\6 Miscellaneous\
Name of input data file: Ski Beach Floating Dock.lpd
Name of output file: Ski Beach Floating Dock.lpo
Name of plot output file: Ski Beach Floating Dock.lpp
Name of runtime file: Ski Beach Floating Dock.lpr

Time and Date of Analysis

Date: June 1, 2017 Time: 14:30:39

Problem Title

Ski Beach 12x12 Floating Dock

Program Options

Units Used in Computations - US Customary Units: Inches, Pounds

Basic Program Options:

Analysis Type 1:
- Computation of Lateral Pile Response Using User-specified Constant EI

Computation Options:
- Only internally-generated p-y curves used in analysis
- Analysis does not use p-y multipliers (individual pile or shaft action only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix elements
- Output pile response for full length of pile
- Analysis assumes no soil movements acting on pile
- No additional p-y curves to be computed at user-specified depths

Solution Control Parameters:
- Number of pile increments = 100
- Maximum number of iterations allowed = 100
- Deflection tolerance for convergence = 1.0000E-05 in
- Maximum allowable deflection = 1.0000E+02 in

Printing Options:
- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (spacing of output points) = 1

Pile Structural Properties and Geometry

Pile Length = 420.00 in

Depth of ground surface below top of pile = 132.00 in

Slope angle of ground surface = 0.00 deg.

Structural properties of pile defined using 2 points

Point No.	Point Depth in	Pile Diameter in	Moment of Inertia in**4	Pile Area Sq.in	Modulus of Elasticity lbs/Sq.in
1	0.0000	12.00000000	1728.0000	144.0000	4000000.
2	420.0000	12.00000000	1728.0000	144.0000	4000000.

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 132.000 in
Distance from top of pile to bottom of layer = 180.000 in
p-y subgrade modulus k for top of soil layer = 80.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 80.000 lbs/in**3

Layer 2 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 180.000 in
Distance from top of pile to bottom of layer = 360.000 in
p-y subgrade modulus k for top of soil layer = 60.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 60.000 lbs/in**3

Layer 3 is sand, p-y criteria by Reese et al., 1974
Distance from top of pile to top of layer = 360.000 in
Distance from top of pile to bottom of layer = 600.000 in
p-y subgrade modulus k for top of soil layer = 40.000 lbs/in**3
p-y subgrade modulus k for bottom of layer = 40.000 lbs/in**3

(Depth of lowest layer extends 180.00 in below pile tip)

Effective Unit Weight of Soil vs. Depth

Effective unit weight of soil with depth defined using 6 points

Point No.	Depth X in	Eff. Unit Weight lbs/in**3
1	132.00	0.03622
2	180.00	0.03622
3	180.00	0.02750
4	360.00	0.02750
5	360.00	0.02465
6	600.00	0.02465

Shear Strength of Soils

Shear strength parameters with depth defined using 6 points

Point No.	Depth X in	Cohesion c lbs/in**2	Angle of Friction Deg.	E50 or k_rm	RQD %
1	132.000	0.00000	31.00	------	------
2	180.000	0.00000	31.00	------	------
3	180.000	0.00000	32.00	------	------
4	360.000	0.00000	32.00	------	------
5	360.000	0.00000	30.00	------	------
6	600.000	0.00000	30.00	------	------

Notes:

(1) Cohesion = uniaxial compressive strength for rock materials.
(2) Values of E50 are reported for clay strata.
(3) Default values will be generated for E50 when input values are 0.
(4) RQD and k_rm are reported only for weak rock strata.

Loading Type

Static loading criteria was used for computation of p-y curves.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load Case Number 1

Pile-head boundary conditions are Shear and Moment (BC Type 1)
Shear force at pile head = 4500.000 lbs
Bending moment at pile head = 0.000 in-lbs
Axial load at pile head = 5700.000 lbs

(Zero moment at pile head for this load indicates a free-head condition)

Computed Values of Load Distribution and Deflection
for Lateral Loading for Load Case Number 1

Pile-head boundary conditions are Shear and Moment (Pile-head Condition Type 1)
Specified shear force at pile head = 4500.000 lbs
Specified moment at pile head = 0.000 in-lbs
Specified axial load at pile head = 5700.000 lbs

Depth X in	Deflect. y in	Moment M lbs-in	Shear V lbs	Slope S Rad.	Total Stress lbs/in**2	Soil Res. Es*h p lbs/in	F/L lbs/in
0.000	2.851	3.8282E-06	4500.0000	-0.0179370	39.5833	0.0000	0.0000
4.200	2.776	19329.4107	4500.0000	-0.0179311	106.6993	0.0000	0.0000
8.400	2.700	38658.5402	4500.0000	-0.0179135	173.8144	0.0000	0.0000
12.600	2.625	57987.1073	4500.0000	-0.0178841	240.9275	0.0000	0.0000
16.800	2.550	77314.8309	4500.0000	-0.0178430	308.0376	0.0000	0.0000
21.000	2.475	96641.4298	4500.0000	-0.0177901	375.1439	0.0000	0.0000
25.200	2.401	115967.	4500.0000	-0.0177255	442.2452	0.0000	0.0000
29.400	2.326	135290.	4500.0000	-0.0176492	509.3407	0.0000	0.0000
33.600	2.253	154612.	4500.0000	-0.0175611	576.4294	0.0000	0.0000
37.800	2.179	173931.	4500.0000	-0.0174613	643.5103	0.0000	0.0000
42.000	2.106	193248.	4500.0000	-0.0173498	710.5823	0.0000	0.0000
46.200	2.033	212562.	4500.0000	-0.0172265	777.6447	0.0000	0.0000
50.400	1.961	231873.	4500.0000	-0.0170914	844.6962	0.0000	0.0000
54.600	1.890	251180.	4500.0000	-0.0169447	911.7361	0.0000	0.0000
58.800	1.819	270484.	4500.0000	-0.0167862	978.7633	0.0000	0.0000
63.000	1.749	289784.	4500.0000	-0.0166160	1045.7768	0.0000	0.0000
67.200	1.679	309079.	4500.0000	-0.0164340	1112.7757	0.0000	0.0000
71.400	1.611	328371.	4500.0000	-0.0162404	1179.7590	0.0000	0.0000
75.600	1.543	347657.	4500.0000	-0.0160350	1246.7257	0.0000	0.0000
79.800	1.476	366938.	4500.0000	-0.0158179	1313.6748	0.0000	0.0000
84.000	1.410	386214.	4500.0000	-0.0155890	1380.6054	0.0000	

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0.0000
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0.0000
  92.400     1.281     424749.   4500.0000  -0.0150963   1514.4071      0.0000
0.0000
  96.600     1.218     444008.   4500.0000  -0.0148323   1581.2762      0.0000
0.0000
 100.800     1.156     463259.   4500.0000  -0.0145567   1648.1229      0.0000
0.0000
 105.000     1.096     482505.   4500.0000  -0.0142693   1714.9463      0.0000
0.0000
 109.200     1.037     501743.   4500.0000  -0.0139703   1781.7452      0.0000
0.0000
 113.400  0.978532     520973.   4500.0000  -0.0136596   1848.5188      0.0000
0.0000
 117.600  0.921827     540197.   4500.0000  -0.0133372   1915.2661      0.0000
0.0000
 121.800  0.866500     559412.   4500.0000  -0.0130031   1981.9861      0.0000
0.0000
 126.000  0.812601     578619.   4500.0000  -0.0126573   2048.6779      0.0000
0.0000
 130.200  0.760179     597818.   4500.0000  -0.0122999   2115.3404      0.0000
0.0000
 134.400  0.709282     617008.   4481.0157  -0.0119308   2181.9727     -9.0402
53.5312
 138.600  0.659960     636030.   4403.8595  -0.0115501   2248.0202    -27.7009
176.2889
 142.800  0.612261     654554.   4244.8507  -0.0111580   2312.3388    -48.0176
329.3921
 147.000  0.566232     672221.   4000.5629  -0.0107549   2373.6834    -68.3099
506.6853
 151.200  0.521920     688673.   3673.5849  -0.0103414   2430.8099    -87.3939
703.2775
 155.400  0.479364     703574.   3268.5664  -0.0099185   2482.5489   -105.4721
924.1045
 159.600  0.438605     716604.   2795.6150  -0.0094870   2527.7921   -119.7429
1146.6365
 163.800  0.399674     727511.   2276.5263  -0.0090482   2565.6648   -127.4422
1339.2357
 168.000  0.362600     736160.   1729.4554  -0.0086035   2595.6950   -133.0677
1541.3269
 172.200  0.327404     742451.   1151.9119  -0.0081543   2617.5376   -141.9530
1820.9997
 176.400  0.294103     746227.    546.0682  -0.0077020   2630.6481   -146.5440
2092.7497
 180.600  0.262707     747407.    -84.3407  -0.0072482   2634.7451   -153.6507
2456.4732
 184.800  0.233218     745865.   -735.5624  -0.0067945   2629.3932   -156.4548
2817.5751
 189.000  0.205633     741553.  -1402.5335  -0.0063426   2614.4208   -161.1505
3291.4555
 193.200  0.179940     734388.  -2084.6683  -0.0058942   2589.5404   -163.6756
3820.3655
 197.400  0.156122     724324.  -2779.0997  -0.0054510   2554.5978   -167.0060
4492.8108
 201.600  0.134152     711304.  -3484.8042  -0.0050149   2509.3896   -169.0438
5292.3960
 205.800  0.113997     695292.  -4194.8407  -0.0045875   2453.7914   -169.0689
6229.0208
 210.000  0.095617     676287.  -4900.5265  -0.0041708   2387.8027   -166.9719
7334.3085
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8651.4219
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235.200	0.019368	504361.	-8498.3730	-0.0019913	1790.8366	-103.0533
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26593.2071						
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357.000	-0.001233	-24200.1234	447.6199	0.0001084	123.6115	16.5050
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365.400	-0.000441	-20014.1286	524.6571	8.1499E-05	109.0768	4.3794
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369.600	-0.000124	-17773.7478	536.4822	7.0019E-05	101.2977	1.2516
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373.800	0.000148	-15511.0309	535.9256	5.9906E-05	93.4411	-1.5166
43160.1272						
378.000	0.000379	-13274.8408	524.4196	5.1161E-05	85.6765	-3.9625
43865.7272						
382.200	0.000577	-11108.3559	503.2322	4.3752E-05	78.1540	-6.1268
44571.3272						
386.400	0.000747	-9049.7855	473.4569	3.7628E-05	71.0062	-8.0519
45276.9272						
390.600	0.000893	-7133.1192	436.0074	3.2711E-05	64.3511	-9.7812
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394.800	0.001022	-5388.8896	391.6164	2.8907E-05	58.2948	-11.3573
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403.200	0.001241	-2527.0742	284.0719	2.4166E-05	48.3579	-14.2116
48099.3272						
407.400	0.001339	-1459.8783	221.5475	2.2954E-05	44.6524	-15.5620
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25460.8636						

Output Verification:

Computed forces and moments are within specified convergence limits.

Output Summary for Load Case No. 1:

Pile-head deflection	=	2.85106218 in
Computed slope at pile head	=	-0.01793695
Maximum bending moment	=	747406.57927 lbs-in
Maximum shear force	=	-9161.79013 lbs
Depth of maximum bending moment	=	180.60000 in
Depth of maximum shear force	=	247.80000 in
Number of iterations	=	14
Number of zero deflection points	=	2

Summary of Pile Response(s)

Definition of Symbols for Pile-Head Loading Conditions:

Type 1 = Shear and Moment, y = pile-head displacment in

Type 2 = Shear and Slope, M = Pile-head Moment lbs-in
Type 3 = Shear and Rot. Stiffness, V = Pile-head Shear Force lbs
Type 4 = Deflection and Moment, S = Pile-head Slope, radians
Type 5 = Deflection and Slope, R = Rot. Stiffness of Pile-head in-lbs/rad

Load Type	Pile-Head Condition 1	Pile-Head Condition 2	Axial Load lbs	Pile-Head Deflection in	Maximum Moment in-lbs	Maximum Shear lbs
1	V= 4500.000	M= 0.000	5700.0000	2.8511	747407.	-9161.7901

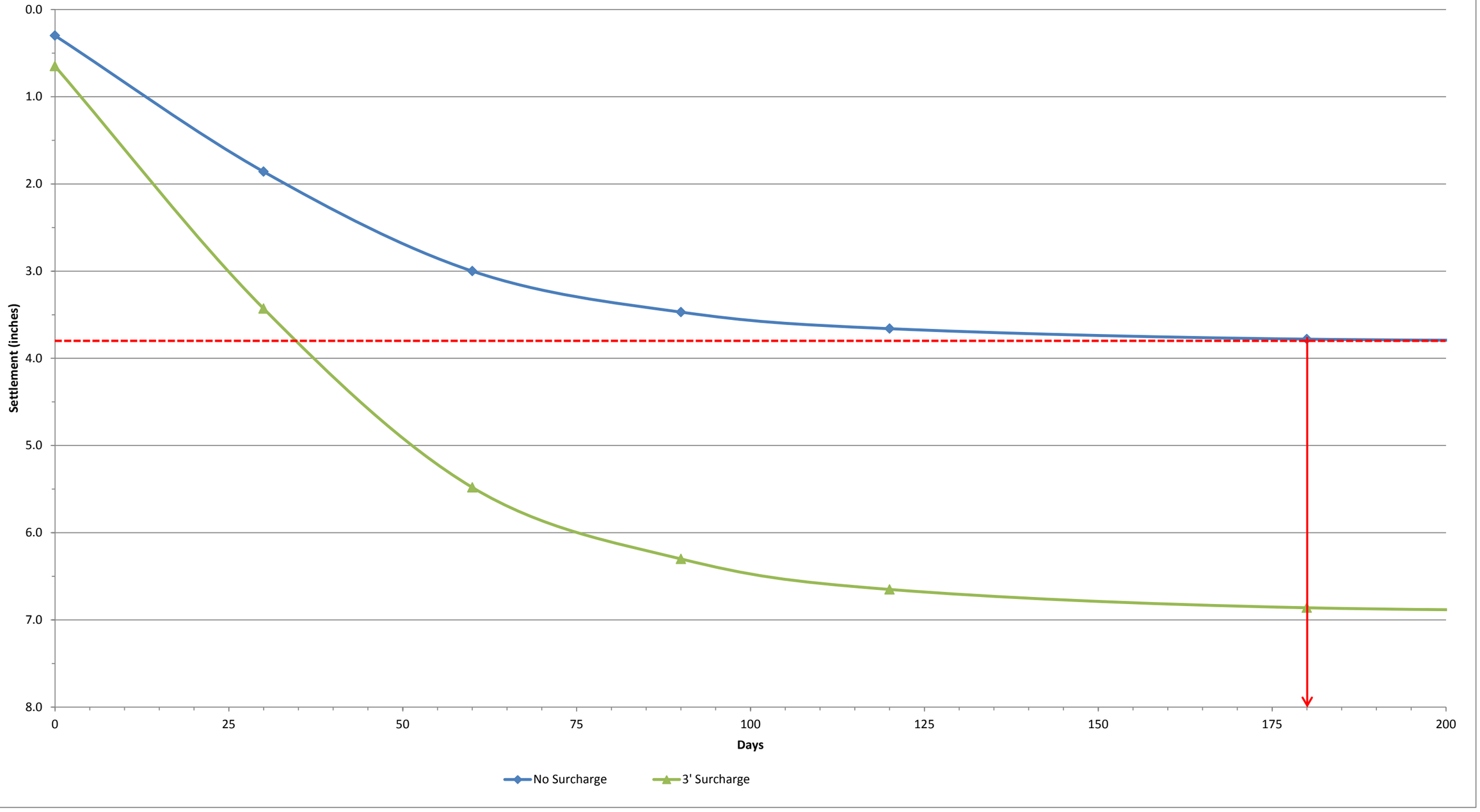
The analysis ended normally.

SURCHARGE ANALYSES

Time Rate Settlement Curves

Ski Beach at Lake Harris

Drive Areas



Secondary Consolidation Settlement Calculations
Ski Beach at Lake Harris
3-foot Surcharge - Drive Areas
GEC Project No. 4002G

Input Parameters

σ'_{vs} =	345	psf	Maximum Effective Stress of Surcharge (3' ft surcharge)
σ'_{vf} =	145	psf	Final Effective Stress (After Surcharge Removal)
t =	5535	days	Elapsed Time From Application of Load (15 years + surcharge time)
t_p =	60	days	Duration of Primary Consolidation (duration of surcharge)
T_v =	1.129		Time Factor (For 95% Rebound)

Soil Layer	Layer Description	Compression Index C_c	Coefficient of Consolidation C_V (ft^2/day)	Secondary Compression Index C_α	e_o	Layer Thickness H (ft)	Length of Drainage Path H_{dr} (ft)
1	Muck	0.85	0.75	0.030	5.12	8.0	4.0

Secondary Settlement Without Surcharge Calculations

Soil Layer	ΔH_{sec} (inches)
1	0.92
Total	**0.92**

in. = Secondary Settlement Without Surcharge

$$\Delta H_{sec} = \frac{C_c}{1+e_o}\frac{C_\alpha}{C_c} H \log\frac{t}{t_p}$$

$$\Delta H'_{sec} = \frac{C_c}{1+e_o}\frac{C_\alpha}{C_c}\frac{C''_\alpha}{C_\alpha} H \log\frac{t}{t_p}$$

Secondary Settlement Post Surcharge Calculations

Soil Layer	Time for Primary Rebound t_{pr} (days)	Effective Surcharge Ratio R'_s	t_l/t_{pr}	Time for Secondary Settlement to Occur Post Surcharge t_l (days)	t/t_l	* C''_α/C_α	$\log(t/t_l)$	Secondary Settlement Post Surcharge $\Delta H'_{sec}$ (inches)
1	24	1.379	13.79	332	17	0.08	1.22	0.05
							Total	**0.05**

Secondary Settlement With Surcharge = 0.05 in.

** Reference: Figure 13, "Secondary Compression of Peat with or without Surcharging" Journal of Geotechnical and Geoenvironmental Engineering, May 1997.*

STRIP LOADING VARIABLE SHAPE

Project Name: Ski Beach Drive Areas Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Increment of stresses obtained using : Boussinesq

Settlement for X-Direction

Point #	X(ft)	Load (psf)
1	0.00	0.00
2	0.10	145.00
3	116.00	145.00
4	116.10	0.00

Foundation Elev. = 0.00 (ft) Ground Surface Elev.= 0.00 (ft)
Water table Elev. = -0.50 (ft) Unit weight of Wat. = 62.40 (pcf)

N°.	Layer Type	Thick. (ft)	Coefficient Comp.	Recomp.	Swell.	Unit Weight (pcf)	Secondary Settlement (in.)
1	COMP.	0.5	0.016	0.001	0.000	100.00	0.00
2	COMP.	1.5	0.016	0.001	0.000	105.00	0.00
3	COMP.	8.0	0.850	0.040	0.000	80.00	0.00
4	COMP.	5.0	0.018	0.001	0.000	110.00	0.00

Total Settlement = 0.00

N°.	Sublayer Thick. (ft)	Elev. (ft)	Soil Stresses Initial (psf)	Max.Past Press. (psf)
1	0.10	-0.05	5.00	5.00
2	0.10	-0.15	15.00	15.00
3	0.10	-0.25	25.00	25.00
4	0.10	-0.35	35.00	35.00
5	0.10	-0.45	45.00	45.00
6	0.30	-0.65	56.39	56.39
7	0.30	-0.95	69.17	69.17
8	0.30	-1.25	81.95	81.95
9	0.30	-1.55	94.73	94.73
10	0.30	-1.85	107.51	107.51
11	1.60	-2.80	127.98	127.98
12	1.60	-4.40	156.14	156.14
13	1.60	-6.00	184.30	184.30
14	1.60	-7.60	212.46	212.46
15	1.60	-9.20	240.62	240.62
16	1.00	-10.50	278.50	278.50
17	1.00	-11.50	326.10	326.10
18	1.00	-12.50	373.70	373.70
19	1.00	-13.50	421.30	421.30

20	1.00	-14.50	468.90	468.90

Layer	X = Stress (psf)	0.00 Sett. (in.)	X = Stress (psf)	10.00 Sett. (in.)	X = Stress (psf)	20.00 Sett. (in.)	X = Stress (psf)	30.00 Sett. (in.)
1	21.40	0.01	145.00	0.03	145.00	0.03	145.00	0.03
2	45.36	0.01	145.00	0.02	145.00	0.02	145.00	0.02
3	54.94	0.01	145.00	0.02	145.00	0.02	145.00	0.02
4	59.66	0.01	145.00	0.01	145.00	0.01	145.00	0.01
5	62.41	0.01	145.00	0.01	145.00	0.01	145.00	0.01
6	65.45	0.02	144.99	0.03	145.00	0.03	145.00	0.03
7	67.66	0.02	144.97	0.03	145.00	0.03	145.00	0.03
8	68.82	0.02	144.94	0.03	144.99	0.03	145.00	0.03
9	69.53	0.01	144.89	0.02	144.99	0.02	145.00	0.02
10	70.01	0.01	144.81	0.02	144.98	0.02	144.99	0.02
11	70.85	0.51	144.37	0.87	144.92	0.88	144.97	0.88
12	71.45	0.44	142.85	0.75	144.69	0.76	144.90	0.76
13	71.73	0.38	140.36	0.66	144.24	0.67	144.75	0.67
14	71.88	0.34	137.15	0.58	143.54	0.60	144.51	0.60
15	71.98	0.30	133.54	0.51	142.58	0.54	144.16	0.54
16	72.04	0.02	130.52	0.04	141.62	0.04	143.79	0.04
17	72.07	0.02	128.22	0.03	140.78	0.03	143.45	0.03
18	72.09	0.02	125.97	0.03	139.87	0.03	143.06	0.03
19	72.11	0.01	123.80	0.02	138.88	0.03	142.63	0.03
20	72.12	0.01	121.71	0.02	137.84	0.02	142.15	0.02
		2.18		3.73		3.82		3.83

3.5"

0.3" salt

Layer	X = Stress (psf)	40.00 Sett. (in.)	X = Stress (psf)	50.00 Sett. (in.)	X = Stress (psf)	60.00 Sett. (in.)	X = Stress (psf)	70.00 Sett. (in.)
1	145.00	0.03	145.00	0.03	145.00	0.03	145.00	0.03
2	145.00	0.02	145.00	0.02	145.00	0.02	145.00	0.02
3	145.00	0.02	145.00	0.02	145.00	0.02	145.00	0.02
4	145.00	0.01	145.00	0.01	145.00	0.01	145.00	0.01
5	145.00	0.01	145.00	0.01	145.00	0.01	145.00	0.01
6	145.00	0.03	145.00	0.03	145.00	0.03	145.00	0.03
7	145.00	0.03	145.00	0.03	145.00	0.03	145.00	0.03
8	145.00	0.03	145.00	0.03	145.00	0.03	145.00	0.03
9	145.00	0.02	145.00	0.02	145.00	0.02	145.00	0.02
10	145.00	0.02	145.00	0.02	145.00	0.02	145.00	0.02
11	144.99	0.88	144.99	0.88	144.99	0.88	144.99	0.88
12	144.95	0.76	144.97	0.76	144.97	0.76	144.97	0.76
13	144.88	0.67	144.92	0.67	144.93	0.67	144.91	0.67
14	144.77	0.60	144.85	0.60	144.86	0.60	144.83	0.60
15	144.59	0.54	144.73	0.55	144.76	0.55	144.70	0.55
16	144.41	0.04	144.61	0.04	144.65	0.04	144.56	0.04
17	144.23	0.03	144.49	0.03	144.54	0.03	144.42	0.03
18	144.03	0.03	144.35	0.03	144.41	0.03	144.27	0.03
19	143.79	0.03	144.19	0.03	144.27	0.03	144.09	0.03
20	143.53	0.03	144.01	0.03	144.10	0.03	143.88	0.03

		3.83		3.83		3.83	3.83

Layer	X = Stress (psf)	80.00 Sett. (in.)	X = Stress (psf)	90.00 Sett. (in.)	X = Stress (psf)	100.00 Sett. (in.)
1	145.00	0.03	145.00	0.03	145.00	0.03
2	145.00	0.02	145.00	0.02	145.00	0.02
3	145.00	0.02	145.00	0.02	145.00	0.02
4	145.00	0.01	145.00	0.01	145.00	0.01
5	145.00	0.01	145.00	0.01	145.00	0.01
6	145.00	0.03	145.00	0.03	145.00	0.03
7	145.00	0.03	145.00	0.03	144.99	0.03
8	145.00	0.03	145.00	0.03	144.99	0.03
9	145.00	0.02	144.99	0.02	144.97	0.02
10	145.00	0.02	144.99	0.02	144.95	0.02
11	144.98	0.88	144.96	0.88	144.84	0.88
12	144.94	0.76	144.85	0.76	144.42	0.76
13	144.85	0.67	144.64	0.67	143.62	0.67
14	144.70	0.60	144.29	0.60	142.43	0.59
15	144.48	0.54	143.79	0.54	140.87	0.53
16	144.24	0.04	143.27	0.04	139.37	0.04
17	144.02	0.03	142.80	0.03	138.11	0.03
18	143.77	0.03	142.27	0.03	136.78	0.03
19	143.48	0.03	141.69	0.03	135.39	0.03
20	143.15	0.02	141.05	0.02	133.96	0.02
		3.83		3.83		3.80

STRIP LOADING VARIABLE SHAPE

Project Name: Ski Beach Drive Areas 3' Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Increment of stresses obtained using : Boussinesq

Settlement for X-Direction

Point #	X(ft)	Load (psf)
1	0.00	0.00
2	4.50	345.00
3	120.50	345.00
4	125.00	0.00

Foundation Elev. = 0.00 (ft) Ground Surface Elev.= 0.00 (ft)
Water table Elev. = -0.50 (ft) Unit weight of Wat. = 62.40 (pcf)

N°.	Layer Type	Thick. (ft)	Coefficient Comp.	Recomp.	Swell.	Unit Weight (pcf)	Secondary Settlement (in.)
1	COMP.	0.5	0.016	0.001	0.000	100.00	0.00
2	COMP.	1.5	0.016	0.001	0.000	105.00	0.00
3	COMP.	8.0	0.850	0.040	0.000	80.00	0.00
4	COMP.	5.0	0.018	0.001	0.000	110.00	0.00

Total Settlement = 0.00

N°.	Sublayer Thick. (ft)	Elev. (ft)	Soil Stresses Initial (psf)	Max.Past Press. (psf)
1	0.10	-0.05	5.00	5.00
2	0.10	-0.15	15.00	15.00
3	0.10	-0.25	25.00	25.00
4	0.10	-0.35	35.00	35.00
5	0.10	-0.45	45.00	45.00
6	0.30	-0.65	56.39	56.39
7	0.30	-0.95	69.17	69.17
8	0.30	-1.25	81.95	81.95
9	0.30	-1.55	94.73	94.73
10	0.30	-1.85	107.51	107.51
11	1.60	-2.80	127.98	127.98
12	1.60	-4.40	156.14	156.14
13	1.60	-6.00	184.30	184.30
14	1.60	-7.60	212.46	212.46
15	1.60	-9.20	240.62	240.62
16	1.00	-10.50	278.50	278.50
17	1.00	-11.50	326.10	326.10
18	1.00	-12.50	373.70	373.70
19	1.00	-13.50	421.30	421.30

20	1.00	-14.50	468.90	468.90

Layer	X = 10.00 Stress (psf)	Sett. (in.)	X = 20.00 Stress (psf)	Sett. (in.)	X = 30.00 Stress (psf)	Sett. (in.)	X = 40.00 Stress (psf)	Sett. (in.)
1	345.00	0.04	345.00	0.04	345.00	0.04	345.00	0.04
2	345.00	0.03	345.00	0.03	345.00	0.03	345.00	0.03
3	345.00	0.02	345.00	0.02	345.00	0.02	345.00	0.02
4	344.99	0.02	345.00	0.02	345.00	0.02	345.00	0.02
5	344.98	0.02	345.00	0.02	345.00	0.02	345.00	0.02
6	344.95	0.05	345.00	0.05	345.00	0.05	345.00	0.05
7	344.84	0.04	344.99	0.04	345.00	0.04	345.00	0.04
8	344.65	0.04	344.97	0.04	344.99	0.04	345.00	0.04
9	344.34	0.04	344.95	0.04	344.99	0.04	344.99	0.04
10	343.91	0.04	344.92	0.04	344.98	0.04	344.99	0.04
11	341.58	1.51	344.71	1.51	344.92	1.51	344.97	1.51
12	334.40	1.33	343.93	1.35	344.71	1.35	344.87	1.35
13	324.36	1.18	342.44	1.22	344.27	1.22	344.68	1.22
14	313.14	1.05	340.17	1.11	343.57	1.11	344.37	1.12
15	301.97	0.94	337.14	1.01	342.55	1.03	343.91	1.03
16	293.39	0.07	334.18	0.07	341.48	0.08	343.40	0.08
17	287.21	0.06	331.65	0.07	340.52	0.07	342.94	0.07
18	281.43	0.05	328.94	0.06	339.42	0.06	342.39	0.06
19	276.04	0.05	326.08	0.05	338.20	0.06	341.78	0.06
20	271.02	0.04	323.10	0.05	336.86	0.05	341.09	0.05
		6.60		6.83		6.86		6.87

Layer	X = 50.00 Stress (psf)	Sett. (in.)	X = 60.00 Stress (psf)	Sett. (in.)	X = 70.00 Stress (psf)	Sett. (in.)	X = 80.00 Stress (psf)	Sett. (in.)
1	345.00	0.04	345.00	0.04	345.00	0.04	345.00	0.04
2	345.00	0.03	345.00	0.03	345.00	0.03	345.00	0.03
3	345.00	0.02	345.00	0.02	345.00	0.02	345.00	0.02
4	345.00	0.02	345.00	0.02	345.00	0.02	345.00	0.02
5	345.00	0.02	345.00	0.02	345.00	0.02	345.00	0.02
6	345.00	0.05	345.00	0.05	345.00	0.05	345.00	0.05
7	345.00	0.04	345.00	0.04	345.00	0.04	345.00	0.04
8	345.00	0.04	345.00	0.04	345.00	0.04	345.00	0.04
9	345.00	0.04	345.00	0.04	345.00	0.04	345.00	0.04
10	344.99	0.04	345.00	0.04	345.00	0.04	344.99	0.04
11	344.98	1.51	344.99	1.51	344.98	1.51	344.98	1.51
12	344.93	1.35	344.94	1.35	344.94	1.35	344.91	1.35
13	344.82	1.22	344.86	1.22	344.84	1.22	344.77	1.22
14	344.63	1.12	344.71	1.12	344.68	1.12	344.53	1.12
15	344.35	1.03	344.49	1.03	344.44	1.03	344.19	1.03
16	344.05	0.08	344.24	0.08	344.18	0.08	343.81	0.08
17	343.76	0.07	344.01	0.07	343.93	0.07	343.45	0.07
18	343.42	0.06	343.74	0.06	343.64	0.06	343.04	0.06
19	343.04	0.06	343.43	0.06	343.31	0.06	342.56	0.06
20	342.60	0.05	343.07	0.05	342.92	0.05	342.03	0.05

	6.87		6.87		6.87		6.87

Layer	X = 90.00 Stress (psf)	Sett. (in.)	X = 100.00 Stress (psf)	Sett. (in.)	X = 110.00 Stress (psf)	Sett. (in.)
1	345.00	0.04	345.00	0.04	345.00	0.04
2	345.00	0.03	345.00	0.03	345.00	0.03
3	345.00	0.02	345.00	0.02	345.00	0.02
4	345.00	0.02	345.00	0.02	345.00	0.02
5	345.00	0.02	345.00	0.02	345.00	0.02
6	345.00	0.05	345.00	0.05	344.99	0.05
7	345.00	0.04	344.99	0.04	344.97	0.04
8	345.00	0.04	344.99	0.04	344.93	0.04
9	344.99	0.04	344.98	0.04	344.86	0.04
10	344.99	0.04	344.96	0.04	344.77	0.04
11	344.95	1.51	344.86	1.51	344.22	1.51
12	344.82	1.35	344.48	1.35	342.23	1.34
13	344.54	1.22	343.72	1.22	338.73	1.21
14	344.09	1.12	342.52	1.11	333.85	1.09
15	343.42	1.03	340.84	1.02	327.93	1.00
16	342.71	0.08	339.13	0.07	322.62	0.07
17	342.06	0.07	337.60	0.07	318.37	0.06
18	341.31	0.06	335.91	0.06	314.05	0.06
19	340.47	0.06	334.07	0.05	309.72	0.05
20	339.52	0.05	332.09	0.05	305.43	0.05
		6.87		6.85		6.78

One Layer Soil System/Rectangular

Project Name: Ski Beach Drive Areas Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Stratum thickness = 8.00 (ft)
Coeff. of consolidation = 0.750 (ft*ft/days)
Number of sublayers = 5
Drainage Conditions = Drain. at top/Imperv. bottom

Load #	Init. Pore Pressure (psf)	Load Type	Placement Time (days)	Ramp Time (days)	Ultimate Settlement (in.)
1	145.00	RAMP	0.00	30.00	3.50

Pore Pressure Distribution
for Time (days) = 30.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	46.61	46.61
3.20	79.43	79.43
4.80	100.90	100.90
6.40	112.96	112.96
8.00	116.83	116.83

T	=	0.35	
U (%)	=	44.44	44.44
Settlement	=	1.56	1.56

Pore Pressure Distribution
for Time (days) = 60.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	16.02	16.02
3.20	30.48	30.48
4.80	41.95	41.95
6.40	49.31	49.31
8.00	51.84	51.84

T	=	0.70	
U (%)	=	77.24	77.24
Settlement	=	2.70	2.70

for Time (days) = 90.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	6.73	6.73
3.20	12.80	12.80
4.80	17.62	17.62
6.40	20.71	20.71
8.00	21.78	21.78

T	=	1.05	
U (%)	=	90.44	90.44
Settlement	=	3.17	3.17

Pore Pressure Distribution
for Time (days) = 120.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	2.83	2.83
3.20	5.38	5.38
4.80	7.40	7.40
6.40	8.70	8.70
8.00	9.15	9.15

T	=	1.41	
U (%)	=	95.98	95.98
Settlement	=	3.36	3.36

Pore Pressure Distribution
for Time (days) = 180.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.50	0.50
3.20	0.95	0.95
4.80	1.31	1.31
6.40	1.53	1.53
8.00	1.61	1.61

T	=	2.11	
U (%)	=	99.29	99.29
Settlement	=	3.48	3.48

One Layer Soil System/Rectangular

Project Name: Ski Beach Drive Areas 3' Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Stratum thickness = 8.00 (ft)
Coeff. of consolidation = 0.750 (ft*ft/days)
Number of sublayers = 5
Drainage Conditions = Drain. at top/Imperv. bottom

Load #	Init. Pore Pressure (psf)	Load Type	Placement Time (days)	Ramp Time (days)	Ultimate Settlement (in.)
1	345.00	RAMP	0.00	30.00	6.25

Pore Pressure Distribution
for Time (days) = 30.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	110.91	110.91
3.20	189.00	189.00
4.80	240.08	240.08
6.40	268.76	268.76
8.00	277.98	277.98

T	=	0.35	
U (%)	=	44.44	44.44
Settlement	=	2.78	2.78

Pore Pressure Distribution
for Time (days) = 60.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	38.13	38.13
3.20	72.52	72.52
4.80	99.80	99.80
6.40	117.32	117.32
8.00	123.35	123.35

T	=	0.70	
U (%)	=	77.24	77.24
Settlement	=	4.83	4.83

for Time (days) = 90.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	16.01	16.01
3.20	30.46	30.46
4.80	41.92	41.92
6.40	49.28	49.28
8.00	51.81	51.81

T	=	1.05	
U (%)	=	90.44	90.44
Settlement	=	5.65	5.65

Pore Pressure Distribution
for Time (days) = 120.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	6.73	6.73
3.20	12.79	12.79
4.80	17.61	17.61
6.40	20.70	20.70
8.00	21.76	21.76

T	=	1.41	
U (%)	=	95.98	95.98
Settlement	=	6.00	6.00

Pore Pressure Distribution
for Time (days) = 180.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	1.19	1.19
3.20	2.26	2.26
4.80	3.11	3.11
6.40	3.65	3.65
8.00	3.84	3.84

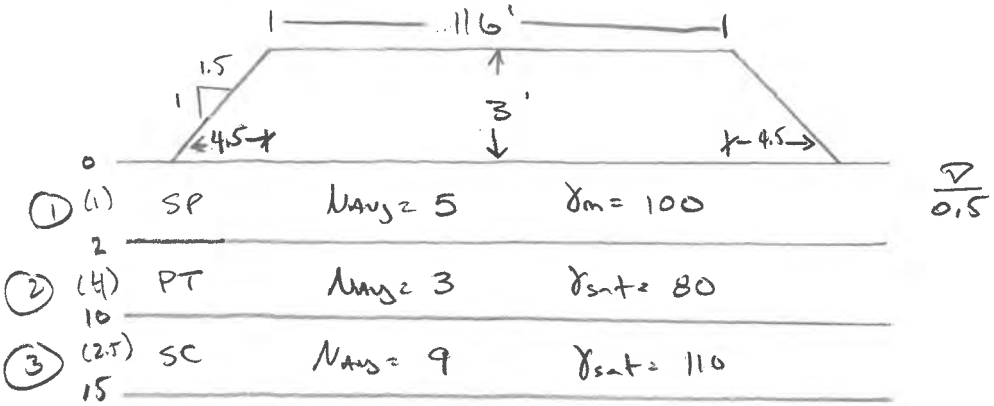
T	=	2.11	
U (%)	=	99.29	99.29
Settlement	=	6.21	6.21

GEC Geotechnical and Environmental Consultants, Inc.

JOB. NO. 4002G
SHEET NO. 1 of 1
DATE 4/19/17
COMPUTED BY GW
CHECKED BY

PROJECT NAME SKi Beach

SUBJECT Boat Parking / Drive Area / Boat Ramp



Layer 1

1) P_o = 0.5 (100) + 0.5(105-62.4) = 71.3

2) N'/N = 3.3 N' = 3.3(5) = 17

3) C' = 63 C_c = 1/63 = 0.016

C_r = 0.1(0.016) = 0.001

Layer 2

1) 71.3 + 1(105-62.4) + 4(80-62.4) = 184.3

2) N'/N = 2.7 N' = 2.7(3) = 8

3) C' = N/A C_c = 0.05 * from Consol Testing correlations

C_r = 0.04

e_o = 5.12 SG = 1.6

Layer 3

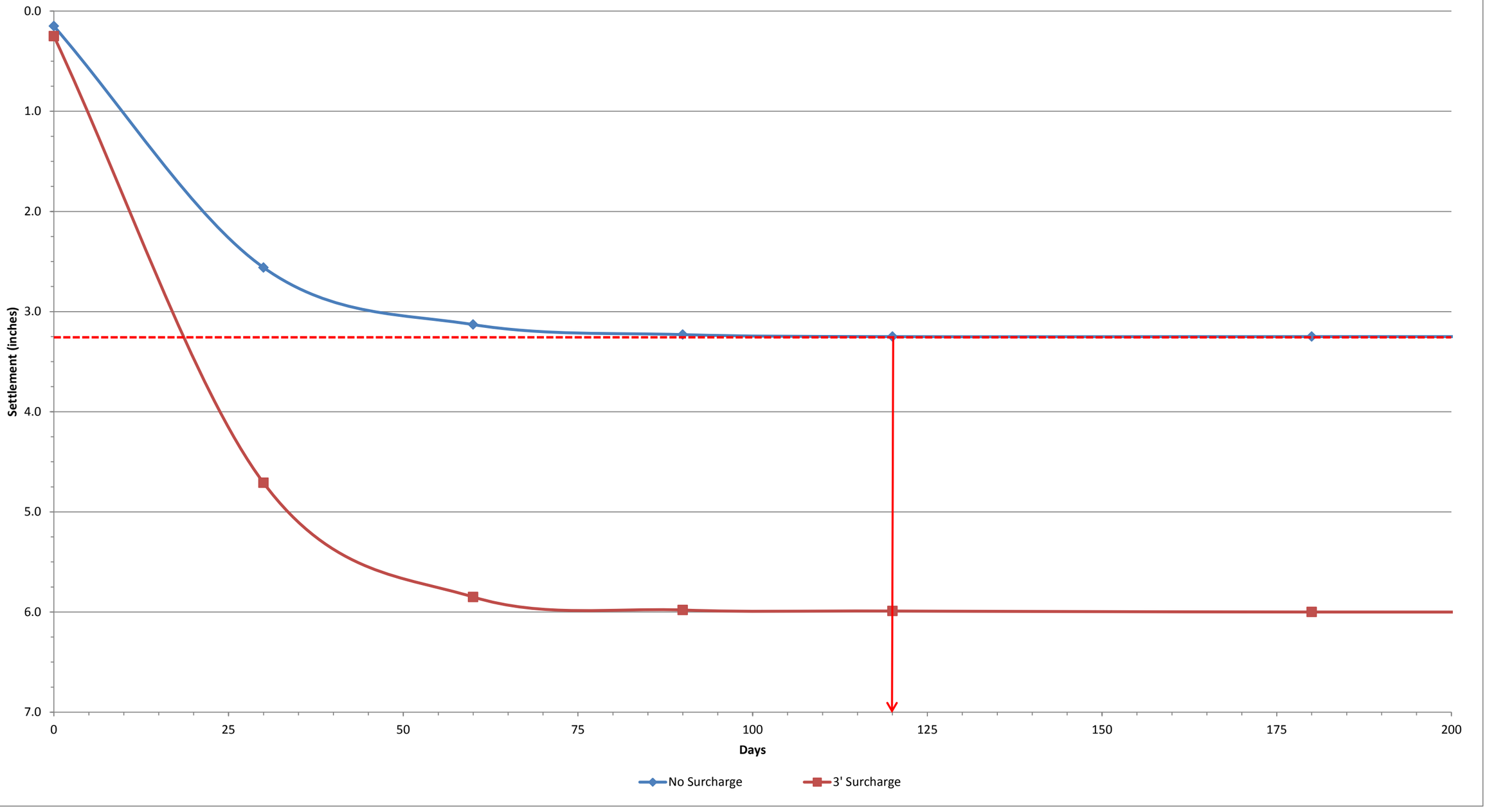
1) 184.3 + 4(80-62.4) + 2.5(110-62.4) = 373.7

2) N'/N = 2.2 N' = 2.2(9) = 20

3) C' = 57 C_c = 0.018

C_r = 0.001

Time Rate Settlement Curves
Ski Beach at Lake Harris
Sidewalks



Secondary Consolidation Settlement Calculations
Ski Beach at Lake Harris
3-foot Surcharge - Sidewalks
GEC Project No. 4002G

Input Parameters

σ'_{vs} =	345	psf	Maximum Effective Stress of Surcharge (3' Surcharge)
σ'_{vf} =	160	psf	Final Effective Stress (After Surcharge Removal)
t =	5535	days	Elapsed Time From Application of Load (15 years + surcharge time)
t_p =	60	days	Duration of Primary Consolidation (duration of surcharge)
T_v =	1.129		Time Factor (For 95% Rebound)

Soil Layer	Layer Description	Compression Index C_c	Coefficient of Consolidation C_V (ft^2/day)	Secondary Compression Index C_α	e_o	Layer Thickness H (ft)	Length of Drainage Path H_{dr} (ft)
1	Organic Silt	0.36	0.38	0.020	1.53	8.0	8.0

Secondary Settlement Without Surcharge Calculations

Soil Layer	ΔH_{sec} (inches)
1	1.49
Total	**1.49**

in. = Secondary Settlement Without Surcharge

$$\Delta H_{sec} = \frac{C_c}{1+e_o}\frac{C_\alpha}{C_c} H \log\frac{t}{t_p}$$

$$\Delta H'_{sec} = \frac{C_c}{1+e_o}\frac{C_\alpha}{C_c}\frac{C''_\alpha}{C_\alpha} H \log\frac{t}{t_p}$$

Secondary Settlement Post Surcharge Calculations

Soil Layer	Time for Primary Rebound t_{pr} (days)	Effective Surcharge Ratio R'_s	t_l/t_{pr}	Time for Secondary Settlement to Occur Post Surcharge t_l (days)	t/t_l	* C''_α/C_α	$\log(t/t_l)$	Secondary Settlement Post Surcharge $\Delta H'_{sec}$ (inches)
1	190	1.156	11.56	2199	3	0.04	0.40	0.01
							Total	**0.01**

Secondary Settlement With Surcharge = 0.01 in.

** Reference: Figure 13, "Secondary Compression of Peat with or without Surcharging" Journal of Geotechnical and Geoenvironmental Engineering, May 1997.*

STRIP LOADING VARIABLE SHAPE

Project Name: Ski Beach Sidewalk — Project Number : 4002G
Client : HDR — Project Manager: GW/DCS
Date : 4/19/2017 — Computed by : GW

Increment of stresses obtained using : Boussinesq

Settlement for X-Direction

Point #	X(ft)	Load (psf)
1	0.00	0.00
2	0.10	160.00
3	8.00	160.00
4	8.10	0.00

Foundation Elev. = 0.00 (ft) Ground Surface Elev.= 0.00 (ft)
Water table Elev. = -0.50 (ft) Unit weight of Wat. = 62.40 (pcf)

N°.	Layer Type	Thick. (ft)	Coefficient Comp.	Recomp.	Swell.	Unit Weight (pcf)	Secondary Settlement (in.)
1	COMP.	1.0	0.015	0.001	0.000	105.00	0.00
2	COMP.	8.0	0.360	0.050	0.000	95.00	0.00
3	COMP.	1.0	0.016	0.001	0.000	110.00	0.00

Total Settlement = 0.00

N°.	Sublayer Thick. (ft)	Elev. (ft)	Soil Stresses Initial (psf)	Max.Past Press. (psf)
1	0.20	-0.10	10.50	10.50
2	0.20	-0.30	31.50	31.50
3	0.20	-0.50	52.50	52.50
4	0.20	-0.70	61.02	61.02
5	0.20	-0.90	69.54	69.54
6	1.60	-1.80	99.88	99.88
7	1.60	-3.40	152.04	152.04
8	1.60	-5.00	204.20	204.20
9	1.60	-6.60	256.36	256.36
10	1.60	-8.20	308.52	308.52
11	0.20	-9.10	339.36	339.36
12	0.20	-9.30	348.88	348.88
13	0.20	-9.50	358.40	358.40
14	0.20	-9.70	367.92	367.92
15	0.20	-9.90	377.44	377.44

Layer	X = 0.00 Stress (psf)	Sett. (in.)	X = 1.00 Stress (psf)	Sett. (in.)	X = 2.00 Stress (psf)	Sett. (in.)	X = 3.00 Stress (psf)	Sett. (in.)

1	40.00	0.02	159.96	0.04	160.00	0.04	160.00	0.04
2	63.61	0.02	159.04	0.03	159.88	0.03	159.96	0.03
3	69.94	0.01	156.29	0.02	159.45	0.02	159.81	0.02
4	72.75	0.01	151.93	0.02	158.59	0.02	159.49	0.02
5	74.32	0.01	146.71	0.02	157.24	0.02	158.95	0.02
6	76.82	0.68	125.22	0.96	146.61	1.07	153.41	1.10
7	76.40	0.48	104.11	0.62	124.17	0.71	135.02	0.75
8	73.50	0.36	91.52	0.44	106.01	0.50	115.15	0.53
9	69.22	0.28	81.55	0.33	91.62	0.36	98.22	0.38
10	64.37	0.22	73.04	0.25	80.06	0.27	84.66	0.29
11	61.60	0.00	68.78	0.00	74.55	0.00	78.32	0.00
12	60.99	0.00	67.89	0.00	73.41	0.00	77.01	0.00
13	60.38	0.00	67.01	0.00	72.30	0.00	75.75	0.00
14	59.78	0.00	66.14	0.00	71.21	0.00	74.52	0.00
15	59.18	0.00	65.29	0.00	70.16	0.00	73.33	0.00
		2.13		2.75		3.06		3.21

Layer	X = Stress (psf)	4.00 Sett. (in.)	X = Stress (psf)	5.00 Sett. (in.)	X = Stress (psf)	6.00 Sett. (in.)	X = Stress (psf)	7.00 Sett. (in.)
1	160.00	0.04	160.00	0.04	160.00	0.04	159.97	0.04
2	159.97	0.03	159.96	0.03	159.89	0.03	159.27	0.03
3	159.87	0.02	159.82	0.02	159.52	0.02	157.11	0.02
4	159.65	0.02	159.52	0.02	158.76	0.02	153.51	0.02
5	159.27	0.02	159.01	0.02	157.56	0.02	148.98	0.02
6	155.04	1.11	153.73	1.11	147.70	1.08	128.50	0.98
7	138.49	0.77	135.67	0.76	125.65	0.71	106.54	0.63
8	118.41	0.54	115.74	0.53	107.18	0.50	93.17	0.45
9	100.64	0.39	98.66	0.39	92.46	0.37	82.68	0.33
10	86.36	0.29 3.1"	84.97	0.29	80.64	0.28	73.83	0.25
11	79.70	0.00	78.57	0.00	75.02	0.00	69.43	0.00
12	78.34	0.00	77.25	0.00	73.86	0.00	68.51	0.00
13	77.02	0.00	75.98	0.00	72.73	0.00	67.60	0.00
14	75.74	0.00	74.74	0.00	71.63	0.00	66.72	0.00
15	74.49	0.00	73.54	0.00	70.56	0.00	65.85	0.00
		3.26		3.22		3.08		2.79

0.5" sand

Layer	X = Stress (psf)	8.00 Sett. (in.)
1	120.00	0.04
2	96.38	0.02
3	90.04	0.02
4	87.20	0.01
5	85.59	0.01
6	82.46	0.71
7	79.33	0.50
8	75.38	0.37
9	70.51	0.29
10	65.28	0.23

11	62.36	0.00
12	61.72	0.00
13	61.09	0.00
14	60.46	0.00
15	59.84	0.00
		2.22

STRIP LOADING VARIABLE SHAPE

Project Name: Ski Beach Sidewalk 3' Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Increment of stresses obtained using : Boussinesq

Settlement for X-Direction

Point #	X(ft)	Load (psf)
1	0.00	0.00
2	4.50	345.00
3	12.50	345.00
4	17.00	0.00

Foundation Elev. = 0.00 (ft) Ground Surface Elev.= 0.00 (ft)
Water table Elev. = -0.50 (ft) Unit weight of Wat. = 62.40 (pcf)

N°.	Layer Type	Thick. (ft)	Coefficient Comp.	Recomp.	Swell.	Unit Weight (pcf)	Secondary Settlement (in.)
1	COMP.	1.0	0.015	0.001	0.000	105.00	0.00
2	COMP.	8.0	0.360	0.050	0.000	95.00	0.00
3	COMP.	1.0	0.016	0.001	0.000	110.00	0.00

Total Settlement = 0.00

N°.	Sublayer Thick. (ft)	Elev. (ft)	Soil Stresses Initial (psf)	Max.Past Press. (psf)
1	0.20	-0.10	10.50	10.50
2	0.20	-0.30	31.50	31.50
3	0.20	-0.50	52.50	52.50
4	0.20	-0.70	61.02	61.02
5	0.20	-0.90	69.54	69.54
6	1.60	-1.80	99.88	99.88
7	1.60	-3.40	152.04	152.04
8	1.60	-5.00	204.20	204.20
9	1.60	-6.60	256.36	256.36
10	1.60	-8.20	308.52	308.52
11	0.20	-9.10	339.36	339.36
12	0.20	-9.30	348.88	348.88
13	0.20	-9.50	358.40	358.40
14	0.20	-9.70	367.92	367.92
15	0.20	-9.90	377.44	377.44

Layer	X = 0.00 Stress (psf)	Sett. (in.)	X = 2.00 Stress (psf)	Sett. (in.)	X = 4.00 Stress (psf)	Sett. (in.)	X = 6.00 Stress (psf)	Sett. (in.)

1	2.44	0.00	153.33	0.04	306.64	0.05	345.00	0.06
2	7.31	0.00	153.35	0.03	305.95	0.04	344.91	0.04
3	12.15	0.00	153.41	0.02	304.10	0.03	344.59	0.03
4	16.94	0.00	153.54	0.02	301.33	0.03	343.93	0.03
5	21.66	0.00	153.75	0.02	298.00	0.03	342.89	0.03
6	41.65	0.41	155.42	1.11	280.89	1.59	333.70	1.74
7	70.18	0.45	158.42	0.85	253.06	1.16	307.78	1.31
8	89.42	0.43	158.88	0.68	230.96	0.90	279.59	1.02
9	101.34	0.40	156.83	0.57	212.68	0.72	253.08	0.82
10	108.03	0.36	152.88	0.48	196.72	0.59	229.26	0.66
11	110.13	0.00	150.07	0.01	188.49	0.01	217.12	0.01
12	110.46	0.00	149.40	0.01	186.72	0.01	214.54	0.01
13	110.75	0.00	148.71	0.01	184.98	0.01	212.01	0.01
14	111.00	0.00	148.02	0.01	183.26	0.01	209.52	0.01
15	111.21	0.00	147.31	0.01	181.56	0.01	207.07	0.01
		2.09		3.85		5.16		5.78

Layer	X = Stress (psf)	8.00 Sett. (in.)	X = Stress (psf)	10.00 Sett. (in.)	X = Stress (psf)	12.00 Sett. (in.)	X = Stress (psf)	14.00 Sett. (in.)
1	345.00	0.06	345.00	0.06	344.97	0.06	230.00	0.05
2	344.98	0.04	344.96	0.04	344.28	0.04	229.93	0.03
3	344.90	0.03	344.84	0.03	342.41	0.03	229.68	0.03
4	344.72	0.03	344.57	0.03	339.60	0.03	229.18	0.02
5	344.41	0.03	344.10	0.03	336.18	0.03	228.41	0.02
6	340.80	1.76	339.07	1.76	318.21	1.70	222.23	1.39
7	324.11	1.36	319.25	1.34	286.57	1.26	208.50	1.02
8	298.60	1.07	292.47	1.06	259.13	0.97	196.52	0.80
9	270.66	0.86	264.82	0.84	235.51	0.77	185.81	0.65
10	244.06	0.69 5.75"	239.08	0.68	214.93	0.63	175.62	0.53
11	230.28	0.01	225.84	0.01	204.47	0.01	170.01	0.01
12	227.36	0.01	223.03	0.01	202.25	0.01	168.78	0.01
13	224.48	0.01	220.26	0.01	200.06	0.01	167.55	0.01
14	221.64	0.01	217.55	0.01	197.90	0.01	166.33	0.01
15	218.86	0.01	214.87	0.01	195.78	0.01	165.11	0.01
		5.96 0.25" saved		5.90		5.55		4.58

Layer	X = Stress (psf)	16.00 Sett. (in.)	X = Stress (psf)	18.00 Sett. (in.)
1	76.67	0.03	0.01	0.00
2	76.86	0.02	0.20	0.00
3	77.47	0.01	0.85	0.00
4	78.61	0.01	2.08	0.00
5	80.26	0.01	3.87	0.00
6	91.11	0.77	16.38	0.18
7	110.08	0.65	42.24	0.29
8	121.99	0.56	63.35	0.32
9	127.98	0.48	78.35	0.32
10	129.92	0.42	88.22	0.30

11	129.76	0.01	91.99	0.00
12	129.63	0.01	92.68	0.00
13	129.47	0.01	93.32	0.00
14	129.27	0.01	93.92	0.00
15	129.05	0.00	94.47	0.00
		2.99		1.43

One Layer Soil System/Rectangular

Project Name: Ski Beach Sidewalk
Client : HDR
Date : 4/19/2017

Project Number : 4002G
Project Manager: GW/DCS
Computed by : GW

Stratum thickness = 8.00 (ft)
Coeff. of consolidation = 0.380 (ft*ft/days)
Number of sublayers = 5
Drainage Conditions = Drainage at top/bottom

Load #	Init. Pore Pressure (psf)	Load Type	Placement Time (days)	Ramp Time (days)	Ultimate Settlement (in.)
1	160.00	RAMP	0.00	15.00	3.10

Pore Pressure Distribution
for Time (days) = 30.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	33.08	33.08
3.20	53.52	53.52
4.80	53.52	53.52
6.40	33.08	33.08
8.00	0.00	0.00

T	=	0.71	
U (%)	=	77.61	77.61
Settlement	=	2.41	2.41

Pore Pressure Distribution
for Time (days) = 60.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	5.70	5.70
3.20	9.23	9.23
4.80	9.23	9.23
6.40	5.70	5.70
8.00	0.00	0.00

T	=	1.43	
U (%)	=	96.14	96.14
Settlement	=	2.98	2.98

for Time (days) = 90.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.98	0.98
3.20	1.59	1.59
4.80	1.59	1.59
6.40	0.98	0.98
8.00	0.00	0.00

T	=	2.14	
U (%)	=	99.33	99.33
Settlement	=	3.08	3.08

Pore Pressure Distribution
for Time (days) = 120.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.17	0.17
3.20	0.27	0.27
4.80	0.27	0.27
6.40	0.17	0.17
8.00	0.00	0.00

T	=	2.85	
U (%)	=	99.89	99.89
Settlement	=	3.10	3.10

Pore Pressure Distribution
for Time (days) = 180.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.01	0.01
3.20	0.01	0.01
4.80	0.01	0.01
6.40	0.01	0.01
8.00	0.00	0.00

T	=	4.28	
U (%)	=	100.00	100.00
Settlement	=	3.10	3.10

One Layer Soil System/Rectangular

Project Name: Ski Beach Sidewalk 3' Project Number : 4002G
Client : HDR Project Manager: GW/DCS
Date : 4/19/2017 Computed by : GW

Stratum thickness = 8.00 (ft)
Coeff. of consolidation = 0.380 (ft*ft/days)
Number of sublayers = 5
Drainage Conditions = Drainage at top/bottom

Load #	Init. Pore Pressure (psf)	Load Type	Placement Time (days)	Ramp Time (days)	Ultimate Settlement (in.)
1	345.00	RAMP	0.00	15.00	5.75

Pore Pressure Distribution
for Time (days) = 30.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	71.33	71.33
3.20	115.40	115.40
4.80	115.40	115.40
6.40	71.33	71.33
8.00	0.00	0.00

T	=	0.71	
U (%)	=	77.61	77.61
Settlement	=	4.46	4.46

Pore Pressure Distribution
for Time (days) = 60.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	12.29	12.29
3.20	19.89	19.89
4.80	19.89	19.89
6.40	12.29	12.29
8.00	0.00	0.00

T	=	1.43	
U (%)	=	96.14	96.14
Settlement	=	5.53	5.53

for Time (days) = 90.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	2.12	2.12
3.20	3.43	3.43
4.80	3.43	3.43
6.40	2.12	2.12
8.00	0.00	0.00

T	=	2.14	
U (%)	=	99.33	99.33
Settlement	=	5.71	5.71

Pore Pressure Distribution
for Time (days) = 120.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.37	0.37
3.20	0.59	0.59
4.80	0.59	0.59
6.40	0.37	0.37
8.00	0.00	0.00

T	=	2.85	
U (%)	=	99.89	99.89
Settlement	=	5.74	5.74

Pore Pressure Distribution
for Time (days) = 180.00

Depth (ft)	Load 1 (psf)	Total (psf)
0.00	0.00	0.00
1.60	0.01	0.01
3.20	0.02	0.02
4.80	0.02	0.02
6.40	0.01	0.01
8.00	0.00	0.00

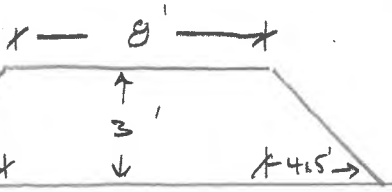
T	=	4.28	
U (%)	=	100.00	100.00
Settlement	=	5.75	5.75

GEC Geotechnical and Environmental Consultants, Inc.

JOB. NO. 4002 G
SHEET NO. 1 of 1
DATE 4/19/17
COMPUTED BY GW
CHECKED BY

PROJECT NAME Ski Beach

SUBJECT Sidewalk



					D / AGS
	0				
(1)	(0.5) 1	SP	N_{AVG} = 5	γ_{sat} = 105	
(2)	(4) 9	SH	N_{AVG} = 2	γ_{sat} = 95	
(3)	(0.5) 10	SP-SM/SM	N_{AVG} = 10	γ_{sat} = 110	

Layer 1

1) ρ_0 = 0.5(105 - 62.4) = 21.3

2) N'/N = 3.8 N' = 3.8(5) = 19

3) C' = 66 C_c = 1/66 = 0.015

C_r = 0.1(0.015) = 0.001

Layer 2

1) ρ_0 = 21.3 + 0.5(105 - 62.4) + 4(95 - 62.4) = 173

2) N'/N = 2.7 N' = 2.7(2) = 5

3) C' = N/A C_c = 0.36 * from Lansol Testing Correlations

C_r = 0.05

e_0 = 1.529 SG = 2.58

Layer 3

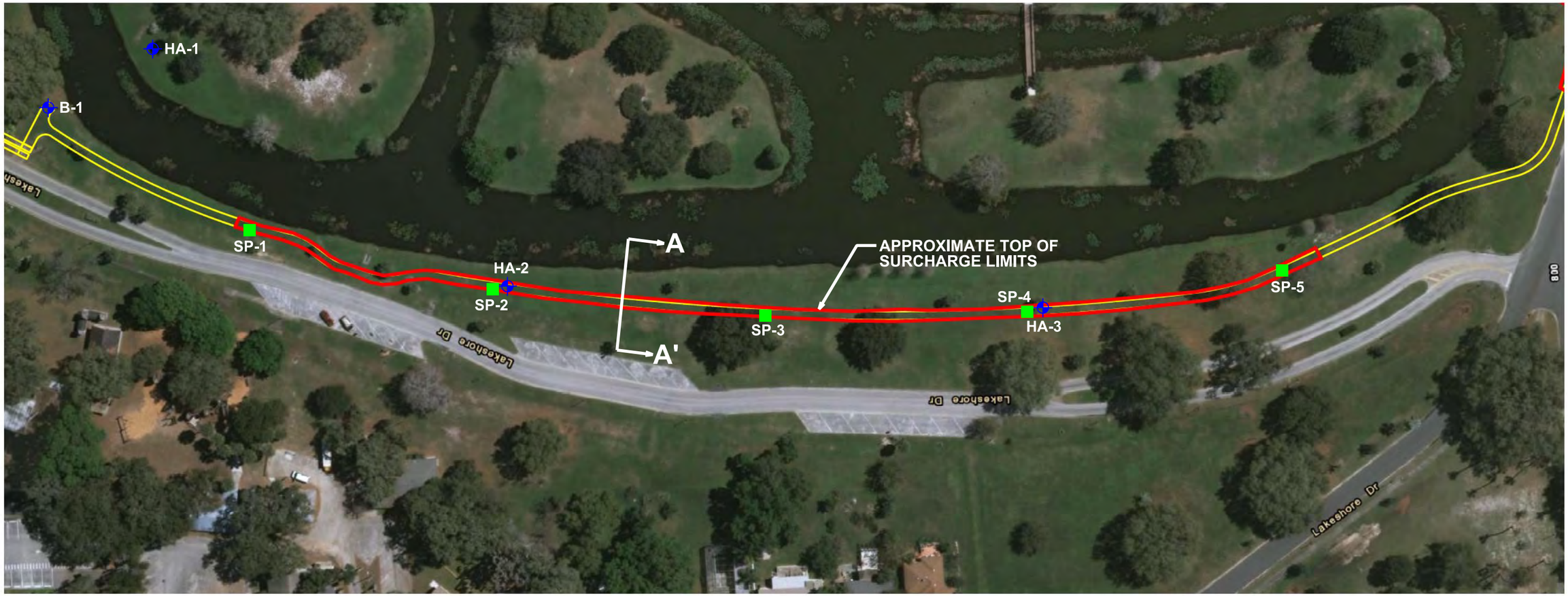
1) ρ_0 = 173 + 4(95 - 62.4) + 0.5(110 - 62.4) = 327.2

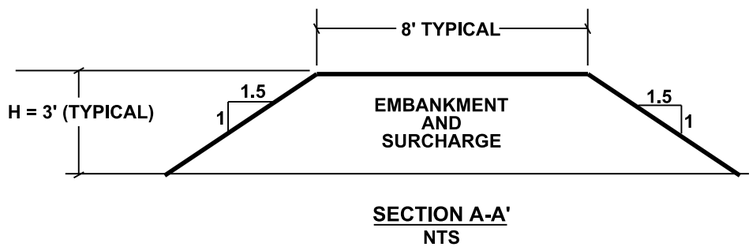
2) N'/N = 2.2 N' = 2.2(10) = 22

3) C' = 62 C_c = 0.016

C_r = 0.001

SURCHARGE CONTROL SHEETS





SECTION A-A'
NTS

LEGEND

- SETTLEMENT PLATE LOCATION
- APPROXIMATE BORING LOCATION

SETTLEMENT PLATE NO.	NORTHING	EASTING
SP-1	1626341.961	375274.417
SP-2	1626305.434	324951.606
SP-3	1625800.742	374895.990
SP-4	1625538.373	374920.638
SP-5	1625581.736	374908.466

NOTES

FOR SURCHARGE PROGRAM CONSTRUCTION DETAILS, REFER TO TECHNICAL SPECIAL PROVISIONS T120 AND T141.

FOR DETAILS REGARDING SUBSURFACE CONDITIONS IN SURCHARGE AREA REFER TO THE CROSS SECTIONS AND REPORT OF SPT BORINGS SHEETS IN THE PLANS.

GENERAL SURCHARGE CONSTRUCTION SEQUENCE

1. REMOVE ORGANIC SOILS IN ACCORDANCE WITH THE CROSS SECTIONS.
2. BACKFILL WITH A-3 SELECT SOILS TO ESTABLISH WORKING PLATFORM AND INSTALL SETTLEMENT PLATES.
3. CONSTRUCT SURCHARGE EMBANKMENT IN ACCORDANCE WITH TECHNICAL SPECIAL PROVISION T120.

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882
DANIEL C. STANFILL PE NO. 42763
GEC

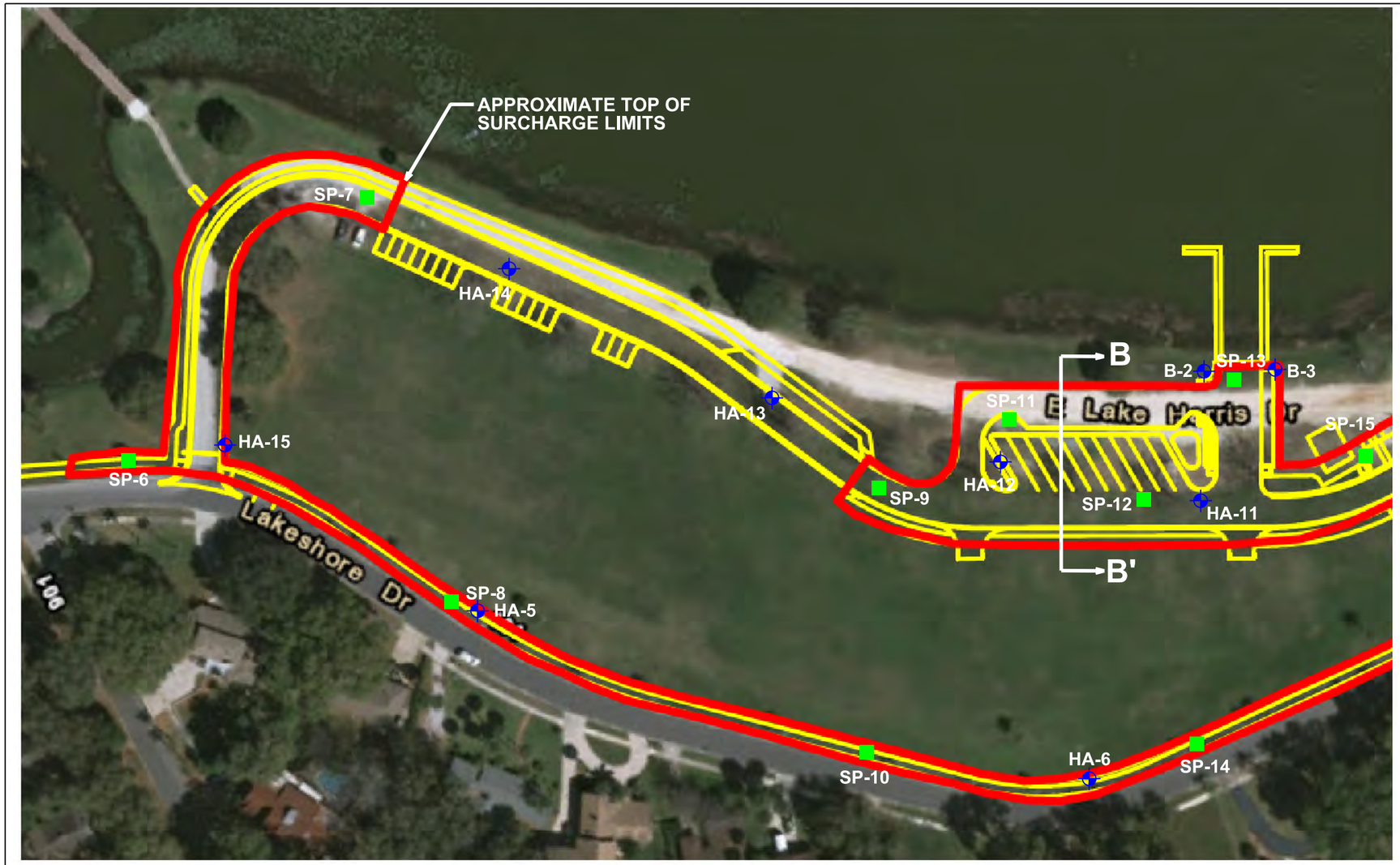
PROJECT NO. 4002G
DATE 5/26/2017
DRAWN BY BMM
CHECKED BY VEW
CHECKED BY DCS 42763

SURCHARGE CONTROL SHEET

SKI BEACH AT LAKE HARRIS

FIGURE NO. 6

Scott 5/26/2017 8:57:03 AM J:\D124\4002G Ski Beach\surcharge01.dgn



0 50 100
Scale (ft.)

LEGEND

- SETTLEMENT PLATE LOCATION
- APPROXIMATE BORING LOCATION

SETTLEMENT PLATE NO.	NORTHING	EASTING
SP-6	1625252.732	375092.776
SP-7	1625346.600	375382.065
SP-8	1624995.887	375305.168
SP-9	1624942.902	375635.978
SP-10	1624756.754	325532.107
SP-11	1624946.431	375749.393
SP-12	1624828.702	375835.651
SP-13	1624886.442	375945.302
SP-14	1624644.769	375776.641
SP-15	1624771.446	376006.276

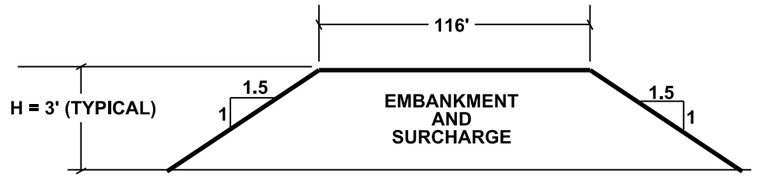
NOTES

FOR SURCHARGE PROGRAM CONSTRUCTION DETAILS, REFER TO TECHNICAL SPECIAL PROVISIONS T120 AND T141.

FOR DETAILS REGARDING SUBSURFACE CONDITIONS IN SURCHARGE AREA REFER TO THE CROSS SECTIONS AND REPORT OF SPT BORINGS SHEETS IN THE PLANS.

GENERAL SURCHARGE CONSTRUCTION SEQUENCE

1. REMOVE ORGANIC SOILS IN ACCORDANCE WITH THE CROSS SECTIONS.
2. BACKFILL WITH A-3 SELECT SOILS TO ESTABLISH WORKING PLATFORM AND INSTALL SETTLEMENT PLATES.
3. CONSTRUCT SURCHARGE EMBANKMENT IN ACCORDANCE WITH TECHNICAL SPECIAL PROVISION T120.



SECTION B-B'
NTS

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882
DANIEL C. STANFILL PE NO. 42763

GEC

PROJECT NO.	4002G
DATE	5/26/2017
DRAWN BY	BMM
CHECKED BY	VEW
CHECKED BY	DCS 42763

SURCHARGE CONTROL SHEET

SKI BEACH AT LAKE HARRIS

FIGURE NO. 7

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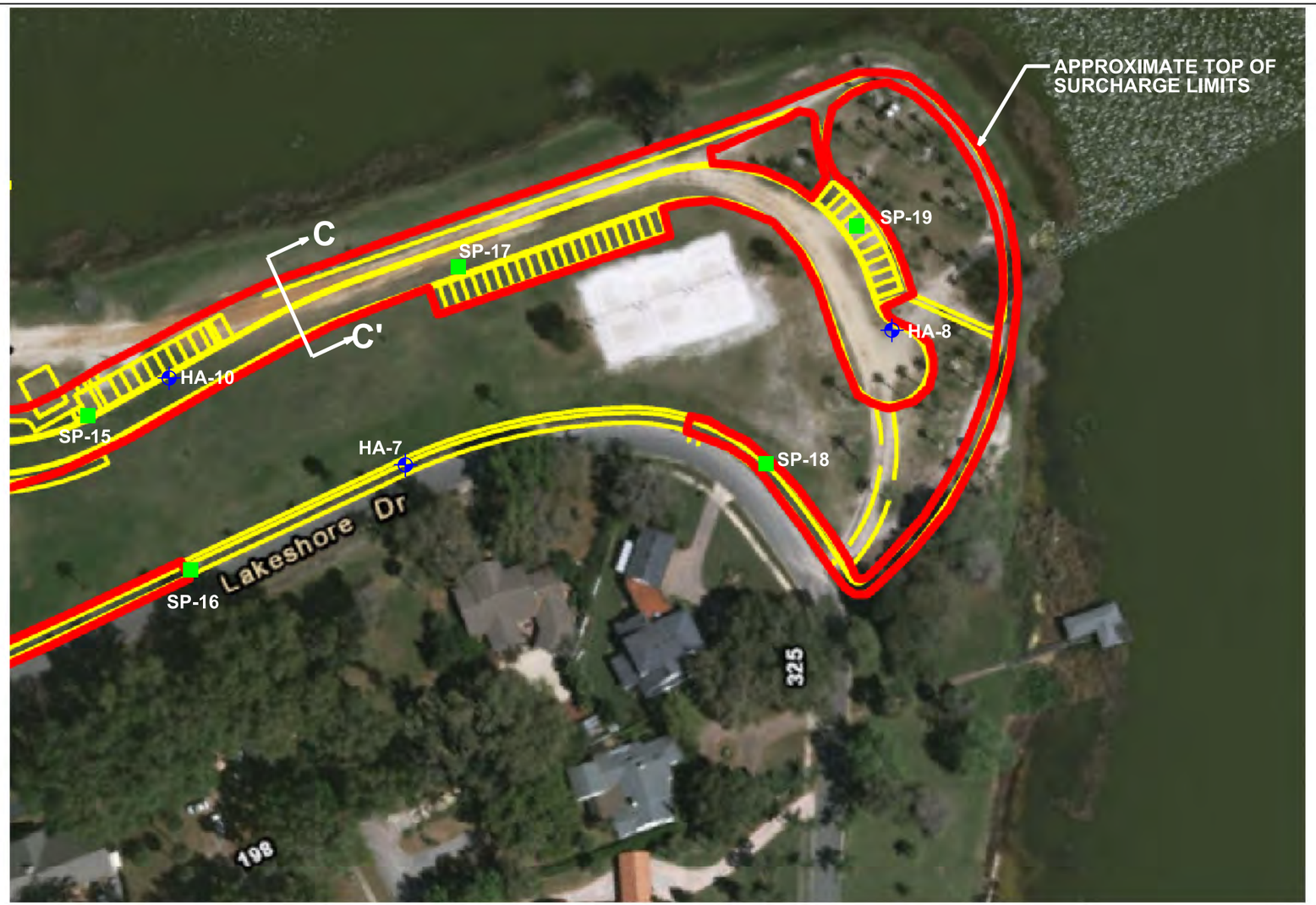


0 50 100
Scale (ft.)

LEGEND

- SETTLEMENT PLATE LOCATION
- APPROXIMATE BORING LOCATION

SETTLEMENT PLATE NO.	NORTHING	EASTING
SP-15	1624771.446	376006.276
SP-16	1624633.290	376002.377
SP-17	1624742.676	376308.759
SP-18	1624508.926	376447.339
SP-19	1624636.131	376605.546

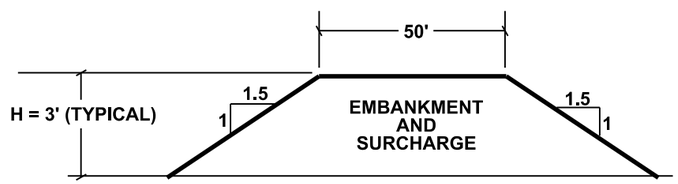
NOTES

FOR SURCHARGE PROGRAM CONSTRUCTION DETAILS, REFER TO TECHNICAL SPECIAL PROVISIONS T120 AND T141.

FOR DETAILS REGARDING SUBSURFACE CONDITIONS IN SURCHARGE AREA REFER TO THE CROSS SECTIONS AND REPORT OF SPT BORINGS SHEETS IN THE PLANS.

GENERAL SURCHARGE CONSTRUCTION SEQUENCE

1. REMOVE ORGANIC SOILS IN ACCORDANCE WITH THE CROSS SECTIONS.
2. BACKFILL WITH A-3 SELECT SOILS TO ESTABLISH WORKING PLATFORM AND INSTALL SETTLEMENT PLATES.
3. CONSTRUCT SURCHARGE EMBANKMENT IN ACCORDANCE WITH TECHNICAL SPECIAL PROVISION T120.



SECTION C-C'
NTS

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.
919 Lake Baldwin Lane
Orlando, FL 32814
T 407-898-1818 F 407-898-1837
Certificate of Authorization No. 5882
DANIEL C. STANFILL PE NO. 42763

GEC

PROJECT NO.	4002G
DATE	5/26/2017
DRAWN BY	BMM
CHECKED BY	VEW
CHECKED BY	DCS 42763

SURCHARGE CONTROL SHEET

SKI BEACH AT LAKE HARRIS

FIGURE NO. 8

Scott 5/26/2017 8:58:15 AM J:\D124\4002G Ski Beach\surcharge01.dgn

SPECIAL TECHNICAL PROVISIONS

TECHNICAL SPECIAL PROVISION

FOR

Surcharge Embankment

Ski Beach at Lake Harris

Notice: The official record of this document is the electronic file signed and sealed under Rule 61G15-23.004 F.A.C

Prepared By: Daniel C. Stanfill, P.E.
Florida License No: 42763
Date: May 26, 2017
Firm Name: Geotechnical & Environmental Consultants, Inc.
Firm Address: 919 Lake Baldwin Avenue
City, State, Zip Code: Orlando, FL 32814
Certificate of Authorization: 5882
Pages: 1 through 5

SECTION T120

SURCHARGE EMBANKMENT

T120-1 Description

A. The surcharge geometry and dimensions are shown in the plans. The surcharge zone will follow along the proposed sidewalk and paved parking/drive areas as defined on the Surcharge Control sheets in the plans. The surcharge height will be 3 feet above final proposed grades with 1.5H:1V slopes on all sides of the surcharge embankment as defined on the Surcharge Control sheets. The surcharge duration is estimated to be 90 days after completion of the surcharge construction.

B. Geotechnical instrumentation (settlement plates) will be installed by the Contractor prior to embankment and surcharge construction for the purpose of monitoring the rate and amount of consolidation and general performance of the surcharge. Installation procedures and locations for geotechnical instrumentation are presented in T141 of the Technical Special Provisions and the Surcharge Control sheet.

T120-2 Surcharge Construction

A. Construction associated with the surcharge program will be performed in the following sequence:

1. Clear and grub in accordance with the FDOT Specifications and perform muck removal and backfill in accordance with the plans. Backfill with Select fill which meets FDOT Standard Index 505 requirements.
2. Backfill to provide a working platform over the prepared surface.
3. Install geotechnical instrumentation (settlement plates) in accordance with T141 of the Technical Special Provisions and the Surcharge Control sheet. The Contractor will notify the Engineer at least 48 hours in advance of the installation of the geotechnical instrumentation.
4. The Contractor will provide the Engineer access to all geotechnical instrumentation locations as needed by the Engineer.
5. Place one foot of embankment fill to stabilize the geotechnical instrumentation.
6. Construct the roadway embankment and surcharge in level lifts. Place embankment fill and surcharge fill while allowing Engineer access to monitor settlement and stop fill operations if directed by the Engineer. The surcharge fill

will be compacted to 90% of the standard Proctor maximum dry density. The surcharge fill will be placed in layers no thicker than 12 inches.

7. Once the surcharge embankment construction is complete, continue allowing Engineer access to monitor instrumentation and report results. Place and compact additional fill as needed to maintain the top of embankment at or above the proposed final roadway subgrade elevations during the surcharge program.
8. Upon completion of the surcharge program as determined by the Engineer, remove the amount of fill to the proposed roadway grades as shown on the roadway cross sections.

B. Monitoring of settlement plates will be performed by the Engineer in accordance with T141 of the Technical Special Provisions.

C. A working platform will be constructed to provide a stable working surface.

D. Fill material for embankment within the surcharge area will meet requirements in this Technical Special Provision.

E. Geotechnical instrumentation will be installed by the Contractor at the locations listed on the Surcharge Control sheet and at the elevation listed in T141 of the Technical Special Provisions.

F. Embankment and surcharge fill will be placed in level lifts. The scheduled placement of fill must be time-phased based on the settlement plate readings so that the soft subsurface soils have time to gain enough strength to support further loading. The Engineer will make all determinations concerning the allowable number of fill lifts per day and whether or not any temporary suspensions of filling are necessary to maintain stability. If any signs of instability are observed during filling, they will be immediately reported to the Engineer and all filling will be halted. Filling may be resumed upon the approval of the Engineer. Fill placement will not be attempted at any time when the rate of settlement exceeds 0.5 inches per day at any monitor location.

G. Embankment and surcharge fill will meet the FDOT Standard Index 505 requirements for “Select”. The embankment and surcharge fill will be placed and compacted in the same manner as the embankment fill below the standard minimum slope in accordance with FDOT Specification Section 120. Each lift of fill will be placed in a level layer of uniform thickness across the entire length and width of the embankment and surcharge area. Fill soils awaiting placement should not be stockpiled more than two feet high in the

embankment and surcharge area. The Contractor will be responsible for maintenance of surcharge areas including compliance with all permit requirements and environmental regulations.

H. The Contractor is responsible for turbidity control during fill placement. The Contractor will employ the means necessary to control turbidity and those means will consider the very soft nature of the bottom soils to the depth necessary for adequate turbidity control.

I. The full surcharge loading will be left in place until the Engineer authorizes termination of the program. The required surcharge duration is anticipated to be 90 days after the surcharge fill has been constructed to the required height above finished grade, as shown in the Plans. This does not include the time for placing the surcharge. The surcharge height above the finished grading template does not need to be maintained during the surcharge duration. However, at no time after the final surcharge elevation has been attained will the top of the embankment be allowed to settle below the proposed final grades. If so, the Contractor will place additional fill, as needed to maintain the top of embankment elevation at or above the final grades. Remove surcharge only with the Engineer's approval. There will be no restriction to the rate of removal of the surcharge to the final template elevation. Upon completion of the surcharge program as determined by the Engineer, fill will be removed only to final grades in order to allow for sidewalk and pavement construction.

J. Settlement of soil layers during the surcharge is estimated to range from 5 to 10 inches. The actual quantity of settlement will vary significantly across the surcharge areas depending on multiple factors, including the thickness and composition of the muck.

T120-3 Method of Measurement

The work of constructing and maintaining the surcharge fill as shown in the plans and any extensions thereof directed by the Engineer will be included in the price and payment for Surcharge Embankment. The quantity will be measured as provided in FDOT Specification Section 120-13.7 with the exception that the original ground line used in computations will be the finished grading template for the permanent construction. The measurement will include surcharge material actually placed above the finished grading template and within the lines and grades for surcharge construction as indicated in the plans or directed by the Engineer. No allowance will be made for subsidence of material below the finished grading template.

T120-4 Basis of Payment

The price and payment for Surcharge Embankment will be full compensation for all work and materials required to construct and remove surcharge fill.

Payment will be made under:

Item No. 120-74 – Surcharge Embankment - per cubic yard

END OF SECTION

TECHNICAL SPECIAL PROVISION

FOR

Settlement Plates

Ski Beach at Lake Harris

Notice: The official record of this document is the electronic file signed and sealed under Rule 61G15-23.004 F.A.C

Prepared By: Daniel C. Stanfill, P.E.
Florida License No: 42763
Date: May 26, 2017
Firm Name: Geotechnical & Environmental Consultants, Inc.
Firm Address: 919 Lake Baldwin Avenue
City, State, Zip Code: Orlando, FL 32814
Certificate of Authorization: 5882
Pages: 1 through 5

SECTION T141

SETTLEMENT PLATES

T141-1 Description

A. The work specified in this Technical Special Provision consists of the fabrication, installation, protection and maintenance of settlement plates in accordance with Contract Documents and as directed by the Engineer. The Contractor will be responsible for the fabrication and installation of the settlement plates. The Contractor will also be responsible for protection and maintenance of the settlement plates.

B. The system of settlement plates is designed to enable the Engineer to observe, monitor and determine the magnitude and rate of embankment settlement. The determination of the time at which the necessary consolidation has taken place and the embankment may be released for additional lifts of fill or the next stages of construction will be determined by the Engineer on the basis of the data obtained from the combined settlement monitoring instrumentation.

T141-2 Materials

The settlement plate assembly will be constructed in accordance with the plate and stem options as shown in FDOT Standard Index 540. All iron pipe and fittings will be fabricated from standard weight stock; all PVC pipe and fittings will be Schedule 40; the sizes will be as shown on FDOT Standard Index 540. Materials will be accepted on the basis of a visual inspection by the Engineer.

T141-3 Installation

A. The settlement plates will be installed at the proposed final grades after any demucking and backfilling to existing ground surface is complete. The settlement plates will be installed by the Contractor's specialty engineer pre-qualified in FDOT work groups 9.1, 9.2, 9.3 and 9.4.

B. A table listing the settlement plate locations is shown on the Surcharge Control sheet in the plans.

C. An excavation slightly larger than the settlement plate will be made to an elevation established by the Engineer. The excavation will form a pit having a minimum depth of twelve inches with a level bottom.

D. The plate will be placed in the pit with one section of marker pipe attached. The attached marker pipe will be 4.5 feet in length as shown in FDOT Standard Index 540. The plate will have full bearing and the marker pipe plumb before proceeding with the stem assembly. When realignment of the plate and marker pipe is necessary, the plate and pipe will be removed and the pit bottom reshaped for proper alignment. If timber plates are selected for installation, and the soil is dense enough to suspend the plate on the fabrication bolts, the plate should be seated by grooving the bottom of the pit under the lines of bolts.

E. With plate and marker pipe in place, wrap the lower six inches of marker pipe with oakum; slip one section of casing pipe over the marker pipe; and, lower the casing to uniformly encase the oakum seal while seating the casing on the plate as shown in FDOT Standard Index 540.

F. With marker pipe and casing centered with respect to each other and maintained in a vertical position, the pit will be backfilled in layers by hand and thoroughly compacted by hand. Prior to backfilling the pit, the elevation of the top of the plate will be determined. A maximum of one foot of embankment fill can be placed to stabilize the settlement plates.

G. When the installation described in the above paragraph is complete, the Contractor will notify the Engineer and allow the Engineer 48 hours to determine the elevation of the top of the marker pipe. No embankment will be placed until this elevation has been determined. The casing will be capped, as shown in FDOT Standard Index 540, immediately after the elevation is determined. The settlement plate stem will be flagged and protected from construction vehicles and equipment. If the settlement plate assembly is disturbed, it will be replaced in kind, unless otherwise directed by the Engineer.

H. The embankment material in the immediate vicinity of the settlement plate stem will be placed and compacted in accordance with T120 of the Technical Special Provision, or as directed by the Engineer. Embankment within three feet of the stem will be placed and compacted by hand with non-impact, light vibratory plate compactors.

I. Upon completion of the surcharge program as determined by the Engineer, settlement plate assemblies will be removed.

J. The Engineer will obtain and record all measurements and elevations necessary for accurate determinations of settlement data during construction of the embankment and surcharge.

K. Monitoring of settlement plates will be performed daily or on regular intervals determined by the Engineer during embankment and surcharge construction and during the surcharge duration. Graphs of settlement versus fill height will be provided weekly or at intervals determined by the Engineer during embankment construction and surcharge duration. The graphs will be prepared by the Engineer.

L. The Contractor will provide the Engineer access to all geotechnical instrumentation locations as needed by the Engineer.

T141-4 Protection and Maintenance

A. The settlement plate stem will remain in a vertical position at all times during the life of this Contract. The Contractor will operate his equipment in a manner to insure that settlement plate assemblies are not damaged or displaced laterally. Each assembly will be clearly marked and flagged as approved by the Engineer and protective barricades will be erected around each assembly. Stems deviating from a vertical position, becoming uncoupled or broken will be repaired or replaced by the Contractor, as directed by the Engineer, at the Contractor's expense.

B. The Contractor will not be held responsible for repair or replacement of any settlement plate assembly which is made inoperable as a result of instability of the embankment caused by factors, which in the opinion of the Engineer, are beyond the control of the Contractor.

T141-5 Method of Measurement

The quantities under this section will be for each Settlement Plate Assembly correctly installed.

T141-6 Basis of Payment

Each settlement plate assembly acceptably installed and maintained in a satisfactory operating condition until final acceptance of the project, will be paid for at the unit price bid for each assembly, which price and payment will be full compensation for furnishing all material, labor and equipment for proper installation of the assembly, for protecting the assembly, for repair and replacing damaged assemblies and for all other work and incidentals necessary to complete the work.

Payment will be made under:

Item No. 141-70 - Settlement Plate Assembly - per assembly.

END OF SECTION