INVITATION FOR BID CONSTRUCTION NO. 22-TA004090DJ ERIE ROAD & SR 62 IMPROVEMENTS FDOT JPA PROJECT (FINANCIAL PROJECT ID 445308-1-58-01)

April 7, 2022

Manatee County BCC
Procurement Division
1112 Manatee Avenue West Ste 803
Bradenton, FL 34205
purchasing@mymanatee.org

Manatee County FLORIDA

ADVERTISEMENT

INVITATION FOR BID CONSTRUCTION, NO. 22-TA004090DJ
ERIE ROAD & SR 62 IMPROVEMENTS

Manatee County, a political subdivision of the State of Florida (hereinafter referred to as County), will receive sealed bids from individuals, corporations, partnerships, and other legal entities authorized to do business in the State of Florida, to provide Erie Road & SR 62 Improvements, as specified in this Invitation for Bid Construction to include roadway re-alignment, intersection improvements, drainage, stormwater management, and new mast arms with intelligent transportation components.

DATE, TIME AND PLACE DUE:
The Due Date and Time for submission of Bids in response to this Invitation for Bid Construction (IFBC) **is May 9, 2022 at 11:00 AM ET.** Bids must be delivered to the following location: Manatee County Administration Building, 1112 Manatee Ave. W., Suite 803, Bradenton, FL 34205 prior to the Due Date and Time.

SOLICITATION INFORMATION CONFERENCE:
No Solicitation Information Conference will be conducted for this solicitation.

DEADLINE FOR QUESTIONS AND CLARIFICATION REQUESTS:
The deadline to submit all questions, inquiries, or requests concerning interpretation, clarification or additional information pertaining to this Invitation for Bid Construction to the Manatee County Procurement Division is April 15, 2022. Questions and inquiries should be submitted via email to the Designated Procurement Contact shown below.

Important: A prohibition of lobbying is in place. Review Section A.13 carefully to avoid violation and possible sanctions.

DESIGNATED PROCUREMENT CONTACT: Dave Janney, Senior Procurement Agent
(941) 749-3056, Fax (941) 749-3034
Email: Dave.Janney@mymanatee.org
Manatee County Financial Management Department
Procurement Division

AUTHORIZED FOR RELEASE: Jacob Erickson, MBA, CPPO, NIGP-CPP

Digitally signed by Jacob Erickson, MBA, CPPO, NIGP-CPP
Date: 2022.04.07 13:48:51 -04'00'

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SECTION A, INFORMATION FOR BIDDERS

To receive consideration, entities who submit a response to this Invitation for Bid Construction (Bidders) must meet the minimum qualification requirements and comply with the following instructions. Bid responses (Bids) will be accepted from single business entities, joint ventures, partnerships or corporations.

A.01 BID DUE DATE

The Due Date and Time for submission of Bids in response to this Invitation for Bid Construction (IFBC) **is May 9, 2022, at 11:00 AM ET.** Bids must be delivered to the following location: Manatee County Administration Building, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205 and time stamped by a Procurement representative prior to the Due Date and Time.

Bids received after the Due Date and Time will not be considered. It will be the sole responsibility of the Bidder to deliver its Bid to the Manatee County Procurement Division for receipt on or before the Due Date and Time. If a Bid is sent by U.S. Mail, courier or other delivery services, the Bidder will be responsible for its timely delivery to the Procurement Division. Bids delayed in delivery will not be considered, will not be opened at the public opening, and arrangements will be made for their return at the Bidder's request and expense.

A.02 SOLICITATION INFORMATION CONFERENCE AND SITE VISIT:

No Solicitation Information Conference will be conducted for this solicitation. No County escorted site visit will be conducted for this solicitation; however, it is a minimum qualification requirement that the Bidder, or it's representative(s) has made an inspection of the construction site for work specified in this IFBC.

Attendance to mandatory information conferences and/or site visits are required to meet the minimum qualification requirements of the IFBC. Attendance to non-mandatory information conferences and/or site visit is not required, but is strongly encouraged.

A.03 PUBLIC OPENING OF BIDS

Bids will be opened immediately following the Due Date and Time at the Manatee County Administration Building, Suite 803 in the presence of County officials. Bidders or their representatives may attend the Bid opening.

Manatee County will make public at the opening the names of the business entities which submitted a Bid and the total bid price submitted. No review or analysis of the Bids will be conducted at the Bid opening.

A.04 SUBMISSION OF BIDS

The contents of the Bid sealed package must include:

- One (1) bound original clearly identifying Bidder and marked “ORIGINAL”.
- One (1) electronic format copy clearly identifying Bidder.

Electronic format copy should be submitted on a Universal Serial Bus (USB) portable flash memory drive or compact disc (CD) in Microsoft Office® or Adobe Acrobat® portable document format (PDF) in one continuous file. Do not password protect or otherwise encrypt electronic Bid copies. Electronic copies must be searchable and contain an identical Bid to the original.

Submit the Bid package in a sealed container with the following information clearly marked on the outside of the package: IFBC NO. 22-TA004090DJ, Erie Road & SR 62 Improvements, Bidder's name, and Bidder's address. Bids must be delivered to the Manatee County Procurement Division prior to the Due Date and Time at the following address:

Manatee County Procurement Division
1112 Manatee Avenue West, Suite 803
Bradenton, FL 34205

A.05 DISTRIBUTION OF SOLICITATION DOCUMENTS

All documents issued pursuant to this IFBC are distributed electronically and available for download at no charge at www.mymanatee.org > *Bids and Proposals*. Documents may be viewed and downloaded for printing using Adobe Reader® software.

At its sole discretion, the County may utilize third-party providers to distribute proposals. Visit the third-party's website for more information regarding this service. Participation in the third-party system is not a requirement for doing business with Manatee County.

Additionally, the IFBC and all related documents are available for public inspection at the Manatee County Procurement Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205. Call (941) 749-3014 to schedule an appointment. Documents are available between the hours of 8:00 A.M. and 5:00 P.M., Monday through Friday, with the exception of County holidays.

As a courtesy, Manatee County notifies the Manatee County Chamber of Commerce and the Manatee County Black Chamber of Commerce of all active solicitations, who then distributes the information to its members.

A.06 EXAMINATION OF BID DOCUMENTS AND SITE(S)

It is the responsibility of each bidder before submitting a bid, to (a) examine the IFBC documents thoroughly; (b) visit the Project Site(s) to become familiar with local conditions that may affect cost, progress, performance, or furnishing of the Work; (c) consider federal, state, and local codes, laws, and regulations that may affect costs, progress, performance, or furnishing of the Work; (d) study and carefully correlate bidder's observations with the IFBC documents; and (e) notify County in writing of all conflicts, errors, or discrepancies in the IFBC documents.

Each bidder may, at bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies, and obtain any additional information and

data which pertain to the physical conditions at or contiguous to the Project Site(s) or otherwise which may affect cost, progress, performance or furnishing of the Work and which bidder deems necessary to determine his bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the IFBC documents. County will provide each bidder access to the site(s) to conduct such explorations and tests.

Bidder shall fill all holes, clean up and restore the Project Site(s) to its former condition upon completion of such explorations. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and other lands designated for use by successful bidder in performing the Work are identified in the IFBC documents.

All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by successful bidder. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by County unless otherwise provided in the IFBC documents.

Inspection of the Project Site(s) is a requirement to be considered for award of this bid. Prior to submitting a bid, each bidder shall examine the Project Site(s) and all conditions thereon fully familiarizing themselves with the full scope of the Work. Failure to become familiar with Project Site conditions will in no way relieve the successful bidder from the necessity of furnishing any materials or performing any Work that is required to complete the Project in accordance with the Project Plans and Specifications. Bidder shall acknowledge inspection of the Project Site(s) on his/her signed, submitted Bid Form.

A.07 ADDENDA

Any interpretations, corrections or changes to this IFBC will be made by addenda. Addenda will be posted on the Procurement Division's web page of the County website at http://www.mymanatee.org/purchasing > *Bids and Proposals*. For those solicitations that are advertised on a third-party website, addenda will also be posted on the third-party's distribution system on the 'Planholders' link.

All addenda are a part of the IFBC and each Bidder will be bound by such addenda. It is the responsibility of each Bidder to read and comprehend all addenda issued. Failure of any Bidder to acknowledge an issued addendum in its Bid will not relieve the Bidder from any obligation contained therein.

A.08 BID FORMS

Bids must include the forms provided in this IFBC. If needed, additional pages may be attached to a form. Bidders must fully complete and execute all Bid Forms. Bid Forms must be executed by an authorized official of the company who has the legal authority to bind the company.

A.09 BID EXPENSES

All costs incurred by Bidder in responding to this IFBC will be the sole responsibility of

the Bidder.

A.10 QUESTION AND CLARIFICATION PERIOD

Each Bidder shall examine all IFBC documents and will judge all matters relating to the adequacy and accuracy of such documents. Any questions or requests concerning interpretation, clarification or additional information pertaining to this IFBC, including the sample Agreement, shall be made in writing via email to the Manatee County Procurement Division to the Designated Procurement Contact or to purchasing@mymanatee.org. All questions received and responses given will be provided to potential bidders via an addendum to this IFBC.

Manatee County will not be responsible for oral interpretations given by other sources including County staff, representative, or others. The issuance of a written addendum by the Procurement Division is the only official method whereby interpretation, clarification or additional information will be given.

A.11 FALSE OR MISLEADING STATEMENTS

Bids which contain false or misleading statements, or which provide references which do not support an attribute or condition claimed by the Bidder, may be rejected. If, in the opinion of the County, such information was intended to mislead the County in its evaluation of the Bid, and the attribute, condition or capability is a requirement of this IFBC. Such Bidder will be disqualified from consideration for this IFBC and may be disqualified from submitting a response on future solicitation opportunities with the County.

A.12 CONFIDENTIALITY OF SECURITY RELATED RECORDS

a. Pursuant to Florida Statutes § 119.071(3), the following records (hereinafter referred to collectively as "the Confidential Security Records") are confidential and exempt from the disclosure requirements of Florida Statutes § 119.07(1):

   i. A Security System Plan or portion thereof for any property owned by or leased to County or any privately owned or leased property held by County.
   ii. Building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by County.
   iii. Building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout or structural elements of an attractions and recreation facility, entertainment or resort complex, industrial complex, retail and service development, office development, or hotel or motel development in the possession of, submitted to County.

b. Successful Bidder agrees that, as provided by Florida Statute, it shall not, as a result of a public records request, or for other reason disclose the contents of, or release or provide copies of the Confidential Security Records to any other party absent the express written authorization of County's Property Management Director or to comply

with a court order requiring such release or disclosure. To the extent successful Bidder receives a request for such records, it shall immediately contact the County's designated Contract administrator who shall coordinate County's response to the request.

A.13 LOBBYING

After the issuance of any IFBC, prospective bidders, bidders, or their agents, representatives or persons acting at the request of such bidder shall not contact, communicate with or discuss any matter relating to the IFBC with any officer, agent or employee of Manatee County other than the Procurement Official or the contact identified in this IFBC, pursuant to the Manatee County Code of Laws. This prohibition includes copying such persons on all written communication, including email correspondence. This requirement begins with the issuance of an IFBC and ends upon execution of the final Agreement or when the IFBC has been cancelled. Violators of this prohibition shall be subject to sanctions as provided in the Manatee County Code of Laws.

A.14 UNBALANCED BIDDING PROHIBITED

County recognizes that large and/or complex projects will often result in a variety of methods, sources, and prices. However, where in the opinion of the County such variation does not appear to be justified given bid requirements and industry and market conditions, the Bid will be presumed to be unbalanced. Examples of unbalanced Bids will include:

a. Bids showing omissions, alterations of form, additions not specified, or required conditional or unauthorized alternate bids.
b. Bids quoting prices that substantially deviate, either higher or lower, from those included in the Bids of competitive Bidders for the same line item unit costs.
c. Bids where the unit costs offered are in excess of, or below reasonable cost analysis values.

In the event County determines that a Bid is presumed unbalanced, it will request the opportunity to and reserves the right to, review all source quotes, bids, price lists, letters of intent, and other supporting documentation which the Bidder obtained and upon which the Bidder relied upon to develop its Bid. County reserves the right to deem any presumptive unbalanced Bid where the Bidder is unable to demonstrate the validity and/or necessity of the unbalanced unit costs as non-responsive.

A.15 FRONT LOADING OF BID PRICING PROHIBITED

Prices offered for performance and/or acquisition activities which occur early in the Project Schedule, such as mobilization; clearing and grubbing; or maintenance of traffic; that are substantially higher than pricing of competitive bidders within the same portion of the Project Schedule, will be presumed to be front loaded. Front loaded bids could reasonably appear to be an attempt to obtain unjustified early payments creating a risk of insufficient incentive for the bidder to complete the Work or otherwise creating an appearance of an undercapitalized bidder.

In the event County determines that a bid is presumed to be front loaded, it will request the opportunity to, and reserves the right to, review all source quotes, bids, price lists, letters of intent, and other documents which the bidder obtained and upon which the bidder relied upon to develop the pricing or acquisition timing for these bid items. County reserves the right to reject as nonresponsive any presumptive front-loaded bids where the bidder is unable to demonstrate the validity and/or necessity of the front-loaded costs.

A.16 WITHDRAWAL OR REVISION OF BIDS

Bidders may withdraw Bids under the following circumstances:

a. If Bidder discovers a mistake(s) prior to the Due Date and Time. Bidder may withdraw its Bid by submitting a written notice to the Procurement Division. The notice must be received in the Procurement Division prior to the Due Date and Time for receiving Bids. A copy of the request shall be retained, and the unopened Bid returned to the Bidder; or

b. After the Bids are opened but before a contract is signed, Bidder alleges a material mistake of fact if:

    1. The mistake is clearly evident in the solicitation document; or
    2. Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made in the Bid. Request to withdraw a Bid must be in writing and approved by the Procurement Official.

A.17 IRREVOCABLE OFFER

Any Bid may be withdrawn up until the Due Date and Time. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of one hundred twenty (120) days to provide the goods or services set forth in this IFBC or until one or more of the Bids have been duly accepted by County, whichever occurs first.

A.18 RESERVED RIGHTS

County reserves the right to accept or reject any and/or all bids, to waive irregularities and minor technicalities, and to request resubmission. Also, County reserves the right to accept all or any part of the bid and to increase or decrease quantities to meet additional or reduced requirements of County. Any sole response received by the first submission date may or may not be rejected by County depending on available competition and current needs of County. For all items combined, the bid of the lowest, responsive, responsible bidder will be accepted, unless all bids are rejected.

The lowest, responsible bidder shall mean that Bidder who makes the lowest Bid to sell goods and/or services of a quality which meets or exceeds the quality of goods and/or services set forth in the IFBC documents or otherwise required by County.

To be responsive, a Bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the IFBC.

To be a responsible bidder, the bidder shall have the capability in all respects to perform fully the bid requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance.

Also, County reserves the right to make such investigation as it deems necessary to determine the ability of any bidder to furnish the service requested. Information County deems necessary to make this determination shall be provided by the bidder. Such information may include, but shall not be limited to current financial statements, verification of availability of equipment and personnel, and past performance records.

A.19 APPLICABLE LAWS

Bidder must be authorized to transact business in the State of Florida. All applicable laws and regulations of the State of Florida and ordinances and regulations of Manatee County will apply to any resulting Agreement. Any involvement with the Manatee County Procurement Division shall be in accordance with the Manatee County Procurement Ordinance as amended.

A.20 COLLUSION

By submitting a bid in response to this IFBC, Bidder certifies that it has not divulged, discussed or compared its bid with any other bidder, and has not colluded with any other bidder or parties to this bid whatsoever. Further, Bidder, and in the case of a joint bid each party thereto, certifies as to their own organization, that in connection with this IFBC that:

a. All prices and/or cost data submitted have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices and/or cost data, with any other bidder or with any competitor;

b. All prices and/or cost data quoted for this bid have not been knowingly disclosed by the Bidder and will not knowingly be disclosed by the Bidder, prior to the scheduled opening, directly or indirectly to any other bidder or to any competitor;

c. No attempt has been made, or will be made, by Bidder to induce any other person or firm to submit or not to submit a bid for the purpose of restricting competition;

d. The only person or persons interested in this bid is/are named in Bidder's Bid and that no person other than those identified has any interest in the Bid or in the resulting Agreement to be entered into.

e. No person or agency has been employed or retained to solicit or secure the resulting Agreement upon an agreement or understanding or a commission, percentage, brokerage, or contingent fee except bona fide employees or established commercial agencies maintained by Bidder for purpose of doing business.

A.21 CODE OF ETHICS

With respect to this and any bid, if a Bidder violates, directly or indirectly, the ethics provisions of the Manatee County Procurement Code and/or Florida criminal or civil laws related to public procurement, including but not limited to Florida Statutes Chapter 112, Part II, Code of Ethics for Public Officers and Employees, such Bidder will be ineligible for award to perform the work described in this IFBC, and may be disqualified from submitting on any future quote or bid requests to supply goods or services to Manatee County. By submitting a bid, the Bidder represents to County that all statements made, and materials submitted are truthful, with no relevant facts withheld.

A.22 PUBLIC CONTRACTING AND ENVIRONMENTAL CRIMES

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime, as that term is defined in Section 287.133, Florida Statutes, may not submit a bid to provide any goods or services to a public entity; may not submit a bid with a public entity for the construction or repair of a public building or public work; may not submit bids on leases of real property to a public entity; may not be awarded or perform Work as a contractor, supplier, Subcontractor, or consultant under an agreement with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of thirty-six (36) months following the date of being placed on the convicted list.

In addition, the Manatee County Code of Laws prohibits the award of any bid to any person or entity who/which has, within the past five (5) years, been convicted of, or admitted to in court or sworn to under oath, a public entity crime or of any environmental law that, in the reasonable opinion of the Procurement Official, establishes reasonable grounds to believe the person or business entity will not conduct business in a responsible matter.

To ensure compliance with the foregoing, the Code requires all persons or entities desiring to do business with County to execute and file with the Purchasing Official an affidavit, executed under the pain and penalties of perjury, confirming that person, entity and any person(s) affiliated with the entity, does not have such a record and is therefore eligible to seek and be awarded business with County. In the case of a business entity other than a partnership or a corporation, such affidavit shall be executed by an authorized agent of the entity. In the case of a partnership, such affidavit shall be executed by the general partner(s). A Public Contracting and Environmental Crimes Certification form is attached herein for this purpose.

A.23 SCRUTINIZED COMPANIES

Florida Statutes § 287.135, as amended from time to time, may contain limitations on the part of a company to conduct business with the County. Submission of a response to this solicitation shall be subject to all procedural requirements contained within that statute including the submission of any required certification of eligibility to contract with the County. It shall be the responsibility of the company responding to this solicitation to concurrently review the current version of the statute and ensure it is compliant. To the

extent a certification is required, it shall be provided on the form located at Appendix F *Vendor Certification Regarding Scrutinized Companies Lists*.

A.24 AGREEMENT

The successful Bidder will be required to execute the Agreement, a sample of which is attached hereto and made a part hereof. The County will transmit the Agreement to the successful Bidder for execution. The successful Bidder agrees to deliver the required number of duly executed copies of the Agreement, with any other required documents, to the County within ten calendar days of receipt.

A.25 LEGAL NAME

Bidders shall clearly indicate the full legal name, including any d/b/a, address, email address, and telephone number on the Bid Form. Bid Forms shall be signed above the typed or printed name and title of the signer. The signer must be an official of the organization and have the authority to bind the bidder to the submitted bid.

When bidder is a partnership, the Bid Form shall be signed in the name of the firm and by all partners required under the terms of the partnership agreement. When a corporation is a bidder, the authorized corporate officers shall sign.

Bidders who are corporations or limited partnerships shall provide a certified copy of their permit to transact business in the State of Florida, preferably along with the Bid Form, or within forty-eight (48) hours after request by County.

When submitting a bid as a joint venture, it must have filed paper documents with the Division of Profession's Construction Industry Licensing Board prior to submitting a bid.

A.26 DISCOUNTS

All discounts must be incorporated in the prices contained in the bid and not shown separately. Unless otherwise specified in this IFBC, pricing must be all inclusive, including delivery costs. The prices indicated on the Pricing Form shall be the prices used in determining award.

A.27 TAXES

Manatee County is exempt from Federal Excise and State Sales Taxes. (F.E.T. Cert. No. 59-78-0089K; Florida Sales Tax Exempt Cert. No. 85-8012622206C-6). Therefore, the Bidder is prohibited from delineating a separate line item in its bid for any sales or service taxes.

The successful Bidder will be responsible for the payment of taxes of any kind, including but not limited to sales, consumer, use, and other similar taxes payable on account of the work performed and/or materials furnished under the award in accordance with all applicable laws and regulations.

A.28 QUALITY

Unless otherwise specifically provided in the IFBC documents, all goods provided shall

be new, the latest make or model, of the best quality, of the highest grade of workmanship, and of the most suitable for the purpose intended.

Unless otherwise specifically provided in the IFBC documents, reference to any equipment, material, article or patented process, by trade name, brand name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition.

A.29 AUTHORIZED PRODUCT REPRESENTATION

Bidder, by virtue of submitting the name and specifications of a manufacturer's product, will be required to furnish the named manufacturer's product. Failure to do so may, in the County's sole discretion, be deemed a material breach of the resulting agreement and shall constitute grounds for County's immediate termination of the resulting agreement.

A.30 ROYALTIES AND PATENTS

The successful Bidder shall pay all royalties and license fees for equipment or processes in conjunction with the equipment and/or services being furnished. Successful Bidder shall defend all suits or claims for infringement of any patent, trademark or copyright, and shall save County harmless from loss on account thereof, including costs and attorney's fees.

A.31 AMERICANS WITH DISABILITIES ACT

Manatee County does not discriminate upon the basis of any individual's disability status. This non-discrimination policy involves every aspect of County's functions including one's access to participation, employment, or treatment in its programs or activities. Anyone requiring reasonable accommodation for an information conference or bid opening should contact the person named on the cover page of this document at least twenty-four (24) hours in advance of either activity.

A.32 EQUAL EMPLOYMENT OPPORTUNITY

In accordance with Title VI of the Civil Rights Act of 1964, Title 15, Part 8 of the Code of Federal Regulations and the Civil Rights Act of 1992, Manatee County hereby notifies all Bidders that it will affirmatively ensure minority business enterprises are afforded full opportunity to participate in response to this IFBC and will not be discriminated against on the grounds of race, color, national origin, religion, sex, age, handicap, or marital status in consideration of award.

A.33 MINORITY AND/OR DISADVANTAGED BUSINESS ENTERPRISES

The State of Florida Office of Supplier Diversity provides the certification process and maintains the database of certified MBE/DBE firms. Additional information may be obtained at https://www.dms.myflorida.com/agency_administration/office_of_supplier_diversity_osd or by calling (850) 487-0915.

A.34 DELIVERY

Unless otherwise specified, all prices shall include all delivery cost (FOB Destination).

A.35 MATHEMATICAL ERRORS

a. Bid pricing forms without imbedded mathematical formulas: In the event of multiplication/extension error(s), the unit price shall prevail. In the event of addition error(s) the extension totals will prevail. In the event the dollar amount for contract contingency is omitted, it will be added to the total price of the Bid.

b. Bid pricing forms with imbedded mathematical formulas: Interactive bid pricing forms that contain mathematical formulas may be provided to automate lengthy and complex bid forms. In the event bid pricing forms with imbedded formulas are used and a multiplication/extension error(s) is discovered in the formula, the unit price entered by the Bidder shall prevail.

c. Bidder shall assume the responsibility and accuracy of the information input in the bid pricing form and therefore shall verify that the calculations are correct before submitting its Bid.

d. Regardless of the type of bid pricing form used, all Bids shall be reviewed mathematically by the County using these standards.

A.36 SUBCONTRACTORS

The successful bidder will obtain prior written approval from the County for any subcontractor(s) and the work each will perform. A subcontractor is defined as any entity performing work within the scope of the project who is not an employee of the successful Bidder.

Bidders subcontracting any portion of the work shall include a list of subcontractors along with their bid. The list shall include: name and address of subcontractor, type of work to be performed and the percent of the contract amount to be subcontracted.

A.37 E-Verify

Prior to the employment of any person under this contract, the successful Bidder shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of (a) all persons employed during the contract term by the successful Bidder to perform employment duties within Florida and (b) all persons, including subcontractors, assigned by the successful Bidder to perform work pursuant to the contract with Manatee County. For more information on this process, please refer to United States Citizenship and Immigration Service site at: http://www.uscis.gov/.

Only those individuals determined eligible to work in the United States shall be employed under this contract.

By submission of a bid in response to this IFBC, the successful Bidder commits that all employees and subcontractors will undergo e-verification before placement on this contract.

The successful Bidder shall maintain sole responsibility for the actions of its employees

and subcontractors. For the life of the contract, all employees and new employees brought in after contract award shall be verified under the same requirement stated above.

A.38 DISCLOSURE

Upon receipt, all inquiries and responses to inquiries related to this IFBC become "Public Records," and shall be subject to public disclosure consistent with Florida Statues, Chapter 119.

Bids become subject to disclosure thirty (30) days after the opening or if a notice of intent to award decision is made earlier than this time as provided by Florida Statutes § 119.071(1)(b). No announcement or review of the bids shall be conducted at the public opening.

Based on the above, County will receive bids at the time and date stated and will make public at the opening the names of the business entities of all that submitted a bid.

If County rejects all bids and concurrently notices its intent to reissue the solicitation, the rejected bids are exempt from public disclosure until such time as County provides notice of an intended decision concerning the reissued solicitation or until County withdraws the reissued solicitation. A bid is not exempt for longer than twelve (12) months after the initial notice rejecting all bids.

Pursuant to Florida Statutes 119.0701, to the extent successful Bidder is performing services on behalf of the County, successful Bidder must:

a. Keep and maintain public records required by public agency to perform the service.

b. Upon request from the public agency's custodian of public records, provide the public agency with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Florida Statutes, Chapter 119, or as otherwise provided by law.

c. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of the contract term and following completion of the contract if the successful Bidder does not transfer the records to the public agency.

d. Upon completion of the contract, transfer, at no cost, to the public agency all public records in possession of contractor or keep and maintain public records required by the public agency to perform the service. If the successful Bidder transfers all public records to the public agency upon completion of the contract, the successful Bidder shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the successful Bidder keeps and maintains public records upon completion of the contract, the successful Bidder shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the public agency, upon request from public

agency's custodian of public records, in a format that is compatible with the information technology systems of the public agency.

IF THE SUCCESSFUL BIDDER HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE SUCCESSFUL BIDDER'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO ANY RESULTING CONTRACT, CONTACT COUNTY'S CUSTODIAN OF PUBLIC RECORDS AT:

Phone: (941) 742-5845
Email: debbie.scaccianoce@mymanatee.org
Mail: Manatee County BCC
Attn: Records Manager
1112 Manatee Ave W.
Bradenton, FL 34205.

A.39 VENDOR REGISTRATION

Registering your business will provide Manatee County a sourcing opportunity to identify suppliers of needed goods and services and identify local businesses. To register as a supplier with the County go to www.mymanatee.org/vendor. For assistance with supplier registration, call the Procurement Division main number at (941) 749-3014. Office hours are Monday – Friday, 8:00 A.M. to 5:00 P.M., excluding County holidays.

A link to Vendor Registration is listed on the Procurement Division's web page at http://www.mymanatee.org/home/government/departments/financial-management/purchasing.html. Click on *"Register as a Vendor",* then "*Vendor Registration Form"*. Registration is not mandatory to submit a Bid.

A.40 ENVIRONMENTAL SUSTAINABILITY

All bidders are encouraged to use as many environmentally preferable "green" products, materials, as supplies, as possible to promote a safe and healthy environment. Environmentally preferable are products or services that have a reduced adverse effect on the environment.

Bidder shall acknowledge in its Bid if Bidder has an environmental sustainability initiative. In addition, Bidder shall submit with its Bid a brief summary of Bidder's environmental sustainability initiative. This information will be used as a determining factor in the award decision when all other factors, are otherwise equal.

A.41 ePAYABLES

Manatee County Board of County Commissioners and the Manatee County Clerk of the Circuit Court have partnered to offer the ePayables program, which allows payments to be made to vendors via credit cards.

The Clerk of the Circuit Court will issue a unique credit card number to vendor after goods are delivered or services rendered, vendors submit invoices to the remit to address on the

purchase order. When payments are authorized, an email notification is sent to the vendor. The email notification includes the invoice number(s), invoice date(s), and amount of payment. There is no cost for vendors to participate in this program; however, there may be a charge by the company that processes your credit card transactions.

If Bidder is interested in participating in this program, complete the ePayables Application attached herein and return the completed form via email to tina.mancini@manateeclerk.com.

A.42 BASIS OF AWARD

County will not make award to a Bidder who is delinquent in payment of any taxes, fees, fines, contractual debts, judgments, or any other debts due and owed to the County, or is in default on any contractual or regulatory obligation to the County. By submitting this solicitation response, Bidder attests that it is not delinquent in payment of any such debts due and owed to the County, nor is it in default on any contractual or regulatory obligation to the County. In the event the Bidder's statement is discovered to be false, bidder will be subject to suspension and/or debarment and the County may terminate any award it has with bidder.

Award shall be to the lowest, responsive, responsible bidder(s) meeting specifications which includes delivery time requirements, qualification requirements, and having the lowest total offer for requirements listed on the Bid Form for the Work as set forth in this IFBC. Bid prices shall include costs for furnishing all labor, equipment and/or materials for the completion of the Work to the County's satisfaction, in accordance with and in the manner set forth and described in the IFBC documents and within the prescribed time.

Multiple schedules for completion of Work shall be considered. Two (2) bids shall be submitted and considered, Bid 'A' based on 545 calendar days completion time and Bid 'B' based on 575 calendar days completion time. County, at its sole discretion, shall select either Bid 'A' or Bid 'B', whichever is in the best interest of the County. Only one (1) award will be made.

In evaluating Bids, County shall consider the qualifications of the Bidders; and if required, may also consider the qualifications of the subcontractors, suppliers, and other persons and organizations proposed. County may also consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work.

Whenever two or more responsive, responsible bids which are equal with respect to price and all other evaluation factors are received, if the company provides documented environmentally preferable "green" products, materials, or supplies, they shall be given preference in award.

Whenever two or more responsive, responsible bids which are equal with respect to price are received, and both or neither of these bids provide documented environmentally preferable "green" products, the award shall be determined by a chance drawing, coin toss,

or similar tie-breaking method conducted by the Procurement Division and open to the public.

Bidder acknowledges that County has, or may hire, others to perform work similar to or the same as that which is within the scope of work of this IFBC. In the event that the successful Bidder cannot meet the delivery time or availability requirements of materials, the County, at its sole discretion can obtain the goods and services from other sources.

A.43 SCOPE OF WORK

The successful Bidder shall furnish and install all materials, equipment and labor which is reasonably inferable and necessary for the proper completion of the Work specified in this IFBC, whether specifically indicated in the IFBC or not.

The successful Bidder shall furnish all shop drawings, work drawings, labor, materials, equipment, tools, services and incidentals necessary to complete all Work required by these Specifications.

The successful Bidder shall perform the Work complete, in place and ready for continuous service and shall include any repairs, replacements, and / or restoration required as a result of damages caused prior to acceptance by the County.

The Scope of Work consist of constructing new roadway from existing US 301 and Erie Road in a north easterly direction tying into existing SR 62. The roadway will include drainage structures and swales. Stormwater management ponds will be constructed to meet the requirements of the local water management district permit issued for the project. A new mast arm signal is to be constructed at Erie Road and US 301 along with the intelligent transportation components identified in the plans.

A.44 COMPLETION OF WORK

The Work will be completed and ready for final inspection within the specified calendar days from the date the Contract Time commences to run. Completion time shall be based on Bid 'A' for 545 calendar days or Bid 'B' based on 575 calendar days time at the County's sole discretion.

A.45 LIQUIDATED DAMAGES

If the successful Bidder fails to achieve substantial completion of the Work within the contract time and as otherwise required by the Agreement (to include not only the entire Work but any portion of the Work as set forth therein), the County shall be entitled to retain or recover from the successful Bidder, as liquidated damages and not as a penalty, the sum of $1,694.00 per calendar day, commencing upon the first day following expiration of the contract time and continuing until the actual date of substantial completion.

Such liquidated damages are hereby agreed to be a reasonable estimate of damages the County will incur because of delayed completion of the Work. The County may deduct liquidated damages as described in this paragraph from any unpaid amounts then or

thereafter due the successful bidder under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the successful bidder shall be payable to the County at the demand of the County, together with interest from the date of the demand at the maximum allowable rate.

A.46 CONTRACT CONTINGENCY WORK

Contract contingency is a monetary allowance used solely at County's discretion to handle unexpected conditions as required to satisfactorily complete the Work in accordance with the IFBC documents. A Field Directive must be issued by an authorized County representative to authorize use of contract contingency funds.

The percentage for contract contingency is listed on the Bid Form. Bidder shall enter the dollar amount for contract contingency based on the percentage of the total base bid. The total contract award will include contract contingency.

Appropriate uses of contract contingency include increases to existing bid item quantities that do not change the initial Scope of Work, which may be directed by County staff; modification items not originally bid which were unforeseen yet necessary during the Work to provide a safe, complete Project and that do not change the initial Scope of Work; and unanticipated conflicts and/or design changes required during construction which are necessary to provide a safe, complete Project and that do not change the initial Scope of Work.

Inappropriate uses of contract contingency include anything that changes the initial Scope of Work, including the Contract Sum and Contract Time, and adding bid items not previously contemplated that change the initial Scope of Work.

A.47 LICENSES AND PERMITS

The successful Bidder shall be solely responsible for obtaining all necessary license and permit fees, including, but not limited to, all license fees, permit fees, impact fees, or inspection fees, and responsible for the costs of such fees. Successful Bidder is solely responsible for ensuring all work complies with all Federal, State, local, and Manatee County ordinances, orders, codes, laws, rules, regulations, directives, and guidelines.

A.48 PROTEST

Any actual bidder, proposer, or contractor who is aggrieved in connection with the notice of intent to award of a contract with a value greater than $250,000 where such grievance is asserted to be the result of a violation of the requirements of the Manatee County Procurement Code or any applicable provision of law by the officers, agents, or employees of the County, may file a protest to the Procurement Official.

Protest must be in writing and delivered via email at purchasing@mymanatee.org or by hand delivery to the Procurement Division at 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205 by 5:00 p.m. on the fifth business day following the date of posting of the Notice of Intent to Award on the County website. There is no stay of the procurement process during a protest. The Procurement Official shall have the authority to settle and resolve a protest concerning the intended award of a contract.

For additional information regarding the County protest process, visit the Procurement Division webpage on the County website.

A.49 ACCESSIBILITY

The County is committed to making its documents and information technologies accessible to individuals with disabilities by meeting the requirements of Section 504 of the Rehabilitation Act and best practices (W3C WCAG 2). **For assistance with accessibility regarding this solicitation, contact the Manatee County Procurement Division via email at purchasing@mymanatee.org or by phone at 941-748-4501 X3014.**

Successful Bidder shall ensure all its electronic information, documents, applications, reports, and deliverables required under this Agreement are in a format that meets the requirements of Section 504 of the Rehabilitation Act and best practices (W3C WCAG 2).

Where not fully compliant with these requirements and best practices, Successful Bidder shall provide clear points of contact for each document and information technology to direct users in how to obtain alternate formats. Further, successful Bidder shall develop accommodation strategies for those non-compliant resources and implement strategies to resolve the discrepancies.

A.50 SOLICITATION SCHEDULE

The following schedule has been established for this Solicitation process. Refer to the County's website (www.mymanatee.org > Business > *Bids & Proposals*) for meeting locations and updated information pertaining to any revisions to this schedule.

Scheduled Item	Scheduled Date
Question and Clarification Deadline	April 15, 2022
Final Addendum Posted	April 22, 2022
Bid Response Due Date and Time	May 9, 2022, 11:00 AM, ET
Projected Award	June 2022

NOTE: Any statements contained in the Scope of Work, Bid Summary, Construction Agreement, General Conditions of the Construction Agreement and/or Exhibits which vary from the information in Section A, Information for Bidders, shall have precedence over the Information for Bidders.

END OF SECTION A

SECTION B, BID FORMS

(To be completed and returned with Bid)

APPENDIX A, MINIMUM QUALIFICATIONS

APPENDIX A, MINIMUM QUALIFICATIONS

IFBC No. 22-TA004090DJ

Bidders must submit the information and documentation requested in this Attachment that confirms Bidder meets the following minimum qualification requirement(s):

1. Must have been registered with the State of Florida, Division of Corporations to do business in Florida.

   No documentation is required. The County will verify registration.

2. Bidder, or its representative(s), has made an inspection of the construction site for work specified in this IFBC on or after the date of advertisement of this IFBC and prior to the Due Date and Time.

   Bidder must submit a statement on company letterhead and signed by an authorized official of Bidder that Bidder, or its representative(s), has made an inspection of the construction site, listing the date of the inspection and the individuals, by name, who conducted the inspection.

3. A Joint Participation Agreement with the Florida Department of Transportation require contractors to be prequalified with the Florida Department of Transportation in order to bid for the performance of this construction contract. Prequalification is defined by Florida Law (Chapter 337.14 F.S.) and Rules of the State of Florida, Department of Transportation, (Chapter 14-22, F.A.C.).

   Bidder, or Bidder's subcontractor combined must be a Florida Department of Transportation (FDOT) Prequalified Contractor in the classes of (7) Drainage, (10) Flexible Paving, (16) Intelligent Transportation Systems, and (39) Traffic Signal. The Bidder must be prequalified in at least one (1) of the FDOT Work Classes.

   No documentation is required. The County will verify that the Bidder and subcontractors are listed in the FDOT database as a prequalified contractor.

4. Bidder or Bidder's subcontractor has provided Drainage, Flexible Paving, and Traffic Signals with Intelligent Transportation Systems for at least four (4) projects since April 1, 2012. Project clients must be agreeable to responding to an inquiry by the County.

   Provide the following information for the four (4) qualifying project references.

   a) Name of client
   b) Project name
   c) Location (City/State)
   d) Client contact name
   e) Contact phone

f) Contact email
g) Service dates (Start/End)

5. In accordance with the IFBC, Section A, sub-section A.36; Bidders subcontracting any portion of the work shall include a list of subcontractors along with their bid.

   Provide the following information for the proposed subcontractors.

   a) Name of subcontractor
   b) Address of subcontractor
   c) Type of work to be performed
   d) Qualifications to perform work
   e) Percentage of the contract amount to be subcontracted

6. Bidder is not on the Florida Department of Management Services Suspended, Debarred, Convicted Vendor Lists.

   No documentation is required. The County will verify.

7. If Bidder is submitting as a joint venture must file the required documents with the Florida Department of Business and Professional Regulation as required by Florida Statute Section 489.119, prior to the Due Date and Time.

   If Bidder <u>is not</u> a joint venture, provide a statement to that effect. If Bidder is a joint venture, provide a copy of Bidder's approved filing with the Florida Department of Business and Professional Regulation.

8. Bidder has no reported conflict of interests in relation to this IFBC.

   If no conflicts of interests are present, Bidder must submit a fully completed copy of Appendix J.

   If there is a potential conflict of interest, on a separate page submit a statement to that affect and disclose the name of any officer, director or agent who is an employee of the County. Disclose the name of any County employee who owns, directly or indirectly, any interest in Bidder's firm or any of its branches.

   END OF APPENDIX A

APPENDIX B, BIDDER'S QUESTIONNAIRE
IFBC No. 22-TA004090DJ

Bidder must fully complete and return this form with its Bid. Bidder warrants the truth and accuracy of all statements and answers herein contained. (Attach additional pages if necessary.)

THIS QUESTIONNAIRE MUST BE COMPLETED AND SUBMITTED WITH YOUR BID

1. Contact Information:

FEIN #: _____

License #: _____
License Issued to: _____
Date License Issued (MM/DD/YR): _____
Company Name: _____
Physical Address: _____
City: _____ State of Incorporation: _____ Zip Code: _____
Phone Number: ( ) _____ Fax Number: ( ) _____
Email address: _____

2. Bidding as: an individual __; a partnership __; a corporation __; a joint venture __

3. If a partnership, list names and addresses of partners; if a corporation, list names of officers, directors, shareholders, and state of incorporation; if joint venture, list names and address of ventures' and the same if any venture are a corporation for each such corporation, partnership, or joint venture:

_____
_____
_____

4. Bidder is authorized to do business in the State of Florida: ☐ Yes ☐ No

For how many years? _____

5. Your organization has been in business (under this firm's name) as a

_____

Is this firm in bankruptcy? _____

6. Attach a list of projects where this specific type of Work was performed.

BIDDER: _____

7. Is this firm currently contemplating or in litigation? Provide summary details.

8. Have you ever been assessed liquidated damages under a contract during the past five (5) years? If so, state when, where (contact name, address and phone number) and why.

9. Have you ever failed to complete Work awarded to you? Or failed to complete projects within contract time? If so, state when, where (contact name, address, phone number) and why.

10. Have you ever been debarred or prohibited from providing a bid to a governmental entity? If yes, name the entity and describe the circumstances.

11. Will you subcontract any part of this Work? If so, describe which portion(s) and to whom.

12. If any part of work will be subcontracted, list MBE/DBE/WBE/VETERAN to be utilized. Include the estimated dollar amount of the portion of Work each will perform.

BIDDER: _____

13. What equipment do you own to accomplish this Work? (A listing may be attached)

_____

_____

14. What equipment will you purchase/rent for the Work? (Specify which)

_____

_____

15. If applicable to the Work for this IFBC, Drilling Supervisor Qualifications: Contractor shall provide a boring specialist who shall remain on the project site during the entirety of the directional boring operation. This includes, but is not limited to, drilling fluid preparation, seaming, boring and pulling. The boring specialist shall have a minimum of five (5) years' experience in supervising directional bores of similar nature, diameter, materials and lengths. (Reference: Specification Section 02619, Horizontal Directional Drilling).

Provide the contact information for a minimum of three (3) projects wherein the boring specialist has performed this type of work, diameter, materials and lengths.

Boring specialist's name: _____
Boring specialist's years of experience in supervising directional bores _____
Provide contact name, and contact number for projects:

_____

_____

_____

16. If applicable to the Work for this IFBC, Pipe Fusion Qualifications: All boring and fusing equipment shall be certified for operation. The Contractor responsible for thermal butt fusing pipe and fittings shall have manufacturer certification for performing such work or a minimum of five (5) years of experience performing this type of work.

Thermal butt fusing pipe and fittings contractor or subcontractor's name: _____
Attach a copy of contractor's/subcontractor's manufacturer certification to this Questionnaire
OR
Provide contractor's/subcontractor's years of experience in thermal butt fusing pipe and fittings

_____
If manufacturer certification is not provided, include contact name, and contact number for projects that confirms five years of experience:

_____

_____

BIDDER: _____

17. If applicable to the Work for this IFB, Pipe Bursting Qualifications: The Contractor shall be certified by the manufacturer of the pipe bursting system that they are fully trained licensed installer of the manufacturer's pipe bursting system. Contractor shall provide a letter to the County documenting this requirement. (Reference: Specification Section 02619A, Pipe Bursting (PB) of Existing Mains).

18. List the following regarding the surety which is providing the bond(s):

Surety's Name: _____

Address: _____

_____

Name, address, phone number and email of surety's resident agent for service of process in Florida:

Agent's Name: _____

Address: _____

_____

Phone: _____

Email: _____

19. Confirm if Bidder has an environmental sustainability initiative as defined in Section A.41.

☐ Yes ☐ No

If yes, submit a brief summary (2-3 paragraphs) of the environmental sustainability initiative.

BIDDER: _____

APPENDIX C, ENVIRONMENTAL CRIMES CERTIFICATION
IFBC No. 22-TA004090DJ

SWORN STATEMENT PURSUANT TO ARTICLE V, MANATEE COUNTY PROCUREMENT CODE

Bidder must fully complete and return this form with its Bid. This form must be signed and sworn to in the presence of a notary public or other official authorized to administer oaths.

This sworn statement is submitted to the Manatee County Board of County Commissioners by

_____

[Print individual's name and title]

for _____ [Print name of entity submitting sworn statement]

whose business address is _____

and (if applicable) its Federal Employer Identification Number (FEIN) is _____. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: _____.

I understand that no person or entity shall be awarded or receive an Owner's Agreement for public improvements, procurement of goods or services (including professional services) or an Owner's lease, franchise, concession or management agreement, or shall receive a grant of Owner's monies unless such person or entity has submitted a written certification to Owner that it has not:

(1) been convicted of bribery or attempting to bribe a public officer or employee of Manatee County, the State of Florida, or any other public entity, including, but not limited to the Government of the United States, any state, or any local government authority in the United States, in that officer's or employee's official capacity; or

(2) been convicted of an agreement or collusion among bidders or prospective bidders in restraint of freedom of competition, by agreement to bid a fixed price, or otherwise; or

(3) been convicted of a violation of an environmental law that, in the sole opinion of Owner's Purchasing Official, reflects negatively upon the ability of the person or entity to conduct business in a responsible manner; or

(4) made an admission of guilt of such conduct described in items (1), (2) or (3) above, which is a matter of record, but has not been prosecuted for such conduct, or has made an admission of guilt of such conduct, which is a matter of record, pursuant to formal prosecution. An admission of guilt shall be construed to include a plea of nolo contendere; or

(5) where an officer, official, agent or employee of a business entity has been convicted of or has admitted guilt to any of the crimes set forth above on behalf of such an entity and pursuant to the direction or authorization of an official thereof (including the person committing the offense, if he is an official of the business entity), the business shall be chargeable with the conduct herein above set forth. A business entity shall be chargeable with the conduct of an affiliated entity, whether wholly owned, partially owned, or one which has common ownership or a common Board of Directors. For purposes of this Form, business entities are affiliated if, directly or indirectly, one business entity controls or has the power to control another business entity, or if an individual or group of individuals controls or has the power to control both entities. Indicia of control shall include, without limitation, interlocking management or ownership, identity of interests among family members, shared organization of a business entity following the ineligibility of a business entity under this Article, or using substantially the same management, ownership or principles as the ineligible entity.
(Continued)

Any person or entity who claims that this Article is inapplicable to him/her/it because a conviction or judgment has been reversed by a court of competent jurisdiction shall prove the same with documentation satisfactory to Owner's Purchasing Official. Upon presentation of such satisfactory proof, the person or entity shall be allowed to contract with Owner.

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR MANATEE COUNTY IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT ANY AGREEMENT OR BUSINESS TRANSACTION SHALL PROVIDE FOR SUSPENSION OF PAYMENTS, OR TERMINATION, OR BOTH, IF THE CONTRACTING OFFICER OR COUNTY ADMINISTRATOR DETERMINES THAT **SUCH** PERSON OR ENTITY HAS MADE FALSE CERTIFICATION.

_____

[Signature]

STATE OF _____
COUNTY OF _____

Sworn to and subscribed before me this _ day of _____,20_____
by _____

Who is personally known / has produced _____ as identification

[Type of identification]

My commission expires _____

_____
Notary Public Signature

_____
[Print, type or stamp Commissioned name of Notary Public]

Signatory Requirement - In the case of a business entity other than a partnership or a corporation, this affidavit shall be executed by an authorized agent of the entity. In the case of a partnership, this affidavit shall be executed by the general partner(s). In the case of a corporation, this affidavit shall be executed by the corporate president.

APPENDIX D, FLORIDA TRENCH SAFETY ACT

Bidder must fully complete and return this form with its Bid. This form must be singed in the presence of a notary public or by an officer authorized to administer oaths.

1. This Sworn Statement is submitted with **IFBC NO. 22-TA004090DJ**
2. This Sworn Statement is submitted by_____ whose business address is_____ and, if applicable, its Federal Employer Identification Number (FEIN) is_____. If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement _____.
3. Name of individual signing this Sworn Statement is: _____, Whose relationship to the above entity is: _____.
4. The Trench Safety Standards that will be in effect during the construction of this project shall include, but are not limited to: Laws of Florida, Chapters 90-96, TRENCH SAFETY ACT, and OSHA RULES AND REGULATIONS 29 CFR 1926.650 Subpart P, effective October 1, 1990.
5. The undersigned assures that the entity will comply with the applicable Trench Safety Standards and agrees to indemnify and hold harmless the County and Engineer of Record, and any of their agents or employees from any claims arising from the failure to comply with said standard.
6. The undersigned has appropriated the following costs for compliance with the applicable standards:

Trench Safety Measure (Description)	Units of Measure (LF, SY)	Unit Quantity	Unit Cost	Extended Cost
a. _____	_____	_____	$_____	_____
b. _____	_____	_____	$_____	_____
c. _____	_____	_____	$_____	_____
d. _____	_____	_____	$_____	_____

7. The undersigned intends to comply with these standards by instituting the following procedures:

_____
_____
_____

THE UNDERSIGNED, in submitting this bid, represents that they have reviewed and considered all available geotechnical information and made such other investigations and tests as they may deem necessary to adequately design the trench safety system(s) to be utilized on this project.

_____
(Authorized signature / Title)

SWORN to and subscribed before me this _____ day of _____, 20_____.
(Impress official seal)

Notary Public, State of _____: _____

My commission expires: _____

Angelina M. Colonneso
CLERK OF THE CIRCUIT COURT AND COMPTROLLER OF MANATEE COUNTY
1115 Manatee Avenue West, Bradenton, Florida 34205 - Phone (941) 749-1800 Fax (941) 741-4082, P.O. Box 25400, Bradenton, Florida 34206 - www.manateeclerk.com

Bidder must fully complete and return this form with its Bid.

APPENDIX E: ePAYABLES APPLICATION

Company name_____

Contact person_____

Phone number_____

Email Address_____

FINANCE USE ONLY

Open orders: YES or NO

PEID _____

CREATE DATE _____

CONFIRMED WITH

_____

_

Name and phone number

IFAS _____

BANK _____

INITIALS_____

Return completed form Via email to:
tina.mancini@manateeclerk.com
Via fax to: (941) 741-4011
Via mail:
PO Box 1000
Bradenton, Fl 34206

Revised: September 30, 2015

"Pride in Service with a Vision to the Future"
Clerk of the Circuit Court – Clerk of Board of County Commissioners – County Comptroller – Auditor and Recorder

APPENDIX F, SCRUTINIZED COMPANY CERTIFICATION
IFBC No. 22-TA004090DJ

This certification is required pursuant to Florida State Statute Section 287.135.

As of July 1, 2011, a company that, at the time of bidding or submitting a proposal for a new contract or renewal of an existing contract, is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of $1 million or more.

Bidder must fully complete and return this form with its Bid.

Company _____ FID or EIN No. _____

Address

_____

City _____ State _____ Zip _____

I, _____, as a representative of _____ certify and affirm that this company is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List.

_____ _____
Signature Title

_____ _____
Printed Name Date

APPENDIX G
MANATEE COUNTY, A POLITICAL SUBDIVISION OF THE STATE OF FLORIDA
INDEMNITY AND HOLD HARMLESS
IFBC No. 22-TA004090DJ

Bidder must fully complete and return this form with its Bid.

Bidder shall defend, indemnify and hold harmless the County and all of the County's officers, agents, employees, and volunteers from and against all claims, liability, loss and expense, including reasonable costs, collection expenses, attorneys' fees, and court costs which may arise because of the negligence (whether active or passive), misconduct, or other fault, in whole or in part (whether joint, concurrent, or contributing), of Respondent, its officers, employees, representatives and agents in performance or non-performance of its obligations under the Contract/Agreement. Bidder recognizes the broad nature of this indemnification and hold harmless clause, as well as the provision of a legal defense to the County when necessary, and voluntarily makes this covenant and expressly acknowledges the receipt of such good and valuable consideration provided by the County in support of these indemnification, legal defense and hold harmless contractual obligations in accordance with the laws of the State of Florida. This clause shall survive the termination of this Contract/Agreement. Compliance with any insurance requirements required elsewhere within this Contract/Agreement shall not relieve Bidder of its liability and obligation to defend, hold harmless and indemnify the County as set forth in this article of the Contract/Agreement.

Nothing herein shall be construed to extend the County's liability beyond that provided in section 768.28, Florida Statutes.

PROJECT NUMBER AND/OR NAME	
INSURANCE AGENT	
RESPONDENT SIGNATURE	**DATE**

Acknowledgement:
STATE OF _____ COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____,

20____ by _____ [FULL LEGAL NAME], who is

personally known to me / has produced _____ as identification.

Notary Signature _____

Print Name _____

APPENDIX H, INSURANCE STATEMENT

IFBC No. 22-TA004090DJ

Bidder must fully complete and return this form with its Bid.

THE UNDERSIGNED has read and understands the insurance requirements of this IFBC applicable to any contract resulting from this solicitation and shall provide the insurances required by this Appendix within ten (10) days from the date of Notice of Intent to Award.

Bidder Name: _____ Date: _____

Signature (Authorized Official): _____

Printed Name/Title: _____

Insurance Agency: _____

Agent Name: _____ Agent Phone: _____

APPENDIX I, ACKNOWLEDGMENT OF ADDENDA
IFBC No. 22-TA004090DJ

The undersigned acknowledges receipt of the following addenda:

Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:
Addendum No. _____	Date Received:

Print or type Bidder's information below:

Name of Bidder	Telephone Number
Street Address	City/State/Zip
Email Address	
Print Name & Title of Authorized Officer	Signature of Authorized Official Date

APPENDIX J, AFFIDAVIT OF NO CONFLICT
IFBC No. 22-TA004090DJ

COUNTY OF _____
STATE OF _____

BEFORE ME, the undersigned authority, this _____ day of _____, 20____ personally appeared, _____, a principal with full authority to bind _____ (hereinafter the "Affiant"), who being first duly sworn, deposes and says:

(a) is not currently engaged or will not become engaged in any obligations, undertakings or contracts that will require the Affiant to maintain an adversarial role against the County or that will impair or influence the advice, recommendations or quality of work provided to the County; and

(b) has provided full disclosure of all potentially conflicting contractual relationships and full disclosure of contractual relationships deemed to raise a question of conflict(s); and

(c) has provided full disclosure of prior work history and qualifications that may be deemed to raise possible question of conflict(s).

Affiant makes this affidavit for the purpose of inducing Manatee County, a political subdivision of the State of Florida, to enter into an Agreement for Erie Road & SR 62 Improvements.

If applicable, on a separate page Bidder shall disclose the name of any officer, director or agent of Bidder who is also an employee of the County and the name of any County employee who owns, directly or indirectly, any interest in the Bidder's firm or any of its branches. If no conflicts of interest are present, submit a statement to that affect.

_____
Signature

_____
Print Name

SUBSCRIBED to and sworn before me this _____ day of _____, 20__.

[Notary Seal]

Notary Public

My commission expires: _____

_____
Notary Signature

_____
Print Name

Personally known OR produced identification. Type of identification produced _____

_____.

APPENDIX K, BID PRICING FORM

IFBC No. 22-TA004090DJ, Erie Road & SR 62 Improvements

Total Bid Price/Offer for Bid "A": $_____Complete. Base on a completion time of 545 calendar days.

Total Bid Price/Offer for Bid "B": $_____Complete. Based on a completion time of 575 calendar days.

We, the undersigned, hereby declare that we have carefully reviewed the IFBC Documents in their entirety and with full knowledge and understanding of the Bid information and all its requirements, submit this Bid, which is complete in meeting each specification, term, and condition contained therein.

As Bidder, we understand that the IFBC documents, including but not limited to, all specifications, terms, and conditions shall be made a part of any resulting Agreement between County and the successful Bidder. Failure by successful Bidder to comply with such specifications, terms and conditions shall result in Agreement default, whereupon, the defaulting successful Bidder shall be required to pay for all re-procurement costs, damages, and attorney fees as incurred by County, and agrees to forfeit its bid bond.

Authorized Signature(s): _____

Name and Title of Above Signer(s):

_____

Date: _____

APPENDIX K, BID PRICING FORM 22-TA004090DJ ERIE ROAD & SR 62 IMPROVEMENTS COUNTY PROJECT NO. 6094060								
PAY ITEM NO.	**FDOT ITEM NUMBER**	**DESCRIPTION**	**QTY.**	**UNIT**	**UNIT PRICE BID A 545 Calendar Days**	**EXTENDED AMOUNT BID A**	**UNIT PRICE BID B 575 Calendar Days**	**EXTENDED AMOUNT BID B**
ROADWAY								
1	0101 1	MOBILIZATION	1.00	LS				
2	0102 1	MAINTENANCE OF TRAFFIC (MOT)	1.00	LS				
SUBTOTAL								
SIGNING AND PAVEMENT MARKING								
3	0700 1 11	SINGLE POST SIGN, F&I GROUND MOUNT, UP TO 12 SF	31.00	AS				
4	0700 1 12	SINGLE POST SIGN, F&I GROUND MOUNT, 12-20 SF	2.00	AS				
5	0700 1 50	SINGLE POST SIGN, RELOCATE	2.00	AS				
6	0700 1 60	SINGLE POST SIGN, REMOVE	11.00	AS				
7	0700 1 74	SINGLE POST SIGN, F&I CUSTOM, 31+ SF	1.00	AS				
8	0700 2 14	MULTI-POST SIGN, F&I GROUND MOUNT, 31-50 SF	3.00	AS				
9	0700 2 15	MULTI-POST SIGN, F&I GROUND MOUNT, 51-100 SF	2.00	AS				
10	0700 2 60	MULTI-POST SIGN, REMOVE	3.00	AS				
11	0700 3 601	SIGN PANEL, REMOVE, UP TO 12 SF	1.00	EA				
12	0705 10 1	OBJECT MARKER, TYPE 1	3.00	EA				
13	0706 1 3	RAISED PAVEMENT MARKER, TYPE B	541.00	EA				
14	0710 90	PAINTED PAVEMENT MARKINGS, FINAL SURFACE	1.00	LS				
15	0711 11123	THERMOPLASTIC, STANDARD, WHITE, SOLID, 12" FOR CROSSWALK AND ROUNDABOUT	825.00	LF				
16	0711 11125	THERMOPLASTIC, STANDARD, WHITE, SOLID, 24" FOR STOP LINE	293.00	LF				
17	0711 11141	THERMOPLASTIC, STANDARD, WHITE, 2-4 DOTTED GUIDELINE/ 6-10 GAP EXTENSION, 6"	0.059	GM				
18	0711 11160	THERMOPLASTIC, STANDARD, WHITE, MESSAGE OR SYMBOL	3.00	EA				
19	0711 11170	THERMOPLASTIC, STANDARD, WHITE, ARROW	24.00	EA				
20	0711 11224	THERMOPLASTIC, STANDARD, YELLOW, SOLID, 18" FOR DIAGONAL OR CHEVRON	570.00	LF				
21	0711 11241	THERMOPLASTIC, STANDARD, YELLOW, 2-4 DOTTED GUIDE LINE /6-10 DOTTED EXTENSION LINE, 6"	0.080	GM				
22	0711 14125	THERMOPLASTIC, PREFORMED, WHITE, SOLID, 24" FOR CROSSWALK	540.00	LF				
23	0711 14160	THERMOPLASTIC, PREFORMED, WHITE, MESSAGE	4.00	EA				
24	0711 11170	THERMOPLASTIC, STANDARD, WHITE, ARROW	4.00	EA				
25	0711 16101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	1.471	GM				
26	0711 16131	THERMOPLASTIC, OTHER SURFACES, WHITE, SKIP, 6", 10-30 SKIP OR 3-9 LANE DROP	0.061	GM				
27	0711 16201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	1.798	GM				
28	0711 16231	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SKIP, 6"	0.030	GM				
29	0711 17 1	THERMOPLASTIC, REMOVE EXISTING THERMOPLASTIC PAVEMENT MARKINGS - SURFACE TO REMAIN	60.00	SF				
SUBTOTAL								

PAY ITEM NO.	FDOT ITEM NUMBER	DESCRIPTION	QTY.	UNIT	UNIT PRICE BID A 545 Calendar Days	EXTENDED AMOUNT BID A	UNIT PRICE BID B 575 Calendar Days	EXTENDED AMOUNT BID B
SIGNALIZATION								
30	0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	170.00	LF				
31	0630 2 12	CONDUIT, FURNISH & INSTALL, DIRECTIONAL BORE	355.00	LF				
32	0632 7 1	SIGNAL CABLE- NEW OR RECONSTRUCTED INTERSECTION, FURNISH & INSTALL	1.00	PI				
33	0635 2 11	PULL & SPLICE BOX, F&I, 17" x 30" COVER SIZE	13.00	EA				
34	0635 2 12	PULL & SPLICE BOX, F&I, 24" x 36" COVER SIZE	1.00	EA				
35	0639 1122	ELECTRICAL POWER SERVICE, F&I, UNDERGROUND, METER PURCHASED BY CONTRACTOR	1.00	AS				
36	0639 2 1	ELECTRICAL SERVICE WIRE, FURNISH & INSTALL	400.00	LF				
37	0639 4 6	EMERGENCY GENERATOR - PORTABLE, FURNISH & INSTALL HOUSING ONLY	1.00	EA				
38	0641 2 12	PRESTRESSED CONCRETE POLE, F&I, TYPE P-II SERVICE POLE	1.00	EA				
39	0646 1 11	ALUMINUM SIGNALS POLE, FURNISH & INSTALL PEDESTAL	7.00	EA				
40	0649 21 6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	1.00	EA				
41	0649 21 10	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 60'	1.00	EA				
42	0649 21 19	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 70'-60'	1.00	EA				
43	0650 1 14	TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 3 SECTION, 1 WAY	10.00	AS				
44	0650 1 16	TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 4 SECTION, 1 WAY	4.00	AS				
45	0650 1 19	TRAFFIC SIGNAL, FURNISH & INSTALL ALUMINUM, 5 SECTION CLUSTER, 1 WAY	2.00	AS				
46	0653 1 11	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 1 WAY	6.00	AS				
47	0653 1 12	PEDESTRIAN SIGNAL, FURNISH & INSTALL LED COUNTDOWN, 2 WAYS	1.00	AS				
48	0660 3 11	VEHICLE DETECTION SYSTEM-MICROWAVE, FURNISH & INSTALL CABINET EQUIPMENT	1.00	EA				
49	0660 3 12	VEHICLE DETECTION SYSTEM-MICROWAVE, FURNISH & INSTALL, ABOVE GROUND EQUIPMENT	6.00	EA				
50	0665 1 11	PEDESTRIAN DETECTOR, FURNISH & INSTALL, STANDARD	8.00	EA				
51	0670 5111	TRAFFIC CONTROLLER ASSEMBLY, F&I, NEMA, 1 PREEMPTION	1.00	AS				
52	0682 1113	ITS CCTV CAMERA, F&I, DOME PTZ ENCLOSURE - PRESSURIZED, IP, HIGH DEFINITION	1.00	EA				
53	0684 1 1	MANAGED FIELD ETHERNET SWITCH, FURNISH & INSTALL	1.00	EA				
54	0684 6 12	WIRELESS COMMUNICATION DEVICE, FUNISH AND INSTALL, ETHERNET SUBSCRIBER UNIT	1.00	EA				
55	0685 1 12	UNINTERRUPTIBLE POWER SUPPLY, FURNISH AND INSTALL, ONLINE/DOUBLE CONVERSION	1.00	EA				
56	0700 3 201	SIGN PANEL, FURNISH & INSTALL OVERHEAD MOUNT, UP TO 12 SF	4.00	EA				
57	0700 5 22	INTERNALLY ILLUMINATED SIGN, FURNISH & INSTALL OVERHEAD MOUNT, 12-18 SF	4.00	EA				
SUBTOTAL								

PAY ITEM NO.	FDOT ITEM NUMBER	DESCRIPTION	QTY.	UNIT	UNIT PRICE BID A 545 Calendar Days	EXTENDED AMOUNT BID A	UNIT PRICE BID B 575 Calendar Days	EXTENDED AMOUNT BID B
LIGHTING								
58	0630 2 11	CONDUIT, FURNISH & INSTALL, OPEN TRENCH	500.00	LF				
59	0635 2 11	PULL & SPLICE BOX, F&I, 13" x 24" COVER SIZE	9.00	EA				
60	0715 1 12	LIGHTING CONDUCTORS, FURNISH AND INSTALL, INSULATED, NO. 8-6	756.00	LF				
61	0715 1 13	LIGHTING CONDUCTORS, FURNISH AND INSTALL, INSULATED, NO. 4-2	3,495.00	LF				
62	0715 1 60	LIGHTING CONDUCTORS, REMOVE AND DISPOSE, CONTRACTOR OWNS	2,540.00	LF				
63	0715 4 3	LIGHT POLE COMPLETE, FURNISH AND INSTALL, STANDARD POLE STANDARD FOUNDATION, 40' MOUNTING HEIGHT	6.00	EA				
64	0715 4 70	LIGHT POLE COMPLETE, REMOVE POLE AND FOUNDATION	3.00	EA				
65	0715 500 1	POLE CABLE DISTRIBUTION SYSTEM, CONVENTIONAL	7.00	EA				
SUBTOTAL								
SR 62 @ ERIE ROAD REALIGNMENT 2 LANE DESIGN (FINAL PLANS 081021)								
ROAD WORK								
66	104-10-3	SEDIMENT BARRIER	3161.00	LF				
67	104-18	INLET PROTECTION SYSTEM	5.00	EA				
68	107-1	LITTER REMOVAL	5.00	AC				
69	107-2	MOWING	5.00	AC				
70	110-1-1	CLEARING & GRUBBING	5.00	AC				
71	110-7-1	MAILBOX, F&I SINGLE	3.00	EA				
72	120-1	REGULAR EXCAVATION	5682.00	CY				
73	120-6	EMBANKMENT	1669.50	CY				
74	160-4	STABILIZED SUBBASE (12" TYPE B)	10219.00	SY				
75	285-7-01	OPTIONAL BASE, BASE GROUP 1	1494.00	SY				
76	285-7-09	OPTIONAL BASE, BASE GROUP 9	7231.00	SY				
77	327-70-06	MILLING, EXIST ASPH PAVT, 1 1/2" AVG DEPTH	5957.00	SY				
78	334-1-53	ASPHALTIC CONCRETE STRUCTURAL ,TRAFFIC C, SP 12.5, PG. 76-22	1376.00	TN				
79	337-7-83	ASPHALTIC CONCRETE FRICTION ,TRAFFIC C, FC 12.5, PG. 76-22	1226.00	TN				
80	425-1-201	INLETS, CURB, TYPE 9, <10'	1.00	EA				
81	425-1-209	INLETS, CURB, TYPE 9, <10', MODIFIED	2.00	EA				
82	425-1-549	INLETS, DT BOT,TYPE D, MODIFIED <10'	1.00	EA				
83	425-11	MODIFY EXISTING DRAINAGE STRUCTURE	4.00	EA				
84	430-174-124	PIPE CULVERT, RCP, 24" SD	11.00	LF				
85	430-175-218	PIPE CULVERT RCP., OTHER-ELLIP/ARCH,18"S/CD	187.00	LF				
86	430-982-625	MITERED END SECT, OPT-ELEPTICAL/ARCH, 18 CD	5.00	EA				
87	440-1-20	UNDERDRAIN, TYPE II	10.00	LF				
88	440-70	UNDERDRAIN, INSPECTION BOX	1.00	EA				
89	515-1-1	PIPE HANDRAIL-GUIDERAIL STEEL	20.00	LF				
90	520-1-10	CONCRETE CURB AND GUTTER, TYPE F	530.00	LF				
91	522-1	SIDEWALK CONCRETE 4" THICK FOR SIDEWALKS	320.00	SY				
92	522-2	SIDEWALK CONCRETE 6" THICK FOR DRIVEWAYS AND HC RAMPS	235.00	SY				
93	527-2	DETECTABLE WARNINGS	30.00	SF				
94	550-10-110	FENCE TYPE A, 0. 0-5.0' STANDARD	1340.00	LF				
95	570-1-2	PERFORMANCE TURF (BAHIA SOD)	15120.00	SY				
SUBTOTAL								

PAY ITEM NO.	FDOT ITEM NUMBER	DESCRIPTION	QTY.	UNIT	UNIT PRICE BID A 545 Calendar Days	EXTENDED AMOUNT BID A	UNIT PRICE BID B 575 Calendar Days	EXTENDED AMOUNT BID B
ERIE ROAD REALIGNMENT 2 LANE DESIGN (FINAL PLANS 082021)								
ROAD WORK								
96	104-10-3	SEDIMENT BARRIER	720.00	LF				
97	0104-18	INLET PROTECTION SYSTEM	2.00	EA				
98	110--1-1	CLEARING & GRUBBING	0.90	AC				
99	120-1	REGULAR EXCAVATION	156.90	CY				
100	120-6	EMBANKMENT	102.80	CY				
101	160-4	TYPE B STABILIZATION	1298.00	SY				
102	285-7-09	OPTIONAL BASE, BASE GROUP 9	1023.00	SY				
103	327-70-1	MILLING, EXISTING ASPHALT, 1.5" AVG DEPTH	1270.00	SY				
104	334-1-53	ASPHALTIC CONCRETE STRUCTURAL ,TRAFFIC C, SP 12.5, PG. 76-22	162.00	TN				
105	337-7-83	ASPHALTIC CONCRETE FRICTION ,TRAFFIC C, FC 12.5, PG. 76-22	200.00	TN				
106	425-15-41	INLETS, DT BOT,TYPE D, <10'	2.00	EA				
107	MC1	JUNCTION BOX 4' x 5'- 4" WITH TRAFFIC BEARING LID	1.00	EA				
108	430-175-215	PIPE CULVERT, RCP., OTHER-ELLIP/ARCH,15"S/CD	221.00	LF				
109	520-1-10	CONCRETE CURB AND GUTTER, TYPE F	530.00	LF				
110	520-2-1	CONCRETE CURB AND GUTTER, VARIABLE HEIGHT TYPE F (DROP CURB)	445.00	LF				
111	0522-1	SIDEWALK CONCRETE 4" THICK FOR SIDEWALKS	250.00	SY				
112	0522-2	SIDEWALK CONCRETE 6" THICK FOR DRIVEWAYS AND HC RAMPS	109.00	SY				
113	0527-2	DETECTABLE WARNINGS	50.00	SF				
114	0570-1-2	PERFORMANCE TURF (BAHIA SOD)	1000.00	SY				
SUBTOTAL								

SUBTOTAL ALL SECTIONS								
CONTRACT CONTINGENCY WORK (USED ONLY WITH COUNTY APPROVAL)			1	10%				
GRAND TOTAL (PROJECT NO. 6094060)								

BIDDER NAME_____

BIDDER SIGNATURE_____

SECTION C, BID ATTACHMENTS

BID ATTACHMENT 1, INSURANCE AND BOND REQUIREMENTS

The CONTRACTOR will not commence work under the resulting Agreement until all insurance coverages indicated by an "X" herein have been obtained. The CONTRACTOR shall obtain and submit to the Procurement Division within ten (10) calendar days from the date of notice of intent to award, at its expense, the following minimum amounts of insurance (inclusive of any amounts provided by an umbrella or excess policy): Work under this Agreement cannot commence until all insurance coverages indicated herein have been obtained on a standard ACORD form (inclusive of any amounts provided by an umbrella or excess policy):

☒ **Automobile Liability Insurance Required Limits**

Coverage must be afforded under a per occurrence policy form including coverage for all owned, hired and non-owned vehicles for bodily injury and property damage of not less than:

- $1,000,000 Combined Single Limit; OR
- $ 500,000 Bodily Injury and $500,000 Property Damage
- $10,000 Personal Injury Protection (No Fault)
- $500,000 Hired, Non-Owned Liability
- $10,000 Medical Payments

This policy shall contain severability of interests' provisions.

☒ **Commercial General Liability Insurance Required Limits (per Occurrence form only; claims-made form is not acceptable)**

Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name 'Manatee County, a political subdivision of the State of Florida' as an Additional Insured, and include limits not less than:

- $1,000,000 Single Limit Per Occurrence
- $5,000,000 Aggregate
- $1,000,000 Products/Completed Operations Aggregate
- $1,000,000 Personal and Advertising Injury Liability
- $50,000 Fire Damage Liability
- $10,000 Medical Expense, and
- $1,000,000, Third Party Property Damage
- $ Project Specific Aggregate (Required on projects valued at over $10,000,000)

This policy shall contain severability of interests' provisions.

☒ **Employer's Liability Insurance**

Coverage limits of not less than:

- $100,000 Each Accident
- $500,000 Disease Each Employee
- $500,000 Disease Policy Limit

☒ **Worker's Compensation Insurance**
☐ **US Longshoremen & Harbor Workers Act**
☐ **Jones Act Coverage**

Coverage limits of not less than:

- Statutory workers' compensation coverage shall apply for all employees in compliance with the laws and statutes of the State of Florida and the federal government.
- If any operations are to be undertaken on or about navigable waters, coverage must be included for the US Longshoremen & Harbor Workers Act and Jones Act.

Should 'leased employees' be retained for any part of the project or service, the employee leasing agency shall provide evidence of Workers' Compensation coverage and Employer's Liability coverage for all personnel on the worksite and in compliance with the above Workers' Compensation requirements. NOTE: Workers' Compensation coverage is a firm requirement. Elective exemptions are considered on a case-by-case basis and are approved in a very limited number of instances.

☐ **Aircraft Liability Insurance Required Limits**
Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name 'Manatee County a political subdivision of the State of Florida' as an Additional Insured, and include limits not less than:

- $ Each Occurrence Property and Bodily Injury with no less than $100,000 per passenger each occurrence or a 'smooth' limit.
- $ General Aggregate.

☐ **Un-Manned Aircraft Liability Insurance (Drone)**
Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name 'Manatee County a political subdivision of the State of Florida' as an Additional Insured, and include limits not less than:

- $ Each Occurrence Property and Bodily Injury; Coverage shall specifically include operation of Unmanned Aircraft Systems (UAS), including liability and property damage.
- $ General Aggregate

☐ **Installation Floater Insurance**
When the contract or agreement **does not** include construction of, or additions to, above ground building or structures, but does involve the installation of machinery or equipment, Installation Floater Insurance shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- 100% of the completed value of such addition(s), building(s), or structure(s)

☐ **Professional Liability and/or Errors and Omissions (E&O) Liability Insurances**
Coverage shall be afforded under either an occurrence policy form or a claims-made policy form. If the coverage form is on a claims-made basis, then coverage must be maintained for a minimum of three years from termination of date of the contract. Limits must not be less than:

- $ 1,000,000 Bodily Injury and Property Damage Each Occurrence
- $ 2,000,000 General Aggregate

☒ **Builder's Risk Insurance**
When the contract or agreement includes the construction of roadways and/or the addition of a permanent structure or building, including the installation of machinery and/or equipment, Builder's Risk Insurance shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- An amount equal to 100% of the completed value of the project, or the value of the equipment to be installed
- The policy shall not carry a self-insured retention/deductible greater than $10,000

Coverage shall be for all risks and include, but not be limited to, storage and transport of materials, equipment, supplies of any kind whatsoever to be used on or incidental to the project, theft coverage, and Waiver of Occupancy Clause Endorsement, where applicable.

☐ **Cyber Liability Insurance**
Coverage shall comply with Florida Statute 501.171, shall be afforded under a per occurrence policy form, policy shall be endorsed and name 'Manatee County, a political subdivision of the State of Florida' as an Additional Insured, and include limits not less than:

- $ Security Breach Liability
- $ Security Breach Expense Each Occurrence
- $ Security Breach Expense Aggregate
- $ Replacement or Restoration of Electronic Data
- $ Extortion Threats
- $ Business Income and Extra Expense
- $ Public Relations Expense

NOTE: Policy must not carry a self-insured retention/deductible greater than $25,000.

☐ **Hazardous Materials Insurance (As Noted Below)**
Hazardous materials include all materials and substances that are currently designated or defined as hazardous by the law or rules of regulation by the State of Florida or federal government.
All coverage shall be afforded under either an occurrence policy form or a claims-made policy form, and the policy shall be endorsed and name 'Manatee County, a political subdivision of the

State of Florida' as an Additional Insured. If the coverage form is on a claims-made basis, then coverage must be maintained for a minimum of three years from termination of date of the contract. Limits must not be less than:

☐ ***Pollution Liability***
Amount equal to the value of the contract, subject to a $1,000,000 minimum, for Bodily Injury and Property Damage to include sudden and gradual release, each claim and aggregate.

☐ ***Asbestos Liability (If handling within scope of Contract)***
Amount equal to the value of the contract, subject to a $1,000,000 minimum, for Bodily Injury and Property Damage to include sudden and gradual release, each claim and aggregate.

☐ ***Disposal***
When applicable, CONTRACTOR shall designate the disposal site and furnish a Certificate of Insurance from the disposal facility for Environmental Impairment Liability Insurance covering liability.

- Amount equal to the value of the contract, subject to a $1,000,000 minimum, for Liability for Sudden and Accidental Occurrences, each claim and an aggregate.
- Amount equal to the value of the contract, subject to a $1,000,000 minimum, for Liability for Non-Sudden and Accidental Occurrences, each claim and an aggregate.

☐ **Hazardous Waste Transportation Insurance**
CONTRACTOR shall designate the hauler and have the hauler furnish a Certificate of Insurance for Automobile Liability insurance with Endorsement MCS-90 for liability arising out of the transportation of hazardous materials. EPA identification number shall be provided.

All coverage shall be afforded under either an occurrence policy form or a claims-made policy form and the policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured. If the coverage form is on a claims-made basis, then coverage must be maintained for a minimum of three years from termination of date of the contract. Limits must not be less than:

- Amount equal to the value of the contract, subject to a $1,000,000 minimum, per accident.

☐ **Liquor Liability Insurance**
Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- $1,000,000 Each Occurrence and Aggregate

☐ **Garage Keeper's Liability Insurance**

Coverage shall be required if the maintenance, servicing, cleaning or repairing of any County motor vehicles is inherent or implied within the provision of the contract.

Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- Property and asset coverage in the full replacement value of the lot or garage.

☐ **Bailee's Customer Liability Insurance**

Coverage shall be required for damage and/or destruction when County property is temporarily under the care or custody of a person or organization, including property that is on, or in transit to and from the person or organization's premises. Perils covered should include fire, lightning, theft, burglary, robbery, explosion, collision, flood, earthquake and damage or destruction during transportation by a carrier.

Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- Property and asset coverage in the full replacement value of the County asset(s) in the CONTRACTOR'S care, custody and control.

☐ **Hull and Watercraft Liability Insurance**

Coverage shall be afforded under a per occurrence policy form, policy shall be endorsed and name "Manatee County, a political subdivision of the State of Florida" as an Additional Insured, and include limits not less than:

- $ Each Occurrence
- $ General Aggregate
- $ Fire Damage Liability
- $10,000 Medical Expense, and
- $ Third Party Property Damage
- $ Project Specific Aggregate (Required on projects valued at over $10,000,000)

☐ **Other [Specify]**

BOND REQUIREMENTS

☒ **Bid Bond**

A Bid Bond in the amount of 5% of the total offer. Bid bond shall be submitted with the sealed response and shall include project name, location, and / or address and project number. In lieu of the bond, the bidder may file an alternative form of security in the amount of 5% of the total offer. in the form of a money order, a certified check, a cashier's check, or an irrevocable letter of credit issued to Manatee County. NOTE: A construction project over $200,000 requires a Bid Bond in the amount of 5% of the total bid offer.

☒ **Payment and Performance Bond**

A Payment and Performance Bond shall be submitted by Successful Bidder for 100% of the award amount and shall be presented to Manatee County within ten (10) calendar days of issuance of the notice of intent to award. NOTE: A construction project over $200,000 requires a Payment and Performance Bond.

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INSURANCE REQUIREMENTS

I. THE POLICIES BELOW ARE TO CONTAIN, OR BE ENDORSED TO CONTAIN, THE FOLLOWING PROVISIONS:

1. Commercial General Liability and Automobile Liability Coverages

a. **"Manatee County, a Political Subdivision of the State of Florida," is to be named as an Additional Insured in respect to:** Liability arising out of activities performed by or on behalf of the successful Bidder, his agents, representatives, and employees; products and completed operations of the successful Bidder; or automobiles owned, leased, hired or borrowed by the successful Bidder. The coverage shall contain no special limitation(s) on the scope of protection afforded to the County, its officials, employees or volunteers.

In addition to furnishing a Certificate of Insurance, the successful Bidder shall provide the endorsement that evidences Manatee County being listed as an Additional Insured. This can be done in one of two ways: (1) an endorsement can be issued that specifically lists "Manatee County, a Political Subdivision of the State of Florida," as Additional Insured; or, (2) an endorsement can be issued that states that all Certificate Holders are Additional Insured with respect to the policy.

b. The successful Bidder's insurance coverage shall be primary insurance with respect to the County, its officials, employees and volunteers. Any insurance or self-insurance maintained by the County, its officials, employees or volunteers shall be excess of successful Bidder's insurance and shall be non-contributory.

c. The insurance policies must be on an occurrence form.

2. Workers' Compensation and Employers' Liability Coverages

The insurer shall agree to waive all rights of subrogation against the County, its officials, employees and volunteers for losses arising from work performed by the successful Bidder for the County.

II. GENERAL INSURANCE PROVISIONS APPLICABLE TO ALL POLICIES:

1. Prior to the execution of contract, or issuance of a Purchase Order, and then annually upon the anniversary date(s) of the insurance policy's renewal date(s) for as long as this contract remains in effect, successful Bidder shall furnish the County with a Certificate(s) of Insurance (using an industry accepted certificate form, signed by the Issuer, with applicable endorsements, and containing the solicitation or contract number, and title or description) evidencing the coverage set forth above and naming "Manatee County, a Political Subdivision of the State of Florida" as an Additional Insured on the applicable coverage(s) set forth above.

2. If the policy contains an aggregate limit, confirmation is needed in writing (letter, email, etc.) that the aggregate limit has not been eroded to procurement representative when supplying Certificate of Insurance.

   In addition, when requested in writing from the County, successful Bidder will provide the County with a certified copy of all applicable policies. The address where such certificates and certified policies shall be sent or delivered is as follows:

   Manatee County, a Political Subdivision of the State of Florida
   Attn: Risk Management Division
   1112 Manatee Avenue West, Suite 969
   Bradenton, FL 34205

3. The project's solicitation number and title shall be listed on each certificate.

4. successful Bidder shall provide thirty (30) days written notice to the Risk Manager of any cancellation, non-renewal, termination, material change, or reduction in coverage of any insurance policies to procurement representative including solicitation number and title with all notices.

5. successful Bidder agrees that should at any time successful Bidder fail to meet or maintain the required insurance coverage(s) as set forth herein, the County may terminate this contract.

6. The successful Bidder waives all subrogation rights against Manatee County, a Political Subdivision of the State of Florida, for all losses or damages which occur during the contract and for any events occurring during the contract period, whether the suit is brought during the contract period or not.

7. The successful Bidder has sole responsibility for all insurance premiums and policy deductibles.

8. It is the successful Bidder's responsibility to ensure that his agents, representatives and subcontractors comply with the insurance requirements set forth herein. successful Bidder shall include his agents, representatives, and subcontractors working on the project or at the worksite as insured under its policies, or successful Bidder shall furnish separate certificates and endorsements for each agent, representative, and subcontractor working on the project or at the worksite. All coverages for agents, representatives, and subcontractors shall be subject to all of the requirements set forth to the procurement representative.

9. All required insurance policies must be written with a carrier having a minimum A.M. Best rating of A- FSC VII or better. In addition, the County has the right to review the successful Bidder's deductible or self-insured retention and to require that it be reduced or eliminated.

III. Successful Bidder understands and agrees that the stipulated limits of coverage listed herein in this insurance section shall not be construed as a limitation of any potential liability to the County, or to others, and the County's failure to request evidence of this insurance coverage shall not be construed as a waiver of successful Bidder's obligation to provide and maintain the insurance coverage specified.

IV. The enclosed Hold Harmless Agreement shall be signed by the successful Bidder and shall become a part of the contract.

V. Successful Bidder understands and agrees that the County does not waive its immunity, and nothing herein shall be interpreted as a waiver of the County's rights, including the limitation of waiver of immunity, as set forth in Florida Statutes 768.28, or any other statutes, and the County expressly reserves these rights to the full extent allowed by law.

VI. No award shall be made until the Procurement Division has received the Certificate of Insurance and Hold Harmless Agreement in accordance with this section.

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BID ATTACHMENT 2, ROADWAY SPECIAL PROVISIONS

SPECIAL PROVISIONS

FOR

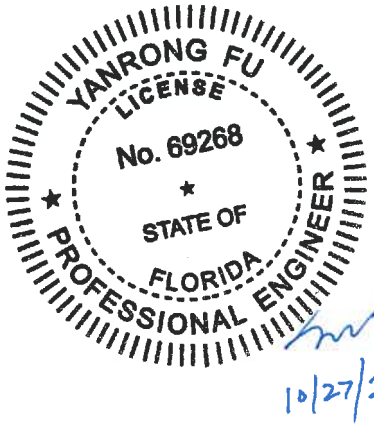
SR 62 at Erie Road Realignment

Manatee County Project # 850-6094060
FDOT Financial Project # 445308-1-58-01

2021

PROJECT OWNER:

County of Manatee, Florida
c/o Manatee County Purchasing Division
1112 Manatee Avenue West
Bradenton, Florida 34205
(941) 748-4501



PREPARED BY:

Engineering Division
Manatee County Public Works Department
1022 26th Avenue East
Bradenton, Florida 34208
(941) 708-7450

SPECIAL PROVISIONS

SECTION **PAGE**

GENERAL

This Section amends, enhances or otherwise revises the Technical Specifications.

STANDARD SPECIFICATIONS

The standard specifications to be used for this work shall be Division II and III of the Florida Department of Transportation (FDOT) *Standard Specifications for Road and Bridge Construction*, latest edition and all Supplemental Specifications thereto, hereinafter referred to as the *Standard Specifications,* for roadway construction, except as amended under this Contract, or as noted on the construction plans meeting the Manatee County Highway, Traffic & Stormwater Standards (dated June 2015, amended November 2016).

The Contractor's work shall follow the Manatee County Public Works Utility Standards (dated 2020) and current Specifications for all utility work.

These specifications cover the usual construction requirements for work specified by the County Public Works Department; however, in the event it is determined that the specific work to be done is of such a nature that the method of construction, type and/or kind of material is not defined by the *Standard Specifications,* such work shall be performed in accordance with the Special Provisions.

The apparent silence of the Specifications as to any detail or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used. Interpretation of these specifications shall be made upon that basis.

PRIORITY

In any instance where there is an apparent conflict between these technical specifications, special provisions and the corresponding terms of the "Standard Specifications", these special provisions followed by these technical specifications shall be controlling.

NO SEPARATE PAYMENT FOR SPECIAL PROVISIONS

No separate payment will be made for the Contractor to execute Special Provisions. All expenses borne by the Contractor shall be included in the individual unit prices for the particular pay item.

E-BUILDER ENTERPRISETM

a. <u>e-Builder Enterprise™: Project Management Tool</u>

The successful bidder shall be required to use the Internet web-based project management tool, e-Builder EnterpriseTM (e-Builder), and protocols included in that software during this project; and shall take any training courses required by the Owner, at no additional cost to the Owner. The use of this project management system does not replace or change any contractual responsibilities of the participants.

User registration, electronic and computer equipment, and Internet connections required for e-Builder are the responsibility of the successful Bidder and its subcontractors. The sharing of user accounts is prohibited. Individuals who are granted log-in access to the County e-Builder platform shall be responsible for the proper use of their passwords and access to data as agents of the successful Bidder. For documents requiring original signature such as Contracts, Change Orders, Application and Certification for Payment, and Field Directives, paper documents may be required in addition to submittal via e-Builder.

b. <u>County Responsibilities</u>

User licenses for e-Builder EnterpriseTM will be provided and paid for by the Owner based on assigned roles for the project including Project Manager, Project Fiscal, Project Superintendent, and others as may be required

MATERIALS

a. **Delivery Tickets**: It will be necessary to submit a copy of all delivery tickets for materials used on the project, regardless of the basis of payment.

b. **Job Mix Formula for Asphaltic Concrete**: Attention is directed to the requirement that job mix formulas for asphaltic concrete, of the type specified, be submitted at least 14 days before plant operations begin. The submitted formula should be derived, or approved, by the laboratory approved by the Owner and/or its agents. Costs for such job mix formulation will be paid by the Contractor directly to the assigned laboratory.

c. **Job Mix Formula for Portland Cement Concrete**: Attention is directed to the requirement that job mix design formulas for all Portland Cement Concrete, of the type specified, be submitted at least 14 days prior to use on the project. The submitted formulas shall be derived or approved by the Owner and/or its agents. All concrete mix designs shall meet FDOT Concrete Class mix guidelines, except as follows: when approved, in writing by the Engineer, an Alternate Class I Concrete mix design formula, for concrete curb and gutter to be placed by automated curb machines, may show, as a substitution for #57

aggregate, an amount of #89 aggregate not to exceed 33 percent, by weight, of the #57 aggregate.

LABORATORY TESTING

Testing for the Work shall be performed at no expense to the Contractor. However, any test that fails or is not performed, as a result of the Contractor's action will, in turn, be back-charged to the Contractor, including the cost of all re-testing due to defective materials or construction. The testing laboratory shall be approved by the County.

The samples and tests used for determining the quality and acceptability of the materials and workmanship, which have been or are to be incorporated in the Work, shall conform to the requirements of the State of Florida Department of Transportation Materials Sampling, Testing and Reporting Guide, latest edition.

Testing shall also be in accordance with the applicable portions of the *FDOT Standard Specifications* and these specifications.

MEASUREMENT AND PAYMENT

a. All work completed under the terms of this contract shall be measured according to United States Standard Measures.
b. All measurements shall be taken horizontally or vertically unless specifically provided otherwise.

c. No payment will be made for construction over a greater area than authorized, nor for material moved from outside of stakes and data shown on the plans, except when such work is performed upon instructions of the Engineer.

d. The Contractor shall accept compensation provided under the terms of this contract as full payment for furnishing all materials and for performing all work contemplated and embraced under this contract. Such compensation shall also be for any and all loss or damage arising out of the nature of the work or from the action of the elements, or from any unforeseen difficulties or obstructions encountered during the contract period until final acceptance by the Owner.

e. Whenever any change, or combination of changes, on the plans results in an increase or decrease in the original contract quantities, and the work added or decreased/eliminated is of the same general character as that called for on the plans, the Contractor shall accept

payment in full at the original contract unit prices for the actual quantity of work performed, with no allowance for any loss of anticipated profits.

f. It is the Contractor's responsibility to perform a detailed quantity take-off from the plans to determine actual quantities for ordering and delivery purposes. The Owner will not be responsible for quantities ordered in excess of those installed and constructed. The Contractor should be aware that some of the pay items may have contingency quantities. Payment shall be made only for final in-place quantities.

   No payment shall be made for contingency quantities or additional work unless otherwise directed and approved in writing by the Engineer.

g. Bid Schedule Completion - the blank spaces in the bid schedule shall be filled in correctly where indicated for each and every item for which a description is given, as the bidder must state the unit prices for which he proposes to do each part of the work contemplated, and the total price for all the parts included in any or all of the combinations of the work. In case of a discrepancy, the written words for "unit price", where stated, shall be considered as being the unit price. If the bid schedule does not use the written words for the unit price, then the numerically correct "total price", shall be considered as being the total price.

RESTORATION

Payment for restoration shall be covered under the applicable restoration Pay Items as specified in the proposal. If a specific restoration Pay Item is not listed in the proposal, the cost of such work shall be included in the applicable Pay Item unless otherwise provided under separate restoration section or pay quantity of these Specifications.

COOPERATION WITH OTHERS

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations, in order that these operations may progress in a reasonable manner and that service rendered by these parties will not be interrupted. The Owner shall not be responsible for costs associated with delays, disruptions and remobilizations attributed to utility agency scheduling.

SITE INVESTIGATION

The Contractor acknowledges that he has satisfied himself as to the nature and location of the work; the general and local conditions, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials; availability of labor, water, electric

power, roads; and uncertainties of weather, water stages, tides or similar physical conditions at the site; the conformation and conditions of the ground; the character of equipment and facilities needed preliminary to and during prosecution of the work.

The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered, insofar as this information presented by the drawings and Specifications made a part of this contract.

The Contractor shall carefully review and adhere to conditions and recommendations made in the project geotechnical report.

Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner. The Owner also assumes no responsibility for any understanding or representations made by its officers or agents during or prior to the execution of this Contract, unless (1) such understanding or interpretations are made in writing by the Engineer or are expressly stated in the Contract and (2) the Contract expressly provides that the responsibility therefore is assumed by the Owner.

PROJECT SCHEDULE

The Contractor shall submit a preliminary construction schedule with the bid. The preliminary schedule shall show major work items and any phases the Contractor proposes. The schedule will show duration of work items and phases.

The Contractor shall submit a detailed Critical Path Method (CPM) construction schedule within 15 days of the notification of award or its intent for the County to review. The submittal shall meet the following requirements:

- Schedule will be submitted on 11-inch by 17-inch paper.
- The time scale (horizontal) shall be in weeks. The activities shall be listed on the left hand side (vertical).
- Activities shall show most Work activities. The listing from top to bottom shall be in a logical sequence of how the Work will be accomplished. Space shall be provided between activities or within bars to allow for marking of actual progress.

A copy of the CPM schedule, clearly showing progress made, shall be submitted on a monthly basis during the progress of the work at the monthly meeting. Review or acceptance will neither impose on the County responsibility for the progress or scheduling of the Work, nor relieve the Contractor from full responsibility therefore.

The Contractor shall provide a revised CPM schedule if, at any time, the County considers the completion date to be in jeopardy because of "activities behind schedule". An activity that cannot be completed by its original or latest completion date shall be deemed to be behind schedule. The revised CPM schedule is designed to show how the Contractor intends to accomplish the Work to meet the contractual completion date. The form and method employed by the Contractor shall be the same as for the original CPM schedule. The cost to prepare and revise the schedule is considered incidental to the Work.

PROJECT IDENTIFICATION SIGNS

The Contractor shall be responsible for furnishing, installing and maintaining two (2) County project identification signs and removal of same upon completion of the construction. Project identification sign shall be constructed and maintained at the project site as directed by the Owner. The Contractor shall erect, maintain and relocate the sign as directed for the duration of the Project.

The Contractor shall mount the sign using 4-inch pressure treated lumber or as approved by the Engineer, and other supports as required, at a location mutually agreed by the Engineer and the Contractor.

The identification signs shall not be less than 32 square feet in area. The Contractor shall coordinate with the Owner for the sign verbiage before fabrication. The signs shall be painted with graphic content to include:

- Title of Project
- Name of Owner
- Names and Titles of authorities, as directed by Owner
- Prime Contractor
- Construction Cost

The signs shall be erected prior to commencement of work at a lighted location of high public visibility, adjacent to the main entrance at each end of the project, as approved by the Engineer and Owner.

The signs shall be a minimum of 8 feet wide and 4 feet high. The signs shall be constructed of high density ¾-inch exterior plywood without waves or buckles, mounted and braced with pressure treated

lumber as necessary and maintained in a presentable condition for the duration of the project. Hardware shall be galvanized. The surface of the sign shall be of exterior softwood plywood with medium density overlay.

Painting shall be constructed with materials to resist weathering and fading during the construction period. Experienced professionals shall perform painting. Graphic design and style shall be in accordance with the following:

- The signs will be placed in accordance with Manatee County Development Code, Ordinance 90-01, Section 724, Signs and Section 713, Visibility Triangles.

Payment for installing and maintaining the project identification signs shall be included as part of the lump sum quantity under Pay Item Number 1 (101-1) for Mobilization. The sign will remain the property of the Owner upon completion of the Project unless otherwise directed.

ENTER PROJECT NAME

Board of County Commissioners

KEVIN VAN OSTENBRIDGE

CHAIRMAN

JAMES SATCHER

VANESSA BAUGH

CAROL WHITMORE

REGGIE BELLAMY

MISTY SERVIA

GEORGE W. KRUSE

CONSTRUCTION COST
$Enter Amount

PRIME CONTRACTOR
Enter Contractor Name

SOIL EROSION AND SILTATION

The Contractor shall plan and control the Work to minimize all soil erosion and the siltation of drains and canals resulting from such erosion.

At the pre-construction meeting, the Contractor shall present his proposed plan and schedule, which shall specifically indicate the proposed usage of temporary erosion control features. The plan shall include:

- **Synthetic Bales, Baled hay and straw barriers** designed, furnished and installed by the Contractor in accordance with the plans, and FDOT Specifications Section 104.

- **Floating turbidity barriers and staked turbidity barriers** furnished and installed by the Contractor as shown on the plans and/or required by conditions of the permits and as outlined in FDOT Specifications Section 104.

SHOP DRAWINGS

The Contractor shall submit to the Engineer for approval, all working drawings and shop drawings with descriptive specifications and engineering calculations necessary for the successful completion of the Work. The shop drawing shall be submitted in pdf format, along with a submittal log, and the number of the submittals should follow the number on the submittal log. Each shop drawing shall have a cover sheet and reference the submittal log number, following the sample format provided in the contact documents.

The working and shop drawings shall be certified by a Florida licensed Professional Engineer and state that the design is sufficient for the successful completion of the Work. The working drawings and shop drawings shall include, but not be limited to:

- Traffic Control Plan
- Erosion Control Plan
- Shop Drawings as required by FDOT Standard Specifications

The Contractor is responsible for maintaining a Submittal Activity Record (Logbook) on this project. The Contractor shall submit all shop drawings to the Roadway Engineer of Record for processing to the appropriate Area of Practice EOR for review. The Area of Practice EOR will complete the review and return the shop drawing to the Roadway Engineer of Record for logging and processing back to the Contractor and to the County Representative.

The logbook shall be updated each time when any Shop Drawing submittal activity occurs.

The following minimum data shall be entered in the logbook for each submittal:

County Project Number
Submittal Number
Description of Submittal
Number of Sheets in the Submittal
Number of Pages of Calculations, in Reports, in Manuals, etc.
Date Transmitted by Contractor to the Roadway Engineer of Record
Date Transmitted by Roadway EOR to the Area of Practice EOR
Date Roadway EOR Receives Shop Drawing Back From Area of Practice EOR
Date Roadway EOR Sends Shop Drawing Back to Contractor
Disposition as either "A" (Approved), "AN" (Approved as Noted), "R" (Resubmit) or "NA" (Not Approved).

The Logbook is a historical record of the activity devoted to an individual submittal as well as that for the project as a whole. It can serve as a verification of review time, to respond to inquiries of a particular submittal's status and as a record of manpower effort to aid in estimating and allocating future workload.

SUBSOIL EXCAVATION

The contractor shall detect and remove all unsuitable material, such as plastic/organic soil, rock, hard plane, debris and trash, within project limit, following FDOT Standard Plans Index 120-002, latest version. Payment for subsoil excavation shall be included in the subsoil excavation pay items.

DEWATERING, SHEETING AND BRACING

The contractor shall determine the need of dewatering, sheeting and bracing to facilitate the construction, conforming to current SWFWMD/FDEP rule and OSHA safety criteria. Payment for dewatering, sheeting and bracing shall be included in the applicable item for earthwork, unless separate pay items are specified.

Approval of Dewatering Plan:
At least 10 days prior to the commencement of any dewatering activity, the Contractor shall obtain the approval from SWFMWD, or FDEP (if water needs to be discharged offsite into the state surface water) and submit the permit with a detailed description of the proposed dewatering system to the Project Manager. The dewatering plan shall include design computations, layout, type, and

spacing of dewatering devices, number and size of pumps and other equipment, with a description of the installation and operating procedures.

EARTHWORK

Quantities included on cross-section sheets, if any, represent estimated in-place quantities and do not include shrinkage and expansion factors. The quantities were calculated by the method with average end areas between the station-to-station limits. Payment for Earthwork shall be made based on average end area method calculations. Contractor shall provide supporting survey data (before and after cross-sections) and calculations for payment purposes.

TEMPORARY PAVEMENT

Temporary pavement shall consist of a minimum of Optional Base Group 4 and one (1) inch of Type SP structural course (Traffic C) over a firm, unyielding, well-compacted subgrade. The Contractor shall immediately repair all potholes that develop within the project limits and shall maintain a supply of cold mix on the project site to expedite these repairs.

The Temporary by-pass road shall provide adequate cover and protection of existing utilities. It is the Contractor's responsibility to coordinate with utility companies to repair any damages to the exiting utilities during the construction at no additional cost to the County.

Payment for the temporary pavement and maintenance of this pavement shall be included under Maintenance of Traffic.

MAINTENANCE OF TRAFFIC

The Contractor shall provide access to local businesses and residents at all times. No road closures will be allowed between the hours of 6AM to 7PM. Temporary by-pass lanes may be constructed at all tie-in locations during the MOT phasing. The payment for temporary by-pass lanes shall be included in Maintenance of Traffic. Business Entrance signs per FDOT Standard Plans Index 700-102 shall be placed at all business entrance points and maintained during all phases of construction. Payment for these items shall be included under the pay item for Maintenance of Traffic.

Temporary pavement marking shall be paid under Maintenance of Traffic. Temporary Striping and Marking during 30 day cure time of the asphalt shall be part of the pay item for Maintenance of Traffic, in accordance with Section 102-1, FDOT Specifications, latest edition.

The Contractor shall prepare a Maintenance of Traffic plan and submit it to the Project Manager for review prior to implementation. It must comply with all FDOT safety criteria, FDOT Standard

Plans Index 102 Series, FHWA and MUTCD standards, and allow for traffic to operate in daytime or nighttime. The Maintenance of Traffic Plan will require the seal of a Florida licensed Professional Engineer with a current FDOT Advance Work Zone certification if any change is made to the FDOT Standard Plans Index 102 Series. No road closures will be allowed without approval from Matt Merucci <Matt.Merucci@mymanatee.org>.

STORMWATER DRAINAGE PIPES AND STRUCTURES

All proposed storm structure shall have a wall thickness no less than 6 inches.

Metal storm pipe or metal mitered end section shall not be used in the road right of way or carry right of way runoff.

MAINTENANCE OF STORM DRAINAGE SYSTEM

The Contractor shall be responsible at all times to maintain the operation of existing stormwater facilities, or, when existing stormwater facilities are removed, to provide equivalent capacity alternate forms of stormwater removal adequate to prevent upstream flooding in excess of existing conditions. This responsibility shall include the installation of temporary connections, bypass pumping, or other temporary means necessary until the new drainage system is fully operational. Payment for these items shall be included under the applicable pay item for new storm systems.

POST-CONSTRUCTION STORM PIPE TESTING

The Contractor shall inspect and televise all newly constructed storm pipes on the project. Video DVD and report shall be provided for those pipes whose diameters are equal or smaller than 48 in, with Laser profile data included for non-RCP pipes, following FDOT Specifications latest version. The purpose is to assure the pipes are properly constructed and do not leak at the joints. Payment for this item shall be included under the pay item for Mobilization.

SIDEWALKS TO REMAIN OPEN

Existing sidewalks and proposed sidewalks completed during construction shall remain open at all times unless approved otherwise by the Engineer. Temporary sidewalk shall be constructed as shown in the plans or as required to maintain pedestrian movement. Payment for these items shall be included under the lump sum pay item for Maintenance of Traffic.

If the Contractor, in the process of performing his contract operations, breaks any of the existing sidewalk that is to remain in place, replacement of this sidewalk will be at the Contractor’s expense.

DUST CONTROL

The Contractor shall control dust resulting from construction operations at all times. The locations and frequencies of applications shall be as directed by the Engineer. Contractor shall provide dust control measures using water sources as needed and maintaining dust control throughout duration of the project. Payment for Dust Control shall be made under Maintenance of Traffic unless separate pay item for Dust Control is specified.

UNDERGROUND UTILITY LOCATIONS

The Contractor shall field verify existing underground utility locations by means of subsurface locating or other approved method. All existing utilities shall remain unless otherwise noted on the plans. The Contractor shall locate all existing utilities to remain at potential conflict locations prior to construction activities and before ordering any proposed structures. The Contractor shall contact and coordinate with "Sunshine State One Call 811" as well as the individual utilities prior to and during construction for utility locations, relocation and assistance while installing in potential conflict areas. All utility coordination and relocations shall be factored into the Contractor's construction schedule at no additional cost to the Owner.

The cost of all labor, materials and incidentals required for the performance of any survey and utility location work shall be included under the pay item for Mobilization. A Florida registered land surveyor shall perform all survey work.

UTILITY COORDINATION

The Contractor shall be responsible for coordination of the work with all affected utility owners. The Contractor must take into consideration the required utility adjustments and relocations in development of his schedule for completing the work including construction of temporary work to allow phased construction of the permanent facilities.

The Contractor shall coordinate and schedule utility relocations and/or adjustments with the utility owners along the project in order to avoid delays. The work includes remobilization if required after utility relocation is complete. The intent is to coordinate utility construction activities so the project construction continues and is not stopped or delayed at any time due to utility work being done. Once Notice to Proceed is issued, the Contractor shall contact the affected utilities to discuss the Contractor's anticipated means and methods so temporary and permanent relocation plans can be implemented as needed to meet OSHA safety requirements.

The Contractor shall hold a utility owners meeting every two weeks / or alternate time schedule agreed to by the Owner at 1022 26th Avenue East. The meeting shall review current and upcoming

activities for the project. Written meeting minutes will be prepared by the Contractor and distributed to the meeting participants within 3 calendar days of the meeting.

To eliminate the need for de-energizing the adjacent existing or propose OE lines, the contractor shall coordinate with FPL regarding mast arm construction and follow below sequence:

1) Mast arm @ southwest quadrant is installed in its entirety (i.e. including drill shaft, vertical & horizontal mast arm members).
2) Mast arm @ southeast quadrant is partially installed (i.e. including drill shaft & vertical member).
3) FPL then relocates all overhead facilities as outlined on the attached RGB marked plans.
4) Mast arm work @ southeast quadrant is then completed.

Any work in the vicinity of the electric lines shall be coordinated with the power company for the setback requirements. The contractor's equipment and personnel shall maintain a minimum clearance distance to the power line following current OSHA Rule (29 CFR Part 1910 and1926) and FDOT Roadway Design Bulletin 11-03 DCE Memorandum 02-11.

UTILITY CONFLICTS

It shall be the Contractor's responsibility to avoid conflicts with other utilities. The Owner will not be responsible for additional costs incurred by the Contractor for incorrect installations, relocations and breaks due to service conflicts.

DAILY CLEAN-UP REQUIREMENTS

The Contractor shall clean up the job site at the end of each workday. Clean up will include the elimination of rubble and waste material on public and private property. Driveways shall remain accessible by residents. Each Friday, the Contractor shall prepare the road surface and barricades in an acceptable manner for weekend traffic use.

MAINTENANCE AND RESTORATION OF JOB SITE

The Contractor shall conduct his operations in such a manner as will result in a minimum of inconvenience to occupants of adjacent homes and business establishments and shall provide temporary access as directed or as may be required by the Project Manager. All final restoration must be performed to an equal or better condition than that which existed prior to construction.

Good housekeeping on this project is extremely important and the Contractor will be responsible for keeping the construction site neat and clean, with debris being removed daily as the work

progresses or as otherwise directed by the Project Manager. Good housekeeping at the job site shall include: Removing all tools and temporary structures, dirt, rubbish, etc.; hauling all excess dirt, rock, etc., from excavations to a dump provided by the Contractor; and all clean up shall be accomplished to the satisfaction of the Project Manager. Dust will be controlled daily as may be required. Immediately after construction completion in an area or part thereof (including restoration), barricades, construction equipment and surplus and discarded materials shall be removed by the Contractor.

In the event that the timely clean up and restoration of the job site is not accomplished to the satisfaction of the Project Manager, the Project Manager shall make arrangements to affect the necessary clean up by others. The Contractor shall be charged for these costs through deductions in payment due the contractor. If such action becomes necessary on the part of and in the opinion of the Project Manager, the Owner shall not be responsible for the inadvertent removal from the work site of materials which the Contractor would not normally have disposed of had he affected the required clean up.

NOTICE AND SERVICE THEREOF

All notices, which shall include demands, instructions, requests, approvals, and claims shall be in writing. Any notice to or demand upon the Contractor shall be sufficiently given if delivered to the office of the Contractor specified in the bid (or to such other office as the Contractor may, from time to time, designate to the Owner in writing), or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered, with charges prepaid, sent via fax transmission, or to any telegraph company for transmission, in each case addressed to such office.

All notices required to be hand delivered to the Owner, unless otherwise specified in writing to the Contractor, shall be delivered to the Project Manager, and any notice to or demand upon the Owner shall be sufficiently given as delivered to the office of the Project Manager, or if deposited in the United States mail in a sealed, postage prepaid envelope, sent via fax transmission, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to said Project Manager or to such other representative of the Owner or to such other address as the Owner may subsequently specify in writing to the Contractor for such purposes.

Any such notice or demand shall be deemed to have been given or made as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post or in the case of a fax transmission or telegram at the time of actual receipt, as the case may be.

REQUIREMENTS FOR CONTROL OF THE WORK

Prior to the start of the Work described in this contract, a pre-construction conference may be held by the Project Manager to be attended by the Contractor and representatives of the various utilities

and others as required, for the purpose of establishing a schedule of operations which will coordinate the work to be done under this contract with all related work to be done by others within the limits of the project.

All items of work in this contract shall be coordinated so that progress of each related item will be continuous from week to week. The progress of the work will be reviewed by the Project Manager at the end of each week, and if the progress of any item of work during that week is found to be unsatisfactory, the Contractor shall be required to adjust the rate of progress on that item or other items as directed by the Project Manager without additional compensation. The Contractor will continuously control the work until completed.

USE OF PRIVATE PROPERTY

All construction activities required to complete this project in accordance with the Contract Documents shall be confined to public right-of-way, easements of record or temporary construction easements, unless the Contractor makes specific arrangements with private property owners for his use of their property. Written authorization from the granting property owner shall be placed on file with the Project Manager prior to utilization of said private properties. The Owner assumes no responsibility for damage to private property in such instances. The Contractor is responsible for protection of private property abutting all work areas on this project. Adequate equipment storage and material storage shall also be accomplished outside the Owner's right-of-way. Pipe and other materials shall not be strung out along the right-of-way, but will be delivered in quantities adequate for one day's installation. The Owner will coordinate with the Contractor to identify possible storage sites.

CONSTRUCTION PHOTOGRAPHY

General

The Contractor shall employ a competent photographer to take construction record photographs and perform videotaping, including providing all labor, materials, equipment and incidentals necessary to obtain photographs and/or videotapes of all areas specified in the Contract specifications.

The word "Photograph" includes standard photographic methods involving negatives, prints and slides and it also includes digital photographic methods involving computer technology items such as diskettes and CD-ROMs.

Qualifications

A competent camera operator who is fully experienced and qualified with the specified equipment shall do all photography.

For the videotape recording, the audio portion should be done by a person qualified and knowledgeable in the specifics of the Contract, who shall speak with clarify and diction so as to be easily understood.

General

The Contractor shall employ a competent photographer to take construction record digital photos and perform video recording, including providing all labor, materials, equipment and incidentals necessary to obtain photos and/or video recordings of all areas within the project limits or as otherwise specified in the Contract specifications.

The word "Photo" includes standard photographic methods involving digital photography and production of hard copies for photos and saving photos as jpg files on diskettes and CD-ROMs.

Qualifications

A competent camera operator who is fully experienced and qualified with the specified equipment shall do all photography.

For the video recording, the audio portion should be done by a person qualified and knowledgeable in the specifics of the Contract, who shall speak with clarity and diction so as to be easily understood.

Project Photos for Construction Progress

Provide photos of the entire work area during construction for the purpose of records of completed work. Photos should be spaced at approximately 100-foot intervals. Three prints of each standard photograph shall be provided to the County. In addition to the CD_ROM media, one print of each digital photograph shall be provided to the County.

The Contractor shall pay all costs associated with the required photographs and prints. Any parties requiring additional photography or prints will pay the photographer directly.

Each print shall have clearly marked on the back the name of the project, the orientation of view, the date and time of exposure, name and address of photographer and the photographers numbered identification of exposure.

All project photographs shall be a single weight, color image. All finishes shall be smooth surface and glossy, and all prints shall be 8 inches by 10 inches.

All project photos shall be taken from locations to adequately illustrate conditions prior to construction, or conditions of construction and state of progress. The Contractor shall consult with the County Representative at each period of photography for instructions concerning views required.

The Contractor shall deliver photos in conformance with the above requirements to the County Representative. No construction shall begin until pre-construction photo are completed and submitted to the County Representative.

Record Photos
The Contractor shall require that photographer maintain digital copies of photos for a period of two years from date of Substantial Completion of the Project.

Photographer shall agree to furnish additional prints to the County Representative at commercial rates applicable at the time of purchase. Photographer shall also agree to participate as required in any litigation requiring the photographer as expert witness.

Video Recording for Pre-Construction
Video recording shall be used in lieu of photos for pre-construction. It shall be of sufficient quality to fully illustrate details of conditions and construction, including special features

Video recording shall be accomplished along all routes that are scheduled for construction.

The video recording shall, when viewed, depict an image with ¼ of the image being the roadway fronting of property and ¾ of the image being of the property. The video recording shall be done so as to show the roadway and property in an oblique view (30 degrees).

A complete view, in sufficient detail, of all driveways, with audio description of the exact location shall be provided.

The Engineering plans shall be used as a reference for stationing in the audio portion of the video recording for easy location identifications. If visible, house numbers shall be mentioned on the audio.

Two complete sets of video recording shall be delivered to the Owner for the permanent and exclusive use of the Owner prior to the start of any construction on the project.

All video recording shall contain the name of the project, the date and time of the video recording the name and address of the photographer and any other identifying information required.
Payment for this item shall be included under the pay item for Mobilization.

CONTRACTOR TO EXECUTE NPDES "NOTICE OF INTENT"

Prior to proceeding with construction, the Contractor shall prepare and submit a "Notice of Intent to Use Generic Permit for Stormwater Discharge from Construction Activities that Disturb One or More Acres of Land" to the Florida Department of Environmental Protection (FDEP). The

Contractor shall monitor the site at all times and take appropriate action to prevent erosion including the use of BMPs. No pumping of ground or surface water shall be performed without approval from the Water Management District. Following completion of construction, Contractor shall prepare and submit a "Notice of Termination of Generic Permit Coverage" to FDEP. Payment for this item shall be included under the pay item for Mobilization.

WORKSITE TRAFFIC SUPERVISOR

a. The Contractor shall have a Worksite Traffic Supervisor who will be responsible for initiating, installing and maintaining all traffic control devices as described in Section 102 of the FDOT *Standard Specifications for Road and Bridge Construction* and in the Plans. The Worksite Traffic Supervisor shall have at least one year of experience directly related to work site traffic control in a supervisory or responsible capacity and shall be certified by the American Traffic Safety Services Association Worksite Traffic Supervisor Certification Program or an equal approved by FDOT. Approved alternate Worksite Traffic Supervisors may be used when necessary.

b. The Worksite Traffic Supervisor shall be available on a 24-hour per day basis and shall review the project on a day-to-day basis as well as being involved in all changes to traffic control. The Worksite Traffic Supervisor shall have access to all equipment and materials needed to maintain traffic control and handle traffic related situations. The Worksite Traffic Supervisor shall ensure that routine deficiencies are corrected within a 24-hour period.

c. The Worksite Traffic Supervisor shall be available on the site within 45 minutes after notification of an emergency situation, prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

d. Failure of the Worksite Traffic Supervisor to comply with the provisions of the Sub-article may be grounds for decertification or removal from the project or both. Failure to maintain a designated Worksite Traffic Supervisor or failure to comply with these provisions will result in temporary suspension of all activities except traffic and erosion control and such other activities deemed to be necessary for project maintenance.

e. Payment for Worksite Traffic Supervisor shall be included under the pay item for Maintenance of Traffic.

CONTRACTOR'S SUPERVISION

a. Prosecution of Work: The Contractor shall give the work the constant attention necessary to assure the scheduled progress. He shall cooperate fully with the Project Manager and with other Contractors at work in the vicinity.

b. Contractor's Superintendent: The Contractor shall at all times have on the work site as his agent, a competent superintendent capable of thoroughly interpreting the plans and specifications and

thoroughly experienced in the type of work being performed, who shall receive the instructions from the Project Manager or his authorized representatives. The superintendent shall have full authority to execute the orders or directions of the Project Manager and to supply promptly any materials, tools, equipment, labor and incidentals that may be required. Such superintendence shall be furnished regardless of the amount of work sublet.

c. The Contractor's superintendent shall speak and understand English, and at least one responsible person who speaks and understands English shall be on the project during all working hours, and wherever work is being done by the contractor.

d. Supervision for Emergencies: The Contractor shall have a responsible person available at or reasonably near the work site on a 24-hour basis, 7 days a week, in order that he may be contacted for emergencies and in cases where immediate action must be taken to maintain traffic or to handle any other problem that may arise. The Contractor's responsible person for supervision for emergencies shall speak and understand English. The Contractor shall submit, by certified mail, phone numbers and names of personnel designated to be contacted in cases of emergencies along with a description of the project location to the Florida Highway Patrol and all other local law enforcement agencies.

LIST OF EMERGENCY CONTACT NUMBERS & UTILITY SERVICE MAINTENANCE

The Contractor shall obtain and maintain a list of emergency contact phone numbers for all utilities during the course of the project. The Contractor shall maintain utility service during the project except for interruptions authorized by the utility owner. If interruptions are required, the Contractor shall notify the Owner 48 hours in advance.

PEDESTRIAN ACCESS

The Contractor shall provide access and make provisions to maintain school zones during construction. The Contractor is to facilitate pedestrian traffic whether for school or public transportation.

THERMOPLASTIC TRAFFIC STRIPES AND MARKINGS

Do not place thermoplastic traffic stripes and markings on newly constructed final surface courses prior to 30 calendar days after placement of the final surface course. The Engineer may require longer cure periods. Provide temporary pavement markings during the interim period if the road is open to traffic. The price of temporary pavement marking shall be included in the Maintenance of Traffic.

RECORD DRAWINGS AND PROJECT CERTIFICATION

The County will furnish the Contractor copies of the bid plans to be used for the record drawings. A Florida Registered Surveyor shall perform a field survey and any differences between the plan elevations or dimensions shall be marked through and the as-built elevation or dimension legibly entered. All elevations and dimensions that are correct shall have a check mark placed beside it.

The Contractor shall keep a complete set of surveyed "As-built" records. These records shall show all items of Work and existing features of utilities revealed by excavation work. The records shall be kept in a professional manner, in a form that shall be approved by the County prior to the Work. These results shall be available at all times during construction for reference by the Engineer and shall be delivered to the Engineer upon completion of the Work. All completed "As-builts" must be certified by a Florida Licensed Surveyor or Engineer per Chapter 61 G 17-6, Florida Administrative Code, pursuant to Sec. 47207, Florida Statutes. All Record Drawings shall be in accordance with current Manatee County Standards.

The "Record Drawings" shall, at a minimum, include the following:

A. Roadway centerline profile [100-foot maximum interval].
B. Roadway cross sections [100-foot maximum interval].
C. All underground piping with elevations and dimensions, changes to piping locations, horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements. Actual installed pipe material, class, etc. Dimensions at these locations shall indicate distance from the centerline of construction.
D. Elevations on all drainage control structures, verifying all plan dimensions.
E. Stormwater ponds with cross sections [25-foot maximum interval] (sufficient to calculate volumes).
F. Flow line elevations on all ditch breaks (vertical and horizontal).
G. Field changes of dimensions and details.
H. Details not on original contract drawings.
I. Equipment and piping relocations.
J. The locations of all headwalls, pipes and any other structures shall be located by station and offset.
K. Benchmarks and elevation datum shall be indicated.
L. Additional elevations or dimensions as required by the Engineer
M. Additional elevations or dimensions as required by the County Representative

Following completion of construction and prior to final payment, the Contractor shall submit a Certification by the Contractor and Manufacturer including test data that the materials (filter fabric, filter media, etc.) installed meet plan specifications and regulatory requirements.

Upon completion of the work, four (4) sets of draft "Record Drawings" shall be submitted to the Owner for review. Such drawings shall accurately show all approved field changes to the original Construction Drawings, including actual locations, dimensions and elevations and shall be subject to a field review in the presence of the Engineer or his designated representative. The drawings are to be prepared by competent personnel, neatly drafted and certified, signed and sealed by a Florida Registered Surveyor.

The Contractor shall incorporate any comments from the Owner and/or Engineer and shall submit two write-only CD-ROMs, one set of 11-inch by 17-inch mylar record drawings and four sets of 11-inch by 17-inch certified prints with the Surveyor's certification.

All Digital Drawings shall be identical to those submitted as hard copy. The Digital Drawing files shall be AutoCAD format (Release 2010 or later) and shall include all external reference drawings, text fonts, shape files and all other files necessary to make use of the drawings.

In addition, $150,000 or five percent (whichever is smaller) of the Contract price shall be retained until the County Representative has approved the "Record Drawings". The County Representative will review and approve the "Record Drawings within 30 days unless additional information is required. No final payment shall be made until such time as the "Record Drawings" have been approved and accepted by SWFWMD for Maintenance and Operation Phase Transfer. Unless there is a separate pay item for Record Drawings, payment shall be included as part of the lump sum quantity for Mobilization.

COMPLIANCE WITH THE SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT (SWFWMD) STORMWATER MANAGEMENT AND DISCHARGE PERMIT REQUIREMENTS AND/OR THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) DREDGE AND FILL PERMIT REQUIREMENTS

Southwest Florida Water Management District Stormwater Management and Discharge permits or exemptions, if any, and/or a Department of Environmental Protection Dredge and Fill permit, if any, required for this project have been obtained by the County. The Contractor shall comply with the stipulations of the Permits or Exemptions as stated herein.

The Contractor shall allow periodic inspection of the work by authorized representatives of the Department of Environmental Protection, the Southwest Florida Water Management District, as well as other duly authorized law enforcement officers of the State.

CRUSHED CONCRETE BASE

Crushed Concrete Base shall follow FDOT Standard Specifications, latest edition, Section 911. The layer coefficient of 0.18 with Limerock Bearing Ratio (LBR) minimum 150 is allowed to calculate the base thickness.

Only FDOT certified piles are acceptable to this project. The producing process certified by FDOT without the actual pile certified is not considered solid enough for the acceptance of the material. The contract shall send the engineer the deliver tickets with FDOT certified pile number, pile location, project name and manufactory contact information shown.

Additional tests and pile inspections will be required for the quality control and the contractor will be responsible for the cost of the initial ten tests and any re-tests when needed. The material will be rejected by the County if the initial test fails. The rejected material shall be completely removed from the project site.

1) Regarding structural number on Crushed Concrete Base, Manatee County to approve SN 0.18 if following criteria is met and maintained:
   A) Limerock Bearing Ratio value of 150 or greater.
   B) Gradation conforms to FDOT Specifications, latest edition, Section 911.
   C) Deleterious materials conform to FDOT Specifications, latest edition Section 911.
   D) Delivery ticket indicates FDOT approved source, actual lot allocated to a particular project.
   E) Piles or lots to be inspected by Manatee County representative prior to acceptance.

2) Regarding Limerock Bearing Ratio value:

A) No Limerock Bearing Ratio value less than 150, with no under tolerance.

3) Regarding source approval:
   A) FDOT approved source, allocated lot sufficient to serve project's needs, delivery tickets stating FDOT approved source, project name, FDOT preapproved lot or pile number.

4) Regarding deleterious materials:
   A) Deleterious material content in addition to the FDOT Specifications, latest edition, Section 911, should state that no construction debris such as Styrofoam insulation, telephone wire, lumber, shingles, aluminum window or door frames etc., or household trash i.e.: bottles, cans, paper goods etc. is acceptable.

5) Material source inspection:
   A) Prior to acceptance of base product, a representative of Manatee County will visit the Producer's location and obtain a sample of the proposed base for the specified project. In addition to sampling, the pile will be visually inspected for deleterious materials, substantial segregation, or any other undesirable characteristics. The pile shall have a traceable identification by pile number or lot number and an accurate quality assessment.

6) Import and placement of base product:
   A) During import of base product, a county inspector or duly designated representative of the county will be onsite monitoring incoming loads, making visual assessments of the product and checking load tickets for verification of materials.

7) Import and placement of base product:
   A) After spreading out, prior to compacting, samples of the base product will be obtained by Manatee County approved testing lab, every 500 LF staggering right, left, center of the roadway for Limerock Bearing Ratio, gradation and deleterious material testing.

8) Rejection of materials:
   A) Material not meeting above requirements will subject to rejection and be removed from the project site. Any three (3) concurrent rejections will require immediate shut down of imported material and require review and remedies prior to restart.

9) Compaction of material:
   A) In place material shall achieve 98% of AASHTO T-180 compaction.

CLARIFICATION OF SPECIFIC LINE ITEMS

Clarification of the County's expectations of work to be performed as it relates to specific line items and/or item No. listed on the Bid Form is included in the FDOT Basis of Estimate Manual current version. Where such item number is not available, the description shows herein will prevail.

Clearing & Grubbing shall per FDOT current specifications, and include completely removing and disposing of all buildings, timber, brush, trees, stumps, roots, rubbish, debris, fences, existing flexible pavement and base, drainage structures, culvers and pipes and other obstructions in the project area.

Subsoil Excavation shall include the removal of any material unsuitable in place, such as muck and organic materials, plastic soils, trash, rock fragments and dense soil, etc. The quantity to be paid shall be "in place" value.

Concrete sidewalk 4" (Incl. detectable warning truncated dome), shall follow Manatee County's Highway, Traffic & Stormwater Standards dated 2015. The payment shall include handicap ramp.

Concrete sidewalk 6", reinforced driveway (Incl. 6" x 6" #10 mesh), shall follow Manatee County's Highway, Traffic & Stormwater Standards, latest version. The payment shall include reinforcement, ramp and detectable warnings.

Fence Removal and Relocation (Including Hog Wire, chain Link Fence and Gates), shall follow current FDOT Standard Specifications Road and Bridge Construction. The contractor shall coordinate with FDOT and Parrish Plantation for the relocation schedule and the new location of the fence.

CONTRACT CONTINGENCY

The discretionary work (Contingency) pay item shall cover the cost for various contingencies and contract amendments authorized by the Owner. Any amount of extra work and/or alterations to the proposed work charged to the allowance shall be fully documented and authorized by the Project Manager before the start of the work. No payment shall be made for work completed without written authorization from the Owner or Engineer.

Date:___/___/_____ Submittal No. _____

SHOP DRAWING SUBMITTAL COVER SHEET

(IFB) # [Insert IFB Number]
Project Name: [Insert Full Project Name]
Project File No.: [Insert Project Number]
Specification Title Number: [Insert Section No.] Specification No.: Part *[Insert Part No.], [Insert Item No.]* Page(s): *[Insert Page No.]*
Submittal Description: [Insert Title, Description of Submittal and Use]

SHOP DRAWING REVIEW

RESPONSE NOT REQUIRED	RESPONSE REQUIRED
☐ NO EXCEPTIONS TAKEN ☐ NOTE MARKINGS	☐ NOTE MARKINGS, CONFIRM ☐ NOTE MARKINGS, RESUBMIT ☐ REJECTED, RESUBMIT

Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the project drawings and specifications, nor departure therefrom. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing his work in a safe manner.

MANATEE COUNTY PUBLIC WORKS DEPARTMENT

By:_____ Date:_____

Your Company Logo and/or information
[Contractor's Name]
[Contractor's Title]
[Company Name]
[Company Address]
[Office Number]
[Fax Number]
[email address]
[Approval Signature]: _____
[Approval Date: ___/___/_____

TRIP AGREEMENT REQUIREMENTS

INDEMNITY

To the fullest extent permitted by law, the Agency's contractor/consultant shall indemnify and hold harmless the Agency and the State of Florida, Department of Transportation, including the Department's officers and employees, from liabilities, damages, losses and costs, including, but not limited to, reasonable attorney's fees, to the extent caused by the negligence, recklessness or intentional wrongful misconduct of the contractor/consultant and persons employed or utilized by the contractor/consultant in the performance of this Agreement

INSPECTOR GENERAL

The contractor/consultant/vendor agrees to comply with s. 20.055(5), Florida Statutes, and to incorporate in all subcontracts the obligation to comply with s. 20.055(5), Florida Statutes.

BID ATTACHMENT 3, ROADWAY PLANS

NOTE - This attachment is uploaded as a separate document on the Procurement page of the County website with the solicitation document and available for download.

BID ATTACHMENT 4, LIGHTING PLANS

NOTE - This attachment is uploaded as a separate document on the Procurement page of the County website with the solicitation document and available for download.

BID ATTACHMENT 5, SIGNAL PLANS

NOTE - This attachment is uploaded as a separate document on the Procurement page of the County website with the solicitation document and available for download.

BID ATTACHMENT 6, S and P MARKING PLANS

NOTE - This attachment is uploaded as a separate document on the Procurement page of the County website with the solicitation document and available for download.

BID ATTACHMENT 7, GEOTECHNICAL REPORT

Geotechnical Engineering Report

SR-62 and Erie Road
Parrish, Manatee County, Florida
May 14, 2019
Terracon Project No. HC185059

Prepared for:
Manatee County Public Works
Bradenton, Florida

Prepared by:
Terracon Consultants, Inc.
Sarasota, Florida

May 14, 2019

Manatee County Public Works
1022 26th Avenue East
Bradenton, Florida 34206

Attn: Mr. Michael Sturm, P.E.
P: (941) 708-7450
E: Michael.Sturm@mymanatee.com

Re: Geotechnical Engineering Report
SR-62 and Erie Road
Parrish, Manatee County, Florida
Terracon Project No. HC185059, Revision No. 1

Dear Mr. Sturm:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PHC185059 dated October 11, 2018 and authorized by Purchase Order Work Assignment No. W1900036 dated October 30, 2018. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavements and signal pole foundations for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

James M. Jackson, P.E.
Department Manager
FL License No. 77733

Douglas S. Dunkelberger, P.E.
Principal
FL License No. 33317

REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

REPORT SUMMARY

Topic [1]	Overview Statement [2]
Project Description	The project includes widening Erie Road from US-301 to approximately 500 feet west of US-301 and extending Erie Road east of US-301 to connect with State Road 62 (approximately 1,300 linear feet). New mast arm signal poles are also planned for the intersection of Erie Road and US-301.
Geotechnical Characterization	In general, the borings found loose to dense poorly graded fine sand with varying amounts of silt from the surface to a depth of about 18 feet below the ground surface (bgs) followed by varying layers of loose to medium dense clayey sand and sand with silt to the maximum borehole termination depth of 30 feet bgs. The estimated Seasonal High Groundwater Level (SHGWL) is +40 feet-NGVD.
Earthwork	Remove topsoil and other large vegetative matter from the planned pavement areas. Densify the existing sandy soils for support of the proposed pavements.
Deep Foundations	Recommended soil parameters for design of drilled shafts are provided on the **Report of Core Borings** exhibit.
Pavements	With subgrade prepared as noted in **Earthwork**. Asphalt: ■ 3” Asphaltic Concrete (AC) over 10” aggregate base and 12” of stabilized subgrade
General Comments	This section contains important information about the limitations of this geotechnical engineering report.

1. If the reader is reviewing this report as a pdf, the topics above can be used to access the appropriate section of the report by simply clicking on the topic itself.
2. This summary is for convenience only. It should be used in conjunction with the entire report for design purposes.

Geotechnical Engineering Report

SR-62 and Erie Road

Parrish, Manatee County, Florida

Terracon Project No. HC185059

May 14, 2019

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Erie Road extension in Parrish, Manatee County, Florida. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Site preparation and earthwork
- Groundwater conditions
- Geotechnical parameters for drilled shaft design (by others)
- Pavement design and construction

The geotechnical engineering Scope of Services for this project included the advancement of 20 test borings to depths ranging from approximately 10 to 30 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is located at SR-62 and Erie Road in Parrish, Manatee County, Florida. See **Site Location**
Existing Improvements	Erie Road, west of US-301, currently consists of a 2-lane, asphalt-paved road with unpaved shoulders. The planned extension of Erie Road, east of US-301, is currently undeveloped pasture land.
Current Ground Cover	Most of the site is covered with short grasses except for the western portion of Erie Road which is covered with asphalt pavement and unpaved shoulders.
Existing Topography	Based on information provided by Mr. Jim Gatch of ZNS Engineering, the site is relatively level with ground surface elevations ranging from about +42 to +44 feet-NGVD.

Item	Description
Prior Land Use	Review of historical aerial photographs (ref. Google Earth) indicate the western portion of Erie Road has been in-place from at least 1995 to the present day. The eastern portion of the site, east of US-301, appears to have been a citrus grove from at least 1995 until 2010 when the grove appears to have been abandoned. The trees appear to have been removed by 2012 and the site remains generally unchanged to the present day.
Surficial Soil Conditions	Review of the Soil Survey for Manatee County, Florida issued April 1983 indicates the site is mapped with Soil Unit 36, Orlando fine sand, moderately wet, 0 to 2 percent slopes. The typical soil profile consists of fine sand to a depth of 80 inches or more. Under natural (pre-development) conditions, the seasonal high groundwater level (SHGWL) is reported to be between 40 and 72 inches bgs.

We also collected photographs at the time of our field exploration program. Representative photos are provided in our **Photography Log**.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	The following information was provided to us by Mr. Michael Sturm, P.E. of Manatee County Public Works and Mr. Jason Starr, P.E. of HDR Engineering.
Project Description	The project includes widening Erie Road from US-301 to approximately 500 feet west of US-301 and extending Erie Road east of US-301 to connect with State Road 62 (approximately 1,300 linear feet). New mast arm signal poles are also planned for the intersection of Erie Road and US-301.
Proposed Structures	The project includes up to three mast arm signal poles located at the northeast, southeast, and southwest corners of Erie Road and US-301. The new signal poles are to be supported on drilled shaft foundations (to be designed by others). We have assumed the mast arm foundation will be designed assuming the most aggressive corrosion conditions.
Maximum Loads	Structural loads for the new mast arm foundation were not provided.
Grading/Slopes	We expect site grading fill thicknesses to be moderate (up to 5 feet in thickness).

Item	Description
Pavements[1]	Based on information from the Florida Department of Transportation (FDOT) Transportation Data and Analytics Office (provided by Mr. Jason Starr, P.E. of HDR) we understand SR-62 has an Average Annual Daily Traffic (AADT) of 3,000. Historically, the AADT peaked in 2014 at 3,400 (1,700 per lane). Additionally, the Average Daily Truck Traffic (ADTT) is 816 (24%) for SR-62 (408 per lane). Based on this information, the following traffic data was utilized: ■ Autos/light trucks: 1,292 vehicles per day per lane ■ Light delivery and trash collection vehicles: 355 vehicles per day per lane ■ Tractor-trailer trucks: 53 vehicles per day per lane The pavement design period is 20 years.
Storm Water Management	Two dry retention ponds are planned for storm water management.

1. The distribution of truck traffic is based on Table 6.9 of Pavement Analysis and Design by Yang H. Huang (2004) and indicates 87% single-unit trucks and 13% multiple-unit trucks for a Rural Major Collector.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	**Sand with silt**	Poorly graded SAND with silt, sometimes with sand-sized phosphate grains (A-3, A-2-4, SP, SP-SM)
2	**Clayey sand**	Clayey SAND (A-2-6, A-6, SC)
3	**Silty sand**	Silty SAND (A-2-4, SM)

Groundwater

Three shallow piezometers were installed along the planned Erie Road alignment to collect stabilized groundwater levels. Groundwater level measurements were made in the piezometers on a weekly basis during the month of December 2018 and are summarized in the table below:

Roadway Piezometers					
Piezometer No.	Ground Surface Elevation (feet-NGVD)[1]	Elevation of Groundwater (feet-NGVD)			
		12-7-18	12-12-18	12-17-18	12-26-18
PZ-1	+42.7	+36.8	+37.8	+38.3	+39.4
PZ-2	+43.6	+37.7	+37.6	+37.9	+39.5
PZ-3	+43.0	+37.9	+36.8	+37.1	+38.7

1. Ground surface elevations were provided by ZNS Engineering.

Pond Piezometers					
Piezometer No.	Ground Surface Elevation (feet-NGVD)[1]	Elevation of Groundwater (feet-NGVD)			
		2-8-19	2-15-19	2-25-19	2-28-19
PZ-4	+43.6	+39.0	+38.7	+38.7	+38.6
PZ-5	+43.4	+38.3	+38.2	+38.2	+38.2

1. Ground surface elevations were estimated from the topographic survey provided by ZNS Engineering.

As presented herein, the SHGWL is the highest sustained groundwater elevation during a typical (normal or average rainfall amount) wet season and not the peak groundwater elevation immediately following a major storm event. Therefore, the SHGWL referred to in this report is an average, high value and not necessarily a peak (upper bound) value. The SHGWL generally occurs at the end of the wet season, which the Southwest Florida Water Management District (SWFWMD) identifies as the four months of mid-May through October.

The best and most accurate method of determining the SHGWL is to obtain real-time site-specific groundwater data through an entire hydro period (dry and wet seasons) during a year with normal rainfall. However, due to the project's design schedule, this was not feasible. Therefore, our SHGWL estimates are based on the stabilized groundwater measurements made in December 2018, February 2019, and an adjustment factor derived from published rainfall and groundwater data.

The groundwater levels in surficial aquifer well ROMP TR 7-2, which is located approximately 13 miles southwest of the site, were considered. The historical groundwater measurements reported for the well show that the groundwater levels peak in the month of September. In general, the groundwater level falls about 1 ½ to 2 feet from September to December and rises about 1 ½ to 2 feet from February to September, during a normal hydro-period. Additionally, the real-time data for the well suggests that the groundwater levels for December 2018 are about average (with the exception of the December 26 readings which were made following a significant rain event) and the levels for February 2019 are about ½ feet higher than the typical average for this time of year.

The well data discussed above suggests that the groundwater measurements made in December 2018 and February 2019 for this study are likely on the order of about 1 ½ to 2 feet below the normal (i.e. average rainfall) year SHGWL. Therefore, we estimate the SHGWL to be at an elevation of about +40 feet-NGVD (3 feet bgs).

Our estimated SHGWL is generally consistent with the Soil Survey.

Double Ring Infiltration Tests

The results of the DRI tests are summarized in the following table.

Location	Depth (ft)	USCS Classification	Area Function	Infiltration Rate (in/hr)
DRI-1	0.5	SP-SM	Pond	11.9
DRI-2	0.5	SP-SM	Pond	8.6

A factor of safety should be applied to the infiltration rate when designing the storm water management system for this project.

GEOTECHNICAL OVERVIEW

In general, the borings found loose to dense poorly graded fine sand with varying amounts of silt from the surface to a depth of about 18 feet bgs followed by varying layers of loose to medium dense clayey sand and sand with silt to the maximum borehole termination depth of 30 feet bgs. These materials are generally suitable for construction of the proposed roadway and associated structures following completion of the recommendations in the **Earthwork** section of this report.

The **Pavements** section addresses the design of pavement systems.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork is anticipated to include clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Earthwork operations should begin with the stripping of any surficial organic soils (topsoil) from the planned roadway areas. Tree removal should include roots down to finger sized roots and topsoil should be removed from the construction areas. Wet or dry material should either be removed, or moisture conditioned and re-compacted. After stripping and grubbing, the exposed surface should be proof-rolled to aid in locating loose or soft areas. Proof-rolling should be performed with a vibratory roller with a minimum static weight of 20,000 pounds. The roller should make a minimum of eight overlapping passes over all areas of the site, the latter four passes at right angles to previous passes. The soils should be compacted sufficiently to obtain a minimum compaction. Unstable soil (pumping) should be removed or moisture conditioned and compacted in place prior to placing fill.

Fill Material Types

Engineered fill should meet the following material property requirements:

Fill Type [1]	AASHTO Classification	Acceptable Location for Placement
Select [1]	A-3 and A-2-4 (fines content < 15 percent, maximum particle size < 2 inches, organic content < 3 percent)	All locations and elevations

1. GeoModel Layer 1 and 2 soils at this site appear to meet this criterion. Soils with fines content > 12 percent may retain moisture and be difficult to compact and achieve specified density and stability. These soils may need to be maintained dry of optimum to properly compact.

Borrow

Based on Borings PB-1 and PB-2 ,which were drilled in the planned retention pond areas, the soils to a depth of about 20 feet should produce materials meeting the Select Fill criteria established above.

Fill Compaction Requirements

Engineered fill should meet the following compaction requirements:

Item	Description
Fill Lift Thickness	12 inches or less in loose thickness when heavy vibratory compaction equipment is used. Maximum particle size should not exceed 2 inches in a 12-inch lift. 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used. Maximum particle size should not exceed 1 inch in a 4- to 6-inch lift.
Minimum Compaction Requirements [1]	At least 100 percent of the maximum dry density as determined by the standard Proctor Test (AASHTO T-99).
Moisture Content [2]	Within ±3 percent of optimum moisture content as determined by the Modified Proctor test, at the time of placement and compaction.
Minimum Testing Frequency	At least one field density test per 500 linear feet of roadway.

1. The moisture content and compaction should be measured for each lift of engineered fill during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the fill material pumping.

Utility Trench Backfill

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. Backfill for utility trenches located beneath pavements should be compacted to at least 98% of the maximum dry density as determined by the Modified Proctor Test (AASHTO T-180) per the Manatee County Utility Design Standards (June 2015). Utility trenches located outside of pavement areas should be compacted to at least 95% of the Modified Proctor maximum dry density.

Earthwork Construction Considerations

Excavations are anticipated to be accomplished with conventional construction equipment. The site should be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and re-compacted.

The groundwater table will affect excavation efforts, especially for storm drain or utility construction. A temporary dewatering system consisting of well points or sumps with pumps will be necessary to achieve the recommended compaction in excavation trenches.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and top soil, proof-rolling and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts.

If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

DEEP FOUNDATIONS

Drilled Shaft Design Parameters

Soil design parameters are provided below in the tables on the **Report of Core Borings** exhibit for the design of drilled shaft foundations. The soil parameters were based on empirical correlations (ref: Florida Department of Transportation Soils and Foundations Handbook, 2017) with average SPT blow counts (N-Values) for the different soil strata. Lateral earth pressure coefficients were based on the estimated friction angles. It is our understanding that the pole foundations will be drilled shafts designed by others. The pole foundations should be designed using the soil parameters provided on the exhibit.

PAVEMENTS

General Pavement Comments

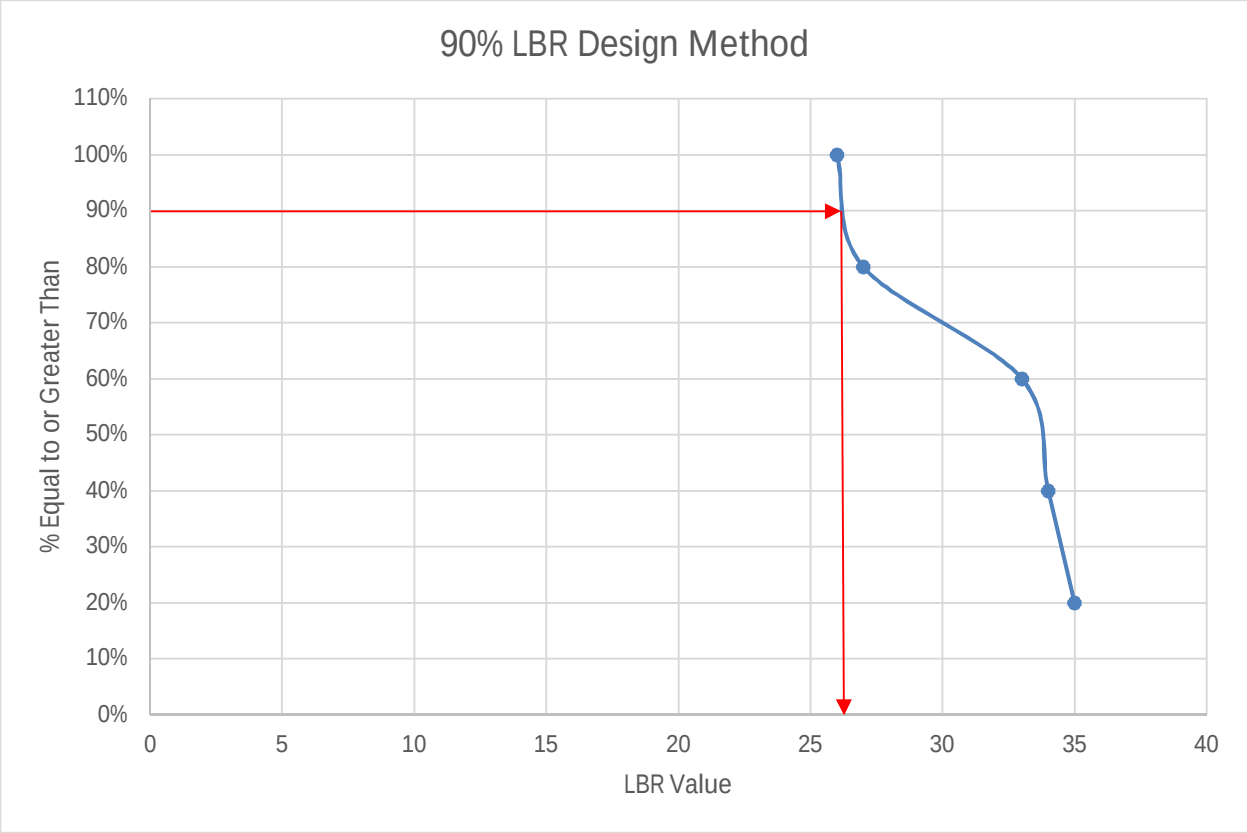
Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs, noted in this section, must be applied to the site, which has been prepared as recommended in the **Site Preparation** section.

Roadway Embankments

The design LBR value was determined according to the Florida Department of Transportation (FDOT) Soils and Foundations Handbook (2017) Section 8.1.2. The LBR values corresponding to moisture contents at 2% above and 2% below the moisture content at the maximum LBR value were averaged to determine a limiting LBR value (+/- 2% of Optimum Method) and are presented in the following table:

+/-2% of Optimum Moisture Method Calculation			
Test No.	**Maximum LBR**	**LBR at Moisture Contents (of Optimum LBR)**	
		-2%	**+2%**
RB-4	27	22.3	26.8
RB-7	26	21.9	7.6
RB-9	35	25.9	11.3
RB-11	34	28.9	6.0
RB-14	33	19.0	28.4
Mean LBR Value	31	23.6	16.0
		Average = 20	

The maximum LBR values were also sorted into ascending order and the percentage of values that were equal to or greater than each LBR vale were calculated. The percentages were plotted versus the maximum LBR values and the LBR value corresponding to 90% is the design value (see chart below) according the Soils and Foundations Handbook 90% Method.



Per the FDOT guidelines, the final design LBR value is taken as the lower of the values determined by each of these two methods. Therefore, we recommend that pavement designs include a limiting LBR value of 20, as determined by the 2% Method, for the existing embankment soils. This corresponds to a Resilient Modulus (M_R) of about 7,500 pounds per square inch (psi) per Table 5.1 of the FDOT Flexible Pavement Design Manual (2018).

Pavement Design Parameters

The design of the recommended pavement section has been based on the traffic data provided in the **Project Description** section and the FDOT Flexible Pavement Design Manual (2018). The following design parameters were used:

Design Criteria	Value
Design Life	20 years
Estimated Growth Factor Percentage	2.66%
Estimated ESAL	4,183,342

1. See Exhibit A for ESAL calculation

The following design parameters were based on the FDOT Flexible Pavement Design Manual (2018)

Pavement Thickness Design Parameters	
Input Parameter	**Value**
Reliability	85%
Asphalt Layer Coefficient	0.44
Aggregate Base Layer Coefficient (LBR = 100)	0.18
Subgrade Layer Coefficient (LBR = 60)	0.09

The recommended subgrade resilient modulus is 7,500 psi as provided in the above **Roadway Embankments** section.

Based on the estimated traffic data and the listed design parameters, the minimum required Structural Number of 4.20 was calculated for Erie Road based on Table A.3A of the FDOT Flexible Pavement Design Manual (2018).

Pavement Section Thicknesses

As a minimum, we suggest the following pavement section:

Typical Pavement Section (inches)		
Asphalt Concrete Surface Course	**Limerock, or Crushed Concrete Base Course**	**Stabilized Subbase Course**
3	10	12

The above recommended pavement section provides a Structural Number of 4.20 which equals the minimum required Structural Number of 4.20.

Asphalt Concrete Design Recommendations

The following items are applicable to asphalt concrete pavement sections.

- Terracon recommends a minimum separation of 36 inches between the bottom of the base course and the seasonal high-water table.

- Natural or fill subgrade soils to a depth of 18 inches below the base should be relatively clean sands with AASHTO Classifications of A-3 and A-2-4 but with a maximum of 15% fines. The natural soils generally satisfy this requirement.
- Stabilized subgrade soils (also identified as stabilized subbase) should be stabilized to a minimum Limerock Bearing Ratio (LBR; Florida Method of Test Designation FM 5-515) value of 60, per Manatee County requirements. Based on the results of the LBR tests, the existing sandy soils will need to be stabilized with an aggregate admixture to meet the minimum LBR value.
- The stabilized subgrade course should be compacted to at least 98 percent of the Modified Proctor maximum dry density (AASHTO T-180 or ASTM D-1557). Any underlying, newly-placed subgrade fill should also be compacted to a minimum of 98 percent of the Modified Proctor maximum dry density.
- Limerock base material from an approved FDOT source should have a minimum LBR value of 100 and be compacted to a minimum of 98 percent of the maximum dry density as determined by the Modified Proctor test. Limerock should be placed in uniform lifts not to exceed 6 inches of loose thickness. Recycled limerock is not a suitable substitute for virgin limerock for base courses but may be used as a granular stabilizing admixture.
- Crushed (recycled) concrete base should meet the current FDOT Specification 911 for recycled materials.
- Asphalt should be compacted to the requirements shown in Table 334-7 of the FDOT Specifications. Asphalt surface courses should be Type SP according to FDOT requirements.
- For a two-lane road with AADT and speed limit greater than 3,000 and 35 miles per hour (mph), respectively, FDOT requires use of a friction course.
- To verify thicknesses, after placement and compaction of the pavement courses, core the wearing surface to evaluate material thickness and composition at a minimum frequency shown in the most current FDOT specifications.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. The subgrade and the pavement surface should have a minimum ¼ inch per foot slope to promote drainage. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the base layer.

Pavement Maintenance

The pavement sections provided in this report represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance

activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

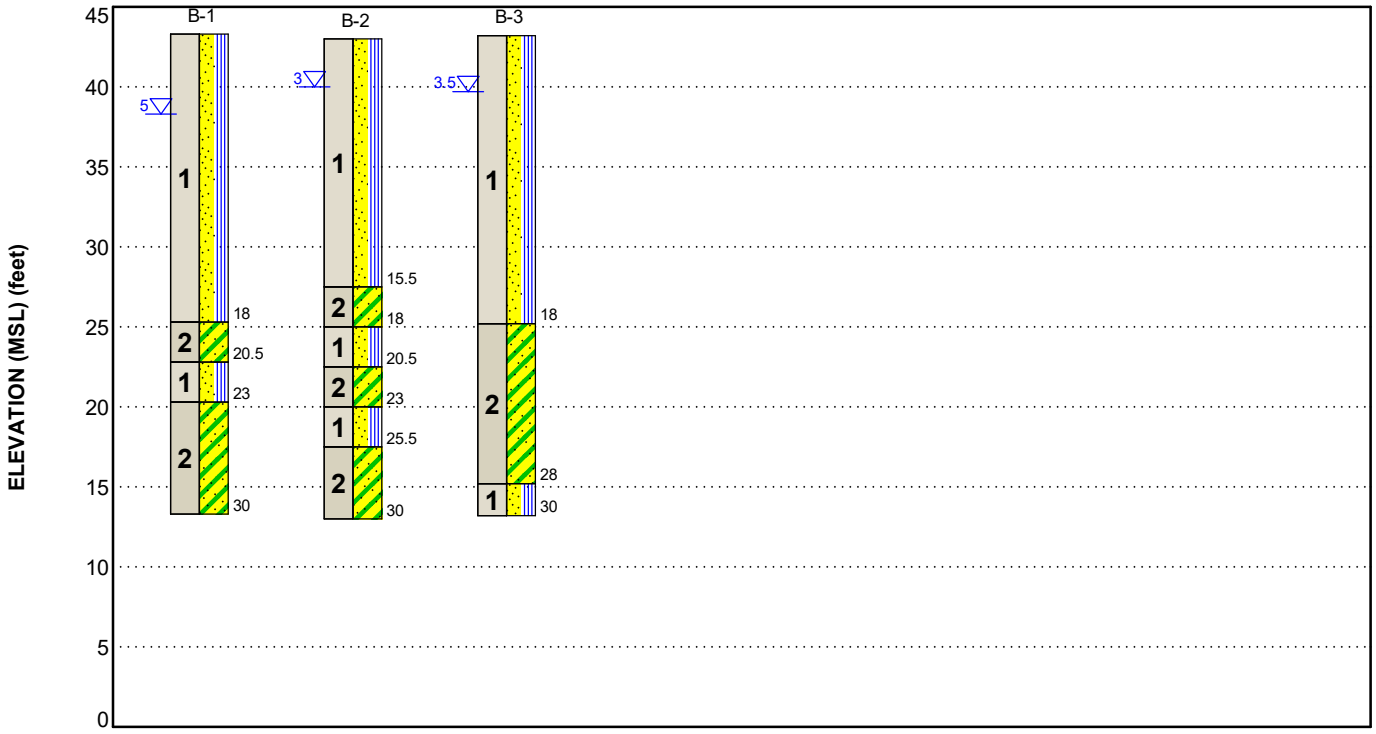
Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:

GEOMODEL

SR 62 & Erie Road - Signal Poles ■ Parrish, FL
12/21/2018 ■ Terracon Project No. HC185059



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Sand with silt**	Poorly graded sand with silt (SP-SM)
2	**Clayey sand**	Clayey sand (SC)
3	**Silty sand**	Silty sand (SM)

LEGEND

Poorly-graded Sand with Silt

Clayey Sand

First Water Observation

Second Water Observation

Final Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

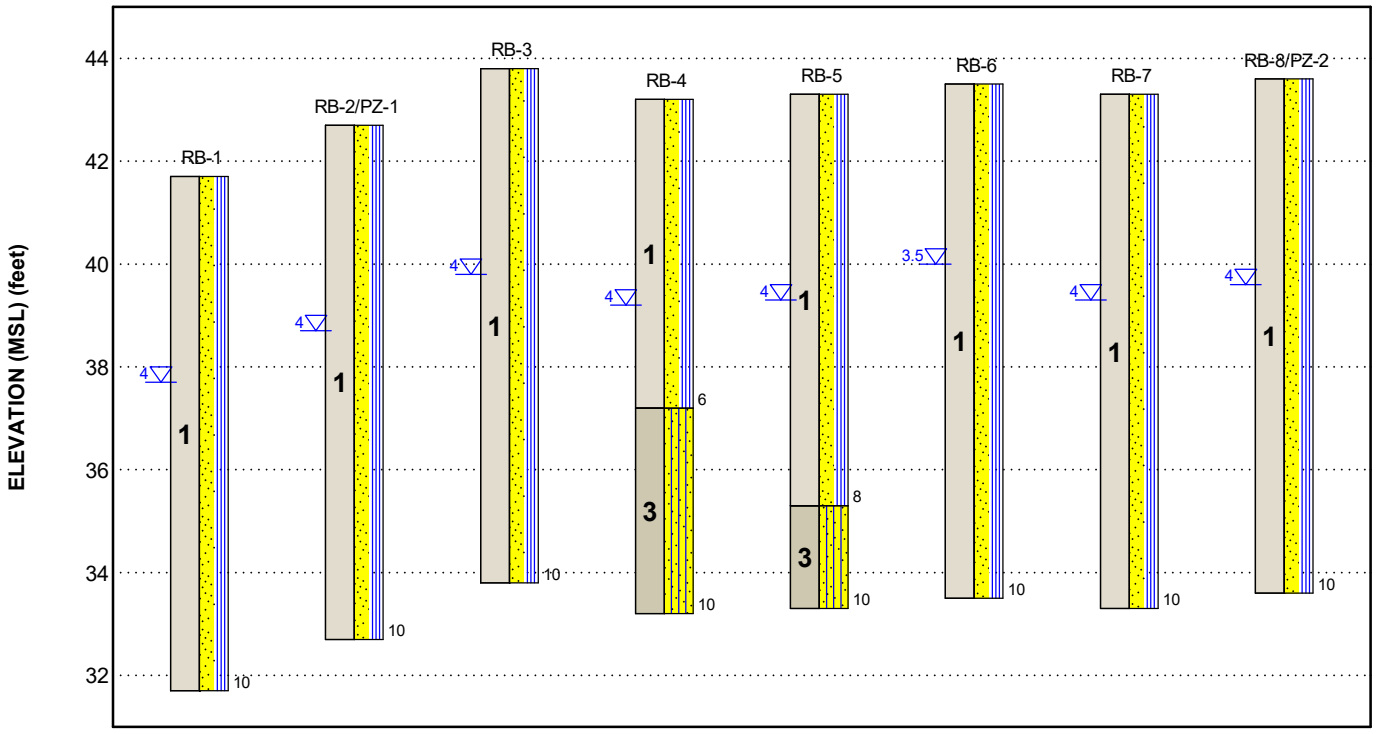
NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL

SR 62 & Erie Road - Signal Poles ■ Parrish, FL
12/21/2018 ■ Terracon Project No. HC185059

Terracon GeoReport



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Sand with silt	Poorly graded sand with silt (SP-SM)
2	Clayey sand	Clayey sand (SC)
3	Silty sand	Silty sand (SM)

LEGEND

Poorly-graded Sand with Silt

Silty Sand

First Water Observation

Second Water Observation

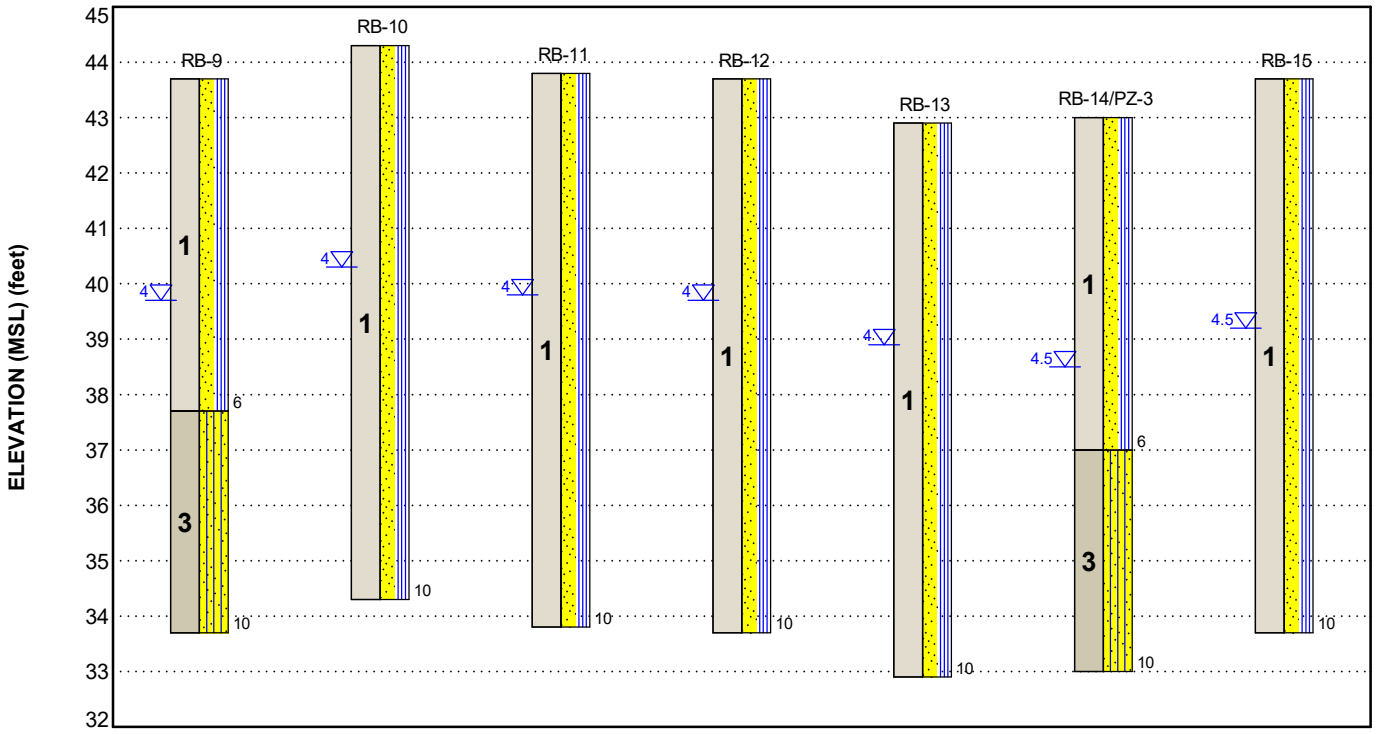
Final Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL

SR 62 & Erie Road - Signal Poles ■ Parrish, FL
12/21/2018 ■ Terracon Project No. HC185059



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Sand with silt	Poorly graded sand with silt (SP-SM)
2	Clayey sand	Clayey sand (SC)
3	Silty sand	Silty sand (SM)

LEGEND

- Poorly-graded Sand with Silt
- Silty Sand

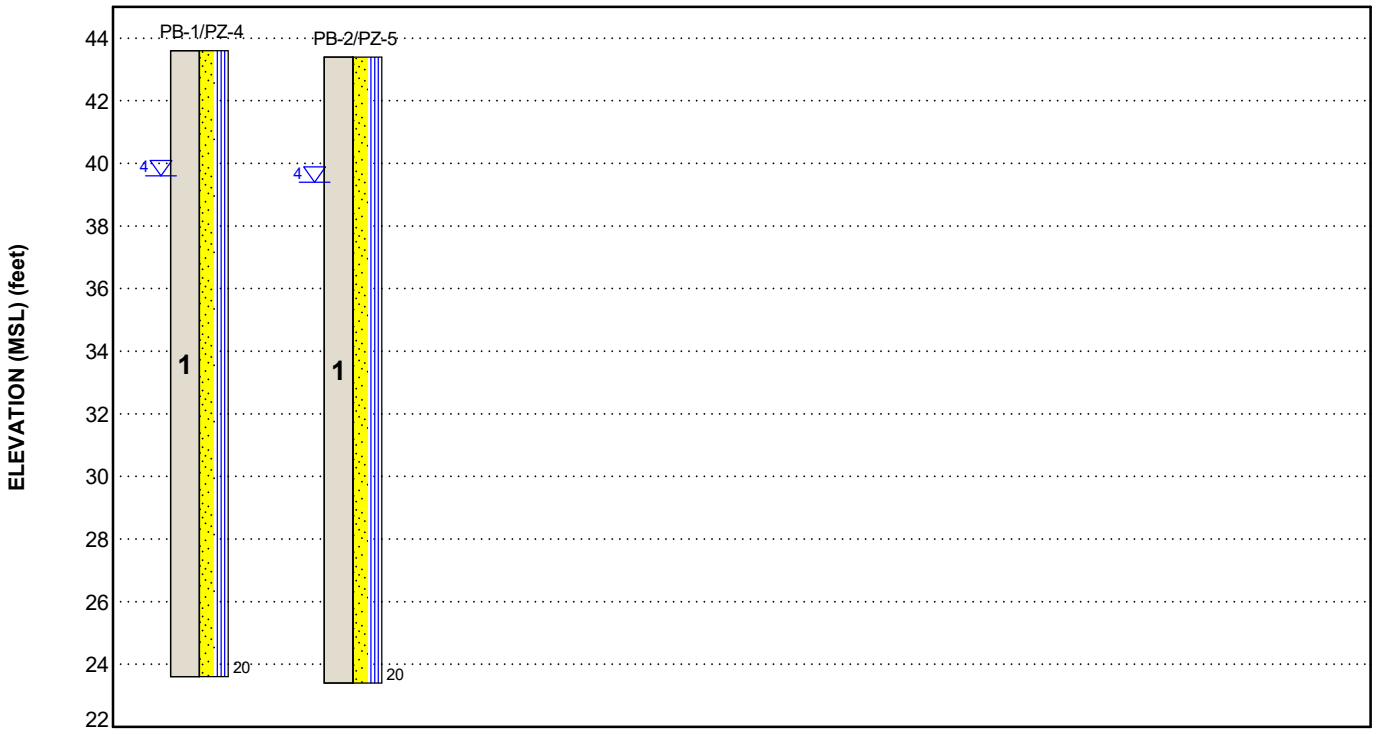
- First Water Observation
- Second Water Observation
- Final Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL

SR 62 & Erie Road - Signal Poles ■ Parrish, FL
2/14/2019 ■ Terracon Project No. HC185059



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Sand with silt**	Poorly graded sand with silt (A-3, A-2-4, SP, SP-SM))
2	**Clayey sand**	Clayey sand (A-2-6, SC)
3	**Sandy clay**	Clayey sand to sandy clay (A-6, SC)
4	**Silty sand**	Silty sand (A-2-4, SM)

LEGEND

Poorly-graded Sand with Silt

First Water Observation
Second Water Observation
Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

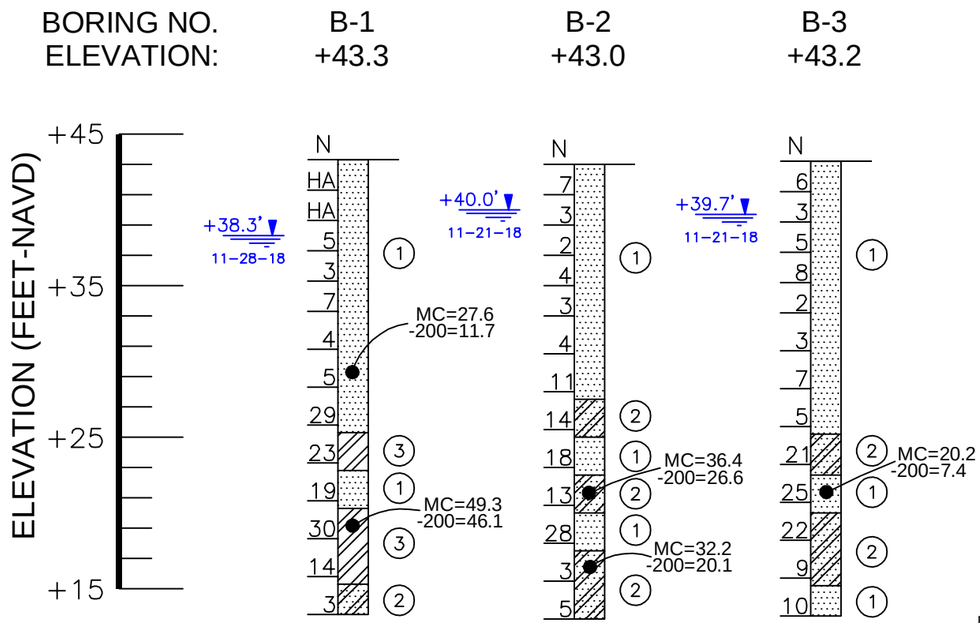
SOURCE: HDR

50 0 25 50

SCALE IN FEET

LEGEND

B-1 APPROXIMATE LOCATION OF STANDARD PENETRATION TEST BORING



GENERAL LEGEND

1. Brown to gray SAND with silt, sometimes with sand-sized phosphate grains (A-3, SP, SP-SM)
2. Dark gray, gray, and tan clayey SAND (A-2-6, SC)
3. Gray clayey SANd to sandy CLAY (A-6, SC)

N – Standard penetration resistance in blows per foot unless otherwise noted

SP – Unified Soil Classification System Group Symbol (ASTM D 2487)

+38.3' 11-28-18 – Elevation of groundwater (feet-NGVD) & date measured

MC – Moisture Content (%)

-200 – Amount Finer Than The U.S. Standard No. 200 Sieve (%)

ENGINEERING CLASSIFICATION (AUTOMATIC HAMMER)

STANDARD PENETRATION TEST DATA

SPOON INSIDE DIA.	1.375 inch
SPOON OUTSIDE DIA.	2.00 inches
AVG. HAMMER DROP	30 inches
HAMMER WEIGHT	140 pounds

GRANULAR MATERIALS

Relative Density	SPT BLOW-COUNTS
Very Loose	Less than 2
Loose	3 - 8
Medium Dense	8 - 24
Dense	24 - 40
Very Dense	Greater than 40

SILTS AND CLAYS

Consistency	SPT BLOW-COUNTS
Very Soft	Less than 1
Soft	1 - 3
Firm	3 - 6
Stiff	6 - 12
Very Stiff	12 - 24
Hard	Greater than 24

SUMMARY OF FOUNDATION DESIGN PARAMETERS FOR B-1

Depth (feet)	Soil Type	Unit Weight (pcf)		Angle of Internal Friction (degrees)	Effective Cohesion (psf)	Earth Pressure Coefficients		Soil Modulus, k (pci)
		Moist	Submerged			Ka	Kp	
0 to 18	SAND	105	43	29	0	0.347	2.88	11
18 to 20.5	CLAY	125	63	0	3,100	1.00	1.00	-
20.5 to 23	SAND	115	53	34	0	0.283	3.54	65
23 to 28	CLAY	125	63	0	2,900	1.00	1.00	-
28 to 30	SAND	105	43	23	0	0.438	2.28	7

SUMMARY OF FOUNDATION DESIGN PARAMETERS FOR B-2

Depth (feet)	Soil Type	Unit Weight (pcf)		Angle of Internal Friction (degrees)	Effective Cohesion (psf)	Earth Pressure Coefficients		Soil Modulus, k (pci)
		Moist	Submerged			Ka	Kp	
0 to 13	SAND	105	43	28	0	0.361	2.77	11
13 to 25.5	SAND	115	53	32	0	0.307	3.25	55
25.5 to 30	SAND	105	43	23	0	0.438	2.28	11

SUMMARY OF FOUNDATION DESIGN PARAMETERS FOR B-3

Depth (feet)	Soil Type	Unit Weight (pcf)		Angle of Internal Friction (degrees)	Effective Cohesion (psf)	Earth Pressure Coefficients		Soil Modulus, k (pci)
		Moist	Submerged			Ka	Kp	
0 to 18	SAND	105	43	29	0	0.347	2.88	11
18 to 30	SAND	115	53	29	0	0.347	2.88	55

NOTES

(1) Borings were drilled on November 21 and 28, 2018 using a BR 2500 drilling rig equipped with an automatic hammer.

(2) Strata boundaries are approximate and represent soil strata at each test hole location only. Soil transitions may be more gradual than implied.

(3) Groundwater elevations shown on the subsurface profiles represent the groundwater levels on the dates shown. Groundwater level fluctuations should be anticipated throughout the year.

(4) Elevations were provided by the project surveyor, ZNS Engineering.

JAMES M. JACKSON, P.E
FL LICENSE NO. 77733

Project Mngr:	JMJ
Drawn By:	JMJ
Checked By:	SNP
Approved By:	DSD
Project No.	HC185059
Scale:	AS-SHOWN
File No.	1
Date:	12-21-18

Terracon
Consulting Engineers and Scientists
8260 VICO COURT, UNIT B SARASOTA, FL 34240
PH. (941) 379-0621 FAX. (941) 379-5061

REPORT OF CORE BORINGS
GEOTECHNICAL ENGINEERING REPORT
ERIE ROAD AT SR-62
MANATEE COUNTY, FLORIDA

EXHIBIT 1

AASHTO 1993 ESAL Calculator for Flexible Pavements

Vehicle Description	Traffic Volume			Analysis Period	Axle Load and Type						Gross Weight	Equivalency Factors			ESAL's
	Quantity in the Design Lane	Days per Week	Weeks per Year	(years)	Axle 1 (kips)		Axle 2 (kips)		Axle 3 (kips)		(pounds)	Axle 1	Axle 2	Axle 3	
Passenger car	**646**	**7**	**52**	**20**	2	S	2	S			4,000	0.0002	0.0002	0	2,440
Pick-up truck or van	**646**	**7**	**52**	**20**	2	S	4	S			6,000	0.0002	0.003	0	19,522
Recreational vehicle					4	S	4	S			8,000	0.003	0.003	0	0
School bus					6	S	14	S			20,000	0.013	0.388	0	0
TARC bus					8	S	14	S			22,000	0.041	0.388	0	0
Greyhound MC-12 bus					13.4	S	18.4	S	6	S	37,800	0.3355	1.094	0.013	0
Package delivery truck	**215**	**6**	**52**	**20**	4	S	14	S			18,000	0.003	0.388	0	680,882
Beverage delivery truck	**20**	**6**	**52**	**20**	6	S	12	S	12	S	30,000	0.013	0.213	0.213	71,105
Garbage/dumpster truck	**50**	**6**	**52**	**20**	20	S	35	T			55,000	1.47	1.245	0	1,099,515
Concrete truck (full)	**20**	**6**	**52**	**20**	20	S	48	R			68,000	1.47	1.069	0	411,286
Dump truck (full)	**50**	**6**	**52**	**20**	20	S	48	R			68,000	1.47	1.069	0	1,028,228
Semi-tractor (no trailer)					8	S	2	T			10,000	0.041	0	0	0
Semi-tractor trailer (empty)					8	S	8	T	6	T	22,000	0.041	0.004	0.001	0
Semi-tractor trailer	**53**	**5**	**52**	**20**	12	S	34	T	34	T	80,000	0.213	1.11	1.11	870,365
User Defined											0	0	0	0	0
User Defined											0	0	0	0	0
Vehicle type H10					4	S	16	S			20,000	0.003	0.645	0	0
Vehicle type H15					6	S	24	S			30,000	0.013	2.89	0	0
Vehicle type H20					8	S	32	S			40,000	0.041	8.8	0	0
Vehicle type 3					16	S	34	T			50,000	0.645	1.11	0	0
Vehicle type HS15					6	S	24	S	24	S	54,000	0.013	2.89	2.89	0
Vehicle type HS20					8	S	32	S	32	S	72,000	0.041	8.8	8.8	0
Vehicle type 3S2					10	S	31	T	31	T	72,000	0.102	0.791	0.791	0

Terminal Serviceability, r_t	**2.5**
Assumed Structural Number, SN	**4**
Traffic Growth Rate, %/yr	**2.66**

Summary:		
Total AASHTO ESAL's		**4,183,342**
	Superpave	**ESAL Class 3**
Traffic Category	**C**	

Project: Erie Road Location: Manatee County, FL

Job No.: HC185059 Date: 12/19/2018

Terracon

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Planned Location
3	30	Planned signal pole locations
15	10	Planned roadway alignment
2	20	Planned pond locations

Boring Layout and Elevations: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and elevations were provided by ZNS Engineering.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted rotary drill rig using mud rotary procedures. Five samples were obtained in the upper 10 feet of each boring and at intervals of 2.5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with cement grout after their completion.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils

The laboratory testing program also included examination of soil samples by an engineer. Based on the material's texture, we described and classified the soil samples in accordance with the American Association of State Highway and Transportation Officials (AASHTO) soil classification system and the Unified Soil Classification System (USCS).

PHOTOGRAPHY LOG

	
East end of the site.	West end of the site near US-301.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

SR-62 and Erie Road ■ Parrish, Manatee County, Florida
May 14, 2019 ■ Terracon Project No. HC185059

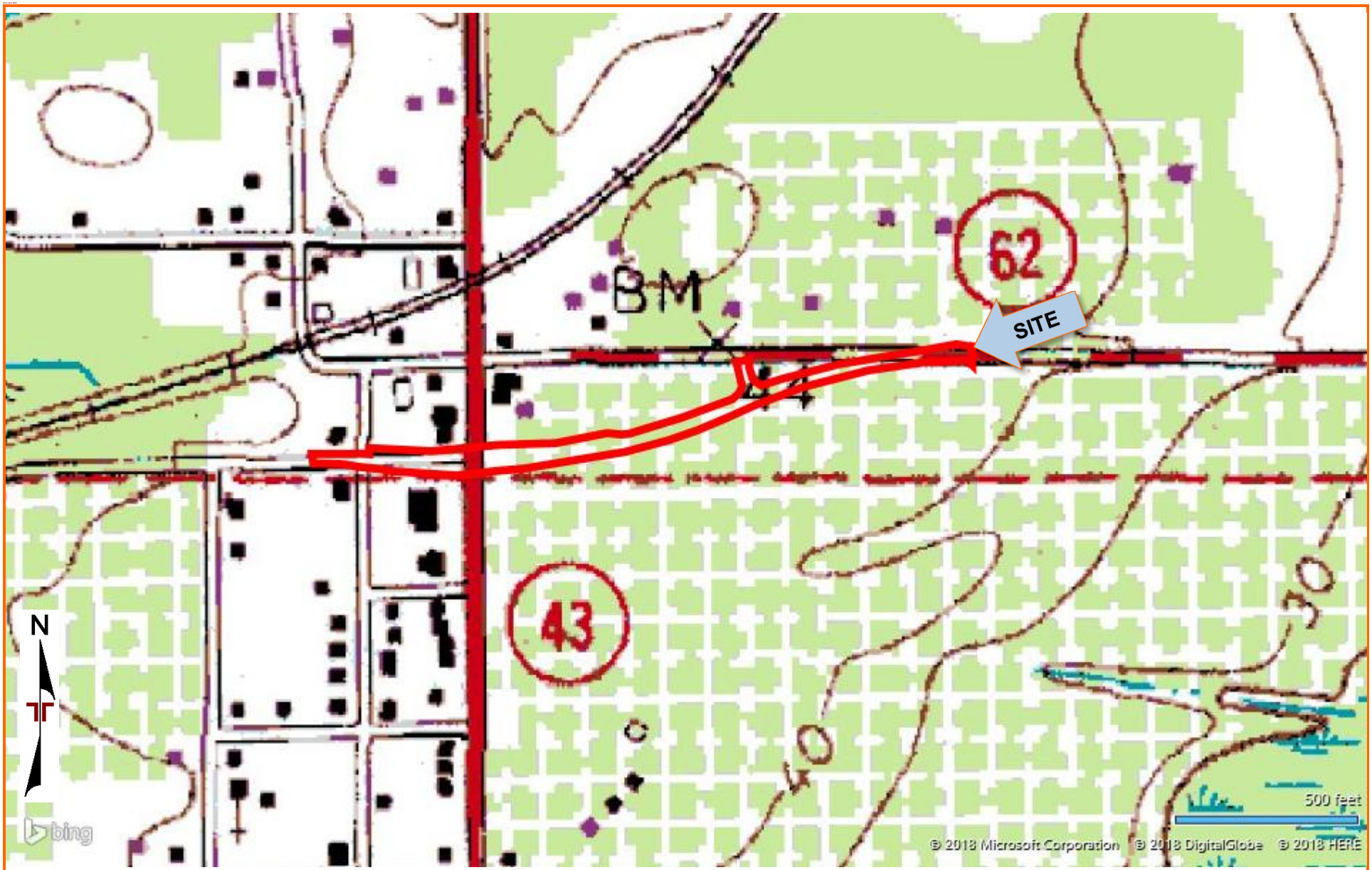


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

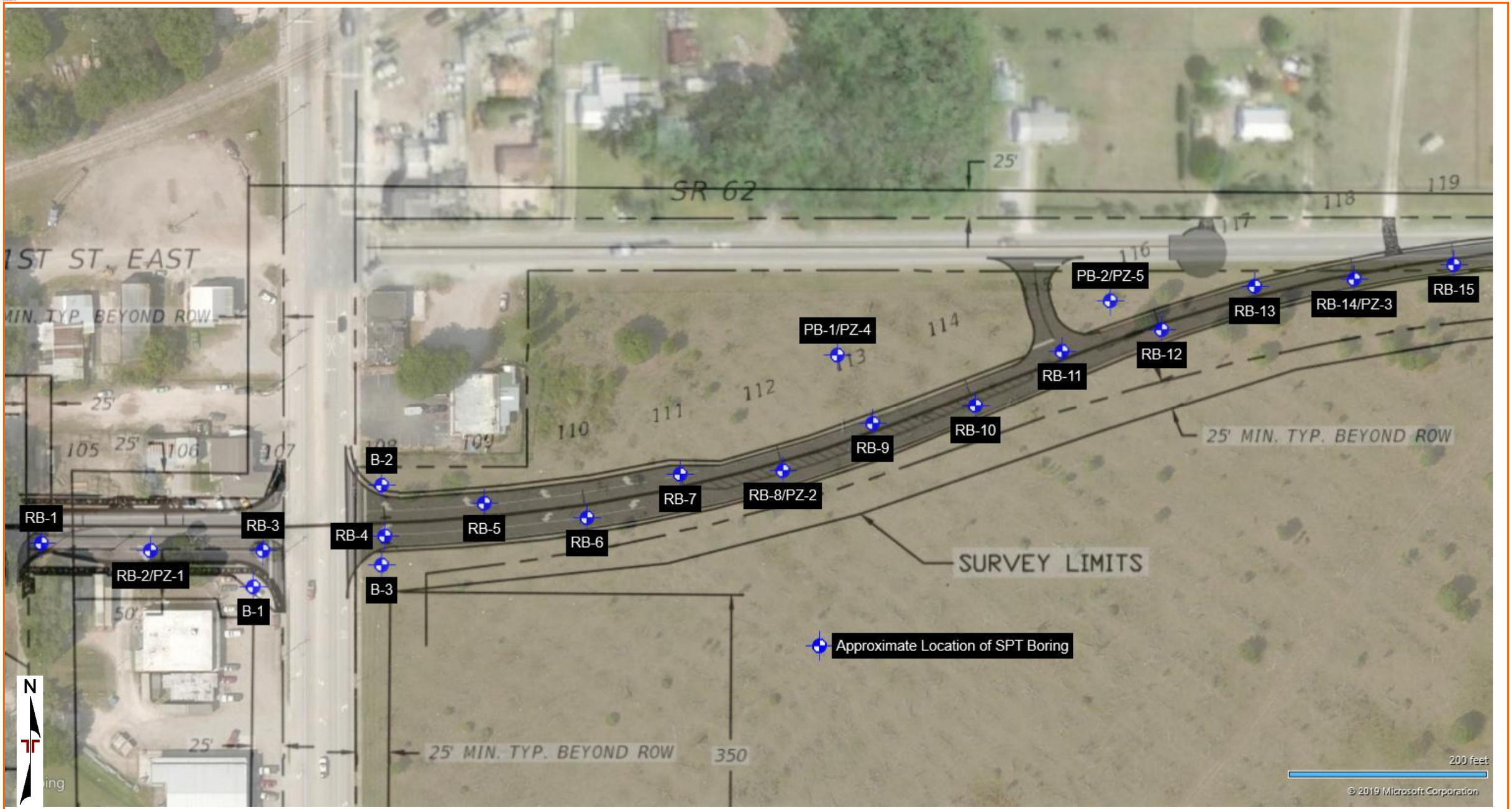


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

BORING LOG NO. RB-1

PROJECT: **SR 62 & Erie Road - Signal Poles**

CLIENT: **Manatee County Government**
Bradenton, FL

SITE: **SR 62**
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.587° Longitude: -82.4264°

Surface Elev.: 41.7 (Ft.)

MODEL LAYER	DEPTH	Material description	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to gray, loose to medium dense						12	7
					▽				
				5		☒	2-3-4-5 N=7		
						☒	5-7-12-11 N=19		
						☒	5-8-9-9 N=17		
	10.0		31.5	10					

Boring Terminated at 10 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hand auger to 4 feet then mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018	Boring Completed: 11-28-2018
Drill Rig: BR-2500	Driller: MC
Project No.: HC185059	

BORING LOG NO. RB-2/PZ-1

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5869° Longitude: -82.426°

Surface Elev.: 42.7 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3, A-2-4) (SP-SM)**, fine grained, light brown to gray, loose to medium dense	0	▽			20	12
				5			2-3-4-3 N=7		
							3-3-4-3 N=7		
		10.0					3-6-10-10 N=16		
			Boring Terminated at 10 Feet	10					
		32.5							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hand auger to 4 feet then mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018 | Boring Completed: 11-28-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-3

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5869° Longitude: -82.4257°

Surface Elev.: 43.8 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, light brown to gray, loose to medium dense	5	▽		2-2-3-2 N=5	21	7
							1-2-3-5 N=5		
		10.0	34	10			2-4-6-4 N=10		
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Hand auger to 4 feet then mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018 | Boring Completed: 11-28-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-4

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.587° Longitude: -82.4253°

Surface Elev.: 43.2 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to gray, very loose to loose				3-3-2-2 N=5		
					▽		2-1-1-1 N=2		
				5			2-1-1-1 N=2		
		6.0	37						
4			**SILTY SAND (A-2-4) (SM)**, fine grained, gray, loose to medium dense				2-2-3-4 N=5	21	14
							4-4-7-8 N=11		
		10.0	33	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-21-2018 | Boring Completed: 11-21-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-5

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5871° Longitude: -82.425°

Surface Elev.: 43.3 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to gray, very loose to loose	5	▽		4-3-1-1 N=4		
							1-2-1-1 N=3		
							1-1-1-1 N=2		
		8.0	35.5				3-4-5-6 N=9		
4			**SILTY SAND (A-2-4) (SM)**, fine grained, gray, medium dense				4-5-5-7 N=10	20	13
		10.0	33.5	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-21-2018 | Boring Completed: 11-21-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-6

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.587° Longitude: -82.4247°

Surface Elev.: 43.5 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to gray, very loose to medium dense	0			3-3-2-2 N=5	5	7
					▽		2-1-2-1 N=3		
				5			2-1-1-2 N=2		
							4-4-4-4 N=8		
							2-5-5-2 N=10		
		10.0	***Boring Terminated at 10 Feet***	10					
		33.5							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 3.5' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-21-2018 | Boring Completed: 11-21-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-7

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5871° Longitude: -82.4244°

Surface Elev.: 43.3 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown, very loose to medium dense	0			1-1-1-1 N=2		
					▽		4-1-2-1 N=3	19	8
				5			6-3-4-2 N=7		
							4-4-4-3 N=8		
							2-3-3-4 N=6		
		10.0	33.5	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-21-2018 | Boring Completed: 11-21-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-8/PZ-2

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5872° Longitude: -82.4241°

Surface Elev.: 43.6 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3, A-2-4) (SP-SM)**, fine grained, brown to gray, loose	5	▽		2-2-3-2 N=5		
							2-1-2-3 N=3		
							2-2-2-2 N=4	23	11
							2-2-4-7 N=6		
		10.0	33.5	10			2-2-5-7 N=7		
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-27-2018 | Boring Completed: 11-27-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-9

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5873° Longitude: -82.4238°

Surface Elev.: 43.7 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to light brown, very loose to loose				2-2-2-3 N=4		
					▽		2-2-2-2 N=4		
				5			2-1-2-1 N=3		
		6.0	37.5						
4			**SILTY SAND (A-2-4) (SM)**, fine grained, light brown, loose to medium dense				5-8-5-4 N=13	18	16
							2-4-5-7 N=9		
		10.0	33.5	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-27-2018 | Boring Completed: 11-27-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-10

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5873° Longitude: -82.4235°

Surface Elev.: 44.3 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown, very loose to medium dense	5	▽		2-1-1-2 N=2		
							2-2-2-2 N=4		
							2-1-2-1 N=3		
							2-4-5-7 N=9		
		10.0	34.5	10			2-2-4-6 N=6	20	9
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-27-2018 | Boring Completed: 11-27-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-11

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5875° Longitude: -82.4232°

Surface Elev.: 43.8 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0					1-2-1-2 N=3	5	12
					▽		2-4-3-4 N=7		
				5			2-4-7-6 N=11		
							2-5-4-4 N=9		
		10.0	34	10			2-2-1-2 N=3		
		Boring Terminated at 10 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-27-2018 | Boring Completed: 11-27-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-12

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5875° Longitude: -82.4229°

Surface Elev.: 43.7 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1		0.0	**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, dark brown to brown, very loose to medium dense				2-2-2-2 N=4		
					▽		2-1-1-1 N=2	7	7
				5			1-2-1-1 N=3		
							4-6-4-5 N=10		
		10.0		10			3-4-6-5 N=10		
			Boring Terminated at 10 Feet						
		33.5							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-27-2018 | Boring Completed: 11-27-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-13

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5877° Longitude: -82.4226°

Surface Elev.: 42.9 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown, very loose to medium dense				3-4-4-3 N=8		
					▽		2-2-2-2 N=4		
				5			1-WOH/12-1 N=1	25	9
							5-8-12-14 N=20		
		10.0	33	10			4-6-12-11 N=18		
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:
A-3: AASHTO Group Classification

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018 | Boring Completed: 11-28-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-14/PZ-3

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5877° Longitude: -82.4223°

Surface Elev.: 43 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown, loose				2-2-2-2 N=4		
							2-2-2-3 N=4		
				5	▽		2-2-2-3 N=4		
		6.0	37						
4			**SILTY SAND (A-2-4) (SM)**, fine grained, brown, medium dense				2-2-10-15 N=12	18	16
							5-6-9-9 N=15		
		10.0	33	10					
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At 4.5' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018 | Boring Completed: 11-28-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. RB-15

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5877° Longitude: -82.422°

Surface Elev.: 43.7 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to gray, very loose to medium dense				4-3-3-3 N=6		
							2-1-1-2 N=2		
				5	▽		2-2-2-2 N=4		
							4-8-8-7 N=16		
		10.0	33.5	10			3-4-6-6 N=10	20	11
			Boring Terminated at 10 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with cement grout upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were provided by others.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At 4.5' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 11-28-2018 | Boring Completed: 11-28-2018

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. PB-1/PZ-4

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5875° Longitude: -82.4239°

Approximate Surface Elev.: 43.6 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to light gray, very loose to very dense		▽		2-2-1-2 N=3		
							1-1-1-1 N=2		
				5			1-1-1-1 N=2	27	9
							1-2-1-1 N=3		
							2-2-2-4 N=4	22	5
				10			2-4-4-3 N=8		
							1-1-2-1 N=3		
				15			4-7-5-8 N=12	30	6
							8-12-17-25 N=29		
		20.0	23.5+/-	20			22-25-30-36 N=55		
			Boring Terminated at 20 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 02-01-2019 | Boring Completed: 02-01-2019

Drill Rig: BR-2500 | Driller: MC

Project No.: HC185059

BORING LOG NO. PB-2/PZ-5

PROJECT: SR 62 & Erie Road - Signal Poles

CLIENT: Manatee County Government
Bradenton, FL

SITE: SR 62
Parrish, FL

LOCATION See Exploration Plan

Latitude: 27.5876° Longitude: -82.4231°

Approximate Surface Elev.: 43.4 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	WATER CONTENT (%)	PERCENT FINES
1			**POORLY GRADED SAND WITH SILT (A-3) (SP-SM)**, fine grained, brown to light gray, very loose to very dense				2-1-2-2 N=3		
					▽		1-1-1-1 N=2	20	8
				5			1-1-1-1 N=2		
							1-1-1-2 N=2		
							2-2-2-2 N=4	24	4
				10			3-1-1-2 N=2		
							3-5-6-8 N=11	29	12
				15			9-11-20-25 N=31		
							23-27-30-37 N=57		
							16-22-36-50 N=58		
		20.0	23.5+/-	20					
			Boring Terminated at 20 Feet						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Mud rotary

Abandonment Method:
Boring backfilled with bentonite chips upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Elevations were interpolated from a topographic site plan.

Notes:

WATER LEVEL OBSERVATIONS

▽ *At 4' while sampling*

Terracon
8260 Vico Ct, Unit B
Sarasota, FL

Boring Started: 02-01-2019 | Boring Completed: 02-01-2019

Drill Rig: BR-2500 | Driller: MC

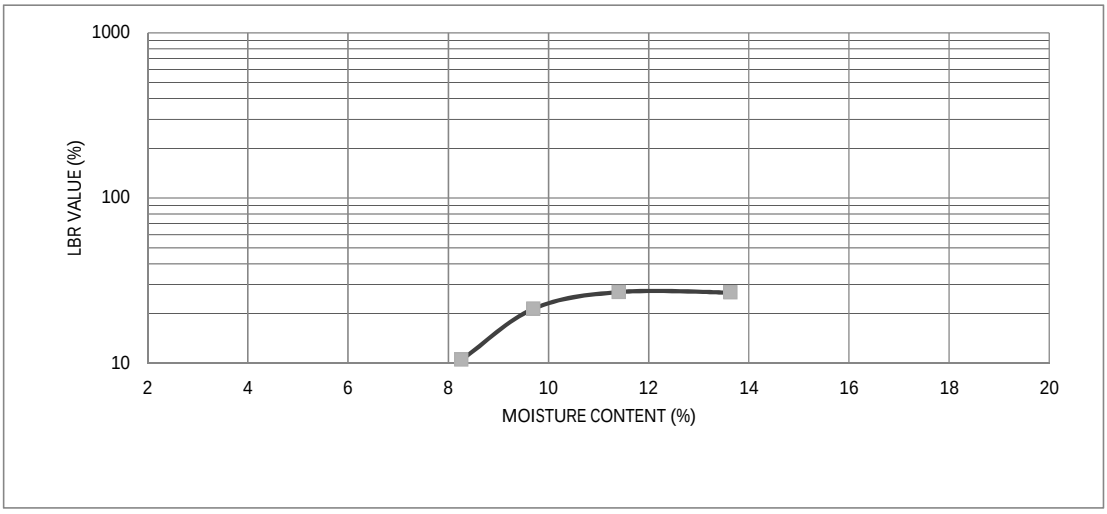
Project No.: HC185059

LIMEROCK BEARING RATIO TEST RESULTS
(FM5-515)

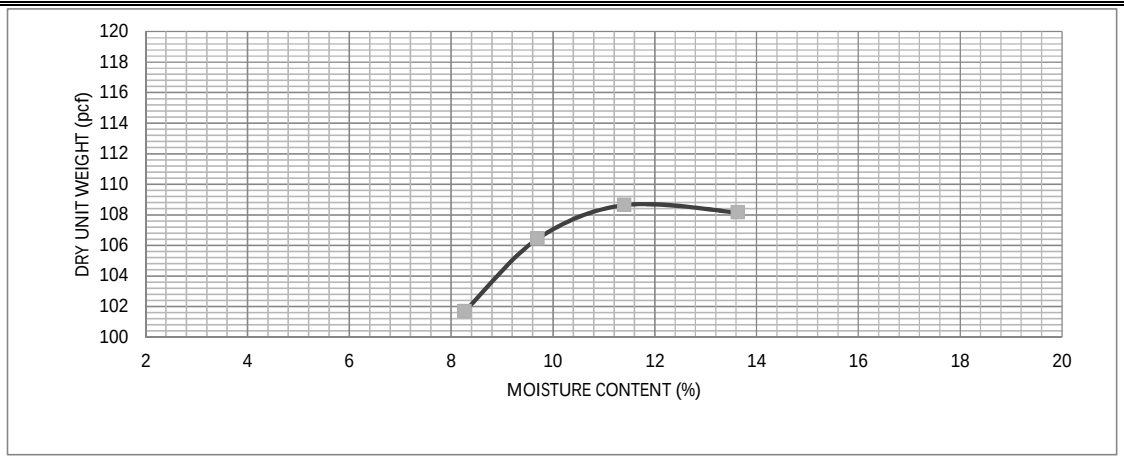
TESTED FOR: Manatee County Public Works
SAMPLE NO.: LBR-1
TESTED BY: D. Richards
DATE TESTED: November 19, 2018

PROJECT: Erie Road
PROJECT NO: HC185059
%<#4: 100.0%
WASH 200: 7.7%

SAMPLE LOCATION: RB-4
SOIL DESCRIPTION: Brown to gray sand with silt and trace roots



PROJECT LBR REQUIREMENT: **N/A** LBR VALUE: **27**



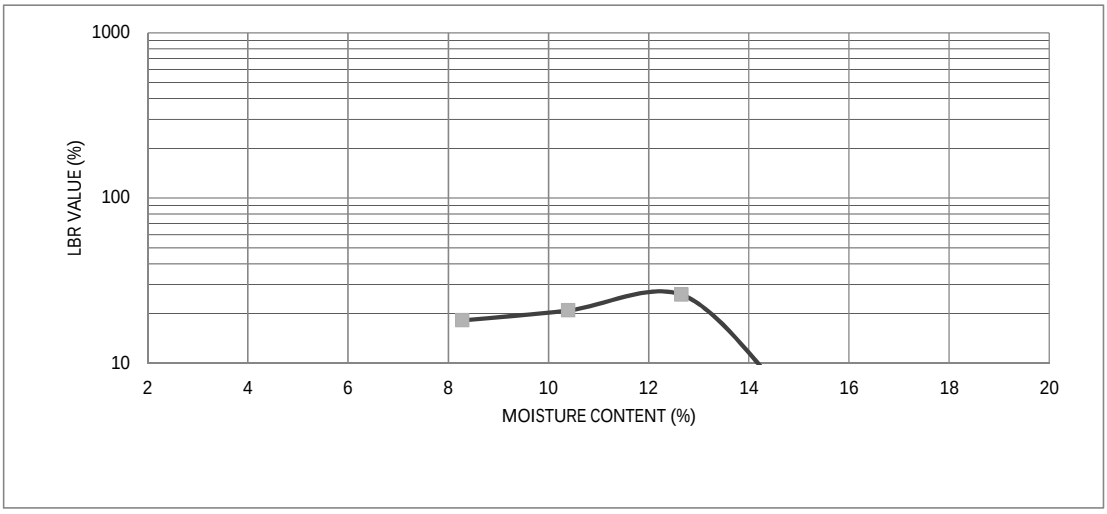
OPT MOISTURE: **12.0** MAX DENSITY: **108.7**

LIMEROCK BEARING RATIO TEST RESULTS
(FM5-515)

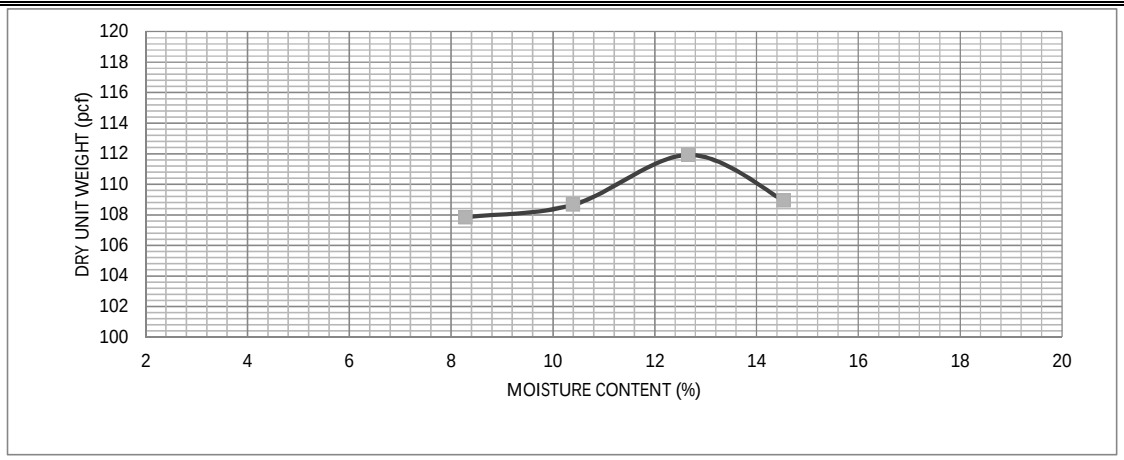
TESTED FOR: Manatee County Public Works
SAMPLE NO.: LBR-2
TESTED BY: D. Richards
DATE TESTED: November 19, 2018

PROJECT: Erie Road
PROJECT NO: HC185059
%<#4: 100.0%
WASH 200: 8.8%

SAMPLE LOCATION: RB-7
SOIL DESCRIPTION: Gray sand with silt and trace roots



PROJECT LBR REQUIREMENT: **N/A** LBR VALUE: **26**



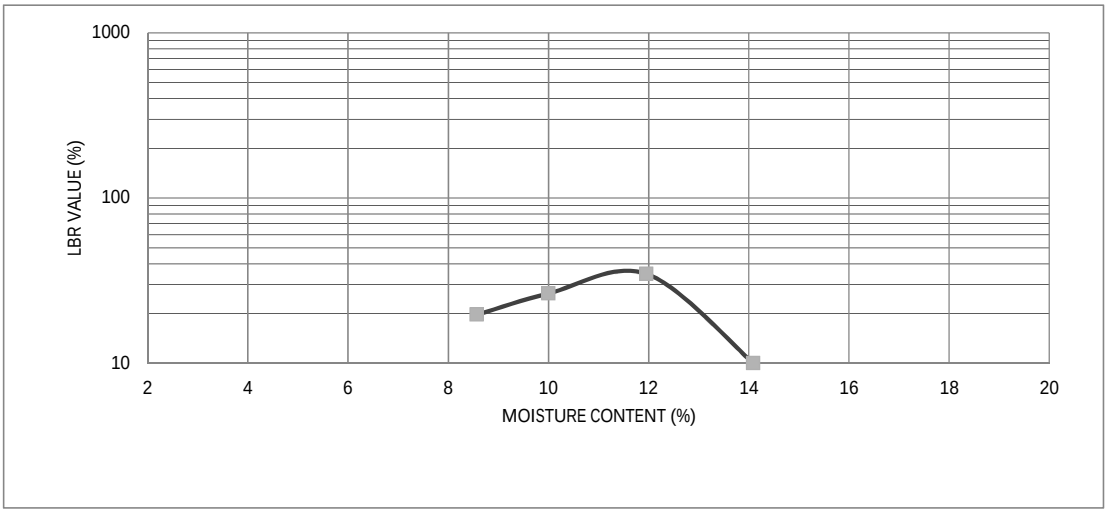
OPT MOISTURE: **12.9** MAX DENSITY: **111.9**

LIMEROCK BEARING RATIO TEST RESULTS
(FM5-515)

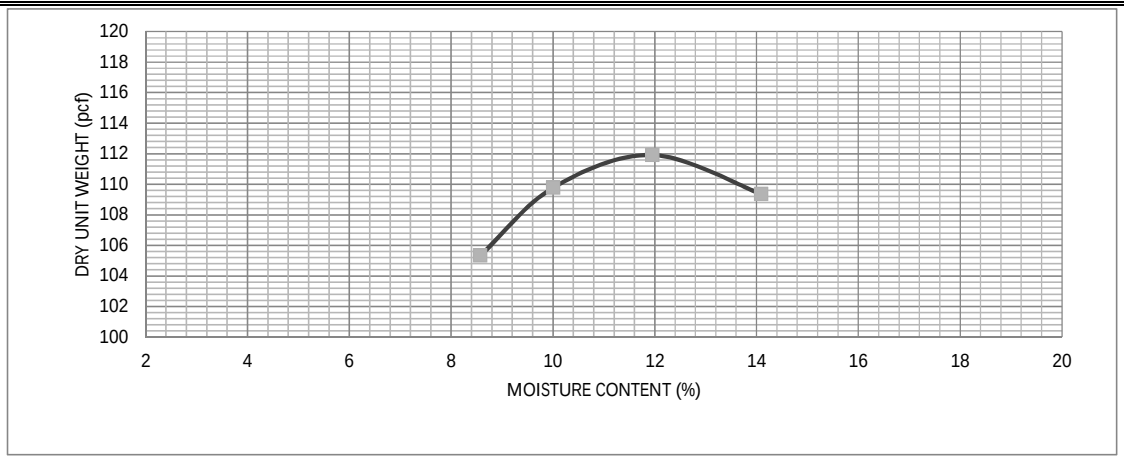
TESTED FOR: Manatee County Public Works
SAMPLE NO.: LBR-3
TESTED BY: D. Richards
DATE TESTED: November 19, 2018

PROJECT: Erie Road
PROJECT NO: HC185059
%<#4: 100.0%
WASH 200: 8.4%

SAMPLE LOCATION: RB-9
SOIL DESCRIPTION: Brown to gray sand with silt and trace roots



PROJECT LBR REQUIREMENT: **N/A** LBR VALUE: **35**



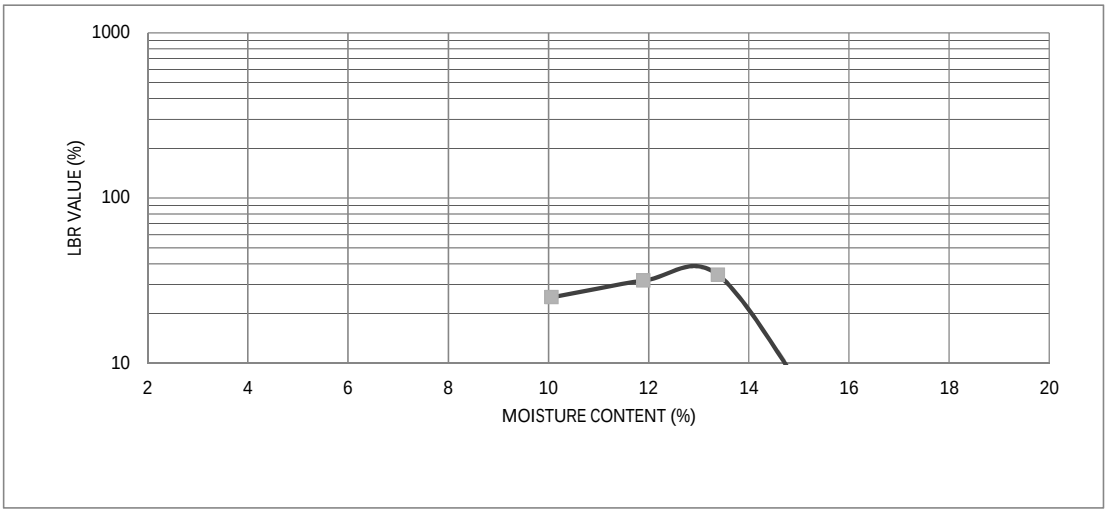
OPT MOISTURE: **11.9** MAX DENSITY: **111.9**

LIMEROCK BEARING RATIO TEST RESULTS
(FM5-515)

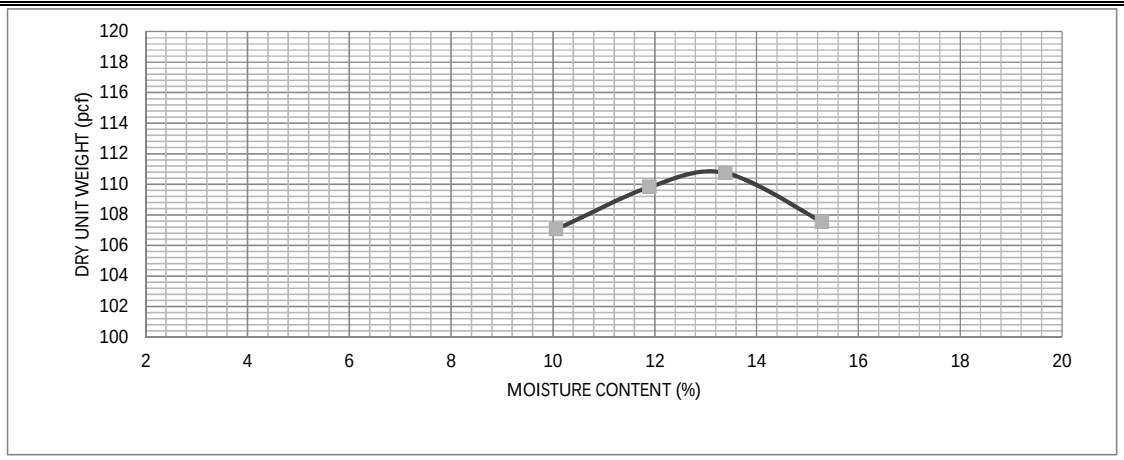
TESTED FOR: Manatee County Public Works
SAMPLE NO.: LBR-4
TESTED BY: D. Richards
DATE TESTED: November 21, 2018

PROJECT: Erie Road
PROJECT NO: HC185059
%<#4: 100.0%
WASH 200: 9.9%

SAMPLE LOCATION: RB-11
SOIL DESCRIPTION: Gray sand with silt and trace roots



PROJECT LBR REQUIREMENT: **N/A** LBR VALUE: **34**



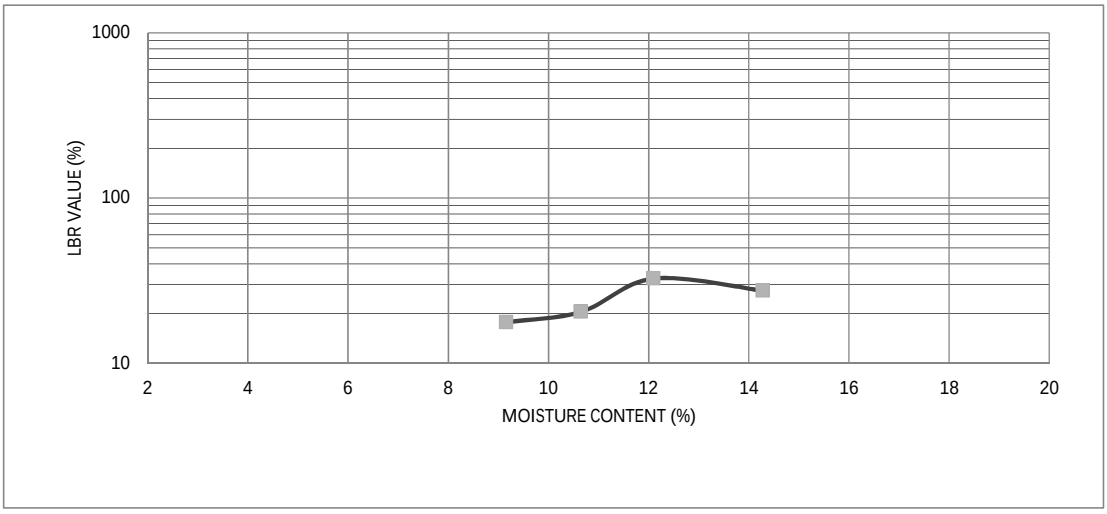
OPT MOISTURE: **13.2** MAX DENSITY: **110.7**

LIMEROCK BEARING RATIO TEST RESULTS
(FM5-515)

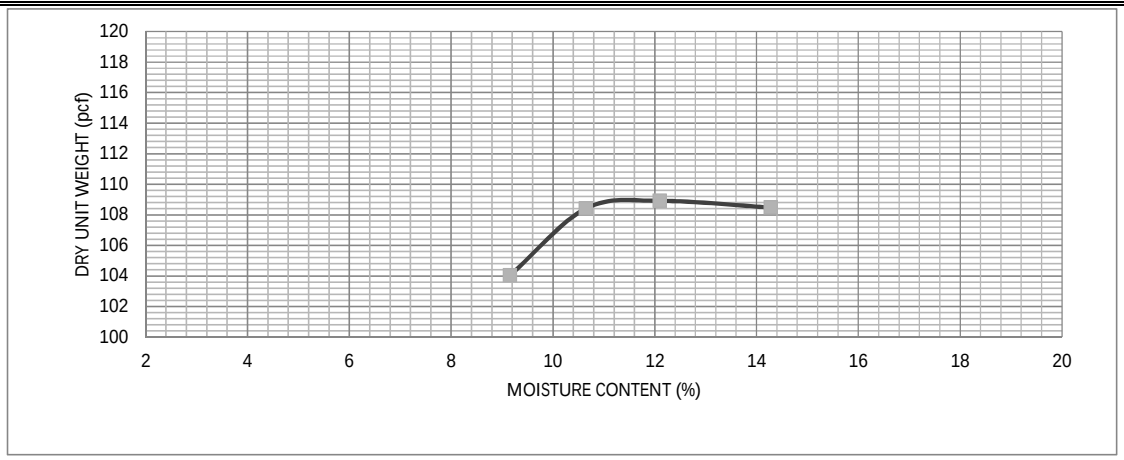
TESTED FOR: Manatee County Public Works
SAMPLE NO.: LBR-5
TESTED BY: D. Richards
DATE TESTED: November 19, 2018

PROJECT: Erie Road
PROJECT NO: HC185059
%<#4: 100.0%
WASH 200: 10.2%

SAMPLE LOCATION: RB-14
SOIL DESCRIPTION: Gray sand with silt and trace roots



PROJECT LBR REQUIREMENT: **N/A** LBR VALUE: **33**

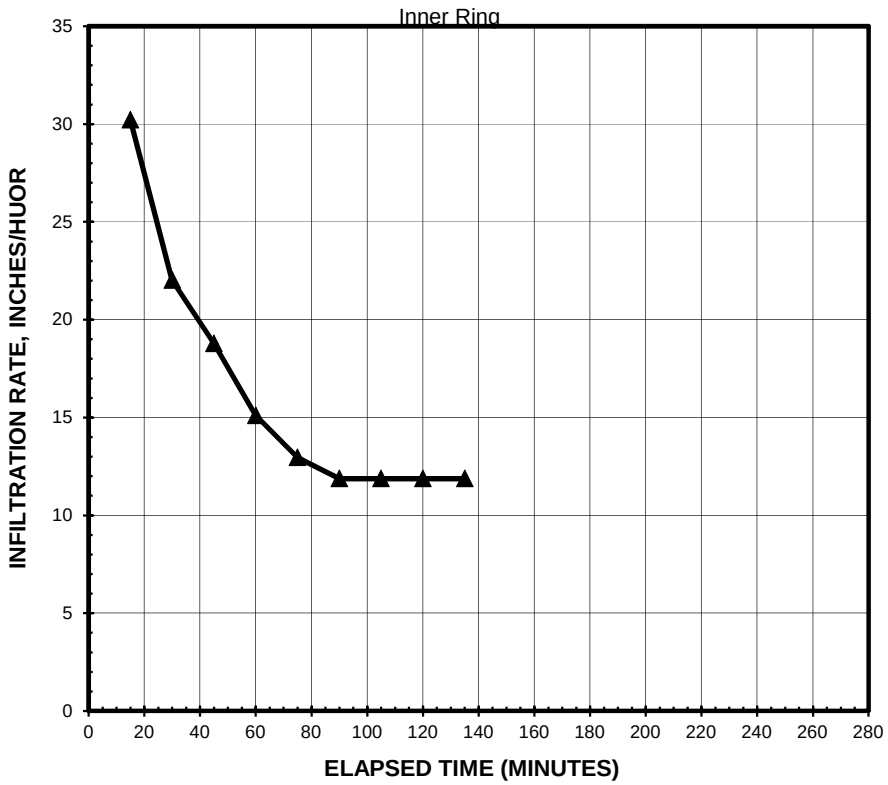


OPT MOISTURE: **11.9** MAX DENSITY: **109.0**

Terracon
Consulting Engineers & Scientists

DOUBLE-RING INFILTROMETER TEST RESULTS
ASTM D3385

Elapsed Time, Minutes	Inner Ring Infiltration Rate, Inches/Hour
15	30.22
30	22.02
45	18.78
60	15.11
75	12.95
90	11.87
105	11.87
120	11.87
135	11.87



TEST INFORMATION

TEST DESIGNATION: DRI-1 **TEST DEPTH:** 0.5'
INNER RING DIA.: 12 INCHES **OUTER RING DIA.:** 24 INCHES
DATE PERFORMED: 2/6/2019 **PERFORMED BY:** J.FREDERICK
INFILTRATION RATE (INCHES/HOUR): 11.9

PROJECT INFORMATION

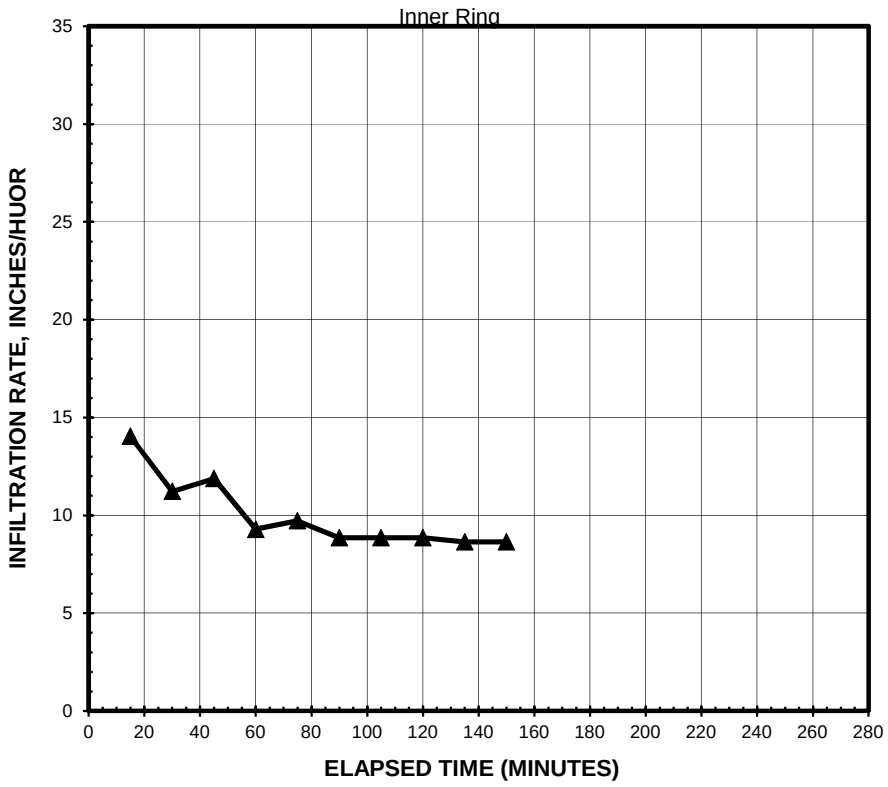
Project Name: SR-62 and Erie Road
Location: Int. of SR-62 and Erie Road
Parrish, Manatee County, Florida
Project Number: HC185059

NOTE: Refer to Auger Boring Record for soil and groundwater conditions at test location

Terracon
Consulting Engineers & Scientists

DOUBLE-RING INFILTROMETER TEST RESULTS
ASTM D3385

Elapsed Time, Minutes	Inner Ring Infiltration Rate, Inches/Hour
15	14.03
30	11.22
45	11.87
60	9.28
75	9.71
90	8.85
105	8.85
120	8.85
135	8.63
150	8.63



TEST INFORMATION

TEST DESIGNATION: DRI-2 **TEST DEPTH:** 0.5'
INNER RING DIA.: 12 INCHES **OUTER RING DIA.:** 24 INCHES
DATE PERFORMED: 2/6/2019 **PERFORMED BY:** J.FREDERICK
INFILTRATION RATE (INCHES/HOUR): 8.6

PROJECT INFORMATION

Project Name: SR-62 and Erie Road
Location: Int. of SR-62 and Erie Road
Parrish, Manatee County, Florida
Project Number: HC185059

NOTE: Refer to Auger Boring Record for soil and groundwater conditions at test location

SUPPORTING INFORMATION

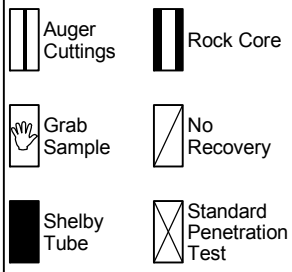
Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer
(T)	Torvane
(DCP)	Dynamic Cone Penetrometer
(PID)	Photo-Ionization Detector
(OVA)	Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Automatic Hammer SPT N-Value (Blows/Ft.)**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (psf)**	**Automatic Hammer SPT N-Value (Blows/Ft.)**
Very Loose	< 3	Very Soft	less than 500	< 1
Loose	3 - 8	Soft	500 to 1,000	1 - 3
Medium Dense	8 - 24	Medium Stiff	1,000 to 2,000	3 - 6
Dense	24 - 40	Stiff	2,000 to 4,000	6 - 12
Very Dense	> 40	Very Stiff	4,000 to 8,000	12 - 24
		Hard	> 8,000	> 24

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Terracon

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ³ 4 and 1 £ Cc £ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ³ 6 and 1 £ Cc £ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above “A”		CL	Lean clay [K, L, M]
			PI < 4 or plots below “A” line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above “A” line		CH	Fat clay [K, L, M]
			PI plots below “A” line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add “with cobbles or boulders, or both” to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ³ 15% sand, add “with sand” to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add “with organic fines” to group name.

[I] If soil contains ³ 15% gravel, add “with gravel” to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add “with sand” or “with gravel,” whichever is predominant.

[L] If soil contains ³ 30% plus No. 200 predominantly sand, add “sandy” to group name.

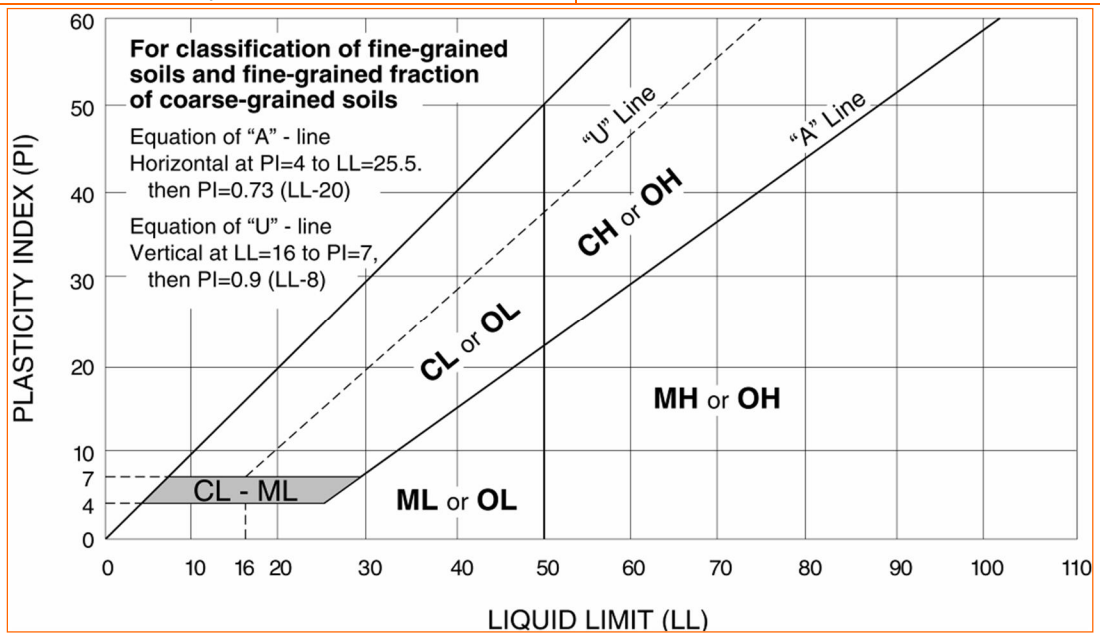
[M] If soil contains ³ 30% plus No. 200, predominantly gravel, add “gravelly” to group name.

[N] PI ³ 4 and plots on or above “A” line.

[O] PI < 4 or plots below “A” line.

[P] PI plots on or above “A” line.

[Q] PI plots below “A” line.



BID ATTACHMENT 8, LIGHTING DESIGN REPORT

Traffic Design Documentation

US 301 at SR 62 / Erie Road Improvements

MC Project No. 850-6094060
Manatee, FL

Prepared for:
Manatee County
1022 26th Avenue East
Bradenton, Florida 34208

Prepared by:
HDR Engineering, Inc.
4830 W. Kennedy Blvd, Suite 400
Tampa, Florida 33609

October 2021

ENGINEER'S CERTIFICATION

I, hereby certify that I am a registered professional engineer in the State of Florida, practicing with HDR Engineering Inc., a Florida Corporation under Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes, by the State of Florida, Department of Professional Regulation, Board of Professional Engineers, and that I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice hereby reported for:

Project: Erie Road and SR 62 Improvements
Manatee County Project Number: 850-6094060

Location: Manatee County, Florida

Manatee County Project Manager: Michael L Sturm, P.E.
1022 26th Avenue East
Bradenton, Florida 34208

Report Prepared by: HDR Engineering
4830 W. Kennedy Blvd, Ste. 400
Tampa, FL 33609-2548

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

The official record of this package has been electronically signed and sealed using a Digital Signature as required by 61G15-23.004 F.A.C.

This item has been digitally signed and sealed by Michael Oates on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

Michael Oates
FL PE # 49282

Table of Contents

1.0 LIGHTING DESIGN MEMO

Lighting Design Memorandum

US 301 at SR 62 / Erie Road Improvements

MC Project No. 850-6094060
Parrish, FL

Prepared for:
Manatee County
1022 26th Avenue East
Bradenton, Florida 34208

October, 2021

Prepared by:
HDR Engineering, Inc.
4830 W Kennedy Blvd, Suite 400
Tampa, FL 33609
(813) 282-2300

Lighting Engineer of Record: Michael J. Oates

PE No. 49282

1. Introduction

The purpose of this memorandum is to summarize the results of a lighting analysis performed for the signalized intersection of SR 62 / Erie Road at US 301 in Parrish, Manatee County Florida. SR 62 will be realigned 275 feet to the south to connect into SR 62 at Erie Road to form a 4 leg intersection. This intersection will include turn lanes and be signalized as part of this geometric roadway improvement.

2. Existing Conditions

There is existing conventional roadway street lighting along US 301 that extends along the east side of the road due to overhead electric utilities on the west side. These lights consist of high pressure sodium (HPS) luminaires on 40 foot poles with 15 foot arms. With the addition of the northbound right turn lane at SR 62, two of these lights will need to be replaced with new LED lights at the back of the new sidewalk. The existing lighting circuits serving these lights are fed from load center '85' located 1000 feet south of CR 675 (Rutland Road).

3. Lighting Parameters

The design criteria performed for this lighting analysis references the 2020 FDOT Design Manual (FDM) Chapter 231 for lighting. While this intersection lies outside the FDOT urban boundary, efforts were made to meet FDOT criteria as much as possible. Per FDM Table 231.2.1, the signalized intersection was designed to meet 3.0 average initial horizontal foot candles and 2.3 average initial vertical foot candles for the crosswalks, as well as 4:1 avg/min, 10:1 max/min uniformity ratios. The analysis zone limits for the signalized intersection extends from the back of sidewalks and stop bars for each leg, and the photometric analyses uses a 5 foot by 5 foot grid. The roadway section of US 301 south of SR 62 will continue to meet the 1.5 average initial horizontal foot candles.

4. Luminaire Selection and Mounting

For this intersection lighting design, the luminaire selected was the AutoBahn ATB2 LED luminaire. To maintain consistency with the height of the existing poles, the proposed luminaires will be mounted on 40 foot conventional poles with 8 foot arms and zero tilt. The fixtures used consist of 388 Watt type III and IV distributions.

Along US 301, the existing HPS light poles with 15 foot arms will be replaced with new LED lights on standard foundations along the east sidewalk. These lights will continue to be fed from the existing load center '85'.

The results of the lighting analysis performed can be seen in **Appendix A**. The cut sheets for the proposed luminaire can be seen in **Appendix B**.

5. Results

The criteria used for this analysis considered the FDM section 231.3.2 which applies to signalized intersections within the FDOT urban boundary. While this intersection lies outside the urban boundary area, all efforts were made to reach as close as possible to this criteria. The light levels attained meet the FDM requirements for average initial horizontal foot-candle levels for the intersection and roadway segment and the vertical foot-candles for most approaches. There are restrictions at the intersection including overhead electric along the entire west side of the roadway and driveways that exist on the north leg of the intersection which prohibit additional light poles from being added. Overall light levels are good with a 4.64 HFC average initial for the intersection. The light levels attained provide a reasonable solution given the geometric restrictions at this location.

Appendix A

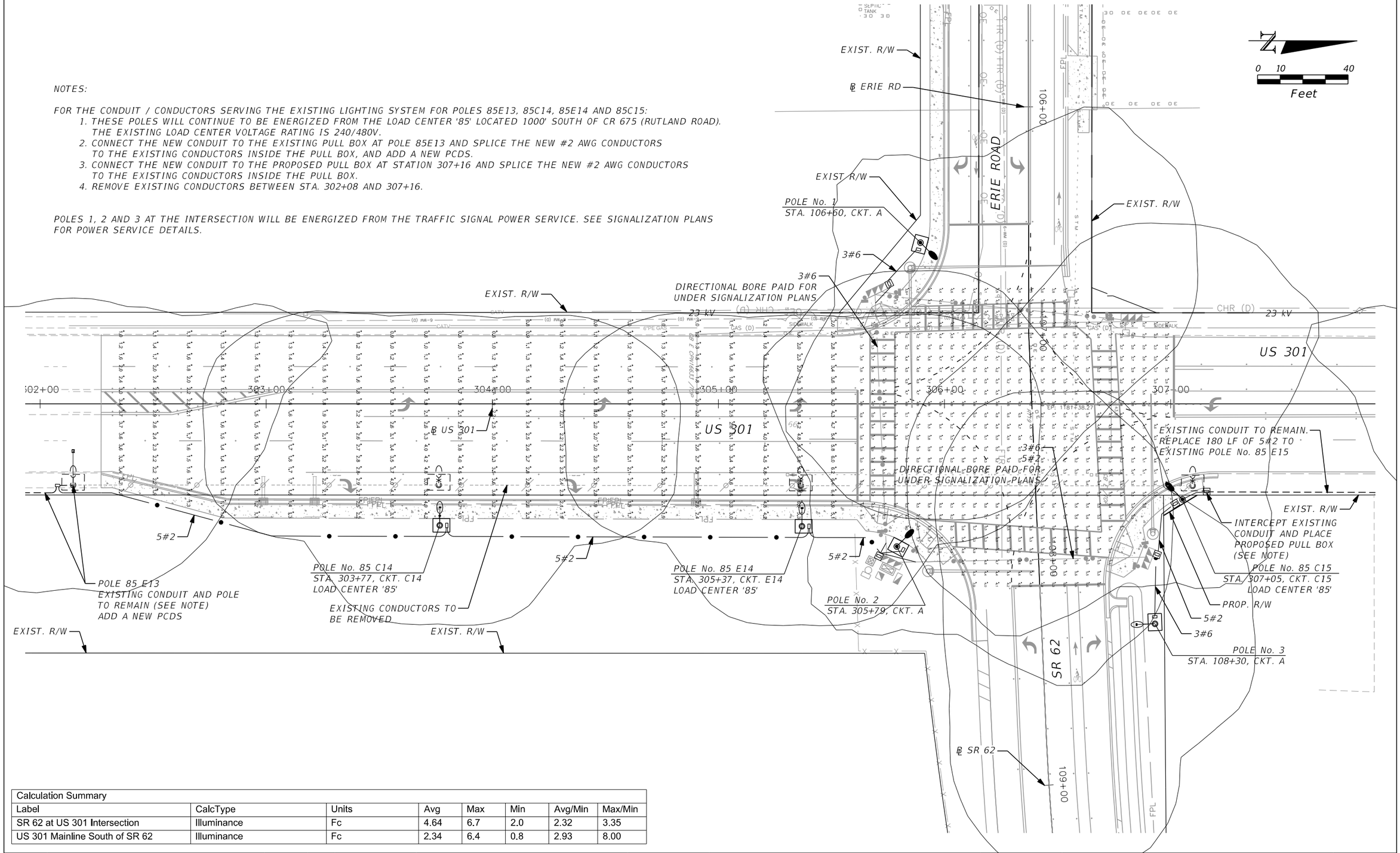
Lighting Analysis Results

NOTES:

FOR THE CONDUIT / CONDUCTORS SERVING THE EXISTING LIGHTING SYSTEM FOR POLES 85E13, 85C14, 85E14 AND 85C15:

1. THESE POLES WILL CONTINUE TO BE ENERGIZED FROM THE LOAD CENTER '85' LOCATED 1000' SOUTH OF CR 675 (RUTLAND ROAD). THE EXISTING LOAD CENTER VOLTAGE RATING IS 240/480V.
2. CONNECT THE NEW CONDUIT TO THE EXISTING PULL BOX AT POLE 85E13 AND SPLICE THE NEW #2 AWG CONDUCTORS TO THE EXISTING CONDUCTORS INSIDE THE PULL BOX, AND ADD A NEW PCDS.
3. CONNECT THE NEW CONDUIT TO THE PROPOSED PULL BOX AT STATION 307+16 AND SPLICE THE NEW #2 AWG CONDUCTORS TO THE EXISTING CONDUCTORS INSIDE THE PULL BOX.
4. REMOVE EXISTING CONDUCTORS BETWEEN STA. 302+08 AND 307+16.

POLES 1, 2 AND 3 AT THE INTERSECTION WILL BE ENERGIZED FROM THE TRAFFIC SIGNAL POWER SERVICE. SEE SIGNALIZATION PLANS FOR POWER SERVICE DETAILS.



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
SR 62 at US 301 Intersection	Illuminance	Fc	4.64	6.7	2.0	2.32	3.35
US 301 Mainline South of SR 62	Illuminance	Fc	2.34	6.4	0.8	2.93	8.00

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: MO
DRAWN BY: GS
CHECKED BY: IR

HDR Engineering, Inc.
4830 W Kennedy Blvd,
Suite 400
Tampa, FL 33609-2548

DATE: 10/2021
PROJECT NO.: 850-6094060

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: MICHAEL J. OATES
FL. LICENSE NO.: 49282

LIGHTING PLAN

SHEET NO.: L-5

9:39:31 AM 10/14/2021

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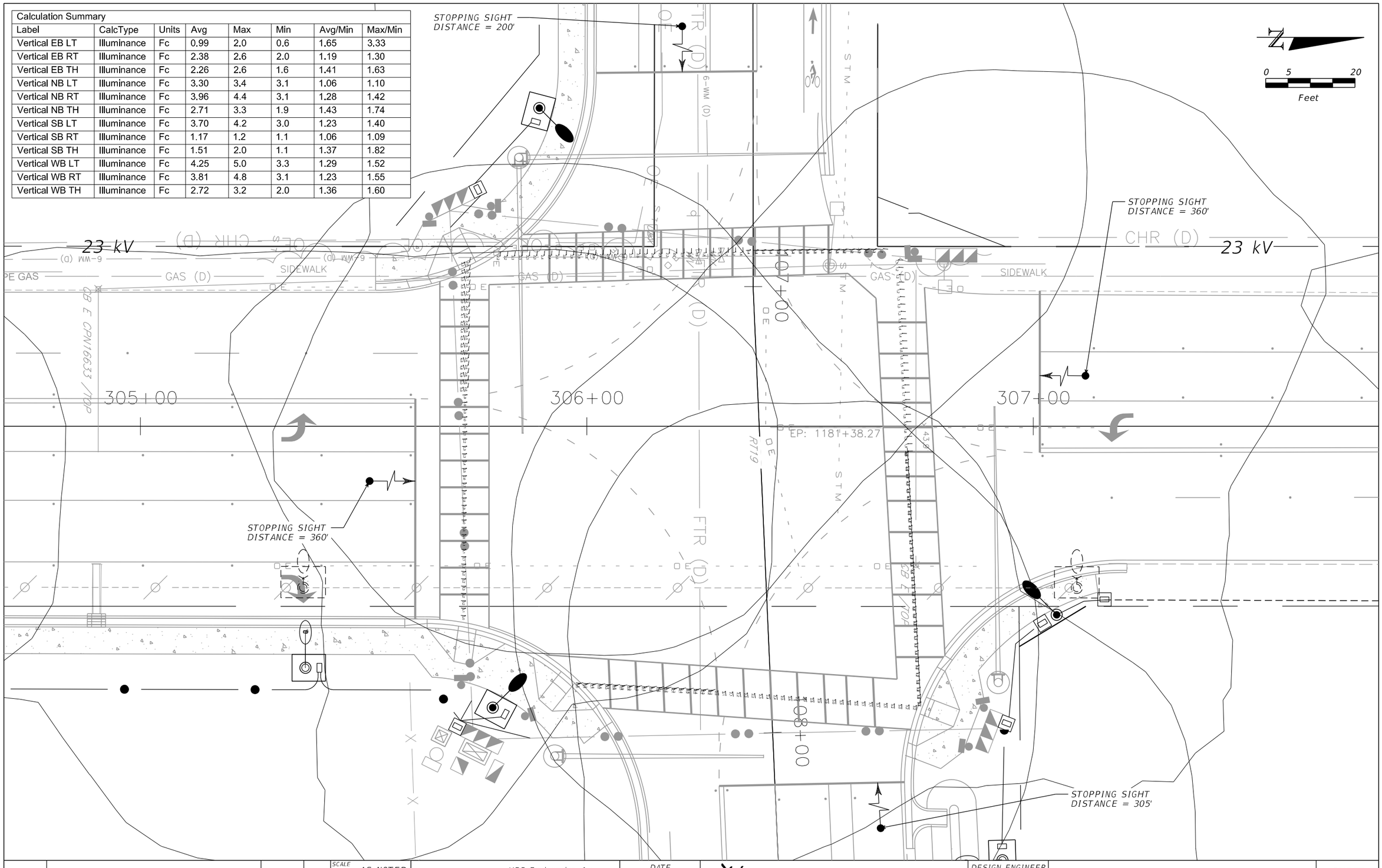
THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Vertical EB LT	Illuminance	Fc	0.99	2.0	0.6	1.65	3.33
Vertical EB RT	Illuminance	Fc	2.38	2.6	2.0	1.19	1.30
Vertical EB TH	Illuminance	Fc	2.26	2.6	1.6	1.41	1.63
Vertical NB LT	Illuminance	Fc	3.30	3.4	3.1	1.06	1.10
Vertical NB RT	Illuminance	Fc	3.96	4.4	3.1	1.28	1.42
Vertical NB TH	Illuminance	Fc	2.71	3.3	1.9	1.43	1.74
Vertical SB LT	Illuminance	Fc	3.70	4.2	3.0	1.23	1.40
Vertical SB RT	Illuminance	Fc	1.17	1.2	1.1	1.06	1.09
Vertical SB TH	Illuminance	Fc	1.51	2.0	1.1	1.37	1.82
Vertical WB LT	Illuminance	Fc	4.25	5.0	3.3	1.29	1.52
Vertical WB RT	Illuminance	Fc	3.81	4.8	3.1	1.23	1.55
Vertical WB TH	Illuminance	Fc	2.72	3.2	2.0	1.36	1.60



No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: MO
DRAWN BY: GS
CHECKED BY: IR

HDR Engineering, Inc.
4830 W Kennedy Blvd,
Suite 400
Tampa, FL 33609-2548

DATE: 10/2021
PROJECT NO.: 850-6094060

Manatee County FLORIDA

MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: MICHAEL J. OATES
FL. LICENSE NO.: 49282

LIGHTING PLAN

SHEET NO.: L-6

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

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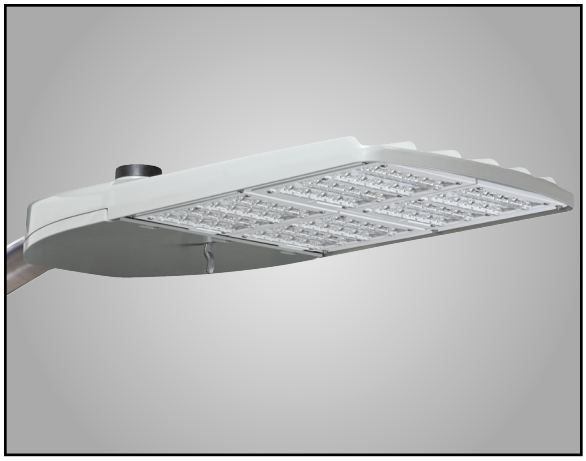
Appendix B

Luminaire Cut Sheets

Autobahn Series ATB2
Roadway Lighting

Consistent with LEED® goals & Green Globes™ criteria for light pollution reduction

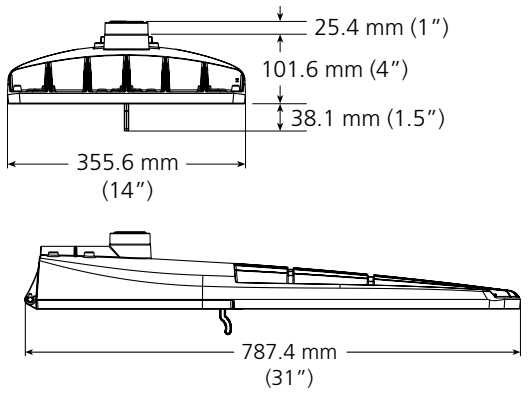
PRODUCT OVERVIEW



Applications:

- Roadways
- Off ramps
- Residential streets
- Parking lots

DIMENSIONS



Effective Projected Area (EPA)
The EPA for the ATB2 is 0.78 sq. ft.,
Approx. Wt. = 21 lbs. (9.53 kg)

STANDARDS

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

Color temperatures of ≤ 3000K must be specified for International Dark-Sky Association certification.

Rated for -40°C to 40°C ambient.
CSA Certified to U.S. and Canadian standards
Complies with ANSI: C136.2, C136.10, C136.14, C136.31, C136.15, C136.37

Features:

OPTICAL

Same Light: Performance is comparable to 250-400W HPS roadway luminaires.

White Light: Correlated color temperature - 4000K, 70 CRI minimum, 3000K, 70CRI minimum or optional 5000K, 70 CRI minimum.

Unique IP66 rated LED light engines provided 0% uplight and restrict backlight to within sidewalk depth, providing optimal application coverage and optimal pole spacing.

Available in Type II, III, IV, & V roadway distributions.

ELECTRICAL

Expected Life: LED light engines are rated >100,000 hours at 25°C, L70. Electronic driver has an expected life of 100,000 hours at a 25°C ambient.

Lower Energy: Saves an average of 40-60% over comparable HPS platforms.

Robust Surge Protection: Three different surge protection options provide a minimum of ANSI C136.2 10kV/5kA protection. 20kV/10kA protection is also available.

MECHANICAL

Easy to Maintain: Includes standard AEL lineman-friendly features such as tool-less entry, 3 station terminal block and quick disconnects. Bubble level located inside the electrical compartment for easy leveling at installation.

Rugged die-cast aluminum housing is polyester powder-coated for durability and corrosion resistance. Rigorous five-stage pre-treating and painting process yields a finish that achieves a scribe creepage rating of 7 (per ASTM D1654) after over 5000 hours exposure to salt fog chamber (operated per ASTM B117).

Four-bolt mast arm mount is adjustable for arms from 1-1/4" to 2" (1-5/8" to 2-3/8" O.D.) diameter and provides a 3G vibration rating per ANSI C136.

Wildlife shield is cast into the housing (not a separate piece).

CONTROLS

NEMA 3 Pin photocontrol receptacle is standard, with the Acuity designed ANSI 7 Pin receptacle optionally available.

Premium solid state locking sale photocontrol - PCSS (10 year rated life). Extreme long life sold state locking style photocontrol - PCLL (20 year rated life).

Mulit-level dimming available to provide scheduled dimming as specified by the customer.

Optional onboard Adjustable Output module allows the light output and input wattage to be modified to meet site specific requirements, and can also allow a single fixture to be flexibly applied in many different applications.

Note: Specifications subject to change without notice.

American Electric Lighting

Autobahn Series ATB2
Roadway Lighting

ORDERING INFORMATION

Example: ATB2 40LEDE70 MVOLT R2

Series

ATB2 Autobahn LED Roadway

Performance Packages

40BLEDE70	40B Chips, 700mA Driver
40BLEDE10	40B Chips, 1050mA Driver
40BLEDE13	40B Chips, 1300mA Driver
40BLEDE15	40B Chips, 1500mA Driver
60BLEDE70	60B Chips, 700mA Driver
60BLEDE85	60B Chips, 850mA Driver
60BLEDE10	60B Chips, 1050mA Driver
60BLEDE13	60B Chips, 1300mA Driver
60BLEDE15	60B Chips, 1500mA Driver
80BLEDE70	80B Chips, 700mA Driver
80BLEDE85	80B Chips, 850mA Driver
80BLEDE10	80B Chips, 1050mA Driver
80BLEDE12	80B Chips, 1200mA Driver
80BLEDE15	80B Chips, 1500mA Driver

Voltage

MVOLT	Multi-volt, 120-277V
347	347V
480	480V

Optics

R2	Roadway Type II
R3	Roadway Type III
R4	Roadway Type IV
R5	Roadway Type V

Options

Color Temperature (CCT)

(Blank)	4000K CCT, 70 CRI Min.
3K	3000K CCT, 70 CRI Min.
5K	5000K CCT, 70 CRI Min.

Paint

(Blank)	Gray (Standard)
BK	Black
BZ	Bronze
DDB	Dark Bronze
GI	Graphite
WH	White

Surge Protection

(Blank)	Standard 10kV/5kA SPD
20	20kV/10KA SPD
MP[1]	MOV Pack
IL[1]	SPD with Indicator Light

Terminal Block

(Blank)	Terminal Block (Standard)
T2	Wired to L1 & L2 Positions

Misc.

BL	External Bubble Level
HS	House-Side Shield
NL	Nema Label
XL	Not CSA Certified
HK	Hingekeepers

Misc. (continued)

UMR-XX	8" Horizontal Arm for Round Pole, Painted to match Fixture
UMS-XX	8" Horizontal Arm for Square Pole, Painted to match Fixture
UMR-GALV	8" Horizontal Arm for Round Pole, Galvanized
UMS-GALV	8" Horizontal Arm for Square Pole, Galvanized

Controls

(Blank)	3 Pin NEMA Photocontrol Receptacle (Standard)
P7[2]	7 Pin Photocontrol Receptacle (Dimmable Driver Included)
NR	No Photocontrol Receptacle
AO[2]	Field Adjustable Output
DM	0V-10V Dimmable Driver (Controls by others)
ML[3,4]	Multi-Level Dimming
PCSS[1]	Solid State Lighting Photocontrol (120-277V)
PCLL	Solid State Long Life Photocontrol
SH	Shorting Cap

Packaging

(Blank)	Single Unit (Standard)
JP	Job Pack (24/Pallet)

Accessories (field installed):

ATB2HS40	Light Trespass Shield LEM 40 House Side
ATB2SS40	Light Trespass Shield LEM 40 Street Side
ATB2HS60	Light Trespass Shield LEM 60 House Side
ATB2SS60	Light Trespass Shield LEM 60 Street Side
ATB2HS80	Light Trespass Shield LEM 80 House Side
ATB2SS80	Light Trespass Shield LEM 80 Street Side

Notes

1. Not available in 347 or 480V.
2. Not available with DM or ML options.
3. Not available with AO, DM or P7 options.
4. Dimming schedule and light level information required from the customer in order to configure product. Contact Infrastructure Technical Support to proceed.

American Electric Lighting®
AEL Headquarters, 3825 Columbus Road, Granville, OH 43023
www.americanelectriclighting.com

Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions
Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

PERFORMANCE PACKAGE

Performance Package	Drive Current (mA)	Input Watts	Optic	3K (3000K CCT, 70 CRI Min.)					4K/5K (4000K/5000K CCT, 70 CRI Min.)					LLD @ 25°C		
				Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	25k Hours	75k Hours	100k Hours
40B	700	88	R2	10,854	123	2	0	3	11,607	132	3	0	3	0.98	0.97	0.96
	1050	133		15,565	117	3	0	3	16,360	123	3	0	3	0.97	0.95	0.92
	1300	171		18,361	107	3	0	3	19,544	114	3	0	4	0.93	0.90	0.88
	1500	198		20,124	102	3	0	4	21,384	108	2	0	2	0.93	0.90	0.88
	700	88	R3	10,980	125	2	0	2	11,552	131	3	0	3	0.98	0.97	0.96
	1050	133		15,607	117	3	0	3	16,249	122	3	0	3	0.97	0.95	0.92
	1300	171		18,428	108	3	0	3	19,462	114	3	0	3	0.93	0.90	0.88
	1500	198		20,240	102	3	0	3	21,331	108	2	0	3	0.93	0.90	0.88
	700	88	R4	10,905	124	2	0	2	11,768	134	3	0	3	0.98	0.97	0.96
	1050	133		15,627	117	3	0	3	16,593	125	3	0	4	0.97	0.95	0.92
	1300	171		18,405	108	3	0	4	19,877	116	3	0	4	0.93	0.90	0.88
	1500	198		20,167	102	3	0	4	21,799	110	4	0	2	0.93	0.90	0.88
	700	88	R5	11,386	129	4	0	2	12,388	141	4	0	2	0.98	0.97	0.96
	1050	133		16,355	123	4	0	2	17,499	132	5	0	3	0.97	0.95	0.92
	1300	171		19,319	113	4	0	2	20,795	122	5	0	3	0.93	0.90	0.88
	1500	198		21,221	107	5	0	3	22,828	115	3	0	3	0.93	0.90	0.88
60B	700	130	R2	16,471	127	3	0	3	18,193	140	3	0	4	0.98	0.97	0.96
	850	165		19,503	118	3	0	3	21,436	130	3	0	4	0.97	0.95	0.92
	1050	204		23,034	113	3	0	4	24,940	122	3	0	4	0.97	0.95	0.92
	1300	254		27,088	107	3	0	4	29,357	116	3	0	5	0.93	0.90	0.88
	1500	291		29,819	102	3	0	4	32,052	110	3	0	3	0.93	0.90	0.88
	700	130	R3	16,702	128	3	0	3	17,714	136	3	0	3	0.98	0.97	0.96
	850	165		19,809	120	3	0	3	21,351	129	3	0	4	0.97	0.95	0.92
	1050	204		23,400	115	3	0	3	25,520	125	3	0	4	0.97	0.95	0.92
	1300	254		27,541	108	3	0	4	29,991	118	3	0	4	0.93	0.90	0.88
	1500	291		30,230	104	3	0	4	32,709	112	3	0	3	0.93	0.90	0.88
	700	130	R4	16,725	129	3	0	3	17,984	138	3	0	4	0.98	0.97	0.96
	850	165		19,831	120	3	0	4	21,446	130	3	0	4	0.97	0.95	0.92
	1050	204		23,421	115	3	0	4	25,423	125	3	0	5	0.97	0.95	0.92
	1300	254		27,542	108	3	0	4	29,898	118	3	0	5	0.93	0.90	0.88
	1500	291		30,221	104	3	0	5	32,527	112	4	0	2	0.93	0.90	0.88
	700	130	R5	17,413	134	4	0	2	18,561	143	5	0	3	0.98	0.97	0.96
	850	165		20,634	125	5	0	3	22,402	136	5	0	3	0.97	0.95	0.92
	1050	204		24,359	119	5	0	3	26,128	128	5	0	4	0.97	0.95	0.92
	1300	254		28,578	113	5	0	3	30,964	122	5	0	4	0.93	0.90	0.88
	1500	291		31,214	107	5	0	4	33,922	117	3	0	4	0.93	0.90	0.88
80B	700	177	R2	22,056	125	3	0	4	23,037	130	3	0	4	0.98	0.97	0.96
	850	214		25,663	120	3	0	4	27,086	127	3	0	5	0.97	0.95	0.92
	1050	268		30,443	114	3	0	5	31,920	119	4	0	5	0.97	0.95	0.92
	1250	330		34,512	105	4	0	5	36,826	112	4	0	5	0.93	0.90	0.88
	1500	388		39,529	102	4	0	5	40,326	104	3	0	3	0.91	0.87	0.84
	700	177	R3	21,936	124	3	0	3	23,934	135	3	0	4	0.98	0.97	0.96
	850	214		25,512	119	3	0	4	26,879	126	3	0	4	0.97	0.95	0.92
	1050	268		30,302	113	3	0	4	32,416	121	4	0	4	0.97	0.95	0.92
	1200	330		35,047	106	4	0	4	37,042	112	4	0	5	0.93	0.90	0.88
	1500	388		39,490	102	4	0	5	41,858	108	3	0	4	0.91	0.87	0.84
	700	177	R4	22,180	125	3	0	4	23,230	131	3	0	4	0.98	0.97	0.96
	850	214		25,842	121	3	0	4	27,263	127	3	0	5	0.97	0.95	0.92
	1050	268		30,644	114	3	0	5	32,329	121	4	0	5	0.97	0.95	0.92
	1250	330		35,084	106	3	0	5	37,293	113	4	0	5	0.93	0.90	0.88
	1500	388		39,816	103	4	0	5	41,611	107	5	0	3	0.91	0.87	0.84
	700	177	R5	22,895	129	5	0	3	24,776	140	5	0	3	0.98	0.97	0.96
	850	214		26,608	124	5	0	3	28,865	135	5	0	4	0.97	0.95	0.92
	1050	268		31,557	118	5	0	4	34,319	128	5	0	4	0.97	0.95	0.92
	1250	330		36,635	111	5	0	4	39,552	120	5	0	4	0.93	0.90	0.88
	1500	388		41,534	107	5	0	4	44,747	115	5	0	4	0.91	0.87	0.84

Note: Individual fixture performance may vary. Specifications subject to change without notice.

ATB2 LLD Multiplier	15°C	20°C	25°C	30°C	35°C	40°C
	1.02	1.01	1	0.99	0.97	0.96

To calculate the LLD for a temperature other than 25°C, multiply the LLD @ 25°C (shown in the performance package table) by the LLD multiplier for the selected temperature.

American Electric Lighting®
AEL Headquarters, 3825 Columbus Road, Granville, OH 43023
www.americanelectriclighting.com

Warranty Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions
Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

Please contact your sales representative for the latest product information.

2.0 MULTI POST SIGN CALCULATIONS

Multi- Column Ground Sign Post Design

SUBJECT SR-62EB Sign 1 STA. 127+00
PROJECT # _____
DESIGNED BY SM DATE 06/11/21
CHECKED BY MO DATE 06/11/21

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Design Standards for Construction and Maintenance on the State Highway System, Index 11200.

Reference:c:\pwworking\east01\d1157999\LRFD Equation Module.xmcd(R)

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 10.5 \cdot ft$ $D_{panel} := 3.5 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 0 \cdot ft$ $D_{top.panel} := 0 \cdot ft$

TopJustification :=
Left
Center
Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification :=
Left
Center
Right

Ground Slope and Sign Height

$Run_{Rise} := 16.5 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 7.54 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

Roadside Design Guide 4.3.2:

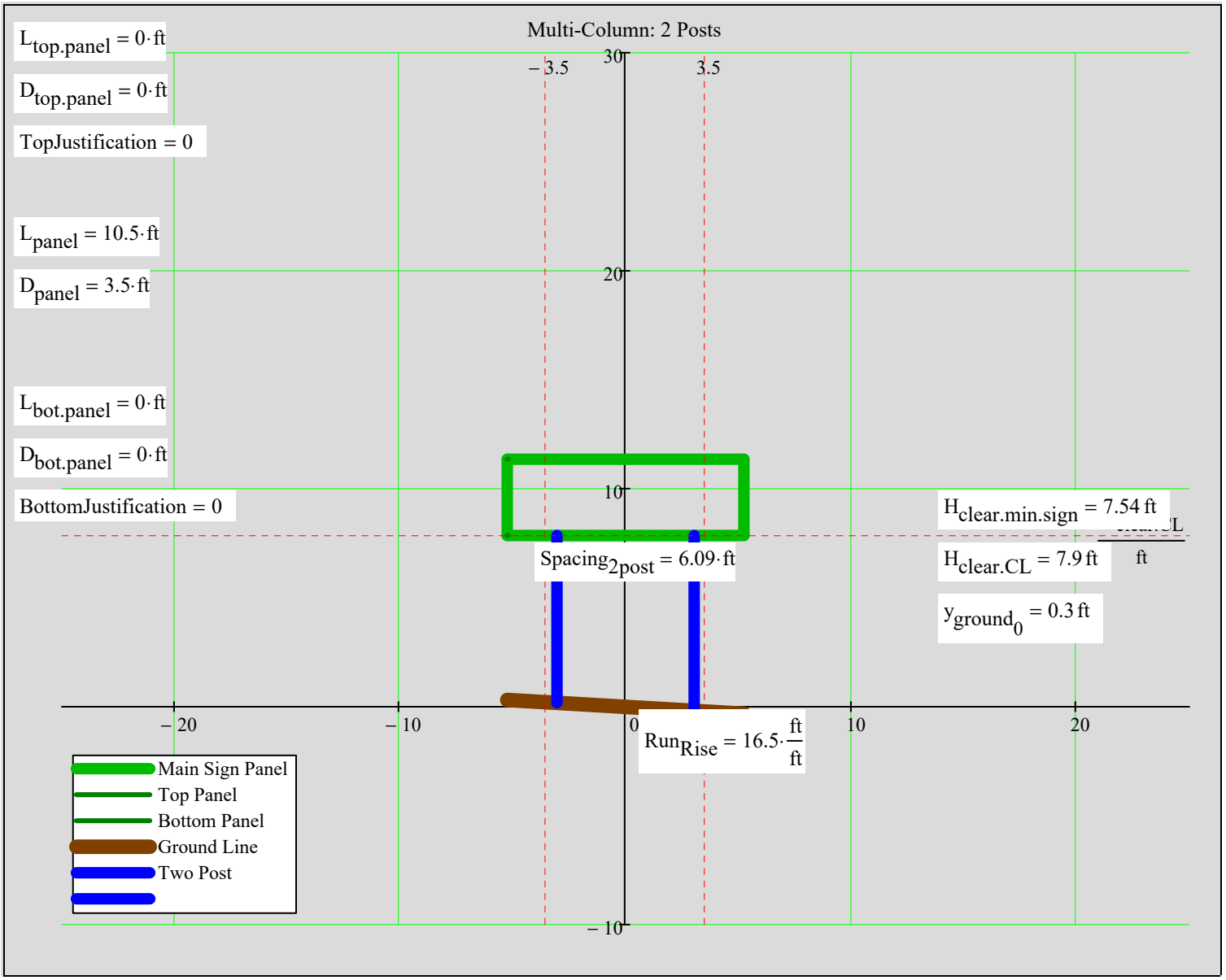
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

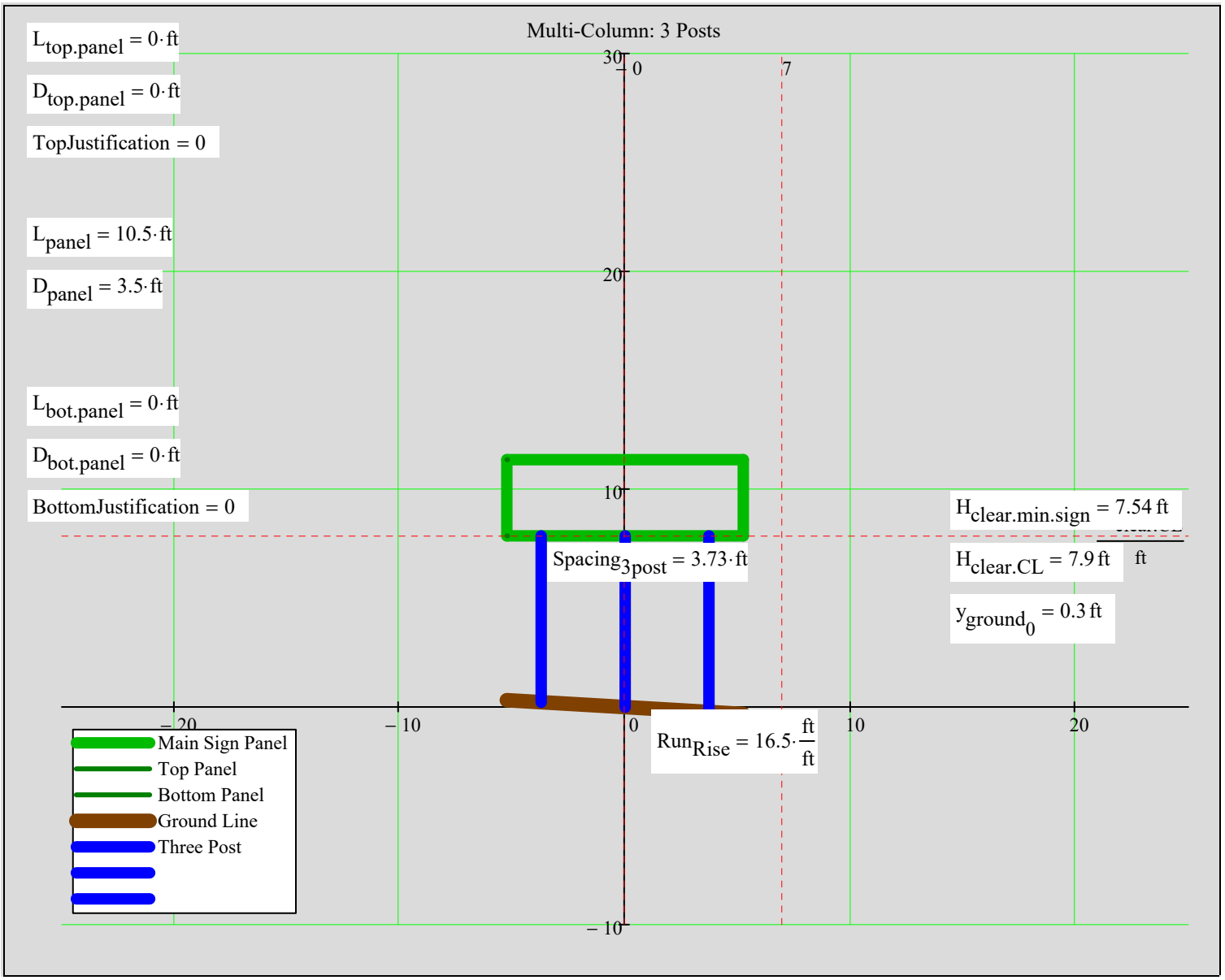
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry


Multi-Column: 2 Posts
$L_{top.panel} = 0 \cdot ft$
$D_{top.panel} = 0 \cdot ft$
TopJustification = 0
$L_{panel} = 10.5 \cdot ft$
$D_{panel} = 3.5 \cdot ft$
$L_{bot.panel} = 0 \cdot ft$
$D_{bot.panel} = 0 \cdot ft$
BottomJustification = 0
$H_{clear.min.sign} = 7.54\,ft$
$H_{clear.CL} = 7.9\,ft$
$y_{ground_0} = 0.3\,ft$
$Spacing_{2post} = 6.09 \cdot ft$
$Run_{Rise} = 16.5 \cdot \frac{ft}{ft}$
Main Sign Panel
Top Panel
Bottom Panel
Ground Line
Two Post
30
20
10
−10
−20
−10
0
10
20
−3.5
3.5



CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

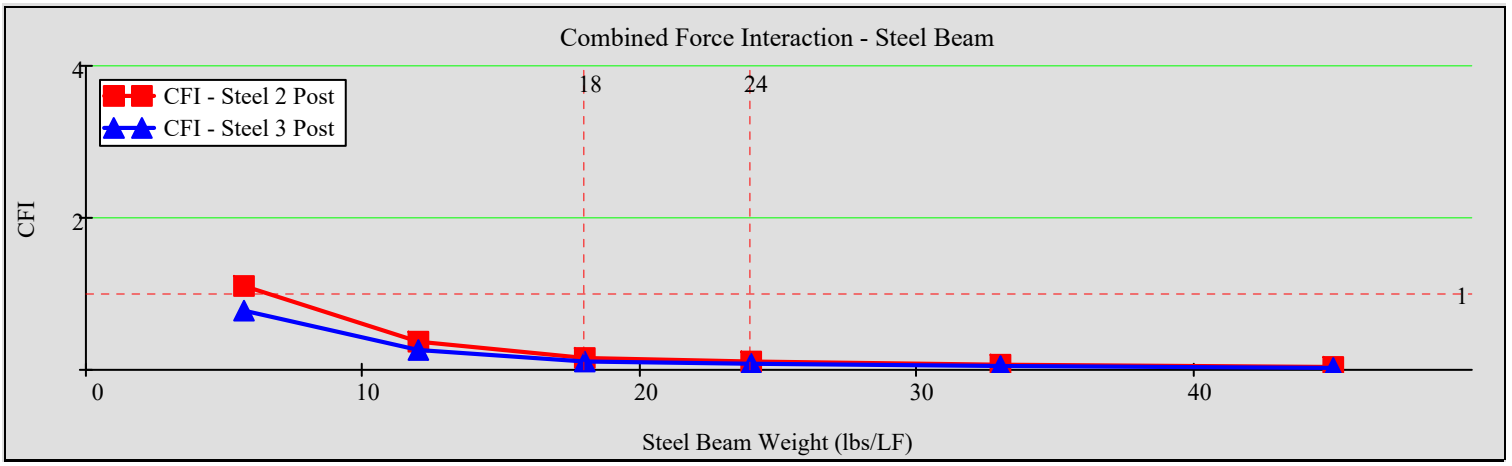
Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 1.11 \\ 0.38 \\ 0.16 \\ 0.11 \\ 0.07 \\ 0.04 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 6 x 12"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 0.78 \\ 0.26 \\ 0.11 \\ 0.08 \\ 0.05 \\ 0.03 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 3 X 5.7"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "OK"

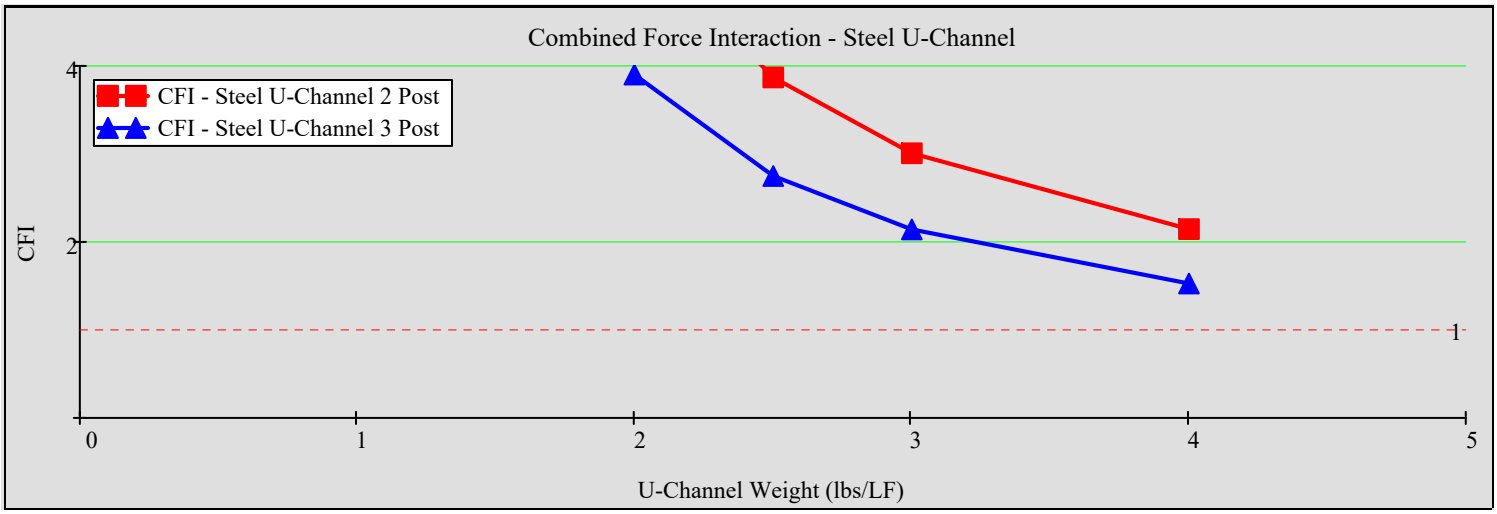
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \quad \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 5.49 \\ 3.87 \\ 3.01 \\ 2.15 \end{pmatrix}$$

Smallest 2 Post U-Channel that Satisfies Strength Requirements

SteelUChannel2Post = "N/A"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 3.9 \\ 2.75 \\ 2.14 \\ 1.53 \end{pmatrix}$$

Smallest 3 Post U-Channel that Satisfies Strength Requirements

SteelUChannel3Post = "N/A"

CheckCFI3PostUchan = "N/A"

CheckBreakaway3PostUchan = "OK"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

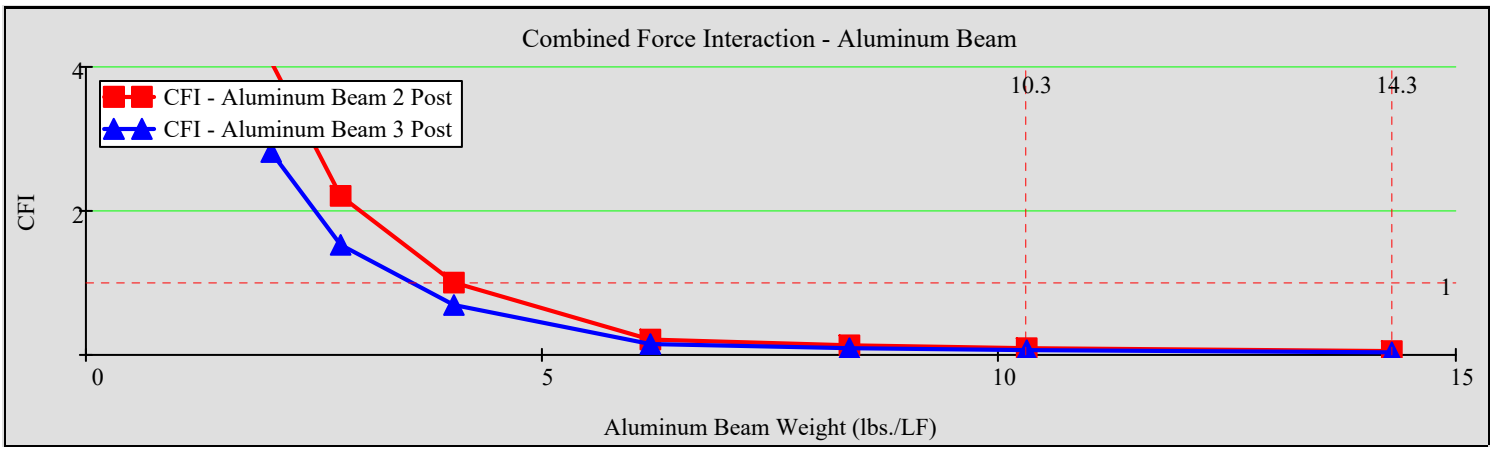
$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10000 \cdot ksi$

Aluminum I-Beam Designations *3x2.03* *4x2.79* *6x4.03* *8x6.18* *9x8.36* *10x10.3* *12x14.3*

$$Prop_{albeam} := \begin{pmatrix} 2.03 & 2.79 & 4.03 & 6.18 & 8.36 & 10.3 & 14.3 \\ 2.5 & 3 & 4 & 5 & 5.5 & 6 & 7 \\ 0.26 & 0.29 & 0.29 & 0.35 & 0.44 & 0.5 & 0.62 \\ 3 & 4 & 6 & 8 & 9 & 10 & 12 \\ 0.15 & 0.17 & 0.19 & 0.23 & 0.27 & 0.29 & 0.31 \\ 1.73 & 2.38 & 3.43 & 5.26 & 7.11 & 8.75 & 12.1 \\ 1.81 & 3.36 & 7.33 & 14.9 & 22.7 & 31.2 & 52.9 \\ 1.25 & 1.68 & 2.53 & 3.37 & 3.79 & 4.22 & 5.11 \\ 2.71 & 6.71 & 22.0 & 59.7 & 102 & 156 & 317 \\ 0.679 & 1.31 & 3.10 & 7.30 & 12.2 & 18.0 & 35.5 \\ 0.0374 & 0.0608 & 0.0888 & 0.188 & 0.386 & 0.620 & 1.26 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{d (in)} \\ \text{Web Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{r (in)} \\ \text{I (in4)} \\ \text{Iy (in4)} \\ \text{J (in4)} \end{pmatrix}$$

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{2Post.albeam} = \begin{pmatrix} 4.08 \\ 2.22 \\ 1.01 \\ 0.22 \\ 0.14 \\ 0.10 \\ 0.06 \end{pmatrix}$$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 8 x 6.18"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{3Post.albeam} = \begin{pmatrix} 2.82 \\ 1.53 \\ 0.70 \\ 0.16 \\ 0.10 \\ 0.07 \\ 0.04 \end{pmatrix}$$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 6 x 4.03"

CheckCFI3PostAlBeam = "OK"

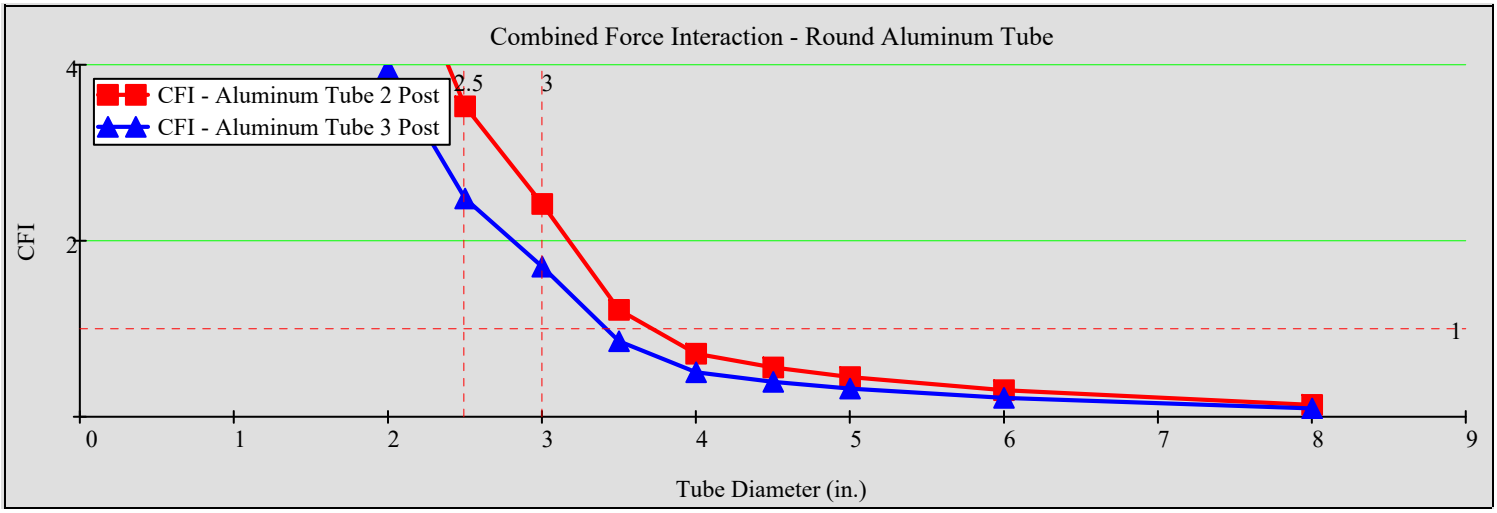
CheckBreakaway3PostAlBeam = "NG"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

$$AlTube := \begin{pmatrix} 2 & 2.5 & 3 & 3.5 & 4 & 4.5 & 5 & 6 & 8 \\ 0.125 & 0.125 & 0.125 & 0.188 & 0.25 & 0.25 & 0.25 & 0.25 & 0.313 \end{pmatrix} \begin{pmatrix} \text{Outside Diameter (in)} \\ \text{Wall Thickness (in)} \end{pmatrix}$$

The order of Aluminum Round Tubes needs to be in ascending order of the Section Strength

Aluminum Round Tube Post Design



$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{2Post.tube} = \begin{pmatrix} 5.64 \\ 3.53 \\ 2.42 \\ 1.22 \\ 0.72 \\ 0.56 \\ 0.45 \\ 0.31 \\ 0.14 \end{pmatrix}$$

Smallest 2 Post Aluminum Tube that Satisfies Strength Requirements

AlTube2Post = "OD = 4 in, t = 1/4 in"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostTube = "OK"

CheckBreakaway2PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{3Post.tube} = \begin{pmatrix} 3.96 \\ 2.49 \\ 1.71 \\ 0.86 \\ 0.51 \\ 0.4 \\ 0.32 \\ 0.22 \\ 0.1 \end{pmatrix}$$

Smallest 3 Post Aluminum Tube that Satisfies Strength Requirements

AlTube3Post = "OD = 3.5 in, t = 3/16 in"

CheckCFI3PostTube = "OK"

CheckBreakaway3PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 105 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

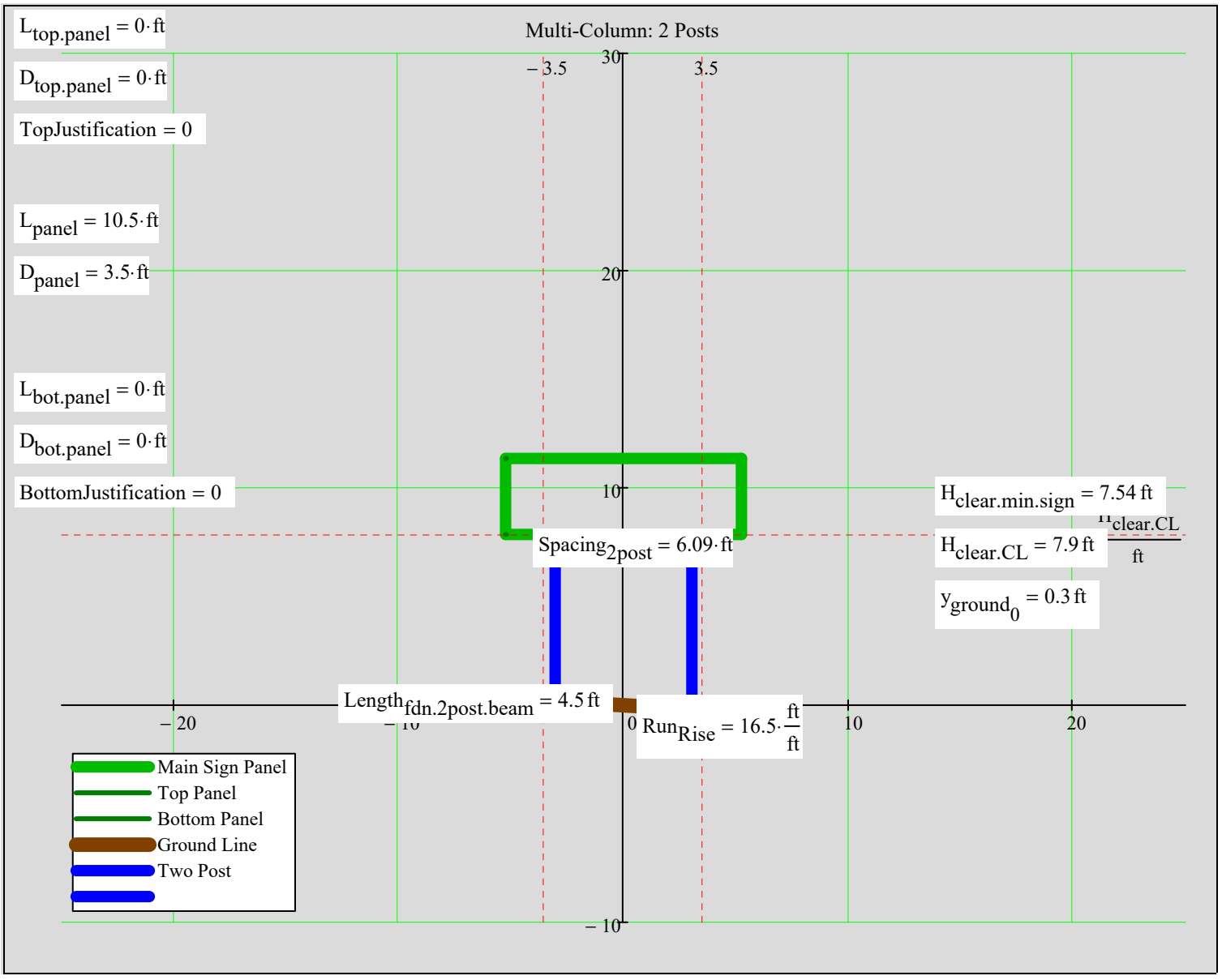
$Dia_{fdn} := 2.0 \cdot ft$

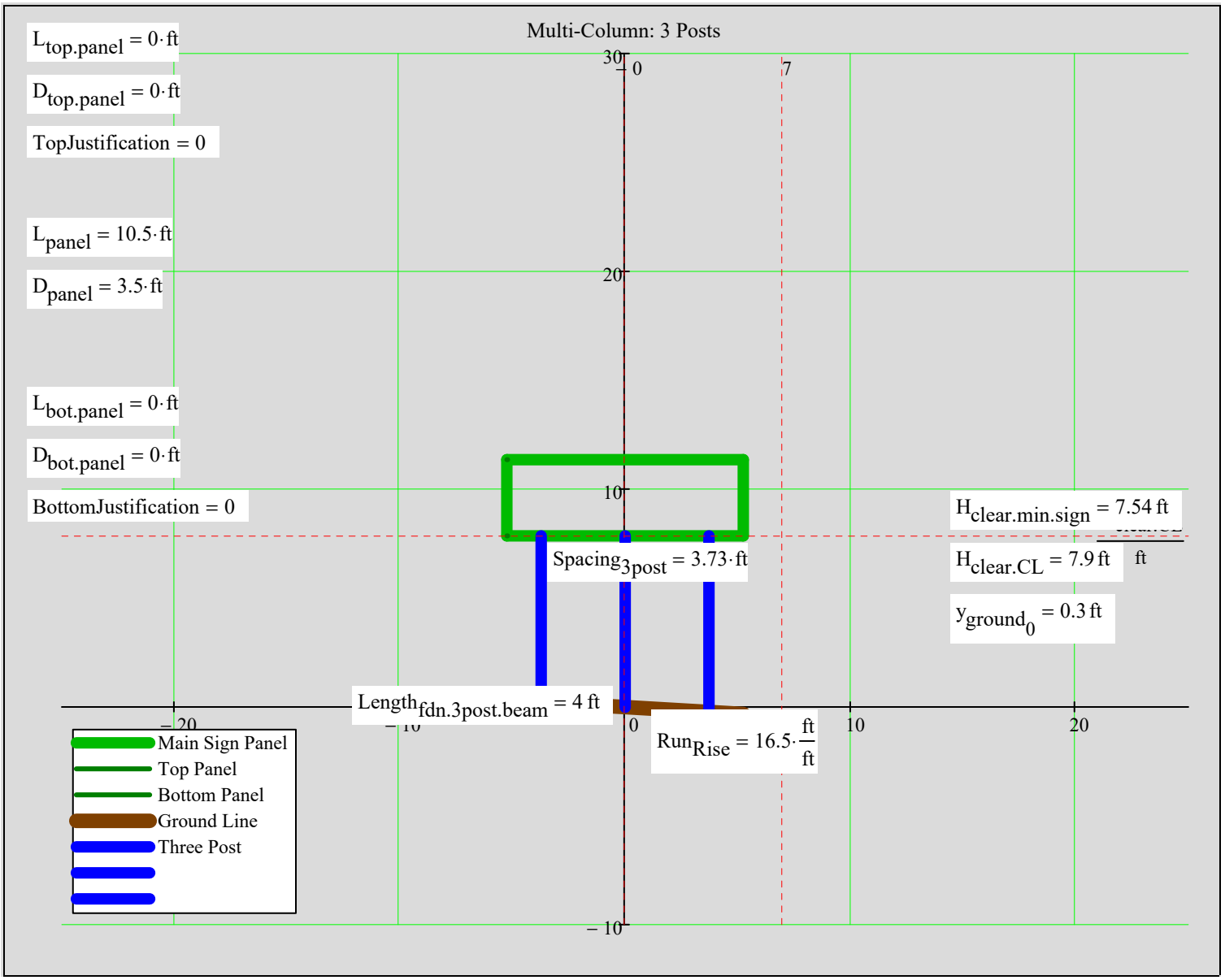
$Offset := 0.5 \cdot ft$

$\phi_{ot} := 0.6$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel and Aluminum Tubes

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 2 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 6 x 12"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 3 X 5.7"

CheckBreakaway3PostStBeam = "OK"

$L_{post.avg} = 11.12 \cdot ft$ *Estimated Average Post Length: 2 Post 3 Post*

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 8 x 6.18"

AlBeam2Post = "I 8 x 6.18"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 6 x 4.03"

CheckBreakaway3PostAlBeam = "NG"

$L_{post.avg} = 11.123 \cdot ft$ *Estimated Average Post Length*

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 105 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2 \cdot ft$ Offset = 0.5·ft

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 4.5 \cdot ft$ *Shaft Length for Three Post Configuration* $Length_{fdn.3post.beam} = 4 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "N/A"

CheckBreakaway2PostUchan = "OK"

CheckCFI3PostUchan = "N/A"

SteelUChannel3Post = "N/A"

CheckBreakaway3PostUchan = "OK"

$L_{uchannel.avg} = 14.36 \cdot ft$ *Est. Average Post Length: 2 Post 3 Post*

Aluminum Tube Post Option (6061-T6 Alloy)

CheckCFI2PostTube = "OK"

AlTube2Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway2PostTube = "NG, posts too strong"

CheckCFI3PostTube = "OK"

AlTube3Post = "OD = 3.5 in, t = 3/16 in"

CheckBreakaway3PostTube = "NG, posts too strong"

$L_{post.avg} = 11.12 \cdot ft$ *Estimated Average Post Length*

Multi- Column Ground Sign Post Design

SUBJECT SR-62WB Sign 2 STA. 114+00
PROJECT # _____
DESIGNED BY SM DATE 06/11/21
CHECKED BY MO DATE 06/11/21

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Design Standards for Construction and Maintenance on the State Highway System, Index 11200.

Reference:c:\pwworking\east01\d1157999\LRFD Equation Module.xmcd(R)

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 12 \cdot ft$ $D_{panel} := 4 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 0 \cdot ft$ $D_{top.panel} := 0 \cdot ft$

TopJustification :=
Left
Center
Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification :=
Left
Center
Right

Ground Slope and Sign Height

$Run_{Rise} := 14.2 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 7.74 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

Roadside Design Guide 4.3.2:

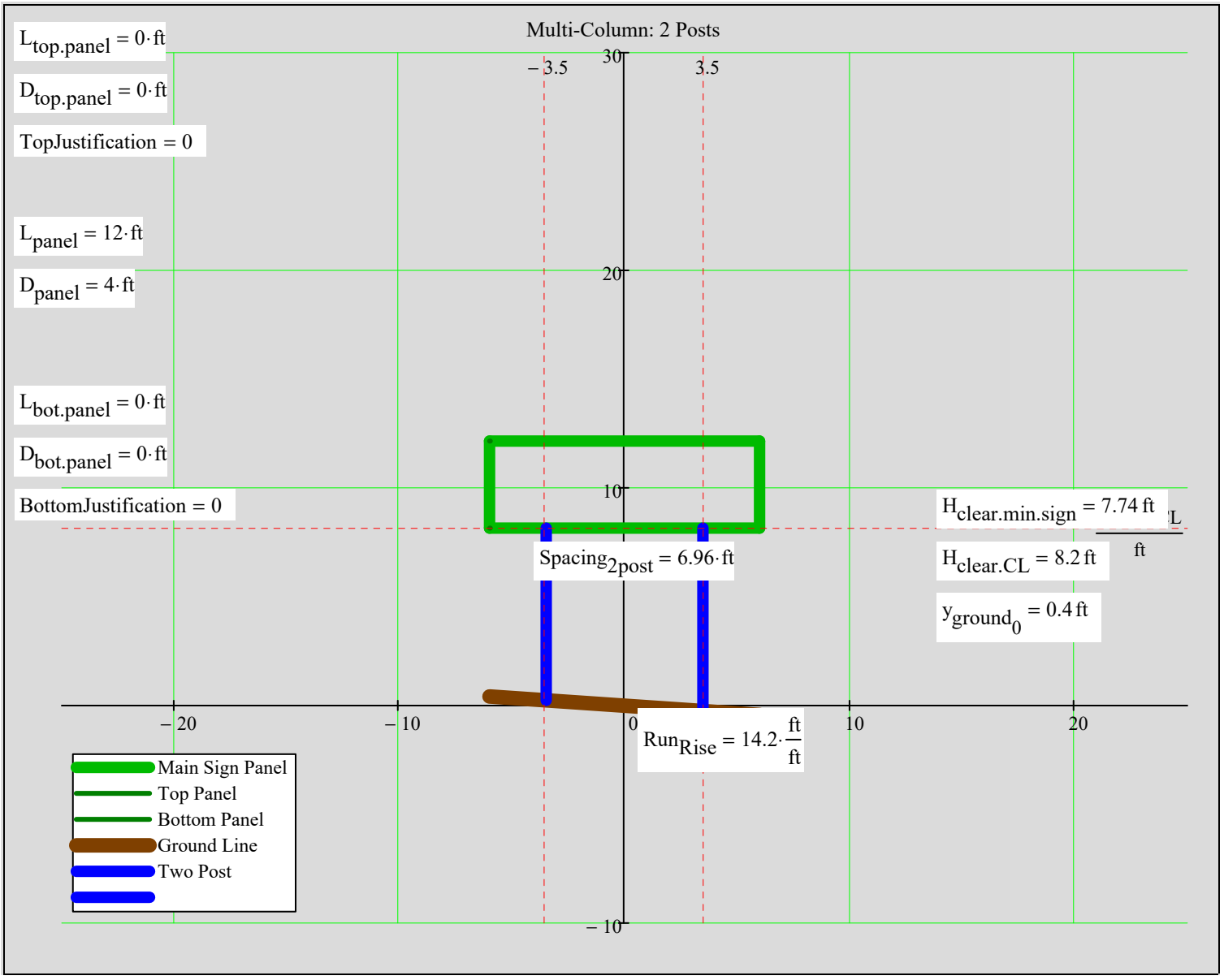
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

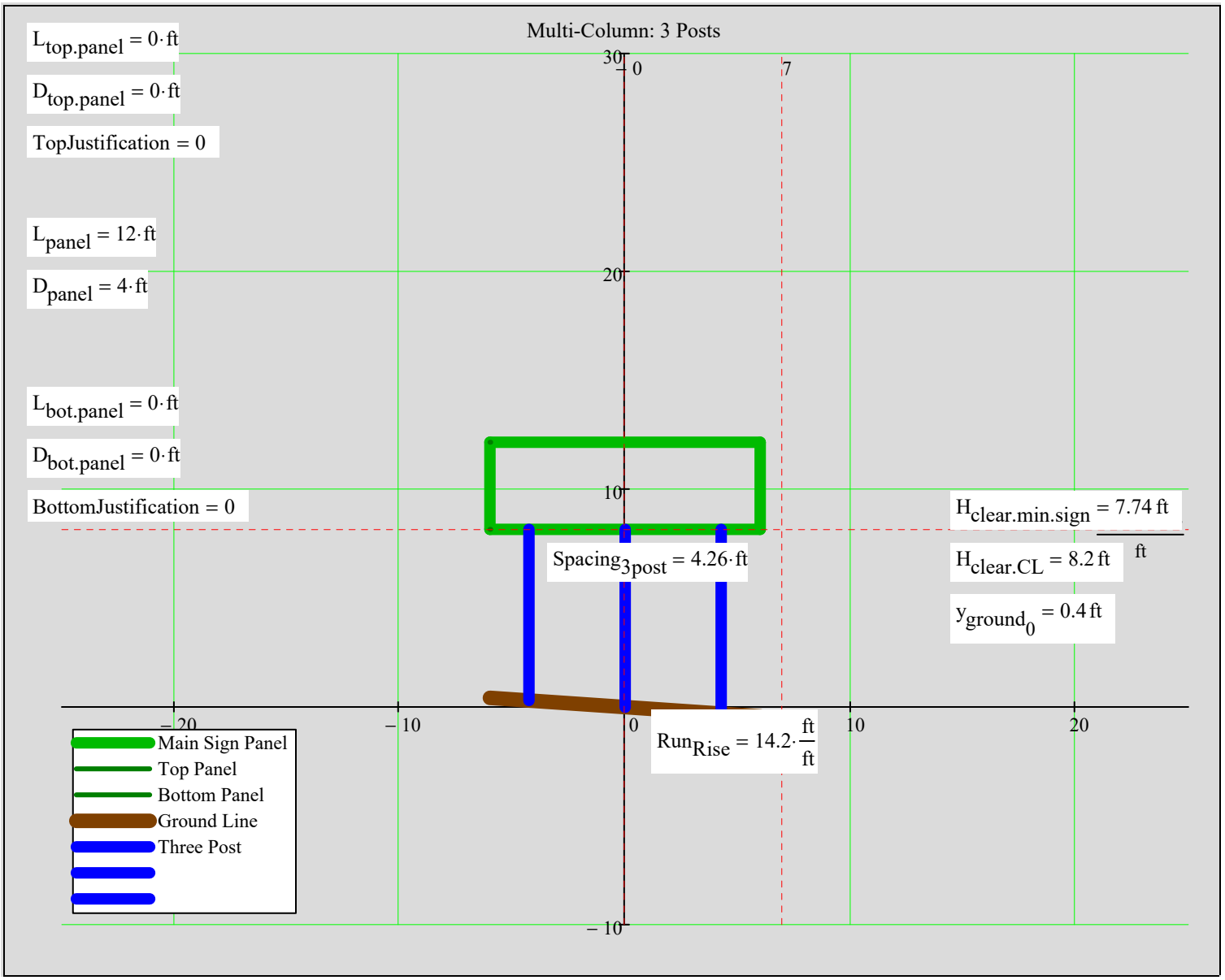
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry


Multi-Column: 2 Posts
$L_{top.panel} = 0 \cdot ft$
$D_{top.panel} = 0 \cdot ft$
TopJustification = 0
$L_{panel} = 12 \cdot ft$
$D_{panel} = 4 \cdot ft$
$L_{bot.panel} = 0 \cdot ft$
$D_{bot.panel} = 0 \cdot ft$
BottomJustification = 0
$Spacing_{2post} = 6.96 \cdot ft$
$H_{clear.min.sign} = 7.74\,ft$
$H_{clear.CL} = 8.2\,ft$
$y_{ground_0} = 0.4\,ft$
$Run_{Rise} = 14.2 \cdot \frac{ft}{ft}$
Main Sign Panel
Top Panel
Bottom Panel
Ground Line
Two Post
30
20
10
−10
−3.5
3.5
−20
−10
0
10
20



CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

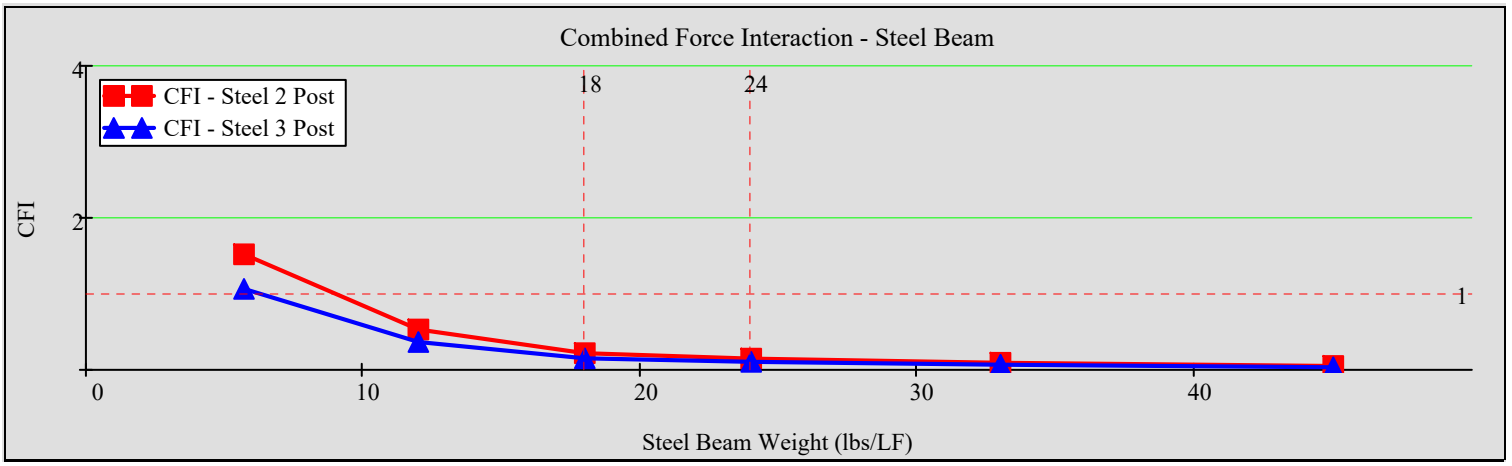
Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 1.52 \\ 0.53 \\ 0.22 \\ 0.15 \\ 0.10 \\ 0.05 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 6 x 12"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 1.07 \\ 0.37 \\ 0.16 \\ 0.11 \\ 0.07 \\ 0.04 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 6 x 12"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "OK"

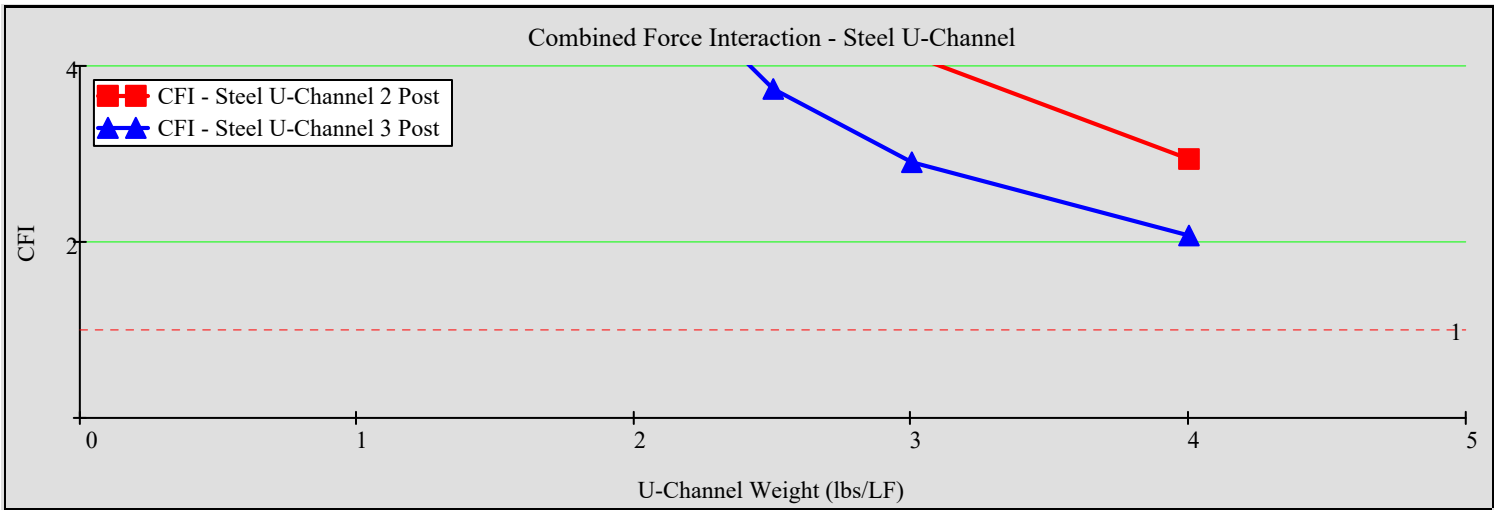
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \quad \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 7.53 \\ 5.31 \\ 4.12 \\ 2.94 \end{pmatrix}$$

Smallest 2 Post U-Channel that Satisfies Strength Requirements

SteelUChannel2Post = "N/A"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 5.31 \\ 3.74 \\ 2.91 \\ 2.08 \end{pmatrix}$$

Smallest 3 Post U-Channel that Satisfies Strength Requirements

SteelUChannel3Post = "N/A"

CheckCFI3PostUchan = "N/A"

CheckBreakaway3PostUchan = "OK"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

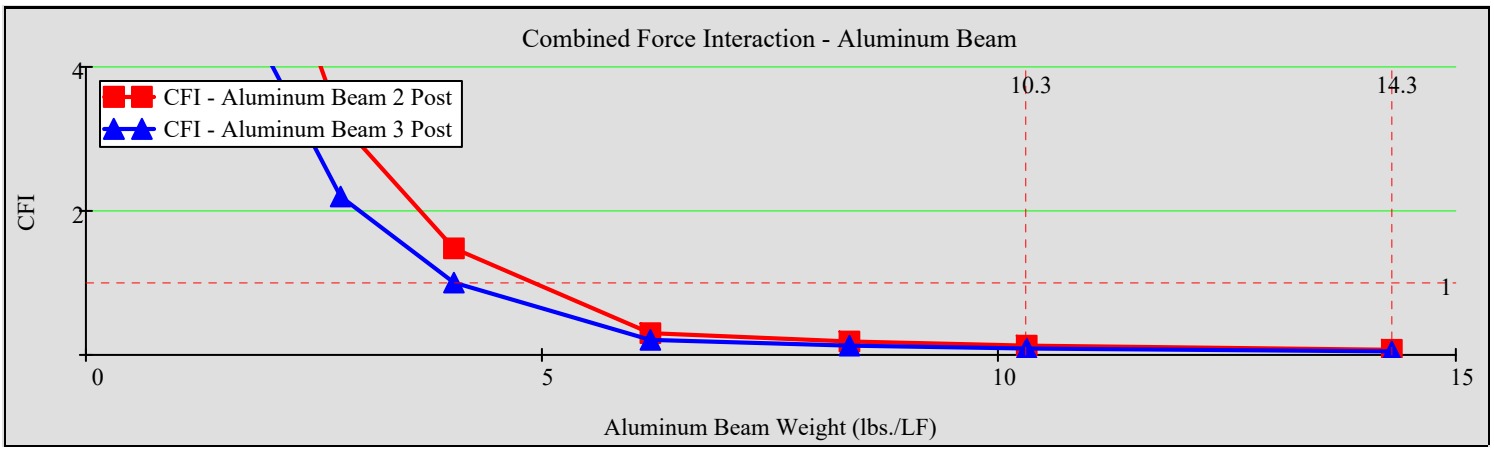
$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10000 \cdot ksi$

Aluminum I-Beam Designations *3x2.03* *4x2.79* *6x4.03* *8x6.18* *9x8.36* *10x10.3* *12x14.3*

$$Prop_{albeam} := \begin{pmatrix} 2.03 & 2.79 & 4.03 & 6.18 & 8.36 & 10.3 & 14.3 \\ 2.5 & 3 & 4 & 5 & 5.5 & 6 & 7 \\ 0.26 & 0.29 & 0.29 & 0.35 & 0.44 & 0.5 & 0.62 \\ 3 & 4 & 6 & 8 & 9 & 10 & 12 \\ 0.15 & 0.17 & 0.19 & 0.23 & 0.27 & 0.29 & 0.31 \\ 1.73 & 2.38 & 3.43 & 5.26 & 7.11 & 8.75 & 12.1 \\ 1.81 & 3.36 & 7.33 & 14.9 & 22.7 & 31.2 & 52.9 \\ 1.25 & 1.68 & 2.53 & 3.37 & 3.79 & 4.22 & 5.11 \\ 2.71 & 6.71 & 22.0 & 59.7 & 102 & 156 & 317 \\ 0.679 & 1.31 & 3.10 & 7.30 & 12.2 & 18.0 & 35.5 \\ 0.0374 & 0.0608 & 0.0888 & 0.188 & 0.386 & 0.620 & 1.26 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{d (in)} \\ \text{Web Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{r (in)} \\ \text{I (in4)} \\ \text{Iy (in4)} \\ \text{J (in4)} \end{pmatrix}$$

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{2Post.albeam} = \begin{pmatrix} 5.93 \\ 3.23 \\ 1.48 \\ 0.31 \\ 0.19 \\ 0.13 \\ 0.08 \end{pmatrix}$$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 8 x 6.18"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{3Post.albeam} = \begin{pmatrix} 4.04 \\ 2.20 \\ 1.01 \\ 0.21 \\ 0.13 \\ 0.10 \\ 0.05 \end{pmatrix}$$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 8 x 6.18"

CheckCFI3PostAlBeam = "OK"

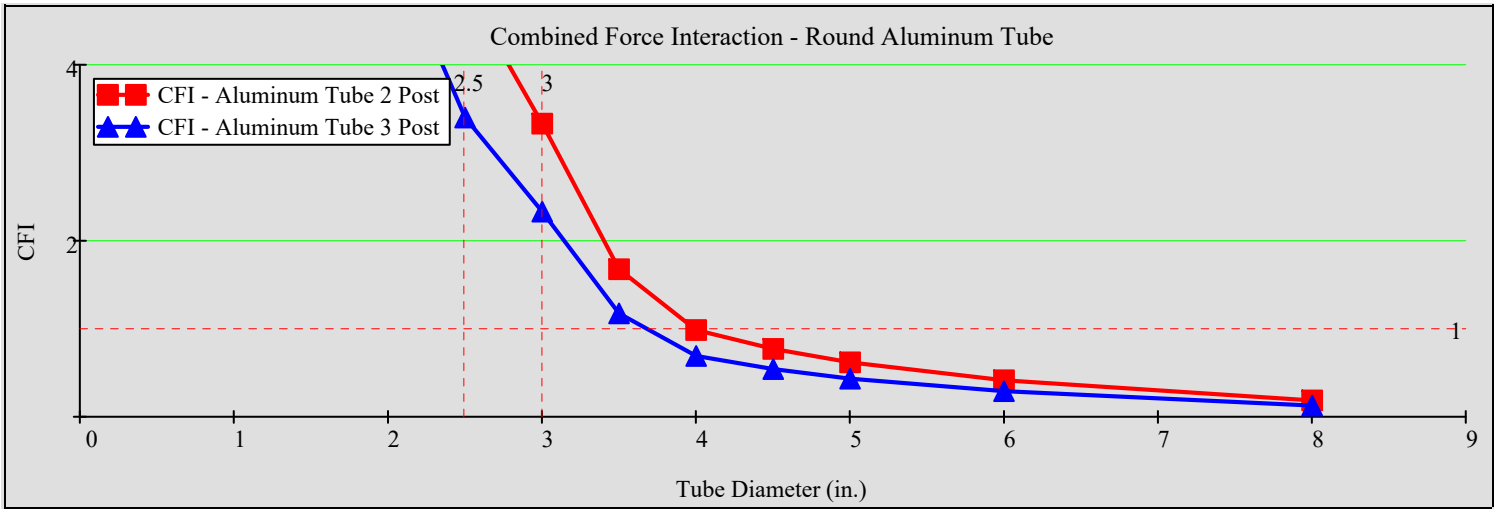
CheckBreakaway3PostAlBeam = "NG"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

$$AlTube := \begin{pmatrix} 2 & 2.5 & 3 & 3.5 & 4 & 4.5 & 5 & 6 & 8 \\ 0.125 & 0.125 & 0.125 & 0.188 & 0.25 & 0.25 & 0.25 & 0.25 & 0.313 \end{pmatrix} \begin{pmatrix} \text{Outside Diameter (in)} \\ \text{Wall Thickness (in)} \end{pmatrix}$$

The order of Aluminum Round Tubes needs to be in ascending order of the Section Strength

Aluminum Round Tube Post Design



$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{2Post.tube} = \begin{pmatrix} 7.79 \\ 4.87 \\ 3.34 \\ 1.68 \\ 0.99 \\ 0.77 \\ 0.62 \\ 0.42 \\ 0.19 \end{pmatrix}$$

Smallest 2 Post Aluminum Tube that Satisfies Strength Requirements

AlTube2Post = "OD = 4 in, t = 1/4 in"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostTube = "OK"

CheckBreakaway2PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{3Post.tube} = \begin{pmatrix} 5.43 \\ 3.4 \\ 2.34 \\ 1.18 \\ 0.69 \\ 0.54 \\ 0.44 \\ 0.29 \\ 0.13 \end{pmatrix}$$

Smallest 3 Post Aluminum Tube that Satisfies Strength Requirements

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckCFI3PostTube = "OK"

CheckBreakaway3PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 105 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

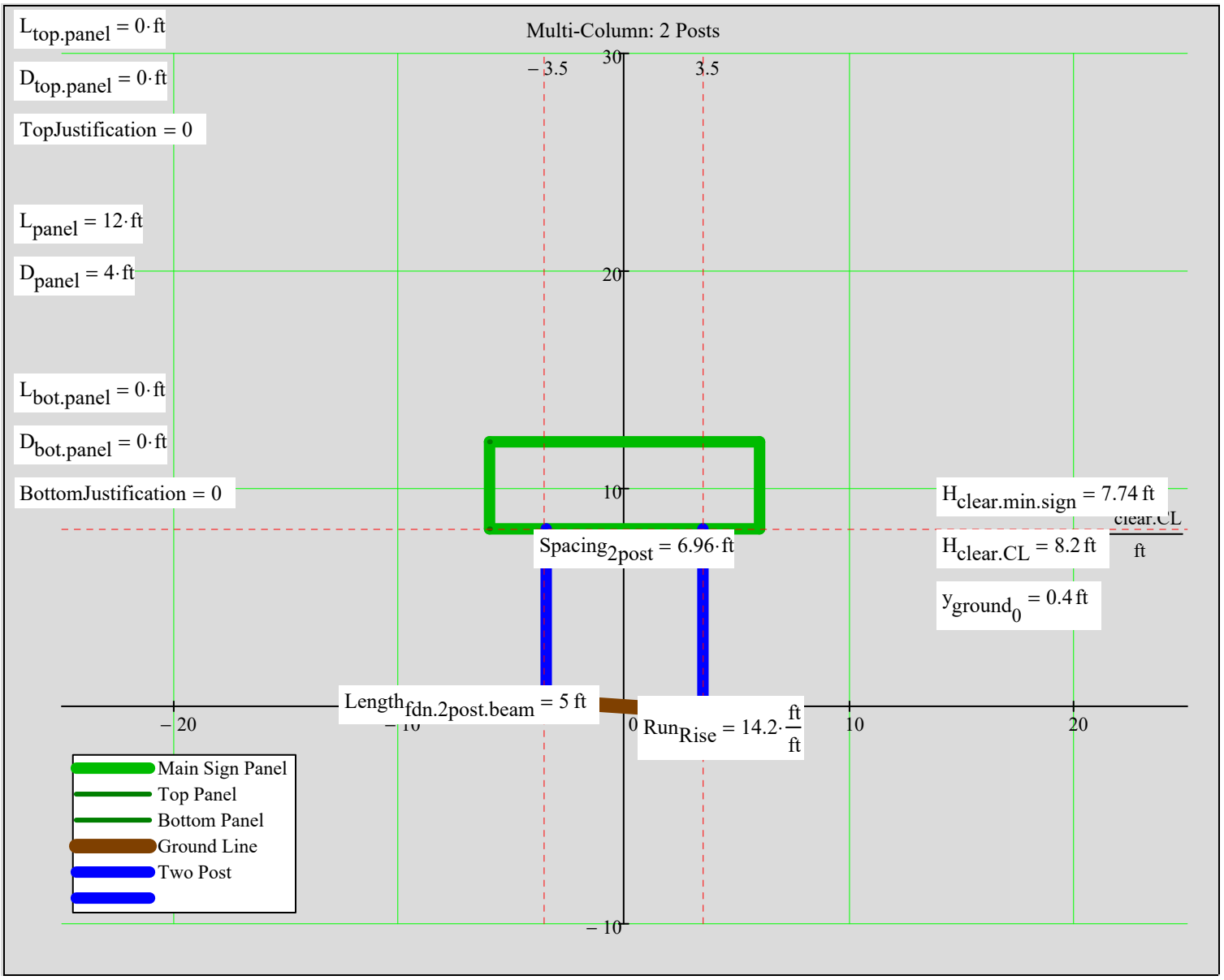
$Dia_{fdn} := 2.0 \cdot ft$

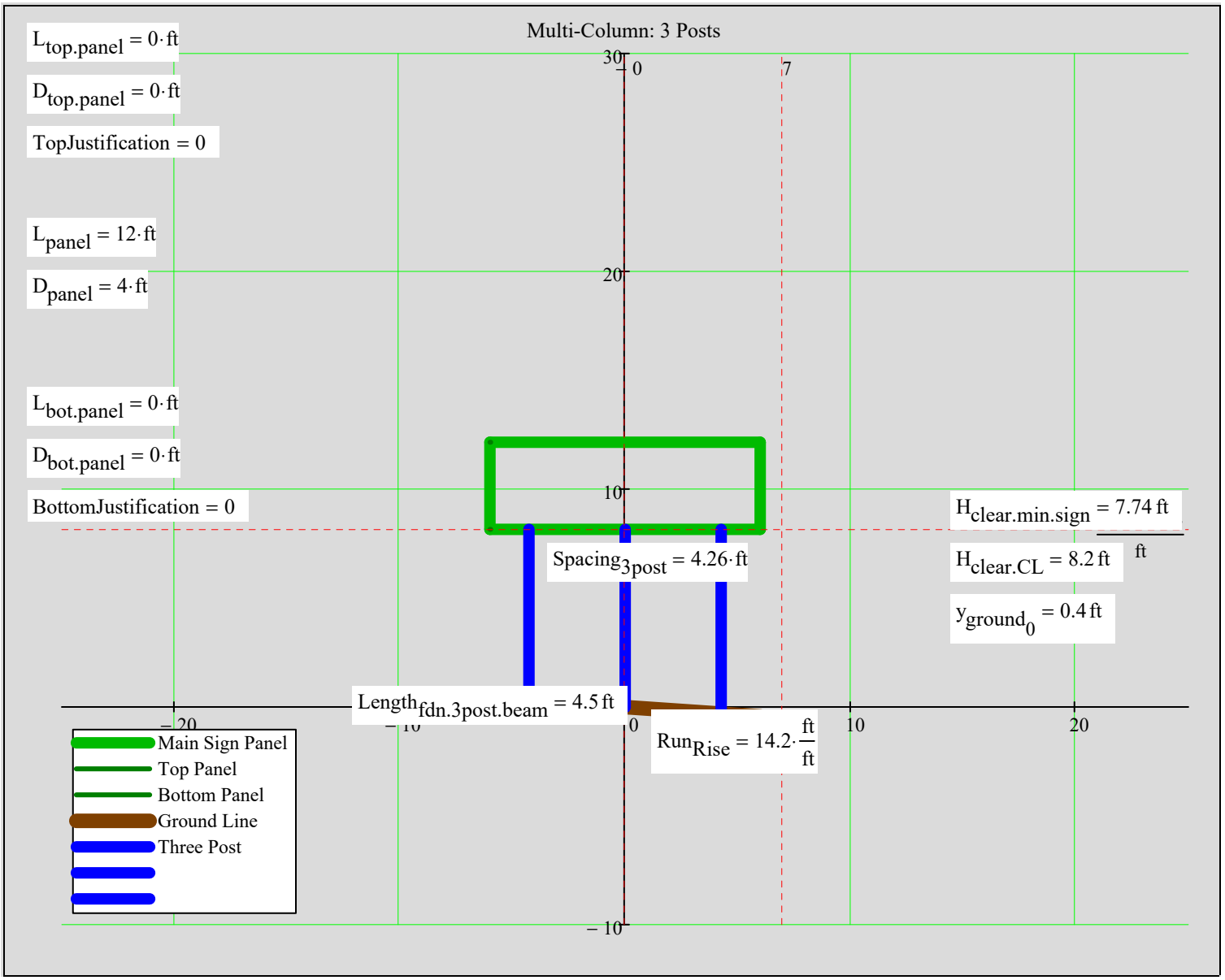
$Offset := 0.5 \cdot ft$

$\phi_{ot} := 0.6$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel and Aluminum Tubes

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 2 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 6 x 12"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 6 x 12"

CheckBreakaway3PostStBeam = "OK"

$L_{post.avg} = 11.82 \cdot ft$ *Estimated Average Post Length: 2 Post 3 Post*

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 8 x 6.18"

AlBeam2Post = "I 8 x 6.18"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 8 x 6.18"

CheckBreakaway3PostAlBeam = "NG"

$L_{post.avg} = 11.823 \cdot ft$ *Estimated Average Post Length*

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 105 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2 \cdot ft$ Offset = 0.5·ft

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 5 \cdot ft$ *Shaft Length for Three Post Configuration* $Length_{fdn.3post.beam} = 4.5 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "N/A"

CheckBreakaway2PostUchan = "OK"

CheckCFI3PostUchan = "N/A"

SteelUChannel3Post = "N/A"

CheckBreakaway3PostUchan = "OK"

$L_{uchannel.avg} = 15.16 \cdot ft$ *Est. Average Post Length: 2 Post 3 Post*

Aluminum Tube Post Option (6061-T6 Alloy)

CheckCFI2PostTube = "OK"

AlTube2Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway2PostTube = "NG, posts too strong"

CheckCFI3PostTube = "OK"

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway3PostTube = "NG, posts too strong"

$L_{post.avg} = 11.82 \cdot ft$ *Estimated Average Post Length*

Multi- Column Ground Sign Post Design

SUBJECT SR-62WB Sign 3 STA. 116+20
PROJECT # _____
DESIGNED BY SM DATE 06/11/21
CHECKED BY MO DATE 06/11/21

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Design Standards for Construction and Maintenance on the State Highway System, Index 11200.

Reference:c:\pwworking\east01\d1157999\LRFD Equation Module.xmcd(R)

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 8.5 \cdot ft$ $D_{panel} := 5.5 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 0 \cdot ft$ $D_{top.panel} := 0 \cdot ft$

TopJustification :=
Left
Center
Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification :=
Left
Center
Right

Ground Slope and Sign Height

$Run_{Rise} := 6.1 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 7.67 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

Roadside Design Guide 4.3.2:

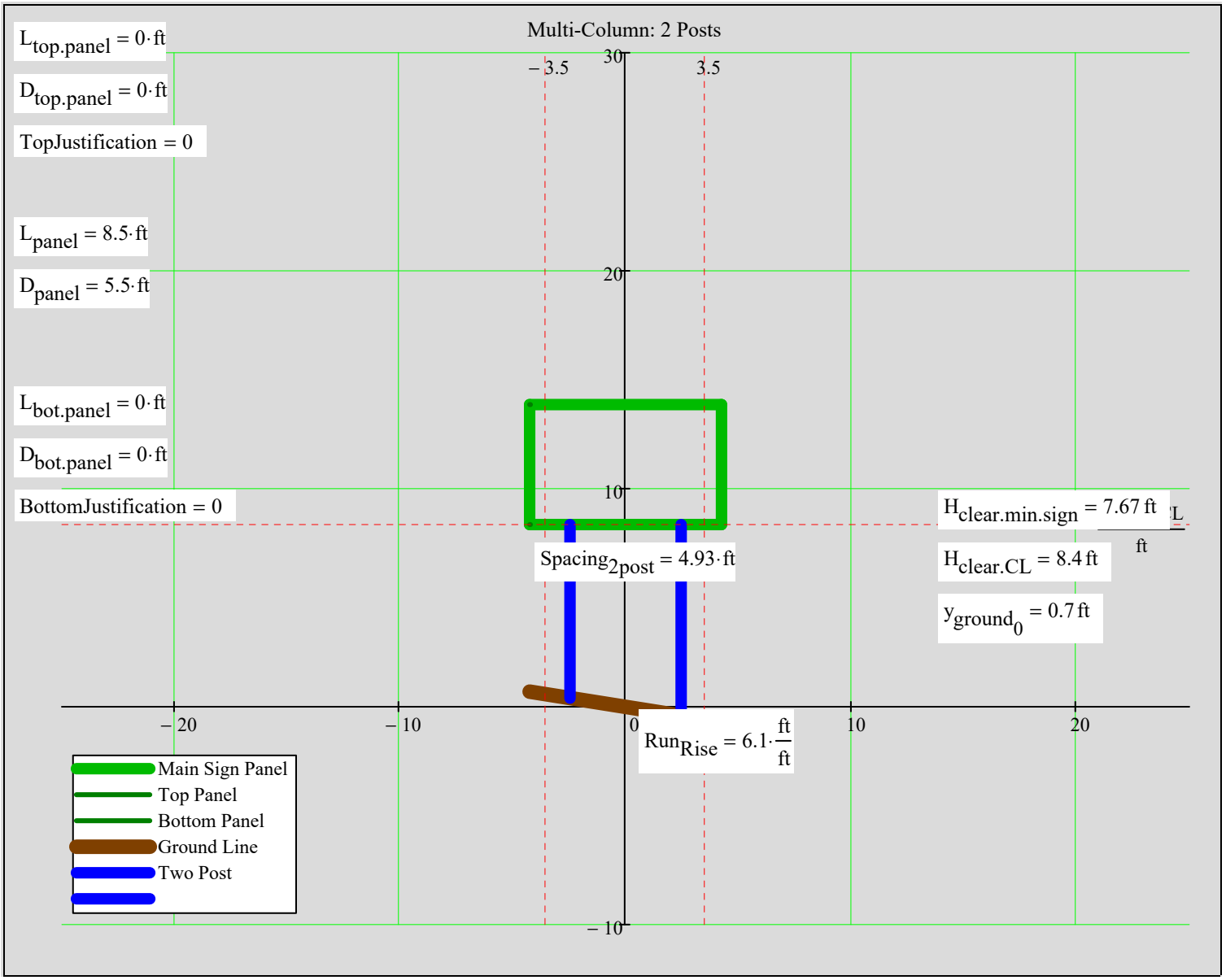
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

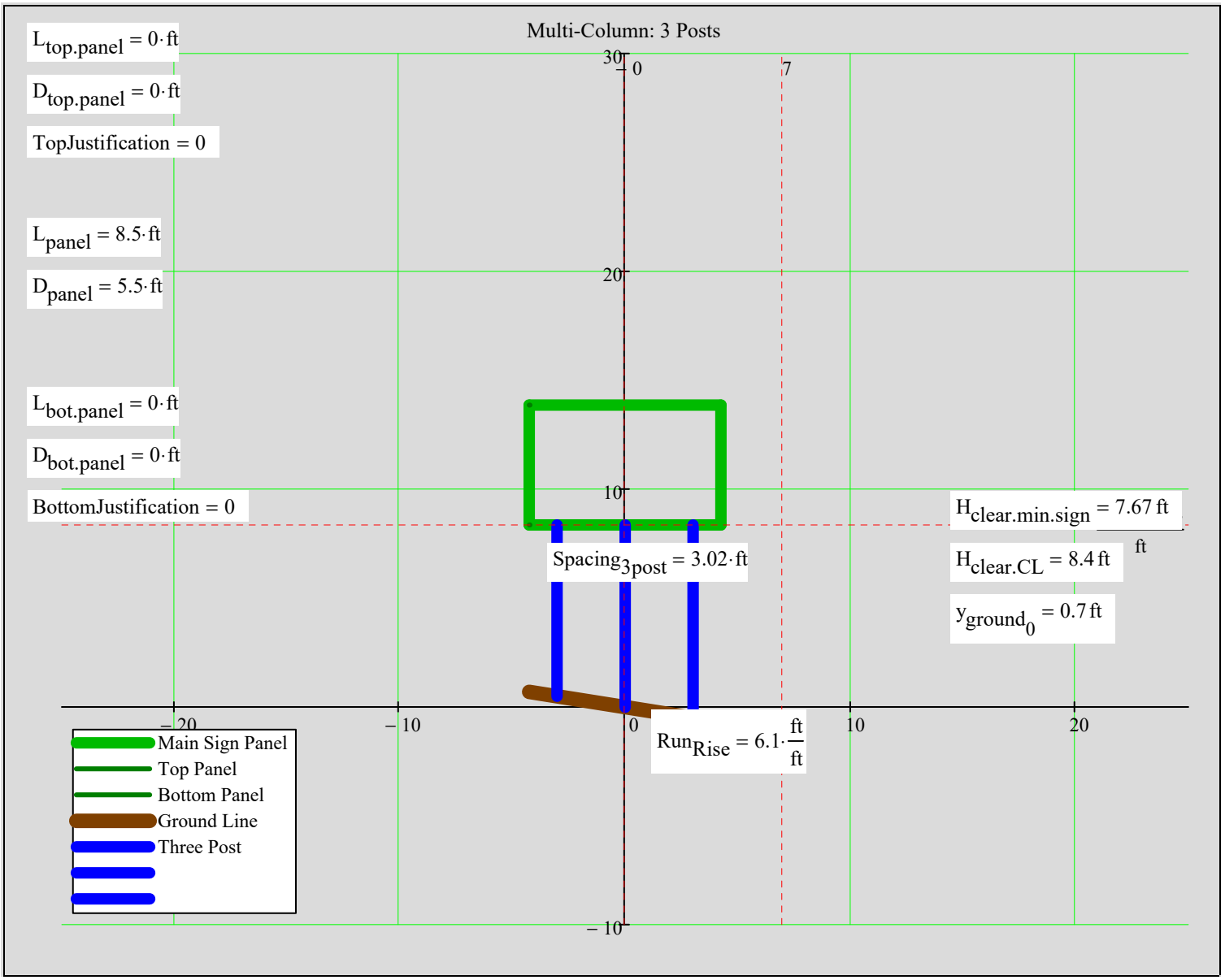
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry


Multi-Column: 2 Posts
$L_{top.panel} = 0 \cdot ft$
$D_{top.panel} = 0 \cdot ft$
TopJustification = 0
$L_{panel} = 8.5 \cdot ft$
$D_{panel} = 5.5 \cdot ft$
$L_{bot.panel} = 0 \cdot ft$
$D_{bot.panel} = 0 \cdot ft$
BottomJustification = 0
$H_{clear.min.sign} = 7.67\,ft$
$H_{clear.CL} = 8.4\,ft$
$y_{ground_0} = 0.7\,ft$
$Spacing_{2post} = 4.93 \cdot ft$
$Run_{Rise} = 6.1 \cdot \frac{ft}{ft}$
Main Sign Panel
Top Panel
Bottom Panel
Ground Line
Two Post
30
20
10
−10
−3.5
3.5
−20
−10
0
10
20



CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

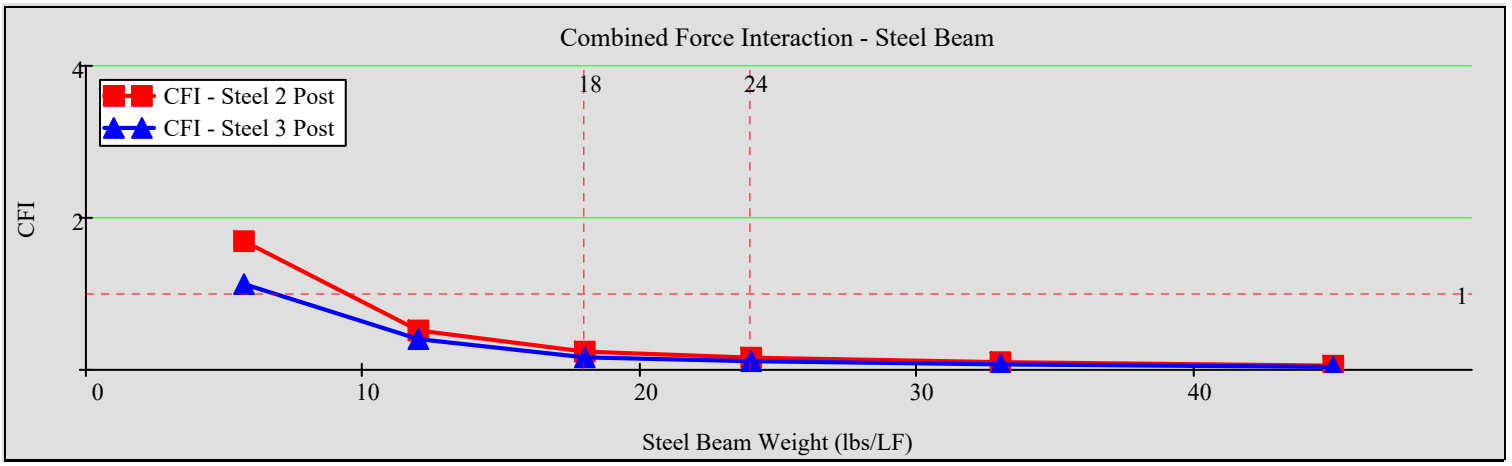
Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 1.70 \\ 0.52 \\ 0.25 \\ 0.16 \\ 0.11 \\ 0.06 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 6 x 12"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 1.13 \\ 0.41 \\ 0.17 \\ 0.12 \\ 0.07 \\ 0.04 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 6 x 12"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

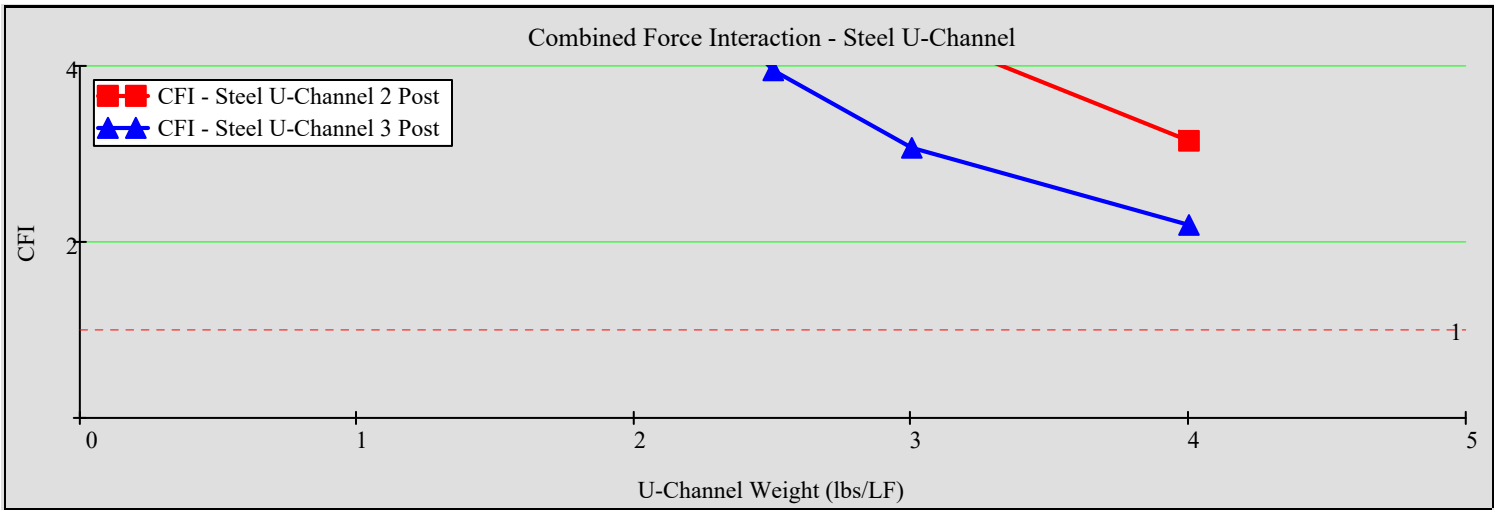
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \quad \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 8.06 \\ 5.69 \\ 4.41 \\ 3.15 \end{pmatrix}$$

Smallest 2 Post U-Channel that Satisfies Strength Requirements

SteelUChannel2Post = "N/A"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 5.6 \\ 3.95 \\ 3.07 \\ 2.19 \end{pmatrix}$$

Smallest 3 Post U-Channel that Satisfies Strength Requirements

SteelUChannel3Post = "N/A"

CheckCFI3PostUchan = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft path"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

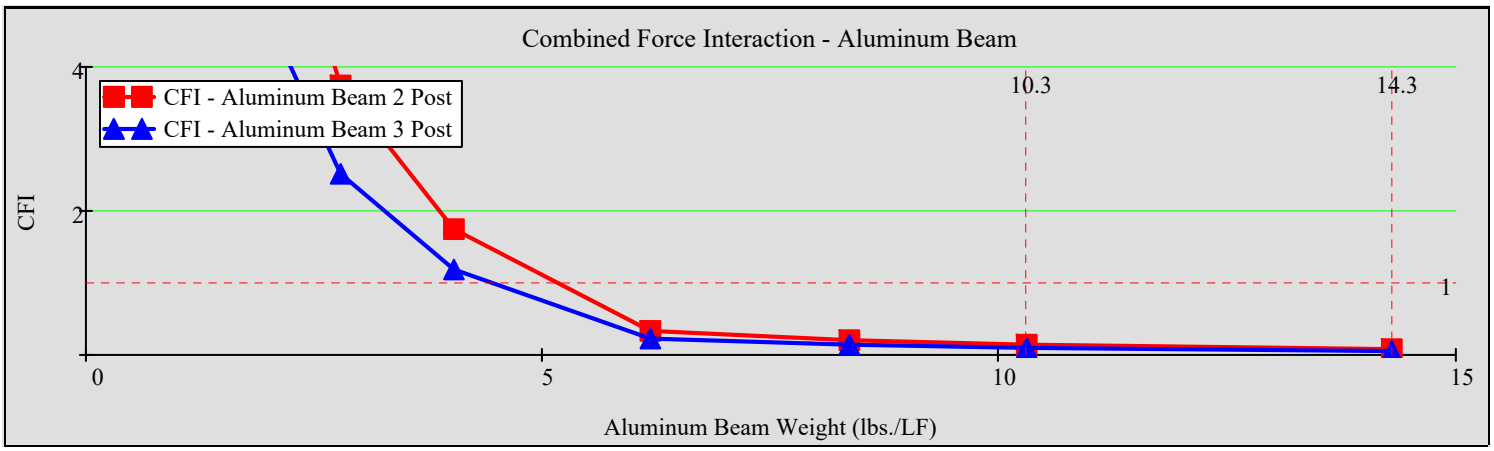
$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10000 \cdot ksi$

Aluminum I-Beam Designations *3x2.03* *4x2.79* *6x4.03* *8x6.18* *9x8.36* *10x10.3* *12x14.3*

$$Prop_{albeam} := \begin{pmatrix} 2.03 & 2.79 & 4.03 & 6.18 & 8.36 & 10.3 & 14.3 \\ 2.5 & 3 & 4 & 5 & 5.5 & 6 & 7 \\ 0.26 & 0.29 & 0.29 & 0.35 & 0.44 & 0.5 & 0.62 \\ 3 & 4 & 6 & 8 & 9 & 10 & 12 \\ 0.15 & 0.17 & 0.19 & 0.23 & 0.27 & 0.29 & 0.31 \\ 1.73 & 2.38 & 3.43 & 5.26 & 7.11 & 8.75 & 12.1 \\ 1.81 & 3.36 & 7.33 & 14.9 & 22.7 & 31.2 & 52.9 \\ 1.25 & 1.68 & 2.53 & 3.37 & 3.79 & 4.22 & 5.11 \\ 2.71 & 6.71 & 22.0 & 59.7 & 102 & 156 & 317 \\ 0.679 & 1.31 & 3.10 & 7.30 & 12.2 & 18.0 & 35.5 \\ 0.0374 & 0.0608 & 0.0888 & 0.188 & 0.386 & 0.620 & 1.26 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{d (in)} \\ \text{Web Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{r (in)} \\ \text{I (in4)} \\ \text{Iy (in4)} \\ \text{J (in4)} \end{pmatrix}$$

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{2Post.albeam} = \begin{pmatrix} 6.85 \\ 3.75 \\ 1.75 \\ 0.34 \\ 0.21 \\ 0.15 \\ 0.08 \end{pmatrix}$$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 8 x 6.18"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{3Post.albeam} = \begin{pmatrix} 4.59 \\ 2.52 \\ 1.19 \\ 0.23 \\ 0.15 \\ 0.10 \\ 0.06 \end{pmatrix}$$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 8 x 6.18"

CheckCFI3PostAlBeam = "OK"

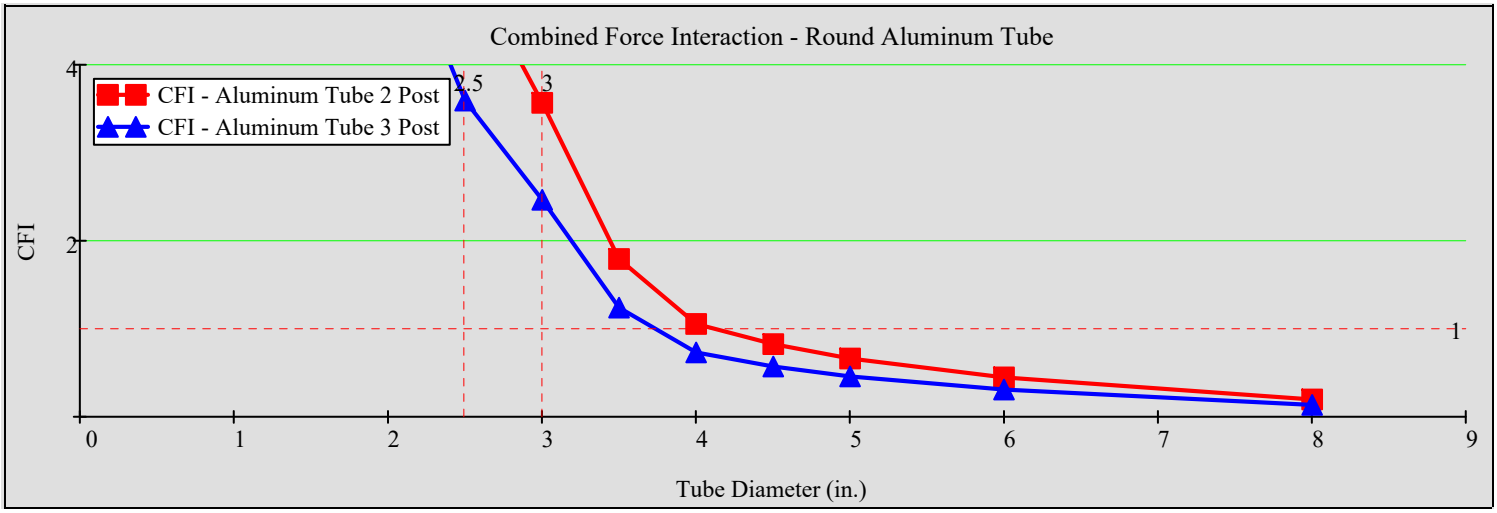
CheckBreakaway3PostAlBeam = "NG"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

$$AlTube := \begin{pmatrix} 2 & 2.5 & 3 & 3.5 & 4 & 4.5 & 5 & 6 & 8 \\ 0.125 & 0.125 & 0.125 & 0.188 & 0.25 & 0.25 & 0.25 & 0.25 & 0.313 \end{pmatrix} \begin{pmatrix} \text{Outside Diameter (in)} \\ \text{Wall Thickness (in)} \end{pmatrix}$$

The order of Aluminum Round Tubes needs to be in ascending order of the Section Strength

Aluminum Round Tube Post Design



$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{2Post.tube} = \begin{pmatrix} 8.33 \\ 5.21 \\ 3.57 \\ 1.8 \\ 1.06 \\ 0.83 \\ 0.67 \\ 0.45 \\ 0.2 \end{pmatrix}$$

Smallest 2 Post Aluminum Tube that Satisfies Strength Requirements

AlTube2Post = "OD = 4.5 in, t = 1/4 in"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostTube = "OK"

CheckBreakaway2PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{3Post.tube} = \begin{pmatrix} 5.74 \\ 3.6 \\ 2.47 \\ 1.24 \\ 0.73 \\ 0.57 \\ 0.46 \\ 0.31 \\ 0.14 \end{pmatrix}$$

Smallest 3 Post Aluminum Tube that Satisfies Strength Requirements

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckCFI3PostTube = "OK"

CheckBreakaway3PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 105 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

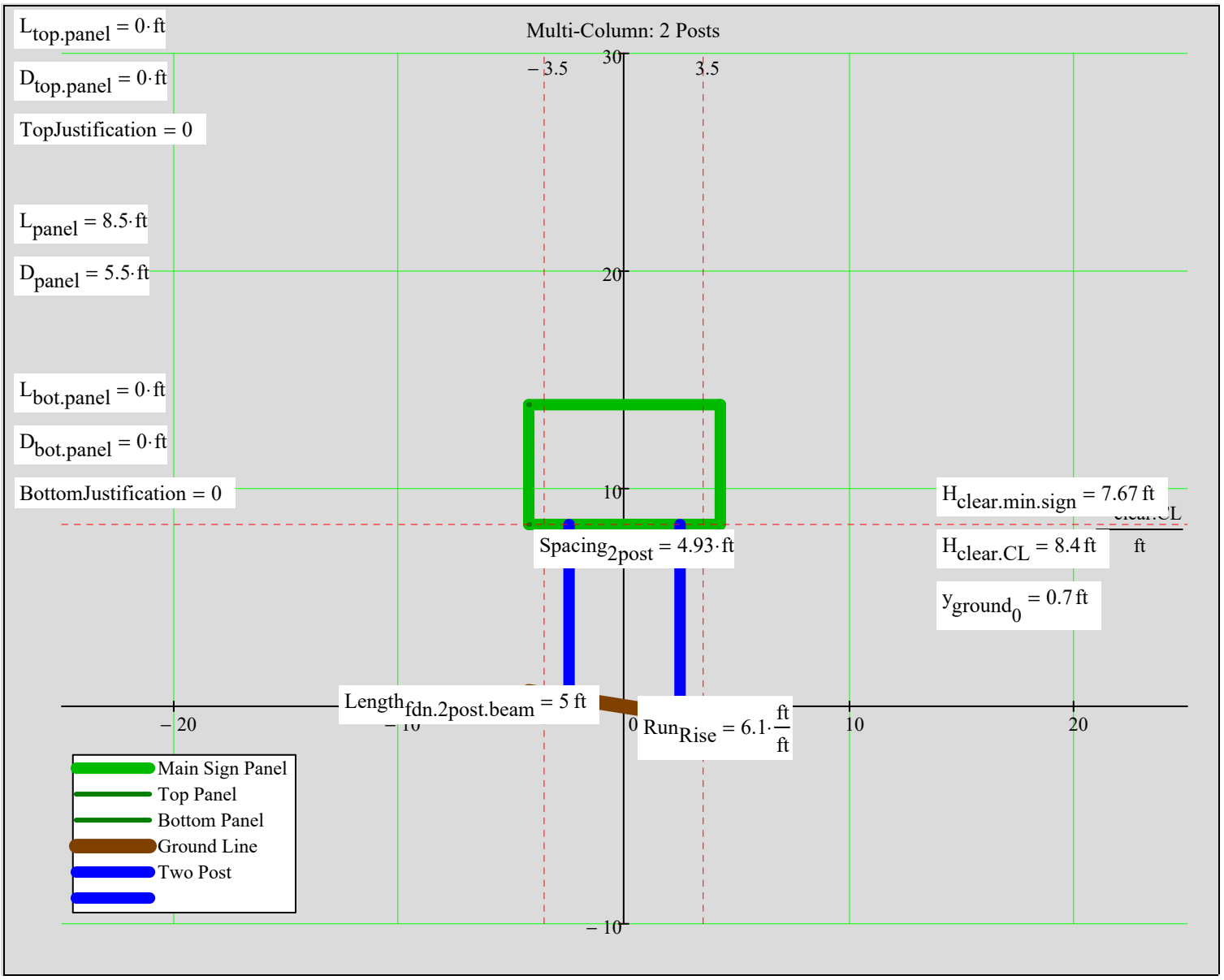
$Dia_{fdn} := 2.0 \cdot ft$

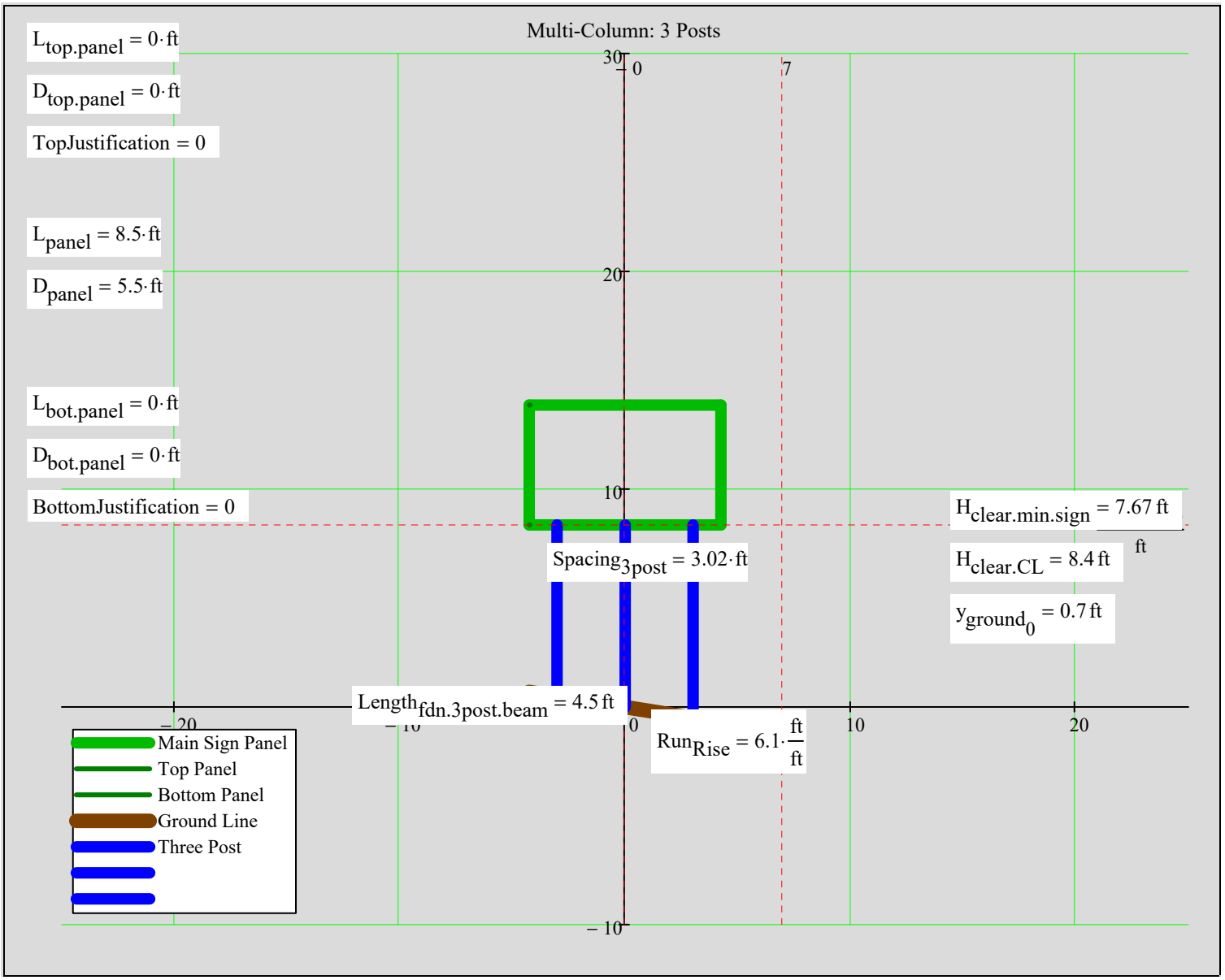
$Offset := 0.5 \cdot ft$

$\phi_{ot} := 0.6$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel and Aluminum Tubes

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 2 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 6 x 12"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 6 x 12"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

$L_{post.avg} = 13.21 \cdot ft$ *Estimated Average Post Length: 2 Post 3 Post*

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 8 x 6.18"

AlBeam2Post = "I 8 x 6.18"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 8 x 6.18"

CheckBreakaway3PostAlBeam = "NG"

$L_{post.avg} = 13.212 \cdot ft$ *Estimated Average Post Length*

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 105 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2 \cdot ft$ Offset = 0.5·ft

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 5 \cdot ft$ *Shaft Length for Three Post Configuration* $Length_{fdn.3post.beam} = 4.5 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "N/A"

CheckBreakaway2PostUchan = "OK"

CheckCFI3PostUchan = "N/A"

SteelUChannel3Post = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft"

$L_{uchannel.avg} = 16.87 \cdot ft$ *Est. Average Post Length: 2 Post 3 Post*

Aluminum Tube Post Option (6061-T6 Alloy)

CheckCFI2PostTube = "OK"

AlTube2Post = "OD = 4.5 in, t = 1/4 in"

CheckBreakaway2PostTube = "NG, posts too strong"

CheckCFI3PostTube = "OK"

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway3PostTube = "NG, posts too strong"

$L_{post.avg} = 13.21 \cdot ft$ *Estimated Average Post Length*

Multi- Column Ground Sign Post Design

SUBJECT US-301NB Sign 4 STA. 291+33
PROJECT # _____
DESIGNED BY SM DATE 06/11/21
CHECKED BY MO DATE 06/11/21

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Design Standards for Construction and Maintenance on the State Highway System, Index 11200.

Reference:c:\pwworking\east01\d1157999\LRFD Equation Module.xmcd(R)

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 9 \cdot ft$ $D_{panel} := 6.5 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 0 \cdot ft$ $D_{top.panel} := 0 \cdot ft$

TopJustification :=
Left
Center
Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification :=
Left
Center
Right

Ground Slope and Sign Height

$Run_{Rise} := 40 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 7.02 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

Roadside Design Guide 4.3.2:

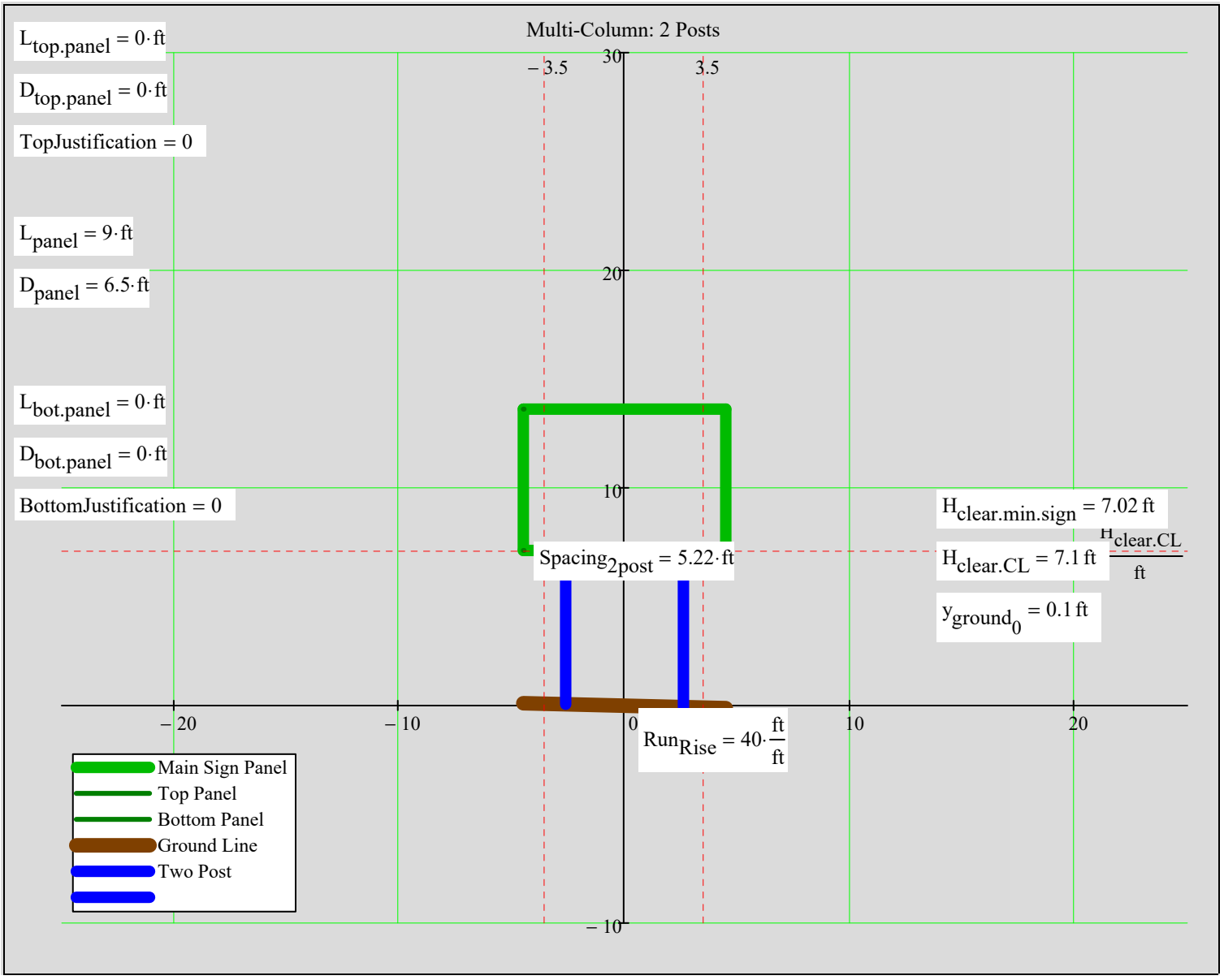
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

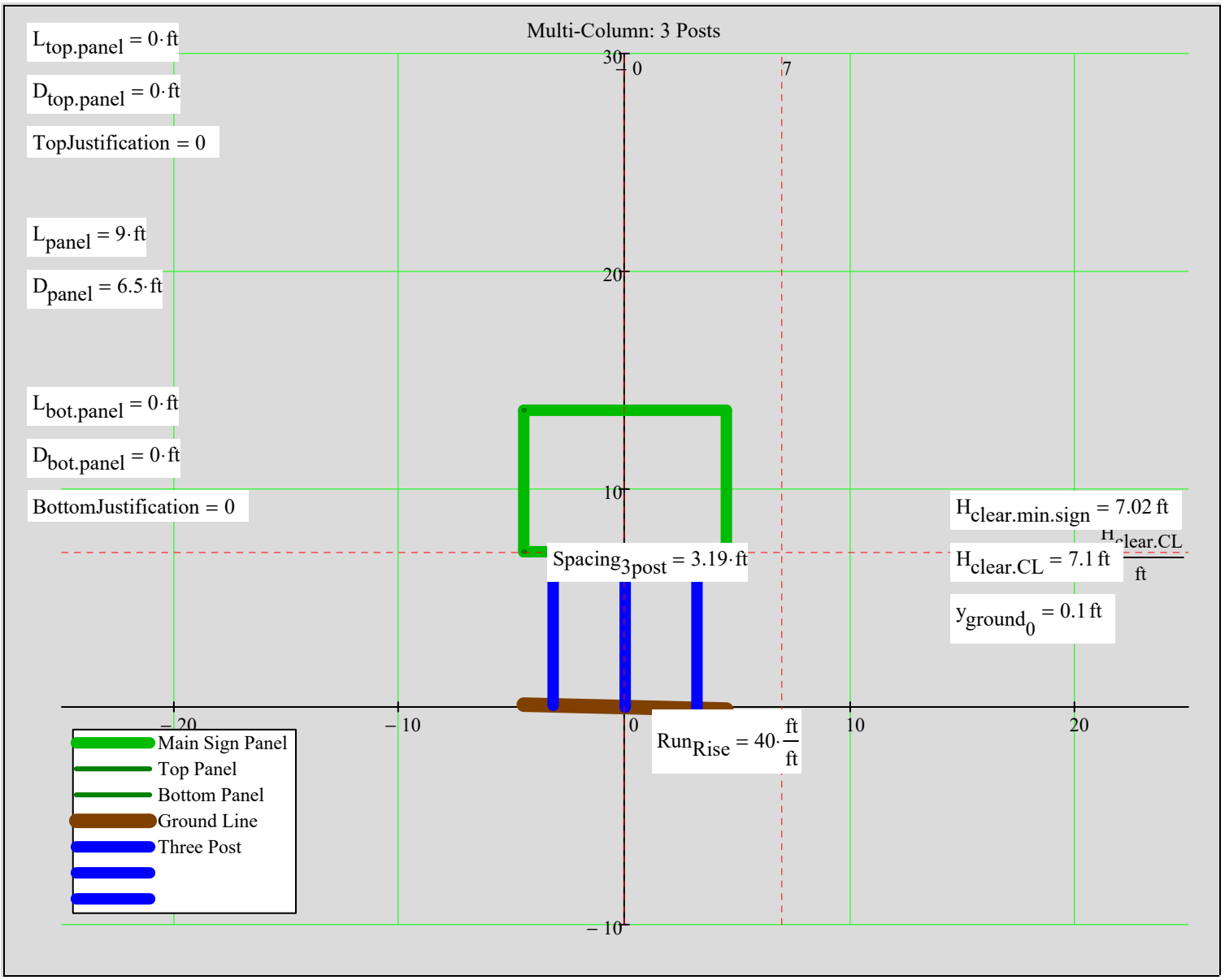
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry


Multi-Column: 2 Posts
$L_{top.panel} = 0 \cdot ft$
$D_{top.panel} = 0 \cdot ft$
TopJustification = 0
$L_{panel} = 9 \cdot ft$
$D_{panel} = 6.5 \cdot ft$
$L_{bot.panel} = 0 \cdot ft$
$D_{bot.panel} = 0 \cdot ft$
BottomJustification = 0
$H_{clear.min.sign} = 7.02\ ft$
$H_{clear.CL} = 7.1\ ft$
$\frac{H_{clear.CL}}{ft}$
$y_{ground_0} = 0.1\ ft$
$Spacing_{2post} = 5.22 \cdot ft$
$Run_{Rise} = 40 \cdot \frac{ft}{ft}$
Main Sign Panel
Top Panel
Bottom Panel
Ground Line
Two Post
30
20
10
0
– 10
– 3.5
3.5
– 20
– 10
10
20



CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

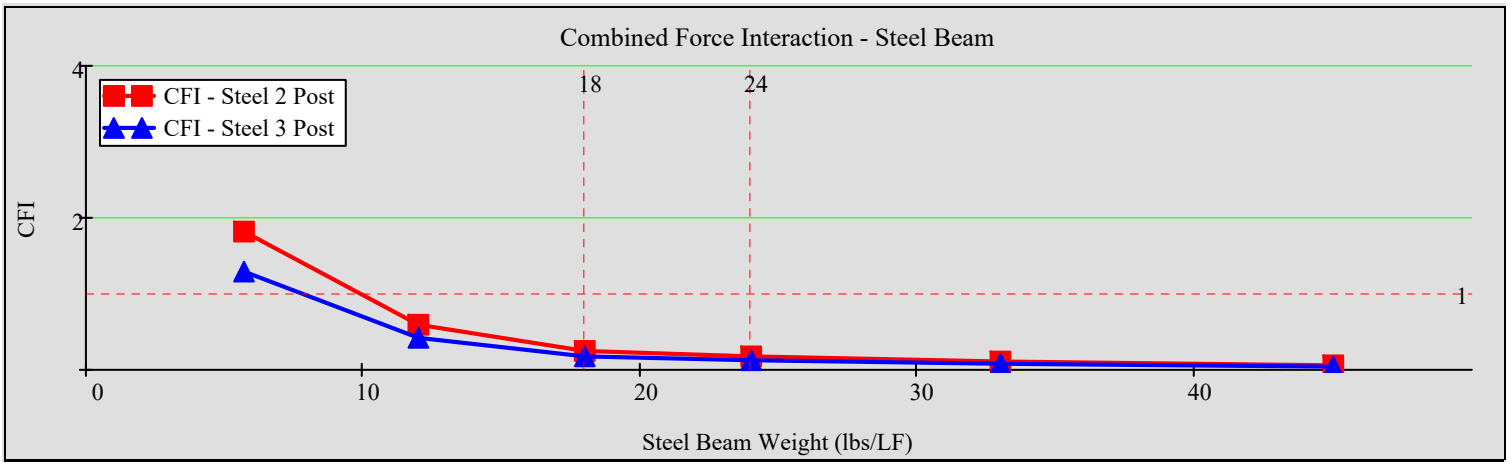
Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 1.82 \\ 0.60 \\ 0.25 \\ 0.18 \\ 0.11 \\ 0.06 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 6 x 12"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 1.30 \\ 0.43 \\ 0.18 \\ 0.13 \\ 0.08 \\ 0.05 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 6 x 12"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

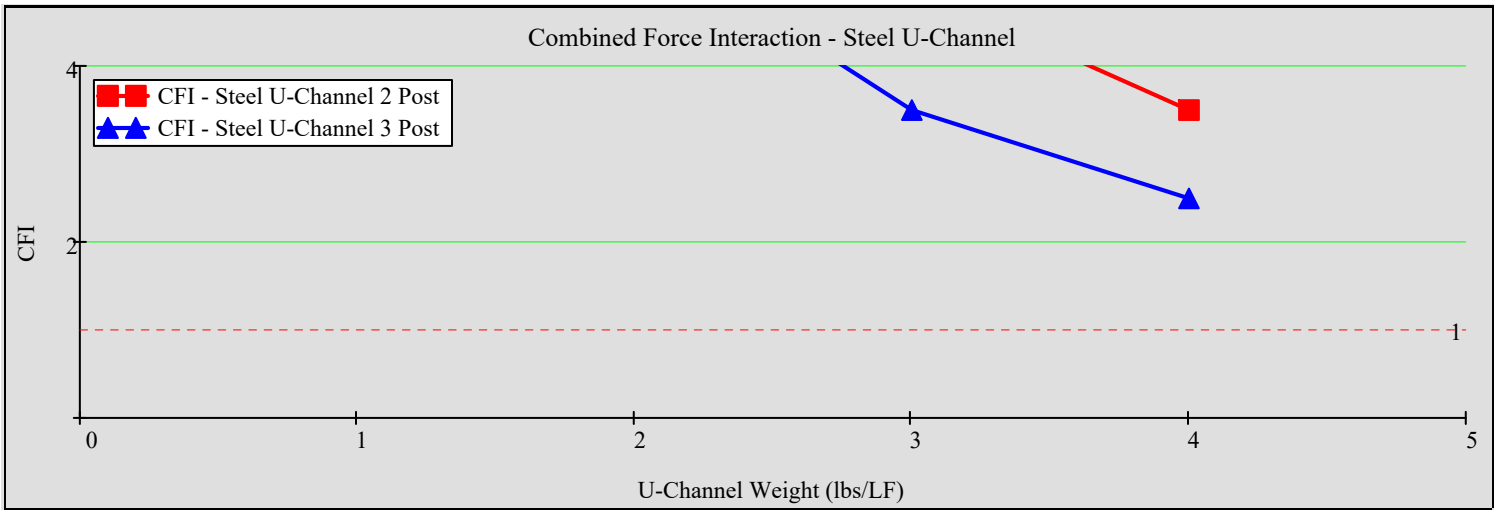
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 8.98 \\ 6.33 \\ 4.90 \\ 3.50 \end{pmatrix}$$

Smallest 2 Post U-Channel that Satisfies Strength Requirements

SteelUChannel2Post = "N/A"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 6.4 \\ 4.52 \\ 3.5 \\ 2.5 \end{pmatrix}$$

Smallest 3 Post U-Channel that Satisfies Strength Requirements

SteelUChannel3Post = "N/A"

CheckCFI3PostUchan = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft path"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

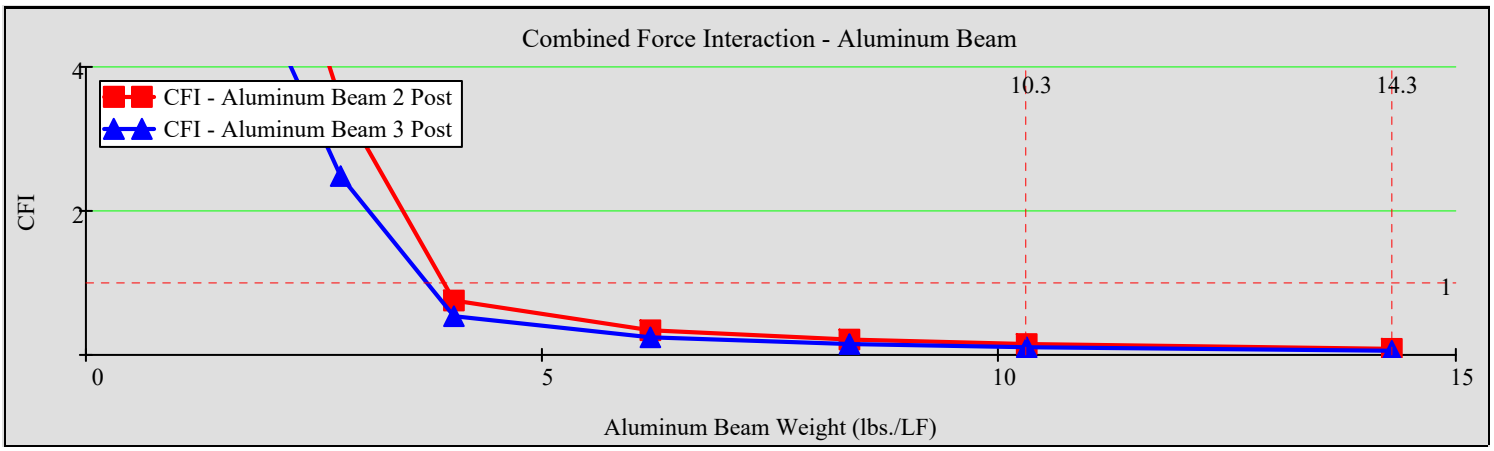
$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10000 \cdot ksi$

Aluminum I-Beam Designations *3x2.03* *4x2.79* *6x4.03* *8x6.18* *9x8.36* *10x10.3* *12x14.3*

$$Prop_{albeam} := \begin{pmatrix} 2.03 & 2.79 & 4.03 & 6.18 & 8.36 & 10.3 & 14.3 \\ 2.5 & 3 & 4 & 5 & 5.5 & 6 & 7 \\ 0.26 & 0.29 & 0.29 & 0.35 & 0.44 & 0.5 & 0.62 \\ 3 & 4 & 6 & 8 & 9 & 10 & 12 \\ 0.15 & 0.17 & 0.19 & 0.23 & 0.27 & 0.29 & 0.31 \\ 1.73 & 2.38 & 3.43 & 5.26 & 7.11 & 8.75 & 12.1 \\ 1.81 & 3.36 & 7.33 & 14.9 & 22.7 & 31.2 & 52.9 \\ 1.25 & 1.68 & 2.53 & 3.37 & 3.79 & 4.22 & 5.11 \\ 2.71 & 6.71 & 22.0 & 59.7 & 102 & 156 & 317 \\ 0.679 & 1.31 & 3.10 & 7.30 & 12.2 & 18.0 & 35.5 \\ 0.0374 & 0.0608 & 0.0888 & 0.188 & 0.386 & 0.620 & 1.26 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{d (in)} \\ \text{Web Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{r (in)} \\ \text{I (in4)} \\ \text{Iy (in4)} \\ \text{J (in4)} \end{pmatrix}$$

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{2Post.albeam} = \begin{pmatrix} 6.53 \\ 3.53 \\ 0.76 \\ 0.35 \\ 0.22 \\ 0.15 \\ 0.09 \end{pmatrix}$$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 6 x 4.03"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{3Post.albeam} = \begin{pmatrix} 4.61 \\ 2.49 \\ 0.54 \\ 0.25 \\ 0.16 \\ 0.11 \\ 0.06 \end{pmatrix}$$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 6 x 4.03"

CheckCFI3PostAlBeam = "OK"

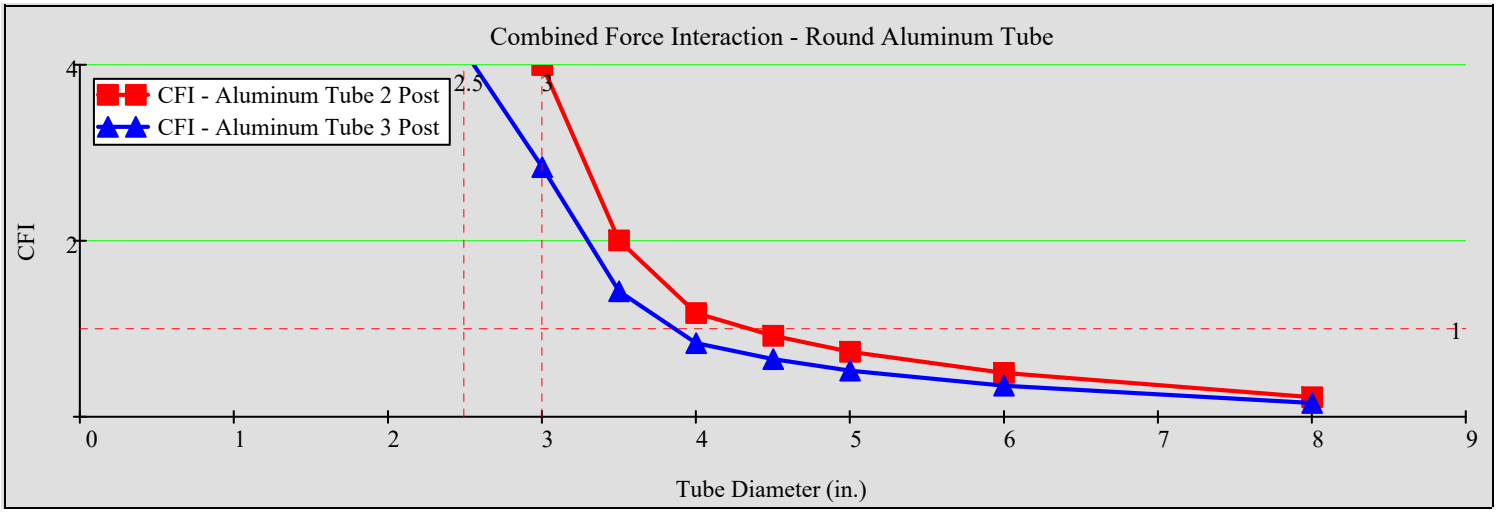
CheckBreakaway3PostAlBeam = "NG"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

$$AlTube := \begin{pmatrix} 2 & 2.5 & 3 & 3.5 & 4 & 4.5 & 5 & 6 & 8 \\ 0.125 & 0.125 & 0.125 & 0.188 & 0.25 & 0.25 & 0.25 & 0.25 & 0.313 \end{pmatrix} \begin{pmatrix} \text{Outside Diameter (in)} \\ \text{Wall Thickness (in)} \end{pmatrix}$$

The order of Aluminum Round Tubes needs to be in ascending order of the Section Strength

Aluminum Round Tube Post Design



$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{2Post.tube} = \begin{pmatrix} 9.37 \\ 5.85 \\ 4 \\ 2.01 \\ 1.18 \\ 0.92 \\ 0.74 \\ 0.5 \\ 0.22 \end{pmatrix}$$

Smallest 2 Post Aluminum Tube that Satisfies Strength Requirements

AlTube2Post = "OD = 4.5 in, t = 1/4 in"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostTube = "OK"

CheckBreakaway2PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{3Post.tube} = \begin{pmatrix} 6.64 \\ 4.15 \\ 2.84 \\ 1.43 \\ 0.84 \\ 0.66 \\ 0.53 \\ 0.36 \\ 0.16 \end{pmatrix}$$

Smallest 3 Post Aluminum Tube that Satisfies Strength Requirements

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckCFI3PostTube = "OK"

CheckBreakaway3PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 105 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

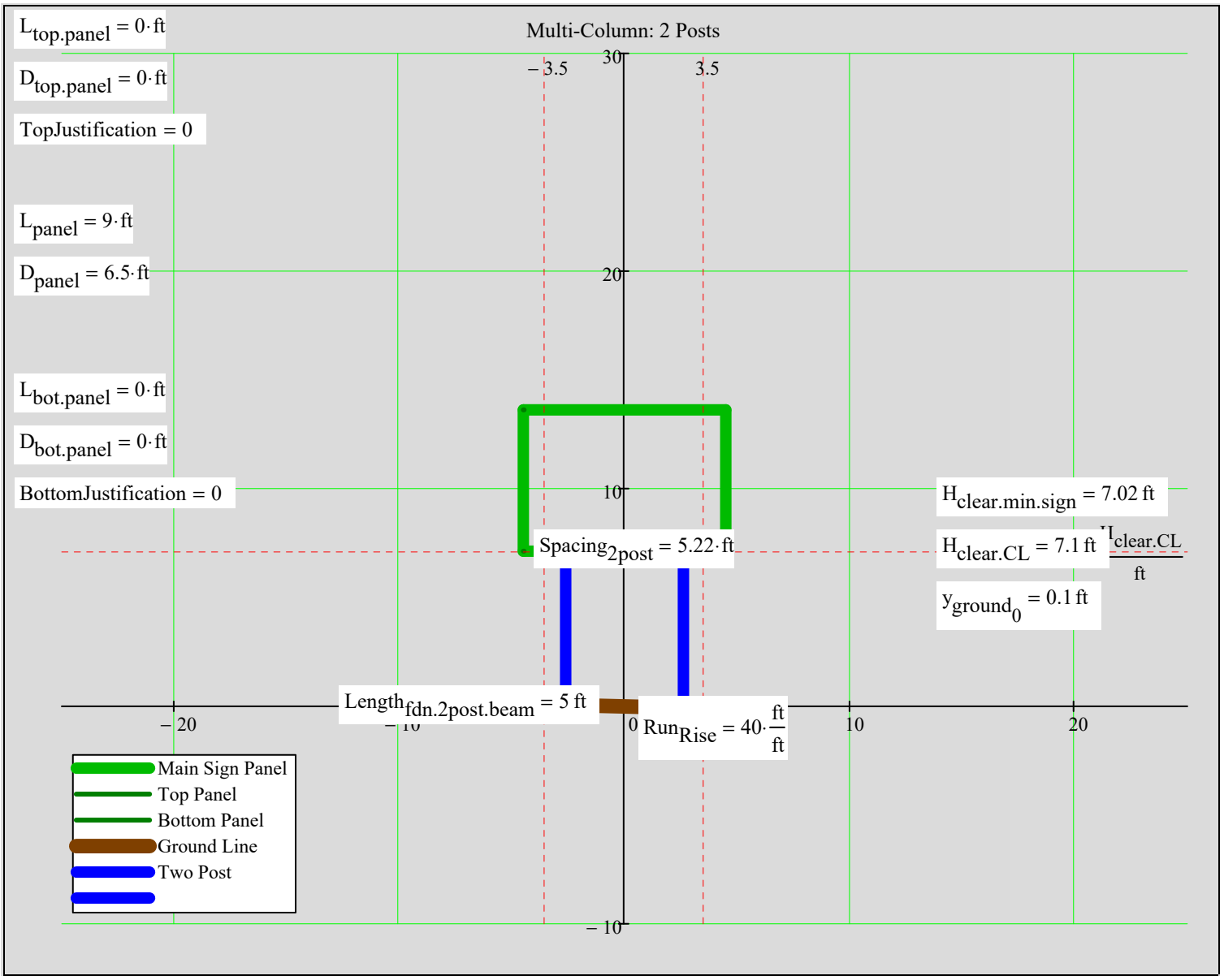
$Dia_{fdn} := 2.0 \cdot ft$

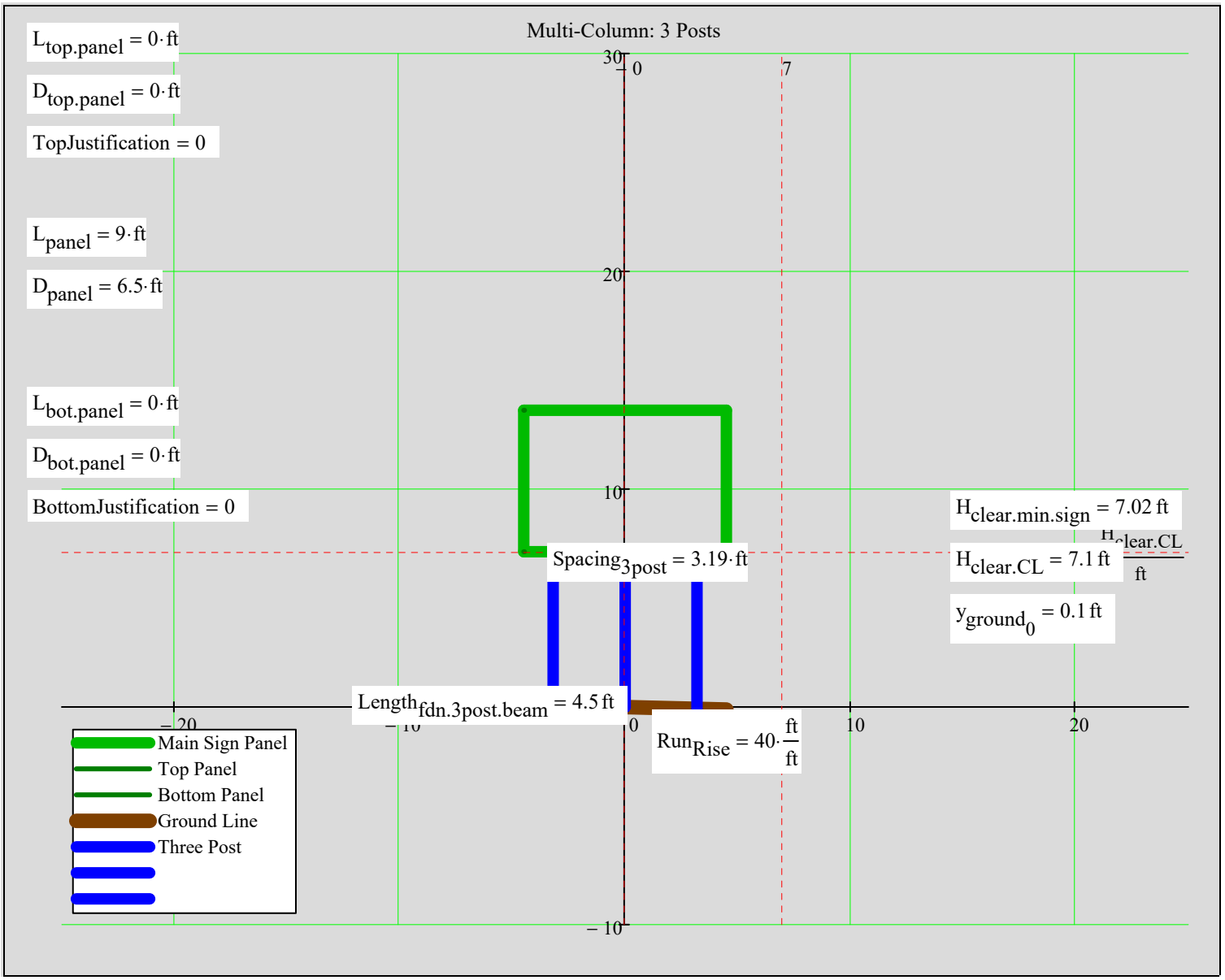
$Offset := 0.5 \cdot ft$

$\phi_{ot} := 0.6$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel and Aluminum Tubes

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 2 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 6 x 12"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 6 x 12"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

$L_{post.avg} = 12.77 \cdot ft$ *Estimated Average Post Length:*
2 Post
3 Post

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 6 x 4.03"

AlBeam2Post = "I 6 x 4.03"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 6 x 4.03"

CheckBreakaway3PostAlBeam = "NG"

$L_{post.avg} = 12.767 \cdot ft$ *Estimated Average Post Length*

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 105 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2 \cdot ft$ Offset = 0.5·ft

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 5 \cdot ft$ *Shaft Length for Three Post Configuration* $Length_{fdn.3post.beam} = 4.5 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "N/A"

CheckBreakaway2PostUchan = "OK"

CheckCFI3PostUchan = "N/A"

SteelUChannel3Post = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft"

$L_{uchannel.avg} = 16.63 \cdot ft$ *Est. Average Post Length:*
2 Post
3 Post

Aluminum Tube Post Option (6061-T6 Alloy)

CheckCFI2PostTube = "OK"

AlTube2Post = "OD = 4.5 in, t = 1/4 in"

CheckBreakaway2PostTube = "NG, posts too strong"

CheckCFI3PostTube = "OK"

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway3PostTube = "NG, posts too strong"

$L_{post.avg} = 12.77 \cdot ft$ *Estimated Average Post Length*

Multi- Column Ground Sign Post Design

SUBJECT US-301SB Sign 5 STA. 325+30
PROJECT # _____
DESIGNED BY SM DATE 06/11/21
CHECKED BY MO DATE 06/11/21

GENERAL INFORMATION:

References:

1. AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition. [LRFD LTS-1]
2. FDOT Structures Manual Volume 3
3.FDOT Design Standards for Construction and Maintenance on the State Highway System, Index 11200.

Reference:c:\pwworking\east01\d1157999\LRFD Equation Module.xmcd(R)

DESIGN REQUIREMENTS:

Main Panel Dimensions

$L_{panel} := 9 \cdot ft$ $D_{panel} := 6.5 \cdot ft$

Top Panel Dimensions and Location

$L_{top.panel} := 0 \cdot ft$ $D_{top.panel} := 0 \cdot ft$

TopJustification :=
Left
Center
Right

Bottom Panel Dimensions and Location

$L_{bot.panel} := 0 \cdot ft$ $D_{bot.panel} := 0 \cdot ft$

BottomJustification :=
Left
Center
Right

Ground Slope and Sign Height

$Run_{Rise} := 40 \cdot \frac{ft}{ft}$ *ground slope*

$H_{clear.min.sign} := 8.03 \cdot ft$ *Clearance from the ground to the bottom of the sign*

LRFD Extreme Event I Wind Speed

$V_{wind} := 110 \cdot mph$ *FDOT Structures Manual, Vol. 3 For Ground Signs, Use 110 mph for the entire state*

Roadside Design Guide 4.3.2:

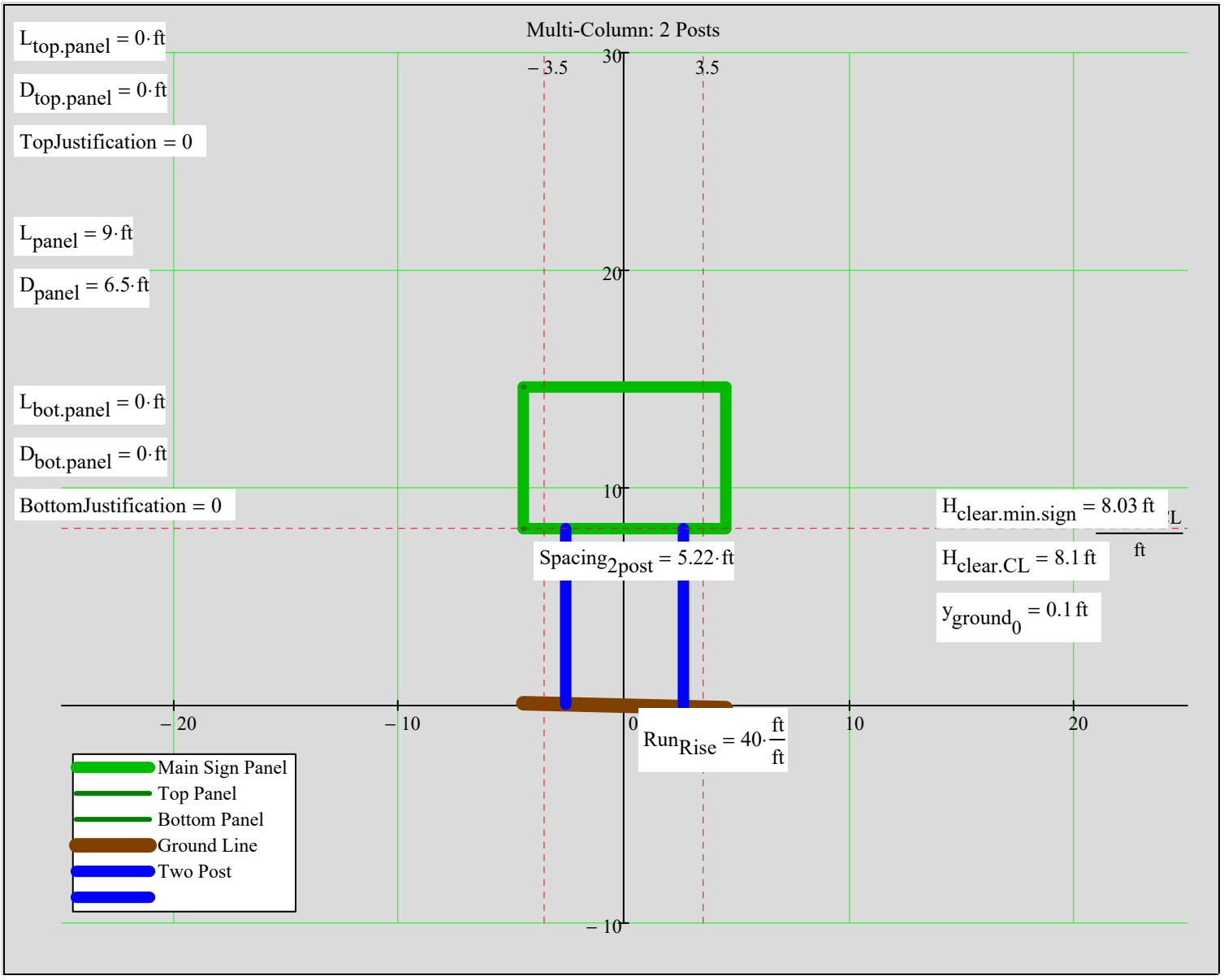
- *The hinge should be at least 7 ft, above the ground so that no portion of the sign or upper section of the support is likely to penetrate the windshield of an impacting vehicle.*
- *No supplementary signs should be attached below the hinges if such placement is likely to interfere with the breakaway action of the support post or if the supplemental sign is likely to strike the windshield of an impacting vehicle.*

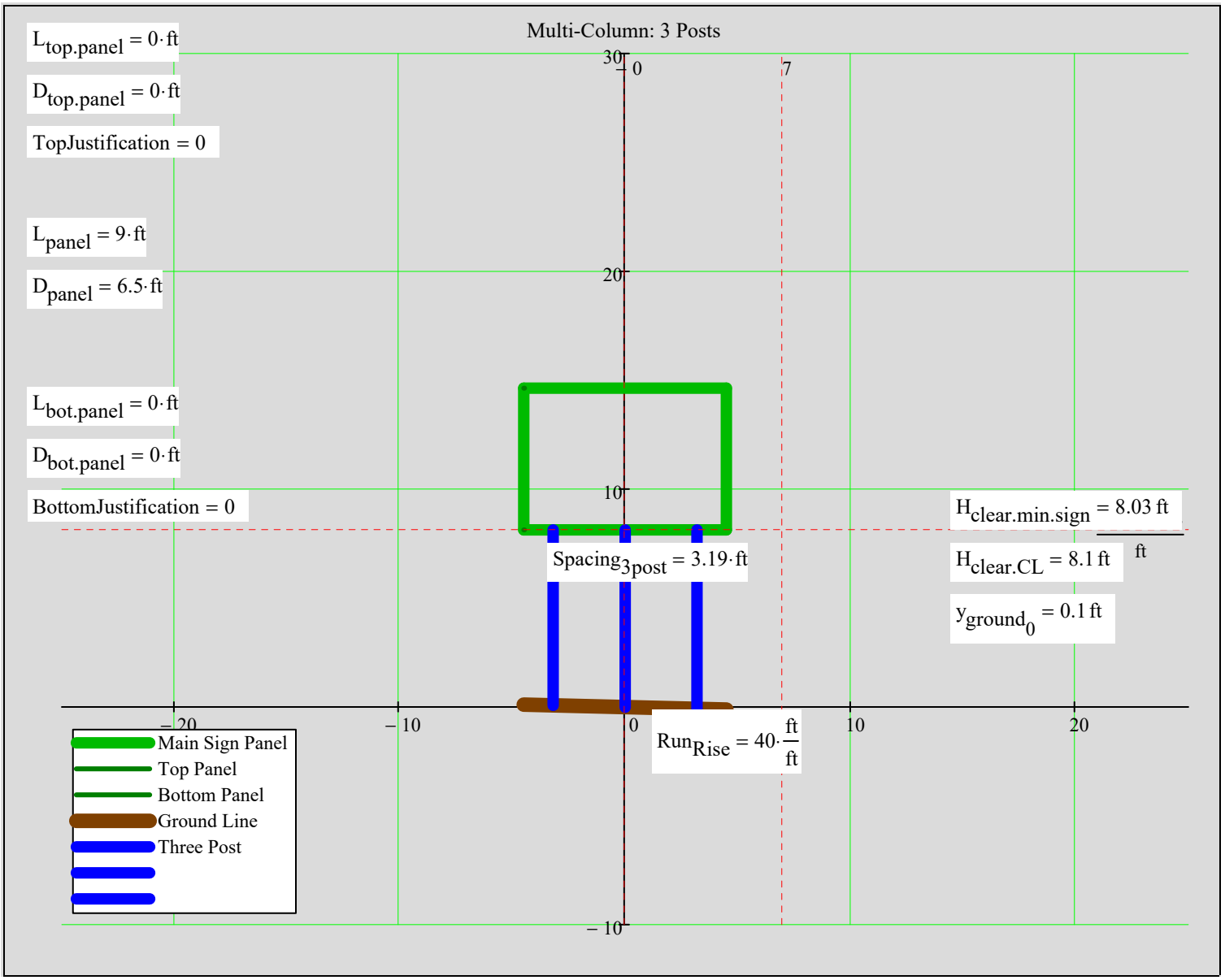
MUTCD 2A.18:

- *Directional signs on freeways and expressways shall be installed with a minimum height of 7 feet,measured vertically from the bottom of the sign to the elevation of the near edge of the pavement.*
- *Where large signs having an area exceeding 50 square feet are installed on multiple breakaway posts, the clearance from the ground to the bottom of the sign shall be at least 7 feet.*

Post and Panel Geometry

Post and Panel Geometry


Multi-Column: 2 Posts
$L_{top.panel} = 0 \cdot ft$
$D_{top.panel} = 0 \cdot ft$
TopJustification = 0
$L_{panel} = 9 \cdot ft$
$D_{panel} = 6.5 \cdot ft$
$L_{bot.panel} = 0 \cdot ft$
$D_{bot.panel} = 0 \cdot ft$
BottomJustification = 0
$H_{clear.min.sign} = 8.03\ ft$
$H_{clear.CL} = 8.1\ ft$
$y_{ground_0} = 0.1\ ft$
$Spacing_{2post} = 5.22 \cdot ft$
$Run_{Rise} = 40 \cdot \frac{ft}{ft}$
Main Sign Panel
Top Panel
Bottom Panel
Ground Line
Two Post
30
20
10
0
−10
−20
−10
10
20
−3.5
3.5



CheckPanelDims = "OK"

CheckTopPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Post and Panel Loads

Post and Panel Loads

Post Design: Steel W-Beam

Post Material and Section Properties

$F_{y.stbeam} := 36 \cdot ksi$ $E_{steel} := 29000 \cdot ksi$

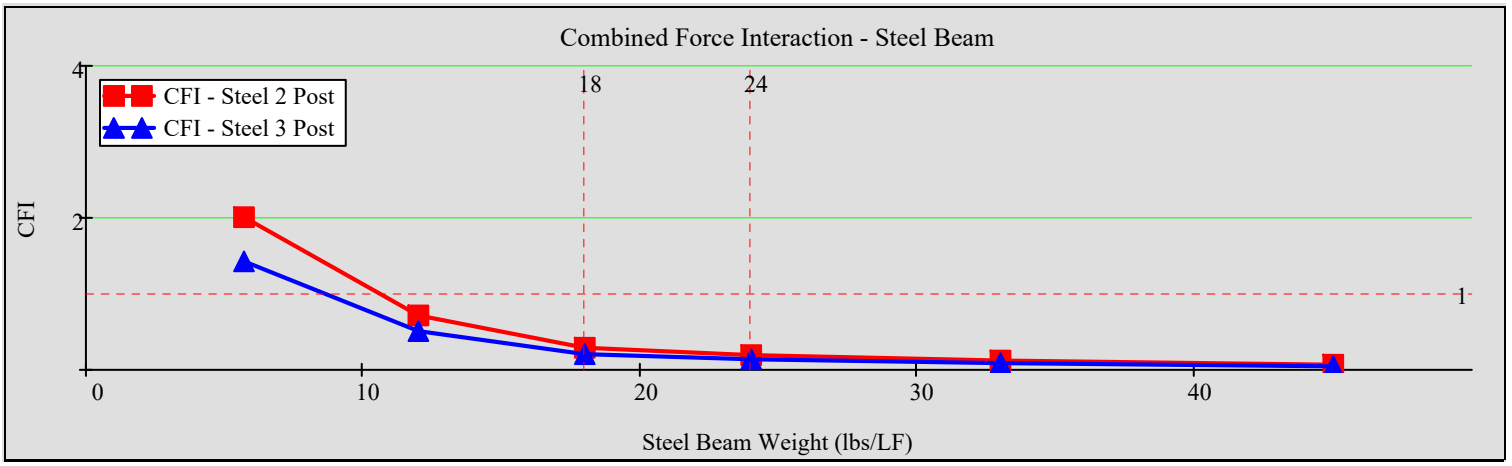
Steel I Beam Designations *S3x5.7* *W6x12* *W8x18* *W8x24* *W10x33* *W12x45*

$Prop_{stbeam} :=$

5.7	12.0	18.0	24.0	33.0	45.0	Wt per Length (lbf/ft)
2.33	4.0	5.25	6.5	7.96	8.0	Flange Width (in)
0.26	0.28	0.33	0.40	0.435	0.575	Flange Thickness (in)
3.0	6.03	8.14	7.93	9.73	12.1	d (in)
0.17	0.23	0.23	0.245	0.29	0.335	Web Thickness (in)
1.66	3.55	5.26	7.08	9.71	13.1	A (in3)
1.67	7.31	15.2	20.9	35.0	57.7	S (in3)
1.94	8.30	17.0	23.1	38.8	64.2	Z (in3)
2.5	22.1	61.9	82.7	171.0	348	I (in4)
0.447	2.99	7.97	18.3	36.6	50.0	Iy (in4)
0.0433	0.0903	0.172	0.346	0.583	1.26	J (in4)
0.838	24.7	122	259	791	1650	Cw(in6)

The order of Steel Beams need to be in ascending order of the Section Strength

Steel Beam Post Design



$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft}$ $CFI_{2Post.stbeam} = \begin{pmatrix} 2.01 \\ 0.72 \\ 0.29 \\ 0.20 \\ 0.13 \\ 0.07 \end{pmatrix}$

Smallest 2 Post Steel Beam that Satisfies Strength Requirements

SteelBeam2Post = "W 6 x 12"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostStBeam = "OK"

CheckBreakaway2PostStBeam = "OK"

$$WtPerFt_{stbeam} = \begin{pmatrix} 5.7 \\ 12 \\ 18 \\ 24 \\ 33 \\ 45 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.stbeam} = \begin{pmatrix} 1.43 \\ 0.51 \\ 0.21 \\ 0.14 \\ 0.09 \\ 0.05 \end{pmatrix}$$

Smallest 3 Post Steel Beam that Satisfies Strength Requirements

SteelBeam3Post = "W 6 x 12"

CheckCFI3PostStBeam = "OK"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

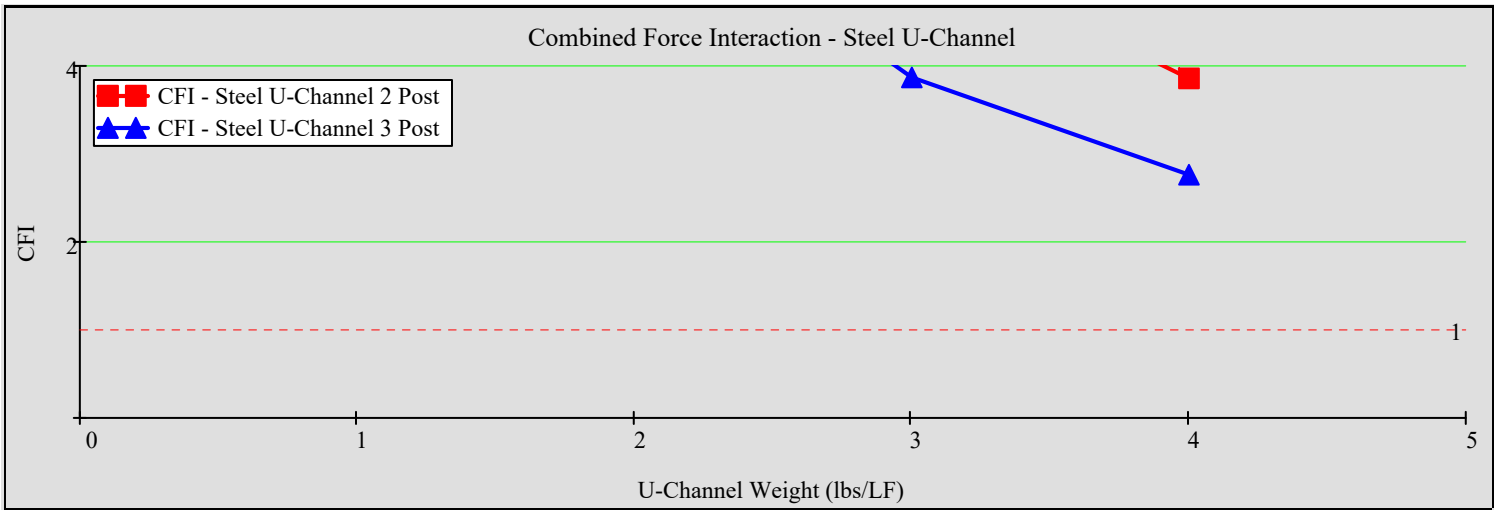
Post Design: Steel U-Channel

$F_{y.steel.uchan} := 60 \cdot ksi$

$$Prop_{uchan} := \begin{pmatrix} 2 & 2.5 & 3 & 4 \\ 3.125 & 3.125 & 3.5 & 3.5 \\ 1.25 & 1.25 & 1.625 & 1.671 \\ 0.11 & 0.13 & 0.14 & 0.19 \\ 0.59 & 0.74 & 0.92 & 1.24 \\ 0.23 & 0.31 & 0.43 & 0.56 \\ 0.26 & 0.35 & 0.48 & 0.62 \\ 0.18 & 0.24 & 0.40 & 0.50 \end{pmatrix} \quad \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Overall Width (in)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{Z (in3)} \\ \text{Iy (in4)} \end{pmatrix}$$

The order of Steel U-Channels need to be in ascending order of the Section Strength

Steel U-Channel Post Design



$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{2Post.uchan} = \begin{pmatrix} 9.90 \\ 6.98 \\ 5.41 \\ 3.86 \end{pmatrix}$$

Smallest 2 Post U-Channel that Satisfies Strength Requirements

SteelUChannel2Post = "N/A"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostUchan = "NG"

CheckBreakaway2PostUchan = "OK"

$$WtPerFt_{uchan} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 4 \end{pmatrix} \cdot \frac{lbf}{ft} \qquad CFI_{3Post.uchan} = \begin{pmatrix} 7.08 \\ 4.99 \\ 3.87 \\ 2.77 \end{pmatrix}$$

Smallest 3 Post U-Channel that Satisfies Strength Requirements

SteelUChannel3Post = "N/A"

CheckCFI3PostUchan = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft path"

Post Design: Aluminum Beam (6061-T6 Alloy)

Post Material and Section Properties

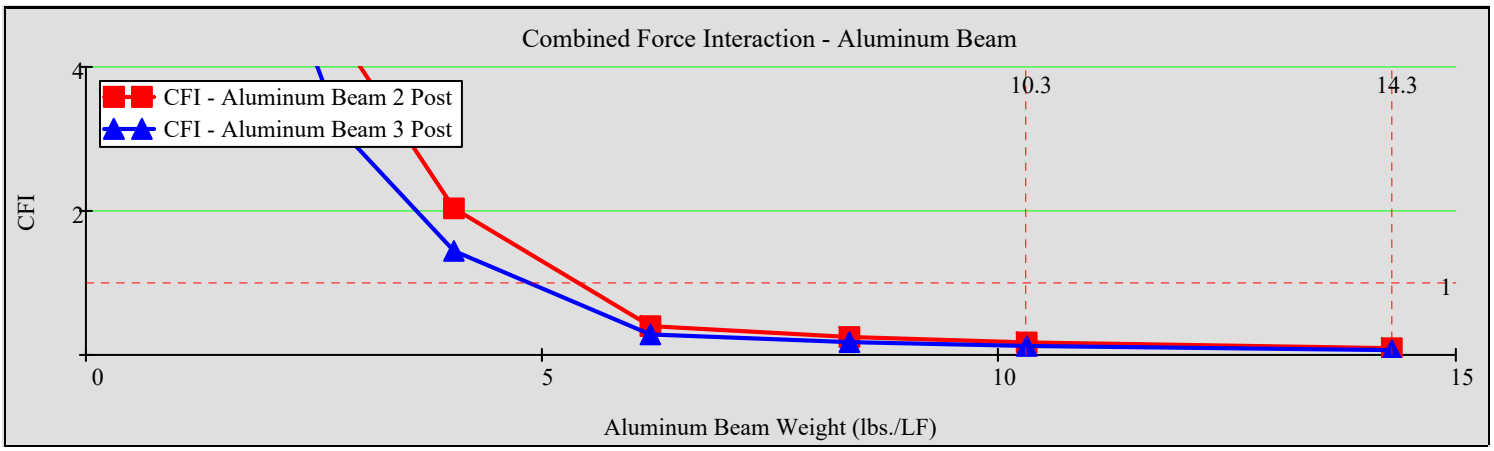
$F_{cy} := 35 \cdot ksi$ $F_{ty} := 35 \cdot ksi$ $C_t := 141$ $F_{tu} := 38 \cdot ksi$ $k_t := 1.0$ $E_{aluminum} := 10000 \cdot ksi$

Aluminum I-Beam Designations *3x2.03* *4x2.79* *6x4.03* *8x6.18* *9x8.36* *10x10.3* *12x14.3*

$$Prop_{albeam} := \begin{pmatrix} 2.03 & 2.79 & 4.03 & 6.18 & 8.36 & 10.3 & 14.3 \\ 2.5 & 3 & 4 & 5 & 5.5 & 6 & 7 \\ 0.26 & 0.29 & 0.29 & 0.35 & 0.44 & 0.5 & 0.62 \\ 3 & 4 & 6 & 8 & 9 & 10 & 12 \\ 0.15 & 0.17 & 0.19 & 0.23 & 0.27 & 0.29 & 0.31 \\ 1.73 & 2.38 & 3.43 & 5.26 & 7.11 & 8.75 & 12.1 \\ 1.81 & 3.36 & 7.33 & 14.9 & 22.7 & 31.2 & 52.9 \\ 1.25 & 1.68 & 2.53 & 3.37 & 3.79 & 4.22 & 5.11 \\ 2.71 & 6.71 & 22.0 & 59.7 & 102 & 156 & 317 \\ 0.679 & 1.31 & 3.10 & 7.30 & 12.2 & 18.0 & 35.5 \\ 0.0374 & 0.0608 & 0.0888 & 0.188 & 0.386 & 0.620 & 1.26 \end{pmatrix} \begin{pmatrix} \text{Wt per Length (lbf/ft)} \\ \text{Flange Width (in)} \\ \text{Flange Thickness (in)} \\ \text{d (in)} \\ \text{Web Thickness (in)} \\ \text{A (in3)} \\ \text{S (in3)} \\ \text{r (in)} \\ \text{I (in4)} \\ \text{Iy (in4)} \\ \text{J (in4)} \end{pmatrix}$$

The order of Aluminum Beams need to be in ascending order of the Section Modulus

Aluminum Beam Post Design



$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{2Post.albeam} = \begin{pmatrix} 8.11 \\ 4.42 \\ 2.04 \\ 0.40 \\ 0.25 \\ 0.18 \\ 0.10 \end{pmatrix}$$

Smallest 2 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam2Post = "I 8 x 6.18"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostAlBeam = "OK"

CheckBreakaway2PostAlBeam = "OK"

$$WtPerFt_{albeam} = \begin{pmatrix} 2.03 \\ 2.79 \\ 4.03 \\ 6.18 \\ 8.36 \\ 10.3 \\ 14.3 \end{pmatrix} \cdot \frac{lbf}{ft} \quad CFI_{3Post.albeam} = \begin{pmatrix} 5.74 \\ 3.13 \\ 1.45 \\ 0.29 \\ 0.18 \\ 0.13 \\ 0.07 \end{pmatrix}$$

Smallest 3 Post Aluminum Beam that Satisfies Strength Requirements

AlBeam3Post = "I 8 x 6.18"

CheckCFI3PostAlBeam = "OK"

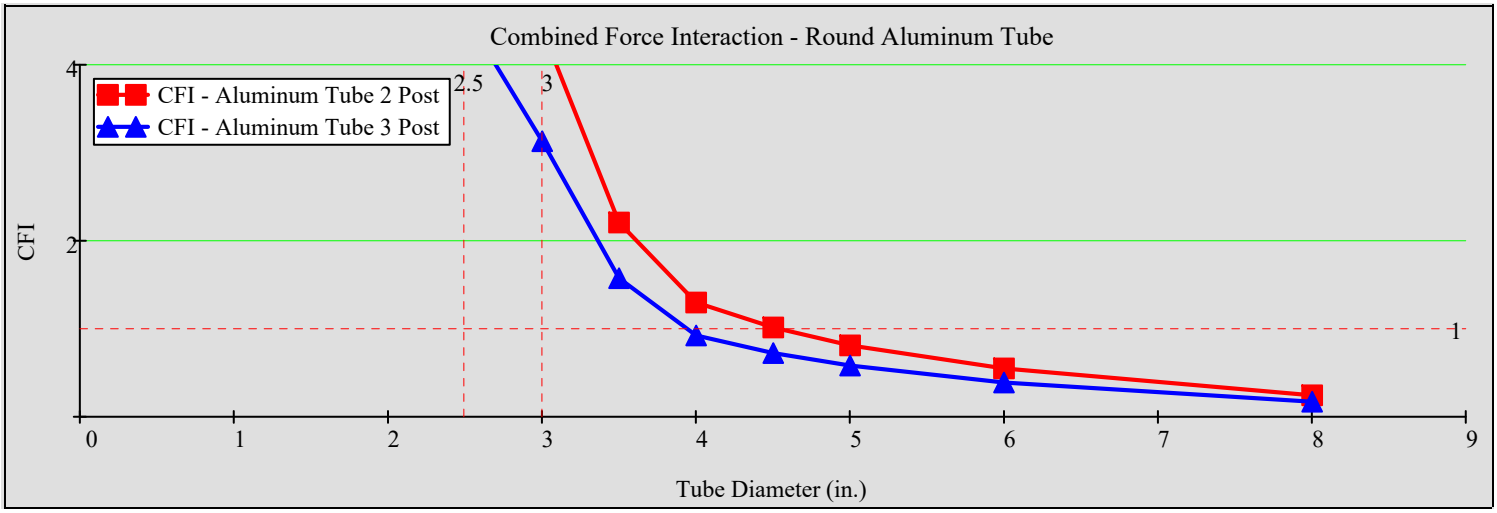
CheckBreakaway3PostAlBeam = "NG"

Post Design: Aluminum Round Tube (6061-T6 Alloy)

$$AlTube := \begin{pmatrix} 2 & 2.5 & 3 & 3.5 & 4 & 4.5 & 5 & 6 & 8 \\ 0.125 & 0.125 & 0.125 & 0.188 & 0.25 & 0.25 & 0.25 & 0.25 & 0.313 \end{pmatrix} \begin{pmatrix} \text{Outside Diameter (in)} \\ \text{Wall Thickness (in)} \end{pmatrix}$$

The order of Aluminum Round Tubes needs to be in ascending order of the Section Strength

Aluminum Round Tube Post Design



$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{2Post.tube} = \begin{pmatrix} 10.31 \\ 6.44 \\ 4.4 \\ 2.21 \\ 1.3 \\ 1.02 \\ 0.82 \\ 0.55 \\ 0.25 \end{pmatrix}$$

Smallest 2 Post Aluminum Tube that Satisfies Strength Requirements

AlTube2Post = "OD = 5 in, t = 1/4 in"

CheckMaxPanelWidth2Post = "OK"

CheckCFI2PostTube = "OK"

CheckBreakaway2PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

$$OD_{tube} = \begin{pmatrix} 2 \\ 2.5 \\ 3 \\ 3.5 \\ 4 \\ 4.5 \\ 5 \\ 6 \\ 8 \end{pmatrix} \cdot in \qquad CFI_{3Post.tube} = \begin{pmatrix} 7.32 \\ 4.57 \\ 3.13 \\ 1.58 \\ 0.93 \\ 0.73 \\ 0.58 \\ 0.39 \\ 0.18 \end{pmatrix}$$

Smallest 3 Post Aluminum Tube that Satisfies Strength Requirements

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckCFI3PostTube = "OK"

CheckBreakaway3PostTube = "NG, posts too strong"

Note: for aluminum tube the only acceptable breakaway sizes are 3 inch OD and smaller with no more than 2 posts in a 7 foot path.

Foundation Design

Soil Properties, Shaft Properties and Phi Factor for Overturning

$SoilType := 1$ *(0 for clay, 1 for sand)*

$\gamma_{soil} := 105 \cdot pcf$

$\phi_{soil} := 30 \cdot deg$ *(for sand)*

$c_{soil} := 1.0 \cdot ksf$ *(for clay)*

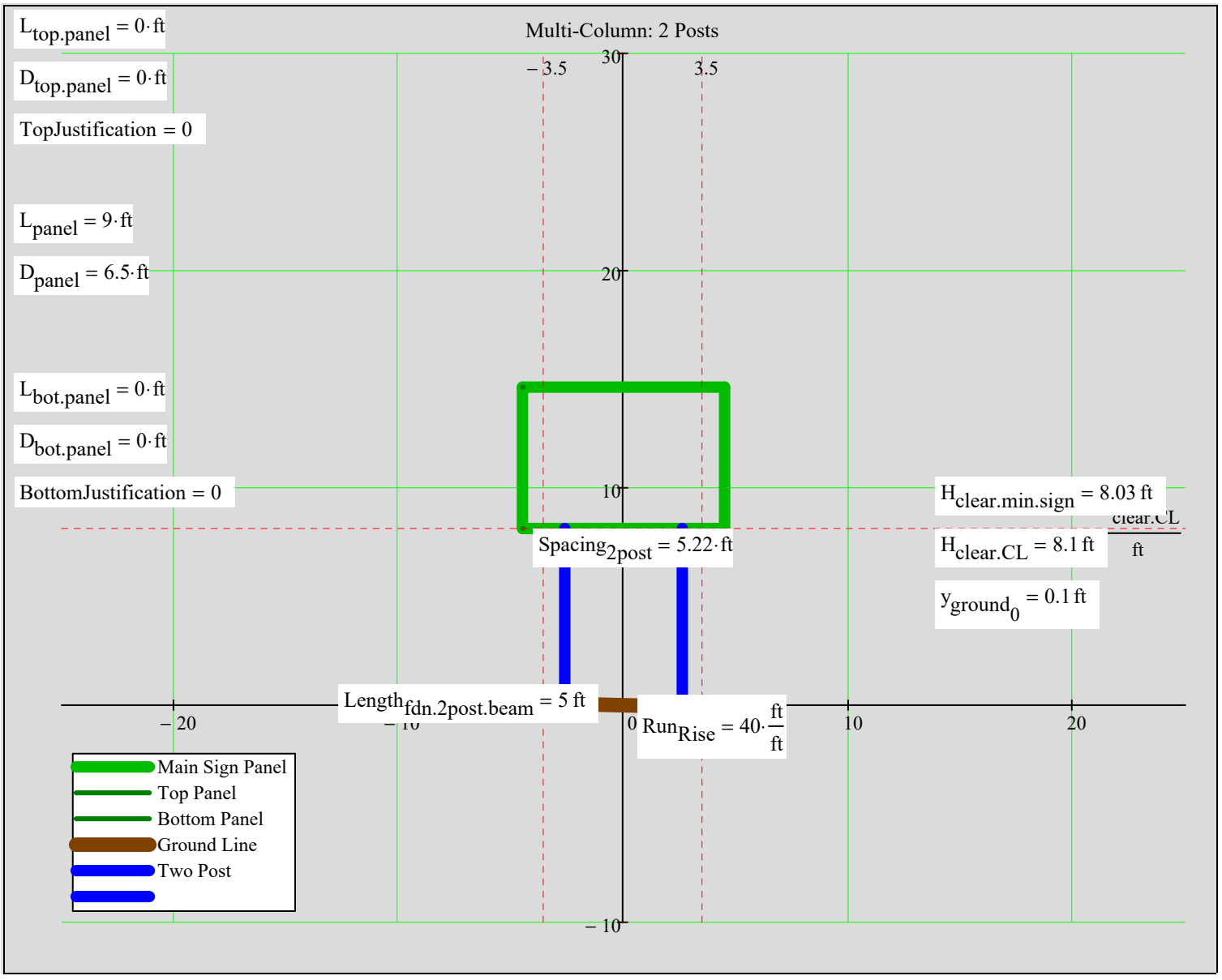
$Dia_{fdn} := 2.0 \cdot ft$

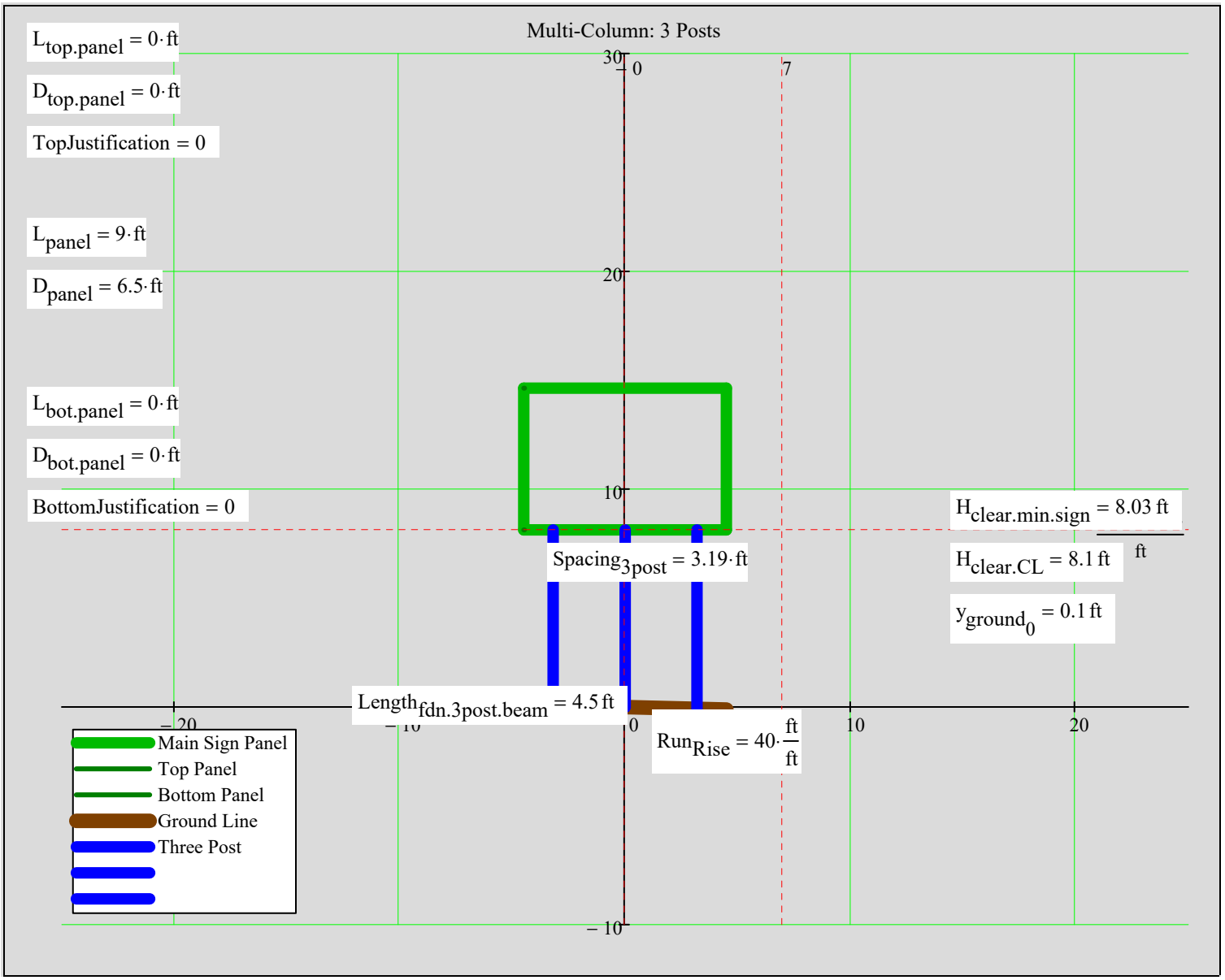
$Offset := 0.5 \cdot ft$

$\phi_{ot} := 0.6$

Foundation Design for Round Piles for Steel & Aluminum Beams and Direct Burial U-Channel and Aluminum Tubes

DESIGN SUMMARY:





Panel and Supplemental Panel Checks

CheckTopPanelDims = "OK"

CheckPanelDims = "OK"

CheckBotPanelDims = "OK"

CheckMaxPanelWidth2Post = "OK"

CheckMaxClearHeight = "OK "

CheckMinClearHeight = "OK "

Design Wind Speed and Number of Wind Beams

$V_{wind} = 110 \cdot mph$ #WindBeams = 2 Check#WindBeams = "OK"

Steel W-Beam Post Option $F_{y.stbeam} = 36 \cdot ksi$

CheckCFI2PostStBeam = "OK"

SteelBeam2Post = "W 6 x 12"

CheckBreakaway2PostStBeam = "OK"

CheckCFI3PostStBeam = "OK"

SteelBeam3Post = "W 6 x 12"

CheckBreakaway3PostStBeam = "NG, Spacing < 3.5 ft"

$L_{post.avg} = 13.78 \cdot ft$ *Estimated Average Post Length: 2 Post 3 Post*

Aluminum I-Beam Post Option (6061-T6 Alloy)

CheckCFI2PostAlBeam = "OK" = "I 8 x 6.18"

AlBeam2Post = "I 8 x 6.18"

CheckBreakaway2PostAlBeam = "OK"

CheckCFI3PostAlBeam = "OK"

AlBeam3Post = "I 8 x 6.18"

CheckBreakaway3PostAlBeam = "NG"

$L_{post.avg} = 13.777 \cdot ft$ *Estimated Average Post Length*

Round Pile Foundation Design for Steel and Aluminum Beams

SoilType = 1 *(0 for clay, 1 for sand)* $\gamma_{soil} = 105 \cdot pcf$ $\phi_{soil} = 30 \cdot deg$ $c_{soil} = 1 \cdot ksf$

$Dia_{fdn} = 2 \cdot ft$ Offset = 0.5·ft

Shaft Length for Two Post Configuration $Length_{fdn.2post.beam} = 5 \cdot ft$ *Shaft Length for Three Post Configuration* $Length_{fdn.3post.beam} = 4.5 \cdot ft$

Steel U-Channel Post Option $F_{y.steel.uchan} = 60 \cdot ksi$

CheckCFI2PostUchan = "NG"

SteelUChannel2Post = "N/A"

CheckBreakaway2PostUchan = "OK"

CheckCFI3PostUchan = "N/A"

SteelUChannel3Post = "N/A"

CheckBreakaway3PostUchan = "U-Channel too large for 3 posts in a 7 ft"

$L_{uchannel.avg} = 17.64 \cdot ft$ *Est. Average Post Length: 2 Post 3 Post*

Aluminum Tube Post Option (6061-T6 Alloy)

CheckCFI2PostTube = "OK"

AlTube2Post = "OD = 5 in, t = 1/4 in"

CheckBreakaway2PostTube = "NG, posts too strong"

CheckCFI3PostTube = "OK"

AlTube3Post = "OD = 4 in, t = 1/4 in"

CheckBreakaway3PostTube = "NG, posts too strong"

$L_{post.avg} = 13.78 \cdot ft$ *Estimated Average Post Length*

3.0 CLEARANCE INTERVAL CALCULATIONS

US 301 at SR 62/Erie Rd

Designed by: SM **Date:** 10/15/2021
Checked by: MO **Date:** 10/18/2021

LEGEND

Y = length of yellow interval, sec.
t = perception-reaction time (use 1.4 sec.)
a = deceleration rate in response to the onset of a yellow indication (use 10 ft/sec2)
g = acceleration due to gravity (use 32.2 ft/sec2)
G = grade, with uphill positive and downhill negative (percent grade /100)
R = length of red interval, sec.
W = width of the intersection, in feet, measured from the near-side stop line to the far edge of the conflicting traffic lane along the actual vehicle path.
L = Length of vehicle (Use 20 ft.)
v = speed of approaching vehicles, in mph.
R_min = minimum radius of curvature (ft)
V = turning speed (mph)
e_max = maximum rate of roadway superelevation (percent)
f_max = maximum side friction (demand) factor

$$Y = t + \frac{1.47v}{2(a + Gg)}$$

$$R = \frac{W + L}{1.47v}$$

YELLOW AND ALL-RED CLEARANCE TIMINGS

Vehicle Movement		**NBL**	**SB**	**EBL**	**WB**	**SBL**	**NB**	**WBL**	**EB**
Phase		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Minimum radius of curvature (ft) (R_min)		46		58		72		68	
[Left Turn Speed (mph) (V)] Sqrt(R_min*15*(0.01e_max+f_max))		20		20		21		20	
Posted Speed Limit (mph) (U)			45		40		45		30
Width of Clearance to last vehicle conflict point (W) (ft)		130	85	124	111	116	91	126	83
Width of Clearance to last pedestrian conflict point (P) (ft)		95	134	99	125	100	118	120	116
Approach Grade (%/100)		0	0	0	0	0	0	0	0
Length of Vehicle (L)		20	20	20	20	20	20	20	20
Perception Reaction Time (t) (sec)		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
[TEM - Calculated All-Red] (W+L)/(U*1.47)		5.1	1.6	4.9	2.2	4.5	1.7	4.9	2.3
[TEM - Calculated Yellow] t+ ((U*1.47)/[2(a+Gg)])		2.9	4.7	2.9	4.3	2.9	4.7	2.9	3.6
Conflict Headway distance (ft)		0	22	0	51	0	50	0	56
Conflict Headway (CH) (sec)	CH Calculated	0.0	1.6	0.0	2.4	0.0	2.4	0.0	2.6
	CH Use	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
[Calculated D2 - D7 All-Red] (P+L)/(U*1.47)		3.9	2.3	4.0	2.5	3.9	2.1	4.7	3.1
[Calculated D1 All-Red] (W+L)/(U*1.47)-CH		5.1	0.6	4.9	1.2	4.5	0.7	4.9	1.3
[Calculated D1 All-Red] (P+L)/(U*1.47)-1.93		2.0	0.4	2.1	0.5	2.0	0.2	2.8	1.2
Yellow Interval	TEM Calculated	2.9	4.7	2.9	4.3	2.9	4.7	2.9	3.6
	Use	3.4	4.8	3.4	4.4	3.4	4.8	3.4	3.7
All Red Interval	Use for D2 - D7	5.2	2.4	4.9	2.5	4.5	2.1	5	3.1
	Use for D1	5.2	2.0	4.9	2.0	4.5	2.0	5.0	2.0
Pedestrian Movement									
Phase			**P2**		**P4**		**P6**		**P8**
Crossing Speed (ft/sec)			3.5		3.5		3.5		3.5
Crossing Distance (curb to curb)			96		102		80		81
Detector to curb distance (ft)			111		116		93		95
FDW Time (curb to curb)			28		30		23		24
FDW Time ((curb to curb/3.5)-3s) (D7 ONLY)			25		27		20		21
FDW Time ((button to far curb/3.0)-7s-3s) (D7 ONLY)			27		29		21		22
Walk Time			7		7		7		7
FDW Time to Use			28		30		23		24
FDW Time to Use (D7 ONLY)			27		29		21		22

Table 3.6-1. Florida Yellow Change Interval (0.0% Grade) Standard*

APPROACH SPEED (MPH)	YELLOW INTERVAL (SECONDS)
25	3.4
30	3.7
35	4.0
40	4.4
45	4.8
50	5.1
55	5.5
60	5.9
65	6.0
* For approach grades other than 0%, use ITE Formula.	

Formula 3.6-1

$$Y = t + \frac{1.47v}{2(a + Gg)}$$

Where:

Y = Length of yellow interval, sec.
t = Perception-reaction time (use 1.4 sec.)
v = Speed of approaching vehicles, in mph.
a = Deceleration rate in response to the onset of a yellow indication (use 10 ft/sec^2)
g = Acceleration due to gravity (use 32.2 ft/sec^2)
G = Grade, with uphill positive and downhill negative (percent grade /100)

3.6.2.2 Red Clearance Interval

A red clearance interval must be used. Providing adequate red clearance intervals can significantly impact intersection safety by reducing the probability of occurrence of right angle crashes, even if drivers run the red signal indication. The red clearance interval shall be determined using engineering practices. The values are typically computed using ***Formula 3.6-2***, found in ITE's ***Determining Vehicle Signal Change and Clearance Interval*** (1994).

Formula 3.6-2

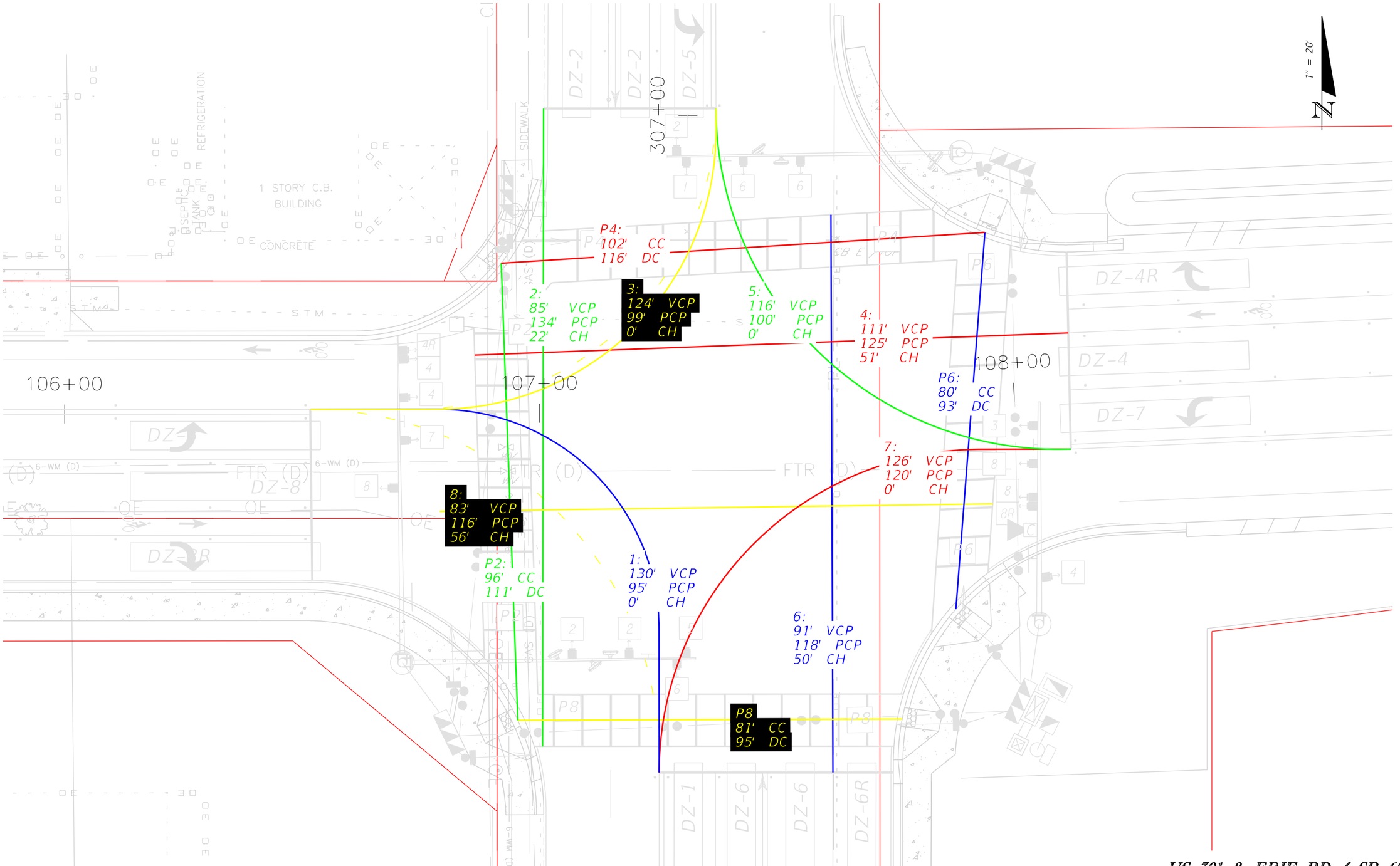
$$R = \frac{W + L}{1.47v}$$

Where:

R = Length of red interval, sec.
W = Width of the intersection, in feet, measured from the near-side stop line to the far edge of the conflicting traffic lane along the actual vehicle path.
L = Length of vehicle (Use 20 ft.)
v = Speed of approaching vehicles, in mph.

The minimum red clearance interval shall be 2.0 seconds and the maximum red clearance interval should normally not exceed 6.0 seconds. Red clearance intervals longer than the calculated values in ***Formula 3.6-2*** can be used at the engineer's discretion. This longer red clearance interval can be applied where the width of intersection, sight distance, complex intersections, crash history and any other unique conditions that may warrant longer red times are present. This interval extension shall meet the minimum/maximum guidance for red clearance interval. The determination shall be based on engineering judgment.

The ***National Cooperative Highway Research Program (NCHRP) Report 731*** recommends using a modified ITE formula that allows for 1.0 second reduction due to reaction time delay from the conflicting movement. Therefore, a 1.0 second reduction may be made in the values computed from ***Formula 3.6-2*** and applying engineering judgment. However, the red clearance interval shall be no less than 2.0 seconds.



US 301 & ERIE RD / SR 62

No.	REVISIONS	DATE	BY

SCALE: AS NOTED
DESIGNED BY: MO
DRAWN BY: GS
CHECKED BY: IR

HDR Engineering, Inc.
4830 W Kennedy Blvd,
Suite 400
Tampa, FL 33609-2548

DATE: 10/2021
PROJECT NO.: 850-6094060

Manatee County FLORIDA
MANATEE COUNTY PUBLIC WORKS

DESIGN ENGINEER: MICHAEL J. OATES
FL. LICENSE NO.: 49282

CLEARANCE DISTANCES

SHEET NO.:

4:09:15 PM 10/18/2021 PW:\

4.0 MAST ARM STRUCTURAL ID NUMBER

MEMORANDUM

Districts 1 & 7 Structures Maintenance Office
2916 Leslie Road, Tampa, FL. 33619-2263
(813) 975-7570 • Fax: (813) 975-7595

DATE: April 29, 2020

TO: Michael Oates, P.E.; Senior Traffic Engineer; HDR

FROM: Katharine Sampson, E.I., Senior Engineer Trainee- Structures Project Manager.

COPIES: Tara Rodrigues, P.E., Engineering Section Manager; Nico Antona, DBi; Vicki Griswold Hitch, DBi; Traffic Signal Mast Arm File

SUBJECT: **Request for Traffic Signal Mast Arm/Steel Pole Number Assignment**

Your request for a Traffic Signal Mast Arm/Steel Pole Number Assignment has been granted as follows:

Traffic Signal Mast Arm/Steel Pole Project Information

FINANCIAL PROJECT ID: **N/A** OWNER: **State** **(Ex: State, County, City Name, Other [specify])**
EOR name; Design firm, address: **Michael Oates, P.E.; HDR; 4830 W. Kennedy Blvd, Suite 400, Tampa, FL 33609**

YEAR BUILT - PROPOSED: **2021** OR ACTUAL: _____ (if already built)
(Year Built (Proposed or Actual) pertains to the New Traffic Signal Mast Arm Structure)

Traffic Signal Mast Arm/Steel Pole Character Description (please check):

OCTAGON:**X** SQUARE: _____ ROUND: _____ OTHER: _____

HORIZONTAL CLEARANCE: **7.00ft Min.** MANUFACTURED BY: **Unknown**

VERTICAL CLEARANCE: **17.5ft Min.**

Traffic Signal Mast Arm Location

COUNTY: **Manatee** SECTION/SUBSECTION: **13020000** M.P.: **11.175** (At the center of the intersection)
(Refer to SLD's)

NAME OF HIGHER RANKED ROUTE: **US 301/SR 43** NAME OF LOWER RANKED ROUTE: **SR 62**
(Primary Route, example: I-75/SR 93) **(Secondary Route, example: Main Street)**

RANKING #: 2

THE ROUTE RANKING IS LISTED IN ORDER BELOW

1. Interstate Highway
2. U.S. Numbered Highway
3. State Highway
4. County Highway
5. City Street
6. Federal Lands Road
7. State Lands Road
8. Other

NOTE: ONLY ONE (1) NUMBER WILL BE ISSUED PER INTERSECTION

RANKING #: 3

FUNCTIONAL CLASSIFICATION OF INVENTORY ROUTE
CODE: **02** (see options below)

Code	Description
	Rural
01	Principal Arterial – Interstate
02	Principal Arterial – Other
06	Minor Arterial
07	Major Collector
08	Minor Collector
09	Local
	Urban
11	Principal Arterial – Interstate
12	Principal Arterial – Other Freeways or Expressways
14	Other Principal Arterial
16	Minor Arterial
17	Collector
19	Local

Federal Aid ____ ***Non-Federal Aid X
******If Functional Classification=08, 09,or19 = Non-Federal Aid***

EXISTING TRAFFIC SIGNAL MAST ARM/STEEL POLE NUMBER TO BE REPLACED: **N/A**
NEW TRAFFIC SIGNAL MAST ARM/STEEL POLE NUMBER ASSIGNED: **13M178**

5.0 VOLTAGE DROP CALCULATION

Project Name: Erie Rd. and SR 62 Improvements

Voltage Drop Calculations

Service Voltage (V) **120** Phase **1**

Allowable voltage drop (%) **3.00%**

Voltage drop per NEC = (2 x L x R x I)/1000

Circuit Description: Service Feeder

2020 NEC, Chapter 9, Table 8 - Conductor Properties

12	0.00205	2	0.00020
10	0.00129	1	0.00016
8	0.00081	1/0	0.00013
6	0.00051	2/0	0.00010
4	0.00032	3/0	0.00008
3	0.00025	4/0	0.00006

Segment	Distance (feet)	2*distance	Conductor Size	Resist/Ft.	Segment Resistance	Amps/ ITS Cabinet	Circuit Amps	Volts Drop
Service Feeder	75	150	6	0.00051	0.0765	40.0	40.00	3.0600
								3.0600

Load/Fixture Type:

	Voltage	**Watts**	**Amps**
Signal Cabinet total load	120		40.00

Voltage Drop (%) **2.550** **<** 3.00%

OK

Project Name: Erie Rd. and SR 62 Improvements

Voltage Drop Calculations

Service Voltage (V) **120** Phase **1**

Allowable voltage drop (%) **2.00%**

Voltage drop per NEC = (2 x L x R x I)/1000

Circuit Description: Signal Roadway Lighting Circuit

2020 NEC, Chapter 9, Table 8 - Conductor Properties

12	0.00205	2	0.00020
10	0.00129	1	0.00016
8	0.00081	1/0	0.00013
6	0.00051	2/0	0.00010
4	0.00032	3/0	0.00008
3	0.00025	4/0	0.00006

Segment	Distance (feet)	2*distance	Conductor Size	Resist/Ft.	Segment Resistance	Amps/ ITS Cabinet	Circuit Amps	Volts Drop	
Signal Cabinet to Adjacent PB	25	50	6	0.00051	0.0255	7.2	10.78	0.2748	**Includes Pole nos. 1 & 2**
From PB to Light Pole No. 3	192	384	6	0.00051	0.1958	3.59	3.59	0.7036	
								0.9784	

Load/Fixture Type:

	Voltage	**Watts**	**Amps**
Roadway Luminaire	120	388	3.59

Voltage Drop (%) **0.815** **<** 2.00%

OK

Note:
Intersection lighting Voltage Drop has three paths, because the lighting circuit is spliced into three directions in the pull box adjacent to the signal cabinet, see lighting plan sheet no. L-6. This voltage drop calculation is for the path that energizes pole no. 3 as can be noted in the segment column above. The other two paths one for pole no.1 and one for pole no. 2 will have less voltage drop because the the load is the same, the conductors are the same and the distance is less than the path to energize pole no. 3.

BID ATTACHMENT 9, DRAINAGE REPORT

SR 62 & ERIE RD DRAINAGE IMPROVEMENTS

INDIVIDUAL RESOURCE PERMIT APPLICATION
MANATEE COUNTY PUBLIC WORKS

DATE: 03/19/19
REVISED 6/11/20

John K. Pari, P.E. 56368

Date: 06/11/2020

TABLE OF CONTENTS

Exhibits

Individual Resource Permit Application
Sections A, C, & E

Section A:
General Information for All Activities

Part 1: Name, Application Type, Location, and Description of Activity

A. Name of project, including phase if applicable:

SR 62 and Erie Rd Improvements

B. This is for (check all that apply):

☑ Construction and operation of **new** works, activities, and/ or a stormwater management system

☐ **Conceptual Approval** of proposed works, activities and/ or a stormwater management system

☐ Modification or alteration of **existing** works, activities, and/or a stormwater management system. Provide the existing DEP or WMD permit #, if known: Note: Minor modifications do not require completion of this form, and may instead be requested by letter in accordance with section 6.2 of Applicant's Handbook Volume I.

☐ **Maintenance or repair** of works, activities, and/ or a stormwater management system previously permitted by the DEP or WMD. Provide existing permit #, if known:

☐ Abandonment or removal of works, activities, and/ or a stormwater management system.

Provide existing DEP or WMD permit #, if known:

☐ Operation of an **existing unpermitted** work, activity, and/or stormwater management system.

☐ Construction of additional phases of a permitted work, activity, or system.

Provide the existing DEP or WMD permit #, if known:

C. **List the type of activities proposed. Check all that apply, and provide the supplemental information requested in each of the referenced application sections.** Please also reference Applicant's Handbook Volumes I and II for the type of information that may be needed.

☐ Activities associated with one single-family residence, duplex, triplex, or quadruplex that do not qualify for an exemption or a General Permit: **Provide the information requested in Section B. Do not complete Section C.**

☑ Activities within wetlands or surface waters, or within 25 feet of a wetland or surface water, (not including the activities associated with an individual single-family residence). Examples include dredging, filling, outfall structures, docks, piers, over-water structures, shoreline stabilization, mitigation, reclamation, and restoration/enhancement. **Provide the information requested in Section C.**

☐ Activities within navigable or flowing surface waters such as a multi-slip dock or marina, dry storage facility, dredging, bridge, breakwaters, reefs, or other offshore structures: **In addition to Section C, also provide the information requested in Section D.**

☐ Activities that are (or may be) located within, on, or over state-owned submerged lands (See Chapter 18-21, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=18-21): **In addition to Section B or C, also provide the information requested in Section F.**

☑ Construction or alteration of a stormwater management system serving residential, commercial, transportation, industrial, agricultural, or other land uses, or a solid waste facility (excluding mines that are regulated by DEP). **Provide the information requested in Section E.**

☐ Creation or modification of a Mitigation Bank (refer to Chapter 62-342, F.A.C. https://www.flrules.org/gateway/ChapterHome.asp?Chapter=62-342): **Provide the information requested in Section G.**

☐ Mines (as defined in Section 2.0 of Applicant's Handbook Volume I) that are regulated by the DEP: **Provide the information requested in Section H.**

☐ Other, describe: Please contact the Agency to determine which additional sections of the application are needed. See Attachment 2 for Agency contacts.

D. Describe in general terms the proposed project, system, works, or other activities. For permit modifications, please briefly describe the changes requested to the permit:

Realign SR 62 with Erie Road

E. Project/Activity Street/Road Address or other location (if applicable):

City: County(ies): Manatee Zip: 34219

Note: For utility, road, or ditch/canal activities, provide a starting and ending point using street names and nearest house numbers or provide length of project in miles along named streets or highways.

F. Project location map and Section, Township, and Range information (use additional sheets if needed):

Please attach a location map showing the location and boundaries of the proposed activity in relation to major intersections or other landmarks. The map should also contain a north arrow and a graphic scale; show Section(s), Township(s), and Range(s); and must be of sufficient detail to allow a person unfamiliar with the site to find it.

Section(s): 20 Township: 33 Range: 19 Land Grant name, if applicable:

Section(s): 20 Township: 33 Range: 19

1. Section(s): 20 Township: 33 Range: 19

G. Latitude (DMS) 27 ° 34 ' 00 " Longitude (DMS) 82 ° 30 ' 00 " (Taken from central location of the activity). Explain source for obtaining latitude and longitude (i.e. U.S.G.S. Quadrangle Map, GPS, online resource):

H. Tax Parcel Identification Number(s):

[Number may be obtained from property tax bill or from the county property appraiser's office; if on multiple parcels, provide multiple Tax Parcel Identification Numbers]

I. Directions to Site (from major roads; include distances and landmarks as applicable):
US 301 north to SR 62

J. Project area or phase area: 4.29 acres

K. Name of waterbody(ies) (if known) in which activities will occur or into which the system will discharge:
GAMBLE CREEK

The following questions (M-O) are not applicable to activities related to an individual single-family residence, including a dock, pier, and/or seawall associated with that residence.

L. Is it part of a larger plan of development or sale? ☐ yes ☑ no

M. Impervious or semi-impervious area excluding wetlands and other surface waters (if applicable):

1.83 acres or square feet

N. Volume of water the system is capable of impounding (if applicable):

Normal Pool: 0 acre-feet. Depth ft.
Maximum Pool: acre-feet. Depth ft.

Part 2: Supplemental Information, and Permit History

A. Is this an application to modify an existing Environmental Resource Permit or to construct or implement ~~for~~ part of a multi-phase project, such as a project with a Conceptual Approval permit? ☐ Yes ☑ No (If you answered "yes", please provide permit numbers below):

Agency	Date	Permit/Application No.	Project Name

Agency	Date	Permit/Application No.	Project Name

B. Indicate if there have been any **pre-application meeting(s)** with the DEP, WMD, or delegated local government, or other discussions, meetings, or coordination with other stakeholders or agencies about the proposed project, system or activity. If so, please provide the date(s), location(s) of the meeting, and the name(s) of Agency staff that attended the meeting(s):

Agency	Date	Location	Meeting Attendees
SWFWMD	10/10/2018	Sarasota	Prony Bonnaire Fils, Chris Mowbray, John Pari, Sunny Fu
			Cliff Ondercin, Steve Lopes, Jim Anderson

C. **Attach a depiction (plan and section views), which clearly shows the works or other activities proposed to be constructed.** Use multiple sheets, if necessary, a scale sufficient to show the location and type of works, and include a north arrow and a key to any symbols used. **Specific information to be included in the plans is based on the activities proposed and is further described in Sections B-H**. However, supplemental information may be required based on the specific circumstances or location of the proposed works or other activies. REFER TO ATTACHED CONSTRUCTION PLANS

D. Processing Fee: **Please submit the application processing fee along with this application form and supplemental information.** Processing fees vary based on the size of the activity, the type of permit applied for, and the reviewing Agency. Please reference Appendix D of Applicant's Handbook Volume I to determine the appropriate fee. CHARGED to Manatee Co. Account

Part 3: Applicant and Associated Parties Information

Instructions: Please complete the following sections. For corporations, list a person who is a registered agent or officer of the corporation who has the legal authority to bind the corporation.

A. Applicant (Entity Must Have Sufficient Real Property Interest)

☑ **This is a Contact Person for Additional Information**

Last Name: Mollanazar
First Name: Sia
Middle Initial:
Title: County Engineer
Company: Manatee County Board of County Commissioners
Address: 1022 26th Ave East
City: Bradenton
State: FL
Zip: 34208
Home Telephone:
Work Telephone: 941 708-7487
Cell Phone:

E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

B. Land Owner(S) (If Different or in Addition to Applicant)
☑ **Check here if land owner is also a co-applicant**

Last Name: Manatee County BOCC
First Name:
Middle Initial:
Title: Admin. Assistant
Company:
Address:
City:
State:
Zip:
Home Telephone:
Work Telephone: 941 745-3707
Cell Phone:
E-mail Address: marianne.lopata@mymanatee.org

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

C. Operation and Maintenance Entity(see Applicant's Handbook I, Section 12.3)

Last Name: Butzow
First Name: Chad
Middle Initial:
Title: Interim Public Works Director
Company: Manatee County Public Works
Address: 1022 26th Ave East
City: Bradenton
State: FL
Zip: 34208
Home Telephone:
Work Telephone: 941 708-7476
Cell Phone:
E-mail Address: chad.butzow@mymanatee.org

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

D. Co-Applicant (If Different or In Addition to Applicant and Owner)

Last Name:
First Name:
Middle Initial:
Title:
Company:
Address:
City:
State:
Zip:
Home Telephone:
Work Telephone:
Cell Phone:
E-mail Address:

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

E. Registered Professional Consultant
☑ **This is a contact person for additional information**

Last Name: Pari
First Name: John
Middle Initial:
Title: Project Engineer II
Company: Manatee County Public Works
Address: 1022 26th Ave East
City: Bradenton
State: FL
Zip: 34208
Home Telephone:
Work Telephone: 941 708-7450
Cell Phone:
E-mail Address: john.pari@mymanatee.org

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

F. Environmental Consultant

☐ **This is a contact person for additional information**

Last Name:	First Name:	Middle Initial:
Title:	Company:	
Address:		
City:	State: FL	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:		
E-mail Address:		

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

G. Agent Authorized to Secure Permit (If Different from Consultant)

Last Name:	First Name:	Middle Initial:
Title:	Company:	
Address:		
City:	State:	Zip:
Home Telephone:	Work Telephone:	
Cell Phone:		
E-mail Address:		

Correspondence will be sent via email, unless you check here to receive it via US Mail: ☐

If necessary, please add additional pages for other contacts and property owners related to this project.

H. Real Property Interest

a. Permits are only issued to entities having sufficient real property interest as described in Section 4.2.3(d) of Applicant's Handbook Volume I. **Please attach evidence of the applicant's real property interest over the land upon which the activities subject to the application will be conducted, including mitigation areas (if applicable).** Refer to Sections 4.2.3(d)-(e) for sufficient real property interest documentation.

b. For activities that require a recorded notice in accordance with rule 62-330.090(7), F.A.C., please provide either the complete legal description of the property or a copy of the pages of the document recorded in the public records that contains the complete legal description. If the land upon which the proposed activities are to occur is not owned by the applicant, the applicant must also provide copies of any right-of-way, leases, easements, or other legal agreement which authorizes the applicant to perform the activities on those lands.

Part 4: Signatures and Authorization to Access Property

Instructions: For multiple applicants please provide a separate Part 4 for each applicant. For corporations, the application must be signed by a person authorized to bind the corporation. A person who has sufficient real property interest (see Section 4.2.3(d) of Applicant's Handbook Volume I) is required in (B) to authorize access to the property, except when the applicant has the power of eminent domain.

A. By signing this application form, I am applying for the permit and any proprietary authorizations identified above, according to the supporting data and other incidental information filed with this application. I am familiar with the information contained in this application and represent that such information is true, complete and accurate. I understand this is an application and not a permit, and that work prior to approval is a violation. I understand that this application and any permit issued or proprietary authorization issued pursuant thereto does not relieve me of any obligation for obtaining any other required federal, state, water management district, or local permit prior to commencement of construction. I agree to operate and maintain the permitted system unless the permitting agency authorizes transfer of the permit to a different responsible operation and maintenance entity. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S. and 18 U.S.C. Section 1001.

Sia Mollanazar

Typed/Printed Name of Applicant or Applicant's Authorized Agent

Signature of Applicant or Applicant's Authorized Agent

Date: 3-21-19

County Engineer, Deputy Dir. - Egr. Services
(Corporate Title if applicable)

B. Certification of Sufficient Real Property Interest And Authorization For Staff To Access The Property:

I certify that:

☐ **I possess sufficient real property interest in or control, as defined in Section 4.2.3 (d) of Applicant's Handbook Volume I,** over the land upon which the activities described in this application are proposed and I have legal authority to grant permission to access those lands. I hereby grant permission, evidenced by my signature below, for staff of the Agency to access, inspect, and sample the lands and waters of the property as necessary for the review of the proposed works and other activities specified in this application, upon advance notice. I authorize these agents or personnel to enter the property as many times as may be necessary to make such review, inspection, and/ or sampling. Further, if a permit is granted, upon advance notice, I agree to provide entry to the project site for such agents or personnel with proper identification to determine compliance with permit conditions and permitted plans and specifications.

OR

☑ I represent an entity having **the power of eminent domain and condemnation authority**, and I/we shall make appropriate arrangements to enable staff of the Agency to legally access, inspect, and sample the property as described above.

Sia Mollanazar

Typed/Printed Name

Signature

Date: 3-21-19

County Engineer, Deputy Dir. - Egr. Services
(Corporate Title if applicable)

C. Designation of Authorized Agent (If Applicable):

I hereby designate and authorize to act on my behalf, or on behalf of my corporation, as the agent in the processing of this application for the permit and/or proprietary authorization indicated above; and to furnish, on request, supplemental information in support of the application. In addition, I authorize the above-listed agent to bind me, or my corporation, to perform any requirements which may be necessary to procure the permit or authorization indicated above. I understand that knowingly making any false statement or representation in this application is a violation of Section 373.430, F.S., and 18 U.S.C. Section 1001.

Section C: Supplemental Information for Works or Other Activities In, On, or Over Wetlands and/or Other Surface Waters

Instructions: **This section is for applications that do not involve activities associated with an individual single-family residence, duplex, triplex, or quadruplex. For those activities, please use Section B.** This form is to be completed if the proposed work or activity will occur in, on, over, or within 25 feet of a wetland or other surface water. The supplemental information required by this section is in addition to the information required by Section A of the application.

Part 1: Wetland or Other Surface Water Impact Summary

1. Describe the basic purpose of the project or activity:
   Realign SR 62 with Erie road to form an intersection at U.S. 301.
2. Total area of work (dredging, filling, construction, alteration, or removal) in, on, or over wetlands or other surface waters: sq. ft.; 0.033 ac.

3. Total volume of material to be dredged or filled in wetlands or other surface waters:
   a. to be dredged: cubic yards,
   b. to be filled: 40 cubic yards.

4. Identify the seasonal high water level (SHWL) and wetland normal pool elevations for each wetland or surface water within the project site. For tidal wetlands and/or surface waters provide the elevation of mean high and mean low water. Include an aerial photograph showing the location of each sampling location, dates, datum, and methods used to determine these elevations.
   Refer to attached Geotechnical Report.
5. Name of waterbody(ies) (if applicable & if known) in which work will occur?
   Gamble Creek
6. Is the activity proposed in an Outstanding Florida Water or Aquatic Preserve?
   ☐ yes, name: ☐ no ☐ I don't know

7. Has there ever been a formal or informal wetland determination for the project site? If yes, provide the identifying number and/or a copy of the jurisdictional map.
   No
8. Provide a map(s) of the project area and vicinity delineating USDA/NRCS soil types.
   Refer to attached Exhibits.
9. Provide recent aerials~~,~~ legible for photointerpretation (no photocopies) with a scale of 1" = 400 ft, or more detailed, with project boundaries and wetland boundaries delineated on the aerial.
   Refer to attached Exhibits.
10. Provide maps accurately portraying the existing and proposed natural vegetative community types and land cover classifications using recognized classification schemes. Suggested sources include: the Florida Natural Areas Inventory Guide to the Natural Communities of Florida (2010) available at http://www.fnai.org/naturalcommguide.cfm, or the Florida Land Use and Cover Classification System (FLUCCS) (FDOT 1999, available at http://www.dot.state.fl.us/surveyingandmapping/documentsandpubs/fluccmanual1999.pdf). For

vegetated areas dominated by exotic vegetation, use the descriptors representative of the native community type that was present prior to exotic infestation. Refer to attached Exhibits.

11. Impact Summary Tables (located at the end of this section):
    a. For all projects, complete Table 1, 2 and 3 as applicable.
    b. For shoreline stabilization projects, provide the information requested in Table 4.

12. If the activity is located on state owned submerged lands and requires a lease or easement, provide a list of names and addresses from the latest county tax assessment roll of all property owners located within a 500 ft. radius of the proposed lease or easement boundary in mailing label format, or you may elect to send notice to those persons by certified mail, with the return-receipt card addressed to the DEP or water management district, as applicable, in accordance with subsection 18-21.005(3), F.A.C., and Section 253.115, F.S. Attach additional sheets if necessary.
    1. Name:
       Mailing Address:
       City, State, Zip Code:

    2. Name:
       Mailing Address:
       City, State, Zip Code:

    3. Name:
       Mailing Address:
       City, State, Zip Code:

    4. Name:
       Mailing Address:
       City, State, Zip Code:

    5. Name:
       Mailing Address:
       City, State, Zip Code:

    6. Name:
       Mailing Address:
       City, State, Zip Code:

Part 2: Environmental Considerations

Note: for many questions, a state statute/Applicant's Handbook Volume I (AH I) section is cited to assist the applicant in addressing these questions. However, additional federal criteria may apply.

1. Elimination or Reduction of Impacts (Avoidance and Minimization). Describe measures taken to eliminate or reduce impacts to wetlands and other surface waters (*Refer to AH I Section 10.2.1*).
   The proposed realignment of SR 62 does not traverse any wetlands. Road sideslope fills short length of swale (OSW).
2. Fish, Wildlife, Listed Species, and their Habitats. Provide results of any wildlife assessments that have been conducted on the project site and provide any comments, biological opinions, formal or informal consultation decisions, or recommended actions you have received pertaining to the project from the Florida Fish and Wildlife Conservation Commission, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service. (*Refer to AH I Section 10.2.2*).
   See coordination with FFWCC in attached exhibit.

3. Water quantity impacts to wetlands and other surface waters (*Refer to AH I Section 10.2.2.4 and AH II*).

   a. Does the activity include a proposed surface water management system with a control elevation different than the wetland normal pool elevation(s) of existing or proposed created wetlands or other surface waters? No

   b. If yes to (a), provide documentation (e.g. drawdown assessment or other methods) that shows the proposed surface water management system will not change the hydroperiod of the existing or created wetland or other surface water.

4. Public Interest Test. Please describe how the proposed activity will ***not be contrary*** to the public interest, OR if such an activity significantly degrades or is located within an Outstanding Florida Water (OFW), that the regulated activity will be ***clearly in*** the public interest (*Refer to AH I Section 10.2.3*).

   a. Please describe how the project will be designed to avoid adverse effects to public health, safety, or the welfare or the property of others.
      ICPR model was used to determine stages in prop. storm water facility that meets SWFWMD/FDOT guidelines.
   b. Please describe how the project will be designed to avoid adverse effects to the conservation of fish and wildlife, including endangered or threatened species, or their habitats.
      The proposed realignment of SR 62 does not traverse any wetland.
   c. Please describe how the project will be designed to avoid adverse effects to navigation or the flow of water or cause harmful erosion or shoaling.
      N/A
   d. Please describe how the project will be designed to avoid adverse effects to the fishing or recreational values or marine productivity in the vicinity of the activity.
      N/A
   e. Will the project be of a temporary or permanent nature?
      Permanent.
   f. Please describe how the project will be designed to avoid adverse impacts to significant historical and archaeological resources, under the provisions of section 267.061, F.S.
      Refer to attached Cultural Resource exhibit.
   g. Please describe how the project will be designed to avoid adverse effects to the current condition and relative value of functions being performed by areas affected by the proposed regulated activity.
      No wetlands are impacted.

5. Water Quality.
   Provide a description of how water quality will be maintained in wetlands and other surface waters that will be preserved or will remain undisturbed, both on and offsite. Please address both short-term (such as during construction) and long-term water quality considerations (*Refer to AH I Section 10.2.4*).
   Silt fence to be utilized prior to any construction activities.

6. Class II Waters; Waters approved for shellfish harvesting *(Refer to AH I Section 10.2.5)*.

   a. Will the project occur in Class II that are NOT approved for shellfish harvesting? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(a)*.
      No.

b. Is the project located adjacent to or in close proximity to Class II waters? If yes, please provide a plan or procedure detailing the measures to be taken to meet the requirements of *AH I Section 10.2.5(b)*.
N/A

c. Is the project located in Class II or Class III waters that are classified as “approved”, “restricted”, “conditionally approved”, or “conditionally restricted”? If yes, demonstrate that the project meets the requirements of *AH I Section 10.2.5(c)*.
No.

7. Vertical seawalls. Are vertical seawalls proposed in an estuary or lagoon as part of the project? If yes, please describe how the project meets the requirements of *AH I Section 10.2.6*.
N/A

8. Secondary Impacts (*AH I Section 10.2.7*).

a. Will an upland buffer, with a minimum width of 15' and an average width of 25', be provided between the proposed activities and existing wetlands or wetlands to be preserved, enhanced, restored, or created? Provide the location and dimension of all buffers on the plans. If not, demonstrate that secondary impacts will not occur or describe how they will be offset.
N/A

b. If listed species are present or may be present, then coordination with wildlife agencies is needed. Have you coordinated with the FFWCC and/or USFWS? If so, please provide correspondence from the wildlife agencies indicating concurrence with the species management plan(s).
Coordination with FFWCC will be completed.

c. What measures will be taken to avoid impacts to wetland-dependent wildlife and/or listed species that use uplands for nesting or denning?
Biologist shall monitor construction activities.

d. Describe whether there are any other relevant activities that are very closely linked and causally related to any proposed dredging or filling in wetlands or other surface waters that have the potential to cause impacts to significant historical and archaeological resources.
Refer to attached Cultural Resource exhibit. No historical structures within project limits.

e. Are there additional future phases or extensions of the proposed activities that are not shown? If yes, please describe.
No

9. Cumulative Impacts. Is the proposed mitigation located within the same drainage basin (*Refer to AH I Figures 10.2.8.1 – 10.2.8.5)* as the proposed wetland impacts? If not, please submit a Cumulative Impact Evaluation in accordance with *AH I Section 10.2.8*.
N/A

10. Mitigation Plan (*Refer to AH I Section 10.3*).

a. If a mitigation bank is proposed to offset wetland/other surface water impacts, provide:

i. the name of the bank: N/A . A letter of reservation from the banker will be required once the application has been evaluated.
ii. If the mitigation bank was assessed using UMAM, provide UMAM worksheets for impact area(s). If the bank was assessed using a method other than UMAM, then prepare the impact assessment using the same method.

b. If mitigation is proposed to offset wetland/other surface water impacts, please provide a mitigation plan that includes, at a minimum, the following: N/A

i. ☐ Proposed mitigation narrative:

(1) ☐ Describe the current and proposed condition for each type of mitigation component (restoration, enhancement, creation, preservation), including:
(a) ☐ Describe current and proposed vegetation
(b) ☐ Describe current and proposed hydrologic conditions for the proposed mitigation.
(c) ☐ Describe the soil types from NRCS maps and confirm if actual soil conditions appear to match.
(2) ☐ Provide details of the proposed construction/mitigation activities including phasing and timing, as appropriate.
(3) ☐ Identify measures that will be implemented during and after construction to avoid adverse impacts related to the proposed activities.
(4) ☐ A mitigation implementation and monitoring schedule with dates.
(5) ☐ Identify the success criteria.
(6) ☐ Describe the anticipated site conditions in and around the mitigation area after the mitigation plan is successfully implemented.
(7) ☐ Provide a comparison of current fish and wildlife habitat to expected habitat after the mitigation plan is successfully implemented.

ii. ☐ Provide a Management Plan that includes, as appropriate, aspects of operation and maintenance, including water management practices, vegetation establishment, exotic and nuisance species control, fire management, and control of access.

iii. ☐ Maps:
(1) ☐ Soil map (include soil names/codes, hydrologic soil groups and hydric soil types).
(2) ☐ Topographic map of the mitigation area and adjacent contributing and receiving areas.
(3) ☐ Hydrologic features map of the mitigation area and adjacent contributing and receiving areas.
(4) ☐ Vegetative communities map (using FLUCCS or other appropriate classification system).
(5) ☐ For all maps, identify source.

iv. Provide the necessary supporting information for the application of sections 62-345.400 - .600 (Uniform Mitigation Assessment Method (UMAM)). To meet this requirement, submittal of UMAM worksheets is acceptable for impact and mitigation areas.

v. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a draft Conservation Easement document or other form of restrictive covenant that provides for protection of the mitigation area in perpetuity. Standard forms, as described in subsection 62-330.301(6), F.A.C., are available from the Agency or on its website.

vi. If onsite and/or offsite applicant-responsible mitigation is proposed, submit a cost estimate for completing the mitigation, including monitoring and maintenance.

vii. If onsite and/or offsite applicant-responsible mitigation is proposed and the proposed mitigation exceeds $25,000, please provide a draft financial assurance document. Standard forms, as described in subsection 62-330.301(5), F.A.C., are available from the agency or on its website.

viii. Identify the entity responsible for monitoring, maintenance, and long-term stewardship of the mitigation area (i.e. the landowner or homeowner association, not the consultant or contractor that will do the work).

Note: It is highly recommended that you coordinate the design of any mitigation plan that also may be required for the Corps permit to meet the requirements of both permits. Pre-application meetings with both the applicable Agency and the Corps can help you to choose a mitigation option that is acceptable to both the applicable Agency and the Corps.

Part 3: Plans

Plans: The information listed in the checklist below represents the typical information required on the submitted project plans. The Plans checklists in each application section are cumulative unless otherwise noted. Separate plans for each application section are not required.

1. ☑ Include the following on the construction plans and cross sections:

   a. ☑ An Existing Conditions sheet showing the entire project and wetland/other surface water boundaries. Include the following: Acreage and type (herbaceous, forested or other surface water) of each wetland/other surface water.
   b. ☑ A Proposed Conditions sheet showing the entire project and wetland/other surface water boundaries with construction plan overlay.
   c. ☐ A Proposed Wetland Impact sheet that includes the following:
      i. ☐ Acreage and type (herbaceous, forested, or other surface water) of each wetland/other surface water to be impacted.
      ii. ☐ Proposed upland buffers with dimensions.
      iii. ☐ Identify the seasonal high water and wetland normal pool elevations on the plans.
   d. ☐ Include wetland boundaries on all construction plan sheets.

2. ☐ If onsite and/or offsite applicant-responsible mitigation is proposed, submit mitigation ~~permit~~ plans and cross sections including, at a minimum:

   a. ☐ existing conditions plan sheet identifying upland and wetland communities and acreage of each, topography, drainage patterns, and location of cross-section detail.
   b. ☐ proposed conditions plan sheet identifying proposed improvements by type (restoration, enhancement, creation, preservation), acreage of each, topography, drainage patterns, and location of cross-section detail.
   c. ☐ monitoring plan sheet including proposed improvements, monitoring transects, photostations, and mitigation signage (if applicable).
   d. ☐ cross-section and/or profile detail(s) sheet(s) including representative section of each type of mitigation component. Include existing and proposed conditions and representative elevations.
   e. ☐ planting schedule, plant species including common and scientific names divided into three sections (canopy, shrub, herbaceous) by mitigation component, quantity, spacing, size, and elevation range.

Table 1 - Project Wetland (WI) And Other Surface Water (SW) And Impact Summary

WL & SW ID	UMAM ASSESSMENT AREA NAME(S)	WL & SW TYPE	WL & SW SIZE (acres)	WL & SW NOT IMPACTED (acres)	TEMPORARY WL &SW IMPACT SIZE (acres)	TEMPORARY WL & SW IMPACT TYPE	PERMANENT WL &SW IMPACT SIZE (acres)	PERMANEN WL & SW IMPACT TYP
OSW		D	0.033				0.033	D
PROJECT TOTALS:			0.033				0.033	

Comments:

Codes (multiple entries per cell not allowed):

- Wetland & Surface Water ID: Include ID on submitted wetland and surface water impact maps
- Wetland Type: from an established wetland classification system
- Impact Type: D=dredge; F=fill; H=change hydrology; S=shading; C=clearing; O=other

Table 2 - Project On-Site Mitigation Summary

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION AREA (acres)	RESTORATION AREA (acres)	ENHANCEMENT AREA (acres)	WETLANDS PRESERVE AREA (acres)	UPLAND PRESERVE AREA (acres
PROJECT TOTALS:							

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification

Table 3 - Project Off-Site Mitigation Summary

MITIGATION ID	UMAM ASSESSMENT AREA NAME(S)	TARGET TYPE	CREATION AREA (acres)	RESTORATION AREA (acres)	ENHANCEMENT AREA (acres)	WETLANDS PRESERVE AREA (acres)	UPLAN PRESER AREA (ac
PROJECT TOTALS:							

COMMENTS:

Codes (multiple entries per cell not allowed):

- Target Type or Type=target or existing habitat type from an established wetland classification system or land use classification

Table 4 - Shoreline Stabilization

Stabilization	Linear Ft. New	Linear Ft. Replaced	Linear Ft. Repaired	Linear Ft. Removed	Slope H: V:	Toe Width (Ft.)
Natural Vegetation (living shoreline)					**N/A**	**N/A**
Rip Rap + Vegetation						
Rip Rap						
Seawall + Rip Rap						
Vertical Seawall						
Other Shoreline Stabilization Type						

Size of Rip Rap

Type of Rip Rap

Section E: Supplemental Information Required for Works or Other Activities Involving a Stormwater Management System
(Other Than a Single-Family Project)

Instructions: The information listed in the checklists below represents the level of information that is usually required to evaluate an application. Information can be provided within reports, plans, and documents. The level of information required for a specific project will vary depending on the nature and location of the site and the activity proposed. Conceptual approvals generally do not require the same level of detail as a construction permit. However, providing a greater level of detail will reduce the need to submit additional information at a later date. If an item does not apply to your project, proceed to the next item. The supplemental information required by this section is in addition to the information required by Section A of the application.

Part 1: Stormwater Management System Summary

Provide drainage calculations, signed and sealed by an appropriate registered professional, and supporting documentation demonstrating that the proposed project meets the conditions for issuance under 62-330.301(1)(a),(b),(c),(e), F.A.C. The drainage calculations should include, but not necessarily be limited to, the following:

REFER TO ATTACHED DRAINAGE REPORT.

1. General Site Information:

   a. ■ Provide pre-development and post-development drainage map(s), as appropriate, that include drainage patterns and basin boundaries with acreage served by each hydraulically separate system, showing the direction of flows, including any off-site runoff being routed through or around the system; topographic information; and connections between wetlands and other surface waters.

   b. ■ Provide the results of any percolation tests, where appropriate, and soil borings that are representative of the actual site conditions. Identify the wet season high water table elevations, soil profiles, and hydraulic conductivity. Include dates, datum, and methods used to determine these soil parameters.

   c. ■ Identify the onsite hydrologic soil classification (e.g. Type A, B/D, D). Reference the source, such as the USDA/NRCS Soil Survey, used in estimating the onsite hydrologic soil classification. Provide maps, as appropriate, with the project limits delineated.

   d. ■ Identify the seasonal high water or mean high tide elevation for receiving waters/wetlands into which runoff will be discharged. Include dates, datum, and methods used to determine these elevations.

   e. ■ Identify the name of each receiving waterbody to which the proposed stormwater management system will discharge: .

   f. ■ Indicate the existing land use and land cover.

   g. ■ Provide the acreage and percentages of the total project, of the following:
      1. Impervious surfaces (excluding buildings, wetlands, and other surface waters);

2. Buildings;
3. Pervious surfaces (green areas not including wetlands);
4. Lakes, canals, retention areas, other open water areas; and
5. Wetlands (Please compare to Section C to ensure consistency in wetland acreages).

h. ■ Provide the location and description of any nearby existing offsite features (such as wetlands and other surface waters, stormwater management ponds, and buildings or other structures) which might be affected by or affect the proposed construction or development.

2. Water Quality Analysis:

a. ■ Provide a description of the proposed stormwater treatment methodology that addresses the type of treatment, pollution abatement volumes, and recovery analysis.

b. ☐ Is the receiving waterbody known to be impaired and/or have an established Total Maximum Daily Load (TMDL) or Basin Management Action Plan (BMAP)? If so, please provide specific descriptions of all water quality parameters for which the waterbody is known to be impaired. For more information about water quality, impaired waters, and to determine whether a TMDL has been adopted in your project area, refer to: https://floridadep.gov/dear/water-quality-evaluation-tmdl/content/final-tmdl-reports. To determine whether a BMAP exists, or is being developed in your project area, refer to: https://floridadep.gov/dear/water-quality-restoration/content/basin-management-action-plans-bmaps.

☐ yes ■ no ☐ don't know

If yes, provide calculations demonstrating that the proposed project will not contribute to violations of state water quality standards in accordance with the applicable Applicant's Handbook, Vol. II.

c. ☐ Does the project have a direct discharge to ~~a~~ Class I or II waters; Outstanding Florida Waters (OFW); or Class III waters, which are approved, conditionally approved, restricted, or conditionally restricted for shellfish harvesting? *To determine whether your project is within or will discharge to an OFW, or for more information about OFWs in general, refer to: https://floridadep.gov/dear/water-quality-standards/content/outstanding-florida-waters.*

☐ yes ■ no ☐ don't know

If yes, additional treatment in accordance with the applicable Applicant's Handbook, Vol. II, may be required. Refer to attached exhibits.

d. ■ Provide construction plans and calculations that address the required treatment volume and recovery, as well as stage-storage and design elevations, which demonstrate compliance with the appropriate water quality treatment criteria in the applicable Applicant's Handbook, Vol. II.

e. ■ Provide a description of the engineering methodology, assumptions, and references for the parameters listed above and a copy of all ~~such~~ computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, a description of the program, input and output data, and justification for model selection.

3. Water Quantity Analysis:

Provide calculations and documentations demonstrating that the project, as proposed, meets the applicable design criteria as indicated in the applicable Applicant's Handbook, Vol. II. Typically, the information would include, at a minimum, but ~~is~~ not necessarily limited to, the following:

a. ■ For projects requiring pre-development analysis, provide an analysis of the pre-development peak rate of discharge and~~/~~or volume of runoff~~,~~ for all design storm events.

Account for all onsite depressional storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) that apply to your project.

b. ■ Provide an analysis of the post-development peak rate of discharge and–/–or volume of runoff for all applicable design storm events. Account for all onsite storage and offsite contributing area. Please refer to the applicable Applicant's Handbook, Vol. II for the design storm event(s) and criteria that apply to your project.

These analyses should include:

1. ■ Runoff characteristics, including area, runoff curve number or runoff coefficient, and time of concentration for each drainage basin in the pre-development and post-development condition;
2. ■ Design storms used including rainfall depth, duration, frequency, and distribution;
3. ■ Runoff hydrograph(s) for each drainage basin~~,~~ for all required design storm event(s);
4. ■ Stage-storage computations for any area, such as a reservoir, closed basin, detention area, or channel, used in storage routing;
5. ■ Stage-discharge computations for any storage areas at a selected control point, such as control structure or natural restriction;
6. ■ Flood routings through on-site conveyance and storage areas;
7. ■ Water surface profiles in the primary drainage system for each required design storm event(s);
8. ■ Runoff peak rates and volumes discharged from the site for each required design storm event(s);
9. ■ Design tailwater elevation(s) for each storm event at all points of discharge (include source or method of estimate); and
10. ☐ Pump specifications and operating curves for range of possible operating conditions (if used in system).

c. ■ Provide a description of the engineering methodology, assumptions, and references for the parameters listed above, and a copy of all such computations, engineering plans, and specifications used to analyze the system. If a computer program is used for the analysis, provide the name of the program, input and output data, justification for model selection, and, if necessary, a description of the program.

4. Floodplain Analysis (where applicable). N/A

a. ☐ If the project is in a known floodplain of a stream or other water course, identify the appropriate floodplain boundary and approximate flooding elevations of any lake, stream, or other watercourse located on or adjacent to the site.

b. ☐ For traversing works, in accordance with the applicable Applicant's Handbook, Vol. II, provide:
   1. ☐ Hydraulic calculations for all proposed traversing works; and
   2. ☐ Water surface profiles showing upstream impact of traversing works.

c. ☐ For impacts to regulated floodplains, in accordance with the applicable Applicant's Handbook, Vol. II, provide:
   1. ☐ Location and volume of encroachment within regulated floodplain(s); and
   2. ☐ Plans and calculations for compensating floodplain storage, if necessary, and calculations required for determining minimum building and road flood elevations.

Part 2: Construction Plans REFER TO ATTACHED CONST. PLANS

1. Provide clear, construction level detailed plans for the system. The plans must be signed and sealed by an appropriate registered professional as required by law. These plans should include cumulative information from all applicable sections, as well as the following:
    a. ☒ Project area boundary and total land area (as defined in A.H. Vol. I, subsection 2.0(a)(107), including distances and orientation from roads or other landmarks.

    b. ☒ Existing topography extending at least 100 feet off the project area. All topography shall include location and description of benchmarks, reference to NGVD 1929 or NAVD 1988 along with the conversion factor.

    c. ☒ Proposed site plan with acreage, including the following:
        1. ☒ plan view of proposed development, including impervious surfaces and water management areas;
        2. ☐ land cover and natural communities*;
        3. ☒ wetlands and other surface waters*;
        4. ☐ undisturbed uplands*;
        5. ☐ aquatic communities*;
        6. ☐ proposed buffers*;
        7. ☐ proposed impacts to wetlands and other surface waters, and any proposed connections/outfalls to other surface waters or wetlands, (if applicable); and
        8. ☐ onsite wetland mitigation areas*.
        9. ☒ For phased projects, provide a master development plan clearly delineating the limits of each phase of construction. N/A
        *Information should reflect that provided in Section C.

    d. ☒ Paving, Grading, and Drainage Information, which includes, but is not necessarily limited to, the following:
        1. ☐ Existing topography;
        2. ☒ Boundaries of wetlands and other surface waters and upland buffers (see Section C);
        3. ☐ Plan view of proposed development;
        4. ☐ Proposed elevations and/or profiles, including:
            a) ☐ roadway, parking, and pavement grades;
            b) ☐ floor slabs, walkways, and other paved surfaces;
            c) ☐ earthwork grades for pervious landscaped areas; and
            d) ☐ perimeter site grading, tying back into existing grades.
        5. ☒ Location of all water management areas, including elevations, dimensions, side slopes, and design water depths;
        6. ☒ Location, size, and invert elevations of existing and proposed stormwater conveyance systems;
        7. ☒ Vegetative cover plan for all on-site and off-site earth surfaces disturbed by construction; and
        8. ☒ Rights-of-way and easements for the system, including all on-site and off-site areas to be reserved for water management purposes (including access), and rights-of-way and easements for the existing drainage system, if any.

    e. ☒ Stormwater detail information, including but not necessarily limited to, the following:
        1. ☒ Cross section of all stormwater management areas, including elevations, dimensions, side slopes, and proposed stabilization measures (with location of the cross section(s) shown on the corresponding plan view);
        2. ☒ Detail of all proposed control structures, including elevations, dimensions, and skimmer, where applicable; and

3. ■ Details of proposed stormwater management systems, such as underdrains, exfiltration trenches, vaults, and other proposed Best Management Practices (BMPs).

f. ■ Location and description of any nearby existing offsite features (such as wetland and other surface waters, stormwater management ponds, and building or other structures) which might be affected by or affect the proposed construction or development.

Part 3: Construction Schedule and Techniques

Provide a construction schedule~~,~~ and a description of construction techniques, sequencing, and equipment. This information should include, as applicable, the following.

a. ■ Access and staging of equipment;

b. ■ Location and details of the erosion, sediment, and turbidity control measures to be implemented during each phase of construction and all permanent control measures to be implemented in post-development conditions.

c. ■ The location of disposal site(s) for any excavated material, including temporary and permanent disposal sites.

d. ■ A demolition plan for any existing structures to be removed. Segment of existing SR 62 pavement to be removed.

e. ■ Dewatering plan details. If dewatering is required, detail the dewatering proposal including the methods that are proposed to contain the discharge, methods of isolating dewatering areas, and indicate the period dewatering structures will be in place. **Note: A Consumptive Use or Water Use permit may be required for dewatering.**

f. ■ Methods for transporting equipment and materials to and from the work site. If barges are required for access, provide the low water depths and draft of the fully loaded barge;

Part 4: Operation and Maintenance and Legal Documentation:

a. ■ Describe the overall maintenance and operation schedule for the proposed system.

b. ■ Identify the entity (or entities) that will be responsible for operating and maintaining the system (or parts of the system) to demonstrate that the entity (or entities) meet(s) the requirements of section 12.3 of the Applicant's Handbook, Vol. I.

1. ☐ If different from the permittee, provide a draft document enumerating the enforceable affirmative obligations on the entity to properly operate and maintain the system for its expected life and documentation of the entity's financial responsibility for long-term maintenance.
2. ☐ If the proposed operation and maintenance entity is not a property owner's association, provide proof of the existence of an entity or the future acceptance of the system by an entity which will operate and maintain the system.

c. ☐ Provide drafts of all proposed conservation easements, stormwater management system easements, draft property owner's association documents, and plats for the property containing the proposed system. Manatee County has power of eminent domain.

d. ☐ Provide legal reservations for access to the treatment system for maintenance and operation by future maintenance entities for subdivided projects.

e. ☐ Provide indication of how water and wastewater service will be supplied.

f. ☐ Provide a copy of the boundary survey and/or legal description and acreage of the total land area of contiguous property owned/controlled by the applicant.

g. ■ If any associated land agreements are required to implement the proposed activities, such as flowage easements across lands not owned by the applicant, include such documentation. If negotiations are underway, but not yet concluded, regarding such land use agreements, please indicate that and provide an anticipated date for providing that documentation. A permit cannot be issued for an activity to use lands that are not owned by the applicant or for which the applicant does not hold a sufficient real property interest to use those lands.

Manatee Co. is in process of acquiring property to accommodate signal pole at intersection of Erie Rd & SR 62.

Part 5: Water Use N/A

a. ☐ Describe how irrigation will be provided to the project. Will the surface water system be used for water supply, including landscape irrigation, or recreation?

b. ☐ If a Consumptive Use or Water Use permit has been issued for the project, state the permit number:

c. ☐ If a Consumptive Use or Water Use permit has not been issued for the project, indicate if such a permit will be required. ☐ yes ☐ no ☐ don't know
If yes, please indicate when the application for a permit will be submitted:

d. ☐ Indicate how any existing wells located within the project site will be utilized or abandoned.

Part 6: Special Basin Information

a. Is your project within a special basin as described in the applicable Applicant's Handbook, Vol. II?

☐ yes ■ no ☐ don't know

b. If yes, please demonstrate that the project will meet the applicable special basin criteria.

Pre-Application Meeting Minutes

THIS FORM IS INTENDED TO FACILITATE AND GUIDE THE DIALOGUE DURING A PRE-APPLICATION MEETING BY PROVIDING A PARTIAL "PROMPT LIST" OF DISCUSSION SUBJECTS. IT IS NOT A LIST OF REQUIREMENTS FOR SUBMITTAL BY THE APPLICANT.

SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
RESOURCE REGULATION DIVISION
PRE-APPLICATION MEETING NOTES

FILE NUMBER: PA 406080

Date:	10-10-2018
Time:	11:00am
Project Name:	SR62 and Erie Road Realignment
District Engineer:	Steve Lopes, P.E.
District ES:	Cliff Ondercin, P.W.S.
Attendees:	Prony Bonnaire/Manatee County prony.bonnairefils@mymanatee.org Chris Mowbray, P.E./ Manatee County chris.mowbray@mymanatee.org John Pari, P.E./ Manatee County john.pari@mymanatee.org Sunny Fu, P.E./Manatee County sunny.fu@mymanatee.org Jim Anderson/Manatee County

County:	Manatee	**Sec/Twp/Rge:**	20,29/T33S/R19E
Total Land Acreage:		**Project Acreage:**	

Prior On-Site/Off-Site Permit Activity:

- ERP 12295.009 FDOT - US 301 (From CR 675 to Moccasin Wallow Road)
- ERP 42027535.001 PARRISH PLANTATION FKA CONE PROPERTY

Project Overview:

- Proposed realignment of SR62 at the US 301 intersection. SR 62 will be shifted south. Existing SR 62 will remain as a local access road; some portions of existing SR 62 will be removed.
- Proposed new turn lanes within Erie Road (west of US 301).
- Proposed turn lanes within US 301 (at new SR 62 intersection).

Environmental Discussion

- Provide and quantify the limits of surface water features (ditches).
- Mitigation not required for ditch impacts.
- As of October 1, 2017, the District will no longer send a copy of an application that does not qualify for a State Programmatic General Permit (SPGP) to the U.S. Army Corps of Engineers. If a project does not qualify for a SPGP, you will need to apply separately to the Corps using the appropriate federal application form for activities under federal jurisdiction. Please see the Corps' Jacksonville District Regulatory Division Sourcebook for more information about federal permitting. Please call your local Corps office if you have questions about federal permitting. Link: http://www.saj.usace.army.mil/Missions/Regulatory/Source-Book/

Site Information Discussion:

- Document/justify SHWE's at pond locations, wetlands, and OSWs.

Water Quantity Discussions:

- Demonstrate that post development peak discharges from proposed project area will not cause an adverse impact for a 25-year, 24-hour storm event.
- Not in floodplain according to Gamble Creek and Buffalo Canal Watershed Models.

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Water Quality Discussions:

- Provide water quality treatment for new impervious for new SR 62. Also provide treatment for any other onsite/offsite co-mingling runoff that will drain to pond.
- Water quality treatment not required for Erie Road turn lane and US 301 turn lanes.
- WBID 1823 nutrient impaired. However, portion of project area located within WBID 1823 is for proposed Erie road turn lane (water quality/net improvement not required for exempt activities).
- WBID 1810 not nutrient impaired.

Operation and Maintenance/Legal Information:

- Manatee County will be applicant. County has power of eminent domain. Permit will be conditioned to prohibit construction until after County acquires legal control of project area.

Application Type and Fee Required:

For Individual ERP :

- Provide/address Sections A, C, and E of the SWERP Application.
- < 10 acres of project area and < 1 acre of wetland or surface water impacts fee is $2,184.00. Online Submittal.
- Erie Road turn lanes and US 301 turn lanes (which could be exempt) can be included as part of the Individual ERP Application for SR 62 realignment. Refer to Rule 62-330.050(6), F.A.C.

Other:

- An application for an individual permit to construct or alter a dam, impoundment, reservoir, or appurtenant work, requires that a notice of receipt of the application must be published in a newspaper within the affected area. Provide documentation that such noticing has been accomplished. Note that the published notices of receipt for an ERP can be in accordance with the language provided in Rule 40D-1.603(10), F.A.C.
- Plans and other engineering documents requiring signature/seal and submitted online must include the appropriate information required under Rules 61G15-23.005 (electronic) or 61G15-23.004 (digital), F.A.C.
- Provide soil erosion and sediment control measures for use during construction. Refer to ERP Applicant's Handbook Vol. 1 Part IV Erosion and Sediment Control.

Stormwater Report Narrative

(Revised 6/11/20)

SR 62 & ERIE RD IMPROVEMENTS
INDIVIDUAL RESOURCE PERMIT APPLICATION

Project Description

State Route 62 is a FDOT roadway that is platted Right-of-Way. The existing pavement is 30 ft. with roadside swales. Currently, Erie Road and SR 62 are offset by 250 ft. along U.S. 301.

Erie Road west of U.S. 301 is a two-lane paved roadway with roadside swales. Commercial development lies to the north and south of Erie Rd.

Per attached soils map, the project is predominantly within soil group A, Orlando fine sands. Existing roadway grades vary from 42.0 to the west and 44.5 to the east (NAVD).

Proposed Conditions

Improvements include realigning SR 62 with Erie Rd. at the intersection with U.S. 301. Both left and right turn bays will be added on SR 62 and Erie Rd with interconnected dry retention ponds that will collect runoff from SR 62.

Functional improvements on Erie Road west of U.S. 301 include adding a thru eastbound lane, and right turn lane onto U.S. 301. Type F curb with 6' wide concrete sidewalk is proposed on the south side and 5' wide concrete sidewalk with drop curb is proposed on the north side. Signalization is also proposed for the newly configured intersection.

A right lane is also proposed on U.S. 301 to allow for northbound traffic to turn onto realigned SR 62. A concrete raised median is proposed across the existing SR 62 opening to eliminate a left turn movement from southbound traffic on U.S. 301.

Per the pre-application meeting on 10/10/18, attenuation is required for a 25-year storm event.

This project is located within Gamble Creek. The outfall is located on SR 62 approximately 1,300 LF east of the US 301 / SR62 intersection. The existing drainage basin that drains to the east contains 1.65 Acres with a corresponding pre-developed peak discharge rate for a 25-year storm is 3.65 CFS. The proposed drainage basin (that drains to the east) is 4.70 Acres with a corresponding peak rate for a 25-year storm of 3.54 CFS.

For FDOT submittal, pre-developed peak discharge rate (to the east) for the 100-year storm is 4.79 CFS compared with 4.34 CFS for proposed conditions.

Note: The remaining drainage basin that drains to the west (toward US 301) is reduced from 5.85 Acres to 4.74 Acres. The pre-developed peak discharge rate (to the west) for a 25-year storm is 14.19 CFS compared with 11.65 CFS for proposed conditions. The pre-developed peak

discharge rate (to the west) for the 100-year is 18.86 CFS compared with 15.33 CFS for proposed conditions.

Water Quality

Per the pre-application meeting on 10/10/18, treatment is required for all of SR 62 realignment. Functional improvements on Erie Road and improvements on U.S. 301 are exempt.

The project area for SR 62 realignment = 4.70 Ac. Therefore, the required treatment volume is (4.7 Ac x 0.5")/12 = 0.196 AF.

Water quality will be achieved by the construction of three (3) interconnected dry ponds with a control structure (with skimmer) in dry pond # 3. The provided treatment volume is 0.197 AF. Refer to attached mounding analysis.

Note: There is an additional project area = 0.54 Ac for functional improvements on Erie Rd and 0.12 Ac for minor improvements on U.S. 301 (new right turn lane on to SR 62).

Mounding Analysis

Per the attached mounding analysis, dry pond #1 recovers 7,010 CF in 34.0 hours; dry pond #2 recovers 287 CF in 16.25 hours; dry pond #3 recovers 1,303 CF in 3.75 hours; the total volume infiltrated by the three (3) ponds is 8,600 CF or 0.197 AF. As previously stated, 0.196 AF of treatment is required for SR 62 realignment.

Floodplain Calculations

100-year Floodplain was determined using the Gamble Creek Study prepared by Atkins, dated February 2012. The proposed project is outside the 100-year floodplain. See Flood Exhibit, attached.

No adverse impacts to the 100-year floodplain area anticipated.

Cultural Resources

Please refer to correspondence from Cultural Resources. Exhibit indicate that the listed structural resources are outside the project limits. Florida Fish and Wildlife Conservation Commission has been contacted to evaluate any adverse impacts by this project. Refer to their response, attached with submitted exhibits.

Wetlands

There are no wetland impacts.

OSW Impacts

There are 0.033 acres of Other Surface Water impacts. Refer to the attached Other Surface Water exhibit. Per pre-application meeting minutes, mitigation not required.

Tailwater Conditions

The tailwater conditions were estimate using the Gamble Creek Study prepared by Atkins dated February 2012. The proposed control structure outlet is outside the 25 & 100-year floodplain. See Flood Exhibit, attached.

For FDOT submittal, per e-mail from Rebecca Milam dated August 14, 2019, the District Drainage Design Engineer (Brent Setchell) has requested that 1.0' of freeboard be provided for the 25 yr 24 hr. storm & 0.50' freeboard is provided for the 100-year 24 hr. storm. The attached results for the 100-year storm event indicate a peak stage = 42.77 in pond # 1 compared with a top of bank =43.8; For the 25-year event, a peak stage = 42.48 in pond # 1.

Pond #	100 Yr Stage	25 Yr Stage	Proposed TOB
Dry Pond # 1	42.77	42.48	43.8
Dry Pond # 2	42.72	42.45	43.7
Dry Pond # 3	42.67	42.41	43.7

Impaired water body

The attached impaired water body exhibit indicates no impaired waterbodies east of U.S. 301.

Existing on-site Wells

There is an existing well in the southeast corner of SR 62 & U.S. 301. This well is outside the project area. Refer to well map exhibit, attached.

Operation and Maintenance/ Legal Information

Manatee County has legal control of the project area. There are no proposed easements or acquisitions. The operation and maintenance plan and schedule of the stormwater facility is as follows:

1. Proposed dry pond areas to be inspected bi-annually.
2. All grass areas to be mowed to a height of 6"
3. Control structure & proposed outlet pipe to be inspected bi-annually.
4. Underdrain shall be flushed bi-annually.
5. Any emergent vegetation with pollutant removing capability shall remain in dry ponds.

Existing Stormwater Model (Input / Output Results for: 25 Yr / 100 Yr)

(Revised 6/11/20)

Manual Basin: Basin1

Scenario: Scenario1
Node: Basin 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 29.4000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
5.8600	basin 1	basin 1	~FLMOD		

Comment:

Manual Basin: basin 2

Scenario: Scenario1
Node: sr62
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 36.6000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.6500	sr62	sr62	~FLMOD		

Comment:

Node: BND

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 42.00 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	42.10
0	0	0	12.0000	42.10
0	0	0	24.0000	42.10

Comment:

Node: Basin 1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 42.00 ft
Warning Stage: 0.00 ft

Comment:

Node: bnd2

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 37.73 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	37.30
0	0	0	12.0000	40.46
0	0	0	24.0000	37.30

Comment:

Node: sr62

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 42.10 ft
Warning Stage: 0.00 ft

Comment:

Weir Link: Weir_1

Scenario: Scenario1
From Node: sr62

Bottom Clip
Default: 0.00 ft

To Node:	BND
Link Count:	1
Flow Direction:	Both
Dampening:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	42.10 ft
Control Elevation:	42.10 ft
Cross Section:	section1

Op Table:	
Ref Node:	
Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Weir Link: weir2

Scenario:	Scenario1
From Node:	Basin 1
To Node:	bnd2
Link Count:	1
Flow Direction:	Both
Dampening:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	42.00 ft
Control Elevation:	42.00 ft
Cross Section:	section 2

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Simulation: 10 yr

Scenario:	Scenario1
Run Date/Time:	11/14/2019 5:00:29 PM
Program Version:	ICPR4 4.05.02

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000

Max Calculation Time: 30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 7.00 in
Storm Duration: 24.0000 hr

Dflt Dampening (2D):	0.0050 ft	Dflt Dampening (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 100 yr

Scenario: Scenario1
Run Date/Time: 5/26/2020 9:29:17 AM
Program Version: ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Lookup Tables

Rainfall Folder:		Boundary Stage Set:	
Reference ET Folder:		Extern Hydrograph Set:	
Unit Hydrograph Folder:		Curve Number Set:	1
		Green-Ampt Set:	
		Vertical Layers Set:	
		Impervious Set:	1
		Roughness Set:	
		Crop Coef Set:	
		Fillable Porosity Set:	
		Conductivity Set:	
		Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	Global
Max dZ:	1.0000 ft	OF Region Rain Opt:	Global
Link Optimizer Tol:	0.0001 ft	Rainfall Name:	~FLMOD
		Rainfall Amount:	10.00 in
Edge Length Option:	Automatic	Storm Duration:	24.0000 hr
Dflt Dampening (2D):	0.0050 ft	Dflt Dampening (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Simulation: 25 yr

Scenario:	Scenario1
Run Date/Time:	5/26/2020 9:28:50 AM
Program Version:	ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000

Max Calculation Time: 30.0000

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft
Edge Length Option: Automatic

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False
Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 8.00 in
Storm Duration: 24.0000 hr

Dflt Dampening (2D):	0.0050 ft	Dflt Dampening (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
BND	100 yr	0.00	42.10	0.0000	4.79	0.00	0	0.0000	0.0000	12.3678	0.0000
Basin 1	100 yr	0.00	42.45	0.0010	18.69	18.86	100	12.2781	16.1529	12.2830	12.2949
bnd2	100 yr	0.00	40.46	0.0022	18.86	0.00	0	12.0006	0.7194	12.2949	0.0000
sr62	100 yr	0.00	42.48	0.0010	4.79	4.79	100	12.3667	3.7611	12.3667	12.3678

Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
BND	25 yr	0.00	42.10	0.0000	3.65	0.00	0	0.0000	0.0000	12.3680	0.0000
Basin 1	25 yr	0.00	42.40	0.0010	14.14	14.19	100	12.3155	11.7290	12.2829	12.3229
bnd2	25 yr	0.00	40.46	0.0022	14.19	0.00	0	11.9997	0.7194	12.3229	0.0000
sr62	25 yr	0.00	42.44	0.0010	3.65	3.65	100	12.3680	4.5777	12.3667	12.3680

Proposed Stormwater Model (Input / Output Results for: 25 Yr / 100 Yr)

(Revised 6/11/20)

Manual Basin: DRY_POND1

Scenario: Percolation
Node: Drypond1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.1100	drypond1	drypond1	~FLMOD		

Comment:

Manual Basin: Drypond2

Scenario: Percolation
Node: Drypond2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.2600	drypond2	drypond2	~FLMOD		

Comment:

Manual Basin: basin 1

Scenario: Percolation
Node: BASIN 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 29.4000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
4.7400	basin 1	Basin 1	~FLMOD		

Comment:

Manual Basin: drypond3

Scenario: Percolation
Node: Drypond3
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.3300	drypond3	drypond3	~FLMOD		

Comment:

Manual Basin: DRY_POND1

Scenario: Scenario1
Node: Drypond1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
3.1100	drypond1	drypond1	~FLMOD		

Comment:

Manual Basin: Drypond2

Scenario: Scenario1
Node: Drypond2
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
0.2600	drypond2	drypond2	~FLMOD		

Comment:

Manual Basin: basin 1

Scenario: Scenario1
Node: BASIN 1
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 29.4000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
4.7400	basin 1	Basin 1	~FLMOD		

Comment:

Manual Basin: drypond3

Scenario: Scenario1
Node: Drypond3
Hydrograph Method: NRCS Unit Hydrograph
Infiltration Method: Curve Number
Time of Concentration: 10.0000 min
Max Allowable Q: 0.00 cfs
Time Shift: 0.0000 hr
Unit Hydrograph: UH256
Peaking Factor: 256.0

Area [ac]	Land Cover Zone	Soil Zone	Rainfall Name	Crop Coeficient Zone	Reference ET Station
1.3300	drypond3	drypond3	~FLMOD		

Comment:

Node: BASIN 1

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 42.00 ft
Warning Stage: 0.00 ft

Comment:

Node: BND

Scenario: Percolation
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 39.80 ft
Warning Stage: 42.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	39.80
0	0	0	12.0000	39.80
0	0	0	24.0000	39.80

Comment: ELEV =42
EXIST TOB

Node: BND2

Scenario: Percolation
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 37.73 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	37.73
0	0	0	12.0000	40.46
0	0	0	24.0000	37.73

Comment:

Node: Drypond1

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.40	1.1000	47916
43.70	1.3000	56628

Comment:

Node: Drypond2

Scenario: Percolation
Type: Stage/Area

Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.35	0.0290	1263
43.70	0.0700	3049

Comment:

Node: Drypond3

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.30	0.1100	4792
43.70	0.2700	11761

Comment:

Node: BASIN 1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 42.00 ft
Warning Stage: 0.00 ft

Comment:

Node: BND

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 39.80 ft
Warning Stage: 42.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	39.80
0	0	0	12.0000	39.80
0	0	0	24.0000	39.80

Comment: ELEV =42
EXIST TOB

Node: BND2

Scenario: Scenario1
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 37.73 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	37.73
0	0	0	12.0000	40.46
0	0	0	24.0000	37.73

Comment:

Node: Drypond1

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.40 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.40	1.1000	47916
43.70	1.3000	56628

Comment:

Node: Drypond2

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.35 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.35	0.0290	1263
43.70	0.0700	3049

Comment:

Node: Drypond3

Scenario: Scenario1
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.30 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.30	0.1100	4792
43.70	0.2700	11761

Comment:

Pipe Link: RDrypond1

Scenario: Percolation
From Node: Drypond1
To Node: Drypond2
Link Count: 1
Flow Direction: Both
Dampening: 0.0000 ft
Length: 85.00 ft
FHWA Code: 0
Entr Loss Coef: 0.50
Exit Loss Coef: 0.00

Upstream		Downstream	
Invert:	41.40 ft	Invert:	41.35 ft
Manning's N:	0.0130	Manning's N:	0.0130
Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Max Depth:	1.20 ft	Max Depth:	1.20 ft
Bottom Clip			
Default:	0.00 ft	Default:	0.00 ft
Op Table:		Op Table:	
Ref Node:		Ref Node:	
Manning's N:	0.0130	Manning's N:	0.0130
Top Clip			

Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Pipe Link: RDrypond2		Upstream		Downstream	
Scenario:	Percolation	Invert:	41.35 ft	Invert:	41.30 ft
From Node:	Drypond2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Drypond3	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Dampening:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	95.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0130	Manning's N:	0.0130
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Drop Structure Link: control struct		Upstream Pipe		Downstream Pipe	
Scenario:	Percolation	Invert:	39.90 ft	Invert:	39.80 ft
From Node:	Drypond3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	BND	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	10	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Dampening:	0.0000 ft	Manning's N:	0.0130	Manning's N:	0.0130
Length:	32.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0130	Manning's N:	0.0130
Bend Location:	0.00 ft				
Energy Switch:	Energy				

Pipe Comment:

Weir Component		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Dampening:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	Top Clip	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	41.55 ft	Op Table:	
Control Elevation:	41.55 ft	Ref Node:	
Max Depth:	0.58 ft	Discharge Coefficients	
Max Width:	1.08 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Weir Component		Bottom Clip	
Weir:	2	Default:	0.00 ft
Weir Count:	1	Op Table:	
Dampening:	0.0000 ft		

Weir Type:	Horizontal
Geometry Type:	Rectangular
Invert:	43.05 ft
Control Elevation:	43.05 ft
Max Depth:	1.00 ft
Max Width:	3.00 ft
Fillet:	0.00 ft

Ref Node:	
Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default:	3.200
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Weir Comment:

Drop Structure Comment:

Percolation Link: drypond1

Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	BND	Perimeter 1:	1100.00 ft
Link Count:	1	Perimeter 2:	1440.00 ft
Flow Direction:	Both	Perimeter 3:	2110.00 ft
Aquifer Base Elevation:	34.00 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	40.00 ft	Distance P2 to P3:	100.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	9.000 fpd	# of Cells P2 to P3:	45
Vertical Conductivity:	4.500 fpd		
Fillable Porosity:	0.100		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety = 2 for porosity

Percolation Link: drypond2

Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond2	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	BND	Perimeter 1:	230.00 ft
Link Count:	1	Perimeter 2:	532.00 ft
Flow Direction:	Both	Perimeter 3:	840.00 ft
Aquifer Base Elevation:	33.50 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	40.00 ft	Distance P2 to P3:	50.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	9.000 fpd	# of Cells P2 to P3:	45
Vertical Conductivity:	4.500 fpd		
Fillable Porosity:	0.080		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety =2 for porosity

Percolation Link: drypond3

Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond3	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	BND	Perimeter 1:	1160.00 ft
Link Count:	1	Perimeter 2:	1485.00 ft
Flow Direction:	Both	Perimeter 3:	1800.00 ft
Aquifer Base Elevation:	33.00 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	40.00 ft	Distance P2 to P3:	50.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	9.000 fpd	# of Cells P2 to P3:	45
Vertical Conductivity:	4.500 fpd		
Fillable Porosity:	0.080		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety =2 for porosity

Weir Link: weir2			
Scenario:	Percolation	Bottom Clip	
From Node:	BASIN 1	Default:	0.00 ft
To Node:	BND2	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	Top Clip	
Dampening:	0.0000 ft	Default:	0.00 ft
Weir Type:	Broad Crested Vertical	Op Table:	
Geometry Type:	Irregular	Ref Node:	
Invert:	42.00 ft	Discharge Coefficients	
Control Elevation:	42.00 ft	Weir Default:	2.800
Cross Section:	section2	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Comment:

Pipe Link: RDrypond1		Upstream		Downstream	
Scenario:	Scenario1	Invert:	41.40 ft	Invert:	41.35 ft
From Node:	Drypond1	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Drypond2	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Dampening:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	85.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0130	Manning's N:	0.0130
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Pipe Link: RDrypond2		Upstream		Downstream	
Scenario:	Scenario1	Invert:	41.35 ft	Invert:	41.30 ft
From Node:	Drypond2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Drypond3	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Dampening:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	95.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0130	Manning's N:	0.0130
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Drop Structure Link: control struct		Upstream Pipe		Downstream Pipe	
Scenario:	Scenario1	Invert:	39.90 ft	Invert:	39.80 ft
From Node:	Drypond3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	BND	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	10	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	

Dampening:	0.0000 ft	Manning's N:	0.0130	Manning's N:	0.0130
Length:	154.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0130	Manning's N:	0.0130
Bend Location:	0.00 ft				
Energy Switch:	Energy				

Pipe Comment:

Weir Component

Weir:	1	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Dampening:	0.0000 ft	Op Table:	
Weir Type:	Sharp Crested Vertical	Ref Node:	
Geometry Type:	Rectangular	**Top Clip**	
Invert:	41.55 ft	Default:	0.00 ft
Control Elevation:	41.55 ft	Op Table:	
Max Depth:	0.58 ft	Ref Node:	
Max Width:	1.50 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Weir Component

Weir:	2	**Bottom Clip**	
Weir Count:	1	Default:	0.00 ft
Dampening:	0.0000 ft	Op Table:	
Weir Type:	Horizontal	Ref Node:	
Geometry Type:	Rectangular	**Top Clip**	
Invert:	43.05 ft	Default:	0.00 ft
Control Elevation:	43.05 ft	Op Table:	
Max Depth:	1.00 ft	Ref Node:	
Max Width:	3.00 ft	**Discharge Coefficients**	
Fillet:	0.00 ft	Weir Default:	3.200
		Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Percolation Link: drypond1

Scenario:	Scenario1	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond1	Vertical Flow Termination:	Horizontal Flow Algorithm
To Node:	BND	Perimeter 1:	1183.00 ft
Link Count:	1	Perimeter 2:	1498.00 ft
Flow Direction:	Both	Perimeter 3:	34324.00 ft
Aquifer Base Elevation:	34.00 ft	Distance P1 to P2:	50.00 ft
Water Table Elevation:	40.00 ft	Distance P2 to P3:	450.00 ft
Annual Recharge Rate:	0 ipy	# of Cells P1 to P2:	10
Horizontal Conductivity:	9.000 fpd	# of Cells P2 to P3:	45
Vertical Conductivity:	6.000 fpd		
Fillable Porosity:	0.100		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety = 2 for porosity

Percolation Link: drypond2

Scenario:	Scenario1	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond2	Vertical Flow Termination:	Horizontal Flow Algorithm

To Node:	BND
Link Count:	1
Flow Direction:	Both
Aquifer Base Elevation:	33.50 ft
Water Table Elevation:	40.00 ft
Annual Recharge Rate:	0 ipy
Horizontal Conductivity:	9.000 fpd
Vertical Conductivity:	6.000 fpd
Fillable Porosity:	0.080
Layer Thickness:	0.00 ft

Perimeter 1:	230.00 ft
Perimeter 2:	544.00 ft
Perimeter 3:	3371.00 ft
Distance P1 to P2:	50.00 ft
Distance P2 to P3:	450.00 ft
# of Cells P1 to P2:	10
# of Cells P2 to P3:	45

Comment: Factor of Safety =2 for porosity

Percolation Link: drypond3

Scenario:	Scenario1
From Node:	Drypond3
To Node:	BND
Link Count:	1
Flow Direction:	Both
Aquifer Base Elevation:	33.00 ft
Water Table Elevation:	40.00 ft
Annual Recharge Rate:	0 ipy
Horizontal Conductivity:	9.000 fpd
Vertical Conductivity:	6.000 fpd
Fillable Porosity:	0.080
Layer Thickness:	0.00 ft

Surface Area Option:	Use 1st Point in Stage/Area Table
Vertical Flow Termination:	Horizontal Flow Algorithm
Perimeter 1:	1040.00 ft
Perimeter 2:	1354.00 ft
Perimeter 3:	4181.00 ft
Distance P1 to P2:	50.00 ft
Distance P2 to P3:	450.00 ft
# of Cells P1 to P2:	10
# of Cells P2 to P3:	45

Comment: Factor of Safety =2 for porosity

Weir Link: weir2

Scenario:	Scenario1
From Node:	BASIN 1
To Node:	BND2
Link Count:	1
Flow Direction:	Both
Dampening:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	42.00 ft
Control Elevation:	42.00 ft
Cross Section:	section2

Bottom Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Top Clip	
Default:	0.00 ft
Op Table:	
Ref Node:	
Discharge Coefficients	
Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Simulation: Perc

Scenario:	Percolation
Run Date/Time:	5/22/2020 3:51:39 PM
Program Version:	ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Dampening (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Manual Basin Rain Opt: No Rainfall
OF Region Rain Opt: No Rainfall

Dflt Dampening (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 10 year

Scenario: Scenario1
Run Date/Time: 11/14/2019 5:07:10 PM
Program Version: ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Dampening (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 7.00 in
Storm Duration: 24.0000 hr

Dflt Dampening (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 100 year

Scenario: Scenario1
Run Date/Time: 5/22/2020 3:46:06 PM
Program Version: ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Dampening (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 10.00 in
Storm Duration: 24.0000 hr

Dflt Dampening (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Simulation: 25 year

Scenario: Scenario1
Run Date/Time: 5/26/2020 10:07:22 AM
Program Version: ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	24.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:
Reference ET Folder:
Unit Hydrograph Folder:

Lookup Tables

Boundary Stage Set:
Extern Hydrograph Set:
Curve Number Set: 1
Green-Ampt Set:
Vertical Layers Set:
Impervious Set: 1
Roughness Set:
Crop Coef Set:
Fillable Porosity Set:
Conductivity Set:
Leakage Set:

Tolerances & Options

Time Marching: SAOR
Max Iterations: 6
Over-Relax Weight Fact: 0.5 dec
dZ Tolerance: 0.0010 ft
Max dZ: 1.0000 ft
Link Optimizer Tol: 0.0001 ft

Edge Length Option: Automatic

Dflt Dampening (2D): 0.0050 ft
Min Node Srf Area (2D): 100 ft2
Energy Switch (2D): Energy

IA Recovery Time: 24.0000 hr
ET for Manual Basins: False

Manual Basin Rain Opt: Global
OF Region Rain Opt: Global
Rainfall Name: ~FLMOD
Rainfall Amount: 8.00 in
Storm Duration: 24.0000 hr

Dflt Dampening (1D): 0.0050 ft
Min Node Srf Area (1D): 100 ft2
Energy Switch (1D): Energy

Comment:

Curve Number: 1 [Set]

Land Cover Zone	Soil Zone	Curve Number [dec]
drypond1	drypond1	88.1
drypond2	drypond2	82.3
drypond3	drypond3	90.8

Impervious: 1 [Set]

Land Cover Zone	% Impervious	% DCIA	% Direct	Ia Impervious [in]	Ia Pervious [in]
drypond1	32.10	32.10	0.00	0.000	0.000
drypond2	11.60	11.60	0.00	0.000	0.000
drypond3	8.30	8.30	0.00	0.000	0.000

Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
BND	100 year	42.00	39.80	0.0000	4.34	0.00	0	0.0000	0.0000	12.5977	0.0000
BND2	100 year	0.00	40.46	0.0019	15.33	0.00	0	11.9998	0.7194	12.2825	0.0000
Drypond1	100 year	43.70	42.77	0.0010	20.17	2.82	53095	13.0404	10.7945	12.0498	13.8336
Drypond2	100 year	43.70	42.72	0.0010	3.05	2.85	2308	12.8510	6.7302	12.0644	13.8626
Drypond3	100 year	43.70	42.67	0.0010	7.73	5.04	8783	12.6969	11.9444	12.0498	12.1103

Node Max Conditions w/ Times [Scenario1]

Node Name	Sim Name	Warning Stage [ft]	Max Stage [ft]	Min/Max Delta Stage [ft]	Max Total Inflow [cfs]	Max Total Outflow [cfs]	Max Surface Area [ft2]	Time to Max Stage [hr]	Time to Min/Max Delta Stage [hr]	Time to Max Total Inflow [hr]	Time to Max Total Outflow [hr]
BND	25 year	42.00	39.80	0.0000	3.54	0.00	0	0.0000	0.0000	12.6376	0.0000
BND2	25 year	0.00	40.46	0.0019	11.65	0.00	0	12.0002	0.7194	12.2830	0.0000
Drypond1	25 year	43.70	42.48	0.0010	16.04	2.34	52047	12.9919	12.2436	12.0496	13.4657
Drypond2	25 year	43.70	42.45	0.0010	2.54	2.37	2199	12.8544	11.5018	12.0665	13.4894
Drypond3	25 year	43.70	42.41	0.0010	6.09	4.29	8052	12.7263	11.7706	12.0496	12.1234

Ground Mounding Analysis

(Revised 6/11/20)

Node: BASIN 1

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 42.00 ft
Warning Stage: 0.00 ft

Comment:

Node: BND

Scenario: Percolation
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 39.80 ft
Warning Stage: 42.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	39.80
0	0	0	12.0000	39.80
0	0	0	24.0000	39.80

Comment: ELEV =42
EXIST TOB

Node: BND2

Scenario: Percolation
Type: Time/Stage
Base Flow: 0.00 cfs
Initial Stage: 37.73 ft
Warning Stage: 0.00 ft
Boundary Stage:

Year	Month	Day	Hour	Stage [ft]
0	0	0	0.0000	37.73
0	0	0	12.0000	40.46
0	0	0	24.0000	37.73

Comment:

Node: Drypond1

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.40	1.1000	47916
43.70	1.3000	56628

Comment:

Node: Drypond2

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.35	0.0290	1263
43.70	0.0700	3049

Comment:

Node: Drypond3

Scenario: Percolation
Type: Stage/Area
Base Flow: 0.00 cfs
Initial Stage: 41.55 ft
Warning Stage: 43.70 ft

Stage [ft]	Area [ac]	Area [ft2]
41.30	0.1100	4792
43.70	0.2700	11761

Comment:

Pipe Link: RDrypond1

Scenario: Percolation
From Node: Drypond1
To Node: Drypond2

Upstream	Downstream
Invert: 41.40 ft	Invert: 41.35 ft
Manning's N: 0.0130	Manning's N: 0.0130
Geometry: Horizontal Ellipse	Geometry: Horizontal Ellipse

Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Dampening:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	85.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0130	Manning's N:	0.0130
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Pipe Link: RDrypond2		Upstream		Downstream	
Scenario:	Percolation	Invert:	41.35 ft	Invert:	41.30 ft
From Node:	Drypond2	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	Drypond3	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Dampening:	0.0000 ft	Default:	0.00 ft	Default:	0.00 ft
Length:	95.00 ft	Op Table:		Op Table:	
FHWA Code:	0	Ref Node:		Ref Node:	
Entr Loss Coef:	0.50	Manning's N:	0.0130	Manning's N:	0.0130
Exit Loss Coef:	0.00	Top Clip			
Bend Loss Coef:	0.00	Default:	0.00 ft	Default:	0.00 ft
Bend Location:	0.00 ft	Op Table:		Op Table:	
Energy Switch:	Energy	Ref Node:		Ref Node:	
		Manning's N:	0.0130	Manning's N:	0.0130

Comment:

Drop Structure Link: control struct		Upstream Pipe		Downstream Pipe	
Scenario:	Percolation	Invert:	39.90 ft	Invert:	39.80 ft
From Node:	Drypond3	Manning's N:	0.0130	Manning's N:	0.0130
To Node:	BND	Geometry: Horizontal Ellipse		Geometry: Horizontal Ellipse	
Link Count:	1	Max Depth:	1.20 ft	Max Depth:	1.20 ft
Flow Direction:	Both	Bottom Clip			
Solution:	Combine	Default:	0.00 ft	Default:	0.00 ft
Increments:	10	Op Table:		Op Table:	
Pipe Count:	1	Ref Node:		Ref Node:	
Dampening:	0.0000 ft	Manning's N:	0.0130	Manning's N:	0.0130
Length:	32.00 ft	Top Clip			
FHWA Code:	0	Default:	0.00 ft	Default:	0.00 ft
Entr Loss Coef:	0.50	Op Table:		Op Table:	
Exit Loss Coef:	0.00	Ref Node:		Ref Node:	
Bend Loss Coef:	0.00	Manning's N:	0.0130	Manning's N:	0.0130

Bend Location: 0.00 ft
Energy Switch: Energy

Pipe Comment:

Weir Component		Bottom Clip	
Weir:	1	Default:	0.00 ft
Weir Count:	1	Op Table:	
Dampening:	0.0000 ft	Ref Node:	
Weir Type:	Sharp Crested Vertical	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	41.55 ft	Op Table:	
Control Elevation:	41.55 ft	Ref Node:	
Max Depth:	0.58 ft	**Discharge Coefficients**	
Max Width:	1.08 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Weir Component		Bottom Clip	
Weir:	2	Default:	0.00 ft
Weir Count:	1	Op Table:	
Dampening:	0.0000 ft	Ref Node:	
Weir Type:	Horizontal	**Top Clip**	
Geometry Type:	Rectangular	Default:	0.00 ft
Invert:	43.05 ft	Op Table:	
Control Elevation:	43.05 ft	Ref Node:	
Max Depth:	1.00 ft	**Discharge Coefficients**	
Max Width:	3.00 ft	Weir Default:	3.200
Fillet:	0.00 ft	Weir Table:	
		Orifice Default:	0.600
		Orifice Table:	

Weir Comment:

Drop Structure Comment:

Percolation Link: drypond1			
Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond1		
To Node:	BND	Vertical Flow Termination:	Horizontal Flow Algorithm
Link Count:	1	Perimeter 1:	1100.00 ft
Flow Direction:	Both	Perimeter 2:	1440.00 ft
Aquifer Base Elevation:	34.00 ft	Perimeter 3:	2110.00 ft
Water Table Elevation:	40.00 ft	Distance P1 to P2:	50.00 ft
Annual Recharge Rate:	0 ipy	Distance P2 to P3:	100.00 ft

Horizontal Conductivity:	9.000 fpd		
Vertical Conductivity:	4.500 fpd	# of Cells P1 to P2:	10
Fillable Porosity:	0.100	# of Cells P2 to P3:	45
Layer Thickness:	0.00 ft		

Comment: Factor of Safety = 2 for porosity

Percolation Link: drypond2

Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond2		
To Node:	BND	Vertical Flow Termination:	Horizontal Flow Algorithm
Link Count:	1	Perimeter 1:	230.00 ft
Flow Direction:	Both	Perimeter 2:	532.00 ft
Aquifer Base Elevation:	33.50 ft	Perimeter 3:	840.00 ft
Water Table Elevation:	40.00 ft	Distance P1 to P2:	50.00 ft
Annual Recharge Rate:	0 ipy	Distance P2 to P3:	50.00 ft
Horizontal Conductivity:	9.000 fpd	# of Cells P1 to P2:	10
Vertical Conductivity:	4.500 fpd	# of Cells P2 to P3:	45
Fillable Porosity:	0.080		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety =2 for porosity

Percolation Link: drypond3

Scenario:	Percolation	Surface Area Option:	Use 1st Point in Stage/Area Table
From Node:	Drypond3		
To Node:	BND	Vertical Flow Termination:	Horizontal Flow Algorithm
Link Count:	1	Perimeter 1:	1160.00 ft
Flow Direction:	Both	Perimeter 2:	1485.00 ft
Aquifer Base Elevation:	33.00 ft	Perimeter 3:	1800.00 ft
Water Table Elevation:	40.00 ft	Distance P1 to P2:	50.00 ft
Annual Recharge Rate:	0 ipy	Distance P2 to P3:	50.00 ft
Horizontal Conductivity:	9.000 fpd	# of Cells P1 to P2:	10
Vertical Conductivity:	4.500 fpd	# of Cells P2 to P3:	45
Fillable Porosity:	0.080		
Layer Thickness:	0.00 ft		

Comment: Factor of Safety =2 for porosity

Weir Link: weir2

Scenario:	Percolation	Bottom Clip	
From Node:	BASIN 1	Default:	0.00 ft
To Node:	BND2	Op Table:	
Link Count:	1	Ref Node:	
Flow Direction:	Both	Top Clip	

Dampening:	0.0000 ft
Weir Type:	Broad Crested Vertical
Geometry Type:	Irregular
Invert:	42.00 ft
Control Elevation:	42.00 ft
Cross Section:	section2

Default:	0.00 ft
Op Table:	
Ref Node:	

Discharge Coefficients

Weir Default:	2.800
Weir Table:	
Orifice Default:	0.600
Orifice Table:	

Comment:

Simulation: Perc

Scenario:	Percolation
Run Date/Time:	6/11/2020 10:29:22 AM
Program Version:	ICPR4 4.03.01

General

Run Mode: Normal

	Year	Month	Day	Hour [hr]
Start Time:	0	0	0	0.0000
End Time:	0	0	0	72.0000

	Hydrology [sec]	Surface Hydraulics [sec]	Groundwater [sec]
Min Calculation Time:	60.0000	0.1000	900.0000
Max Calculation Time:		30.0000	

Output Time Increments

Hydrology

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Surface Hydraulics

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	15.0000

Groundwater

Year	Month	Day	Hour [hr]	Time Increment [min]
0	0	0	0.0000	360.0000

Restart File

Save Restart: False

Resources & Lookup Tables

Resources

Rainfall Folder:	
Reference ET Folder:	
Unit Hydrograph Folder:	

Lookup Tables

Boundary Stage Set:	
Extern Hydrograph Set:	
Curve Number Set:	1
Green-Ampt Set:	
Vertical Layers Set:	
Impervious Set:	1
Roughness Set:	
Crop Coef Set:	
Fillable Porosity Set:	
Conductivity Set:	
Leakage Set:	

Tolerances & Options

Time Marching:	SAOR	IA Recovery Time:	24.0000 hr
Max Iterations:	6	ET for Manual Basins:	False
Over-Relax Weight Fact:	0.5 dec		
dZ Tolerance:	0.0010 ft	Manual Basin Rain Opt:	No Rainfall
Max dZ:	1.0000 ft	OF Region Rain Opt:	No Rainfall
Link Optimizer Tol:	0.0001 ft		
Edge Length Option:	Automatic		
Dflt Dampening (2D):	0.0050 ft	Dflt Dampening (1D):	0.0050 ft
Min Node Srf Area (2D):	100 ft2	Min Node Srf Area (1D):	100 ft2
Energy Switch (2D):	Energy	Energy Switch (1D):	Energy

Comment:

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	0.0000	41.55	0
Drypond1	0.2511	41.54	-416
Drypond1	0.5050	41.54	-720
Drypond1	0.7522	41.53	-951
Drypond1	1.0005	41.53	-1147
Drypond1	1.2564	41.52	-1323
Drypond1	1.5047	41.52	-1478
Drypond1	1.7530	41.52	-1620
Drypond1	2.0014	41.51	-1752
Drypond1	2.2572	41.51	-1880
Drypond1	2.5055	41.51	-1997
Drypond1	2.7539	41.51	-2108
Drypond1	3.0022	41.50	-2214
Drypond1	3.2505	41.50	-2316
Drypond1	3.5064	41.50	-2416
Drypond1	3.7547	41.50	-2509
Drypond1	4.0030	41.50	-2599
Drypond1	4.2513	41.49	-2686
Drypond1	4.5072	41.49	-2772
Drypond1	4.7555	41.49	-2853
Drypond1	5.0038	41.49	-2932
Drypond1	5.2521	41.49	-3008
Drypond1	5.5005	41.49	-3082
Drypond1	5.7563	41.48	-3156
Drypond1	6.0046	41.48	-3226
Drypond1	6.2530	41.48	-3294
Drypond1	6.5013	41.48	-3361
Drypond1	6.7571	41.48	-3427
Drypond1	7.0055	41.48	-3490
Drypond1	7.2538	41.48	-3552
Drypond1	7.5021	41.48	-3612
Drypond1	7.7504	41.47	-3671
Drypond1	8.0063	41.47	-3730
Drypond1	8.2546	41.47	-3787
Drypond1	8.5029	41.47	-3842
Drypond1	8.7513	41.47	-3896
Drypond1	9.0071	41.47	-3951
Drypond1	9.2554	41.47	-4002
Drypond1	9.5038	41.47	-4053
Drypond1	9.7521	41.47	-4103
Drypond1	10.0004	41.46	-4152
Drypond1	10.2563	41.46	-4202

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	10.5046	41.46	-4249
Drypond1	10.7529	41.46	-4296
Drypond1	11.0012	41.46	-4342
Drypond1	11.2571	41.46	-4388
Drypond1	11.5054	41.46	-4432
Drypond1	11.7537	41.46	-4476
Drypond1	12.0021	41.46	-4518
Drypond1	12.2504	41.46	-4561
Drypond1	12.5062	41.45	-4604
Drypond1	12.7546	41.45	-4644
Drypond1	13.0029	41.45	-4685
Drypond1	13.2512	41.45	-4724
Drypond1	13.5071	41.45	-4765
Drypond1	13.7554	41.45	-4803
Drypond1	14.0037	41.45	-4841
Drypond1	14.2520	41.45	-4879
Drypond1	14.5004	41.45	-4916
Drypond1	14.7562	41.45	-4954
Drypond1	15.0045	41.45	-4990
Drypond1	15.2529	41.45	-5026
Drypond1	15.5012	41.45	-5061
Drypond1	15.7570	41.44	-5097
Drypond1	16.0054	41.44	-5132
Drypond1	16.2537	41.44	-5166
Drypond1	16.5020	41.44	-5200
Drypond1	16.7503	41.44	-5233
Drypond1	17.0062	41.44	-5267
Drypond1	17.2545	41.44	-5300
Drypond1	17.5028	41.44	-5332
Drypond1	17.7511	41.44	-5364
Drypond1	18.0070	41.44	-5397
Drypond1	18.2553	41.44	-5428
Drypond1	18.5036	41.44	-5459
Drypond1	18.7520	41.44	-5489
Drypond1	19.0003	41.44	-5520
Drypond1	19.2561	41.44	-5550
Drypond1	19.5045	41.43	-5580
Drypond1	19.7528	41.43	-5610
Drypond1	20.0011	41.43	-5639
Drypond1	20.2570	41.43	-5669
Drypond1	20.5053	41.43	-5698
Drypond1	20.7536	41.43	-5726

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	21.0019	41.43	-5755
Drypond1	21.2503	41.43	-5783
Drypond1	21.5061	41.43	-5811
Drypond1	21.7544	41.43	-5839
Drypond1	22.0028	41.43	-5866
Drypond1	22.2511	41.43	-5894
Drypond1	22.5069	41.43	-5921
Drypond1	22.7553	41.43	-5948
Drypond1	23.0036	41.43	-5975
Drypond1	23.2519	41.43	-6001
Drypond1	23.5002	41.43	-6028
Drypond1	23.7561	41.42	-6054
Drypond1	24.0044	41.42	-6080
Drypond1	24.2527	41.42	-6106
Drypond1	24.5011	41.42	-6132
Drypond1	24.7569	41.42	-6158
Drypond1	25.0052	41.42	-6183
Drypond1	25.2536	41.42	-6208
Drypond1	25.5019	41.42	-6233
Drypond1	25.7502	41.42	-6257
Drypond1	26.0061	41.42	-6283
Drypond1	26.2544	41.42	-6307
Drypond1	26.5027	41.42	-6331
Drypond1	26.7510	41.42	-6356
Drypond1	27.0069	41.42	-6380
Drypond1	27.2552	41.42	-6404
Drypond1	27.5035	41.42	-6428
Drypond1	27.7519	41.42	-6452
Drypond1	28.0002	41.42	-6475
Drypond1	28.2560	41.42	-6499
Drypond1	28.5044	41.41	-6522
Drypond1	28.7527	41.41	-6545
Drypond1	29.0010	41.41	-6568
Drypond1	29.2569	41.41	-6592
Drypond1	29.5052	41.41	-6615
Drypond1	29.7535	41.41	-6637
Drypond1	30.0018	41.41	-6660
Drypond1	30.2501	41.41	-6682
Drypond1	30.5060	41.41	-6705
Drypond1	30.7543	41.41	-6728
Drypond1	31.0026	41.41	-6750
Drypond1	31.2510	41.41	-6772

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	31.5068	41.41	-6794
Drypond1	31.7551	41.41	-6816
Drypond1	32.0035	41.41	-6838
Drypond1	32.2518	41.41	-6859
Drypond1	32.5001	41.41	-6881
Drypond1	32.7560	41.41	-6903
Drypond1	33.0043	41.41	-6925
Drypond1	33.2526	41.41	-6946
Drypond1	33.5009	41.41	-6967
Drypond1	33.7568	41.41	-6989
Drypond1	34.0051	41.40	-7010
Drypond1	34.2534	41.40	-7031
Drypond1	34.5018	41.40	-7052
Drypond1	34.7501	41.40	-7073
Drypond1	35.0059	41.40	-7094
Drypond1	35.2543	41.40	-7115
Drypond1	35.5026	41.40	-7135
Drypond1	35.7509	41.40	-7156
Drypond1	36.0068	41.40	-7177
Drypond1	36.2551	41.40	-7197
Drypond1	36.5034	41.40	-7218
Drypond1	36.7517	41.40	-7236
Drypond1	37.0001	41.40	-7236
Drypond1	37.2559	41.40	-7236
Drypond1	37.5042	41.40	-7236
Drypond1	37.7526	41.40	-7236
Drypond1	38.0009	41.40	-7236
Drypond1	38.2567	41.40	-7236
Drypond1	38.5051	41.40	-7236
Drypond1	38.7534	41.40	-7236
Drypond1	39.0017	41.40	-7236
Drypond1	39.2500	41.40	-7236
Drypond1	39.5059	41.40	-7236
Drypond1	39.7542	41.40	-7236
Drypond1	40.0025	41.40	-7236
Drypond1	40.2509	41.40	-7236
Drypond1	40.5067	41.40	-7236
Drypond1	40.7550	41.40	-7236
Drypond1	41.0034	41.40	-7236
Drypond1	41.2517	41.40	-7236
Drypond1	41.5000	41.40	-7236
Drypond1	41.7559	41.40	-7236

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	42.0042	41.40	-7236
Drypond1	42.2525	41.40	-7236
Drypond1	42.5008	41.40	-7236
Drypond1	42.7567	41.40	-7236
Drypond1	43.0050	41.40	-7236
Drypond1	43.2533	41.40	-7236
Drypond1	43.5016	41.40	-7236
Drypond1	43.7575	41.40	-7236
Drypond1	44.0058	41.40	-7236
Drypond1	44.2541	41.40	-7236
Drypond1	44.5025	41.40	-7236
Drypond1	44.7508	41.40	-7236
Drypond1	45.0066	41.40	-7236
Drypond1	45.2550	41.40	-7236
Drypond1	45.5033	41.40	-7236
Drypond1	45.7516	41.40	-7236
Drypond1	46.0075	41.40	-7236
Drypond1	46.2558	41.40	-7236
Drypond1	46.5041	41.40	-7236
Drypond1	46.7524	41.40	-7236
Drypond1	47.0008	41.40	-7236
Drypond1	47.2566	41.40	-7236
Drypond1	47.5049	41.40	-7236
Drypond1	47.7533	41.40	-7236
Drypond1	48.0016	41.40	-7236
Drypond1	48.2574	41.40	-7236
Drypond1	48.5058	41.40	-7236
Drypond1	48.7541	41.40	-7236
Drypond1	49.0024	41.40	-7236
Drypond1	49.2507	41.40	-7236
Drypond1	49.5066	41.40	-7236
Drypond1	49.7549	41.40	-7236
Drypond1	50.0032	41.40	-7236
Drypond1	50.2516	41.40	-7236
Drypond1	50.5074	41.40	-7236
Drypond1	50.7557	41.40	-7236
Drypond1	51.0041	41.40	-7236
Drypond1	51.2524	41.40	-7236
Drypond1	51.5007	41.40	-7236
Drypond1	51.7566	41.40	-7236
Drypond1	52.0049	41.40	-7236
Drypond1	52.2532	41.40	-7236

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	52.5015	41.40	-7236
Drypond1	52.7574	41.40	-7236
Drypond1	53.0057	41.40	-7236
Drypond1	53.2540	41.40	-7236
Drypond1	53.5024	41.40	-7236
Drypond1	53.7507	41.40	-7236
Drypond1	54.0065	41.40	-7236
Drypond1	54.2549	41.40	-7236
Drypond1	54.5032	41.40	-7236
Drypond1	54.7515	41.40	-7236
Drypond1	55.0073	41.40	-7236
Drypond1	55.2557	41.40	-7236
Drypond1	55.5040	41.40	-7236
Drypond1	55.7523	41.40	-7236
Drypond1	56.0006	41.40	-7236
Drypond1	56.2565	41.40	-7236
Drypond1	56.5048	41.40	-7236
Drypond1	56.7531	41.40	-7236
Drypond1	57.0015	41.40	-7236
Drypond1	57.2573	41.40	-7236
Drypond1	57.5056	41.40	-7236
Drypond1	57.7540	41.40	-7236
Drypond1	58.0023	41.40	-7236
Drypond1	58.2506	41.40	-7236
Drypond1	58.5065	41.40	-7236
Drypond1	58.7548	41.40	-7236
Drypond1	59.0031	41.40	-7236
Drypond1	59.2514	41.40	-7236
Drypond1	59.5073	41.40	-7236
Drypond1	59.7556	41.40	-7236
Drypond1	60.0039	41.40	-7236
Drypond1	60.2523	41.40	-7236
Drypond1	60.5006	41.40	-7236
Drypond1	60.7564	41.40	-7236
Drypond1	61.0048	41.40	-7236
Drypond1	61.2531	41.40	-7236
Drypond1	61.5014	41.40	-7236
Drypond1	61.7573	41.40	-7236
Drypond1	62.0056	41.40	-7236
Drypond1	62.2539	41.40	-7236
Drypond1	62.5022	41.40	-7236
Drypond1	62.7506	41.40	-7236

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond1	63.0064	41.40	-7236
Drypond1	63.2547	41.40	-7236
Drypond1	63.5031	41.40	-7236
Drypond1	63.7514	41.40	-7236
Drypond1	64.0072	41.40	-7236
Drypond1	64.2556	41.40	-7236
Drypond1	64.5039	41.40	-7236
Drypond1	64.7522	41.40	-7236
Drypond1	65.0005	41.40	-7236
Drypond1	65.2564	41.40	-7236
Drypond1	65.5047	41.40	-7236
Drypond1	65.7530	41.40	-7236
Drypond1	66.0014	41.40	-7236
Drypond1	66.2572	41.40	-7236
Drypond1	66.5055	41.40	-7236
Drypond1	66.7539	41.40	-7236
Drypond1	67.0022	41.40	-7236
Drypond1	67.2505	41.40	-7236
Drypond1	67.5064	41.40	-7236
Drypond1	67.7547	41.40	-7236
Drypond1	68.0030	41.40	-7236
Drypond1	68.2513	41.40	-7236
Drypond1	68.5072	41.40	-7236
Drypond1	68.7555	41.40	-7236
Drypond1	69.0038	41.40	-7236
Drypond1	69.2521	41.40	-7236
Drypond1	69.5005	41.40	-7236
Drypond1	69.7563	41.40	-7236
Drypond1	70.0046	41.40	-7236
Drypond1	70.2530	41.40	-7236
Drypond1	70.5013	41.40	-7236
Drypond1	70.7571	41.40	-7236
Drypond1	71.0055	41.40	-7236
Drypond1	71.2538	41.40	-7236
Drypond1	71.5021	41.40	-7236
Drypond1	71.7504	41.40	-7236
Drypond1	72.0063	41.40	-7236
Drypond2	0.0000	41.55	0
Drypond2	0.2511	41.51	-55
Drypond2	0.5050	41.49	-93
Drypond2	0.7522	41.47	-116
Drypond2	1.0005	41.46	-132

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	1.2564	41.46	-142
Drypond2	1.5047	41.45	-149
Drypond2	1.7530	41.45	-154
Drypond2	2.0014	41.44	-157
Drypond2	2.2572	41.44	-161
Drypond2	2.5055	41.44	-163
Drypond2	2.7539	41.44	-166
Drypond2	3.0022	41.44	-168
Drypond2	3.2505	41.44	-171
Drypond2	3.5064	41.43	-173
Drypond2	3.7547	41.43	-176
Drypond2	4.0030	41.43	-178
Drypond2	4.2513	41.43	-180
Drypond2	4.5072	41.43	-182
Drypond2	4.7555	41.43	-184
Drypond2	5.0038	41.42	-186
Drypond2	5.2521	41.42	-189
Drypond2	5.5005	41.42	-191
Drypond2	5.7563	41.42	-193
Drypond2	6.0046	41.42	-195
Drypond2	6.2530	41.42	-198
Drypond2	6.5013	41.41	-200
Drypond2	6.7571	41.41	-202
Drypond2	7.0055	41.41	-204
Drypond2	7.2538	41.41	-207
Drypond2	7.5021	41.41	-209
Drypond2	7.7504	41.41	-211
Drypond2	8.0063	41.40	-213
Drypond2	8.2546	41.40	-216
Drypond2	8.5029	41.40	-218
Drypond2	8.7513	41.40	-220
Drypond2	9.0071	41.40	-222
Drypond2	9.2554	41.40	-224
Drypond2	9.5038	41.40	-226
Drypond2	9.7521	41.39	-228
Drypond2	10.0004	41.39	-230
Drypond2	10.2563	41.39	-233
Drypond2	10.5046	41.39	-235
Drypond2	10.7529	41.39	-237
Drypond2	11.0012	41.39	-239
Drypond2	11.2571	41.38	-241
Drypond2	11.5054	41.38	-243

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	11.7537	41.38	-245
Drypond2	12.0021	41.38	-247
Drypond2	12.2504	41.38	-249
Drypond2	12.5062	41.38	-251
Drypond2	12.7546	41.38	-253
Drypond2	13.0029	41.37	-255
Drypond2	13.2512	41.37	-258
Drypond2	13.5071	41.37	-260
Drypond2	13.7554	41.37	-262
Drypond2	14.0037	41.37	-265
Drypond2	14.2520	41.36	-267
Drypond2	14.5004	41.36	-270
Drypond2	14.7562	41.36	-272
Drypond2	15.0045	41.36	-275
Drypond2	15.2529	41.36	-277
Drypond2	15.5012	41.36	-280
Drypond2	15.7570	41.35	-283
Drypond2	16.0054	41.35	-285
Drypond2	16.2537	41.35	-287
Drypond2	16.5020	41.35	-287
Drypond2	16.7503	41.35	-287
Drypond2	17.0062	41.35	-287
Drypond2	17.2545	41.35	-287
Drypond2	17.5028	41.35	-287
Drypond2	17.7511	41.35	-287
Drypond2	18.0070	41.35	-287
Drypond2	18.2553	41.35	-287
Drypond2	18.5036	41.35	-287
Drypond2	18.7520	41.35	-287
Drypond2	19.0003	41.35	-287
Drypond2	19.2561	41.35	-287
Drypond2	19.5045	41.35	-287
Drypond2	19.7528	41.35	-287
Drypond2	20.0011	41.35	-287
Drypond2	20.2570	41.35	-287
Drypond2	20.5053	41.35	-287
Drypond2	20.7536	41.35	-287
Drypond2	21.0019	41.35	-287
Drypond2	21.2503	41.35	-287
Drypond2	21.5061	41.35	-287
Drypond2	21.7544	41.35	-287
Drypond2	22.0028	41.35	-287

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	22.2511	41.35	-287
Drypond2	22.5069	41.35	-287
Drypond2	22.7553	41.35	-287
Drypond2	23.0036	41.35	-287
Drypond2	23.2519	41.35	-287
Drypond2	23.5002	41.35	-287
Drypond2	23.7561	41.35	-287
Drypond2	24.0044	41.35	-287
Drypond2	24.2527	41.35	-287
Drypond2	24.5011	41.35	-287
Drypond2	24.7569	41.35	-287
Drypond2	25.0052	41.35	-287
Drypond2	25.2536	41.35	-287
Drypond2	25.5019	41.35	-287
Drypond2	25.7502	41.35	-287
Drypond2	26.0061	41.35	-287
Drypond2	26.2544	41.35	-287
Drypond2	26.5027	41.35	-287
Drypond2	26.7510	41.35	-287
Drypond2	27.0069	41.35	-287
Drypond2	27.2552	41.35	-287
Drypond2	27.5035	41.35	-287
Drypond2	27.7519	41.35	-287
Drypond2	28.0002	41.35	-287
Drypond2	28.2560	41.35	-287
Drypond2	28.5044	41.35	-287
Drypond2	28.7527	41.35	-287
Drypond2	29.0010	41.35	-287
Drypond2	29.2569	41.35	-287
Drypond2	29.5052	41.35	-287
Drypond2	29.7535	41.35	-287
Drypond2	30.0018	41.35	-287
Drypond2	30.2501	41.35	-287
Drypond2	30.5060	41.35	-287
Drypond2	30.7543	41.35	-287
Drypond2	31.0026	41.35	-287
Drypond2	31.2510	41.35	-287
Drypond2	31.5068	41.35	-287
Drypond2	31.7551	41.35	-287
Drypond2	32.0035	41.35	-287
Drypond2	32.2518	41.35	-287
Drypond2	32.5001	41.35	-287

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	32.7560	41.35	-287
Drypond2	33.0043	41.35	-287
Drypond2	33.2526	41.35	-287
Drypond2	33.5009	41.35	-287
Drypond2	33.7568	41.35	-287
Drypond2	34.0051	41.35	-287
Drypond2	34.2534	41.35	-287
Drypond2	34.5018	41.35	-287
Drypond2	34.7501	41.35	-287
Drypond2	35.0059	41.35	-287
Drypond2	35.2543	41.35	-287
Drypond2	35.5026	41.35	-287
Drypond2	35.7509	41.35	-287
Drypond2	36.0068	41.35	-287
Drypond2	36.2551	41.35	-287
Drypond2	36.5034	41.35	-287
Drypond2	36.7517	41.35	-287
Drypond2	37.0001	41.35	-287
Drypond2	37.2559	41.35	-287
Drypond2	37.5042	41.35	-287
Drypond2	37.7526	41.35	-287
Drypond2	38.0009	41.35	-287
Drypond2	38.2567	41.35	-287
Drypond2	38.5051	41.35	-287
Drypond2	38.7534	41.35	-287
Drypond2	39.0017	41.35	-287
Drypond2	39.2500	41.35	-287
Drypond2	39.5059	41.35	-287
Drypond2	39.7542	41.35	-287
Drypond2	40.0025	41.35	-287
Drypond2	40.2509	41.35	-287
Drypond2	40.5067	41.35	-287
Drypond2	40.7550	41.35	-287
Drypond2	41.0034	41.35	-287
Drypond2	41.2517	41.35	-287
Drypond2	41.5000	41.35	-287
Drypond2	41.7559	41.35	-287
Drypond2	42.0042	41.35	-287
Drypond2	42.2525	41.35	-287
Drypond2	42.5008	41.35	-287
Drypond2	42.7567	41.35	-287
Drypond2	43.0050	41.35	-287

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	43.2533	41.35	-287
Drypond2	43.5016	41.35	-287
Drypond2	43.7575	41.35	-287
Drypond2	44.0058	41.35	-287
Drypond2	44.2541	41.35	-287
Drypond2	44.5025	41.35	-287
Drypond2	44.7508	41.35	-287
Drypond2	45.0066	41.35	-287
Drypond2	45.2550	41.35	-287
Drypond2	45.5033	41.35	-287
Drypond2	45.7516	41.35	-287
Drypond2	46.0075	41.35	-287
Drypond2	46.2558	41.35	-287
Drypond2	46.5041	41.35	-287
Drypond2	46.7524	41.35	-287
Drypond2	47.0008	41.35	-287
Drypond2	47.2566	41.35	-287
Drypond2	47.5049	41.35	-287
Drypond2	47.7533	41.35	-287
Drypond2	48.0016	41.35	-287
Drypond2	48.2574	41.35	-287
Drypond2	48.5058	41.35	-287
Drypond2	48.7541	41.35	-287
Drypond2	49.0024	41.35	-287
Drypond2	49.2507	41.35	-287
Drypond2	49.5066	41.35	-287
Drypond2	49.7549	41.35	-287
Drypond2	50.0032	41.35	-287
Drypond2	50.2516	41.35	-287
Drypond2	50.5074	41.35	-287
Drypond2	50.7557	41.35	-287
Drypond2	51.0041	41.35	-287
Drypond2	51.2524	41.35	-287
Drypond2	51.5007	41.35	-287
Drypond2	51.7566	41.35	-287
Drypond2	52.0049	41.35	-287
Drypond2	52.2532	41.35	-287
Drypond2	52.5015	41.35	-287
Drypond2	52.7574	41.35	-287
Drypond2	53.0057	41.35	-287
Drypond2	53.2540	41.35	-287
Drypond2	53.5024	41.35	-287

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	53.7507	41.35	-287
Drypond2	54.0065	41.35	-287
Drypond2	54.2549	41.35	-287
Drypond2	54.5032	41.35	-287
Drypond2	54.7515	41.35	-287
Drypond2	55.0073	41.35	-287
Drypond2	55.2557	41.35	-287
Drypond2	55.5040	41.35	-287
Drypond2	55.7523	41.35	-287
Drypond2	56.0006	41.35	-287
Drypond2	56.2565	41.35	-287
Drypond2	56.5048	41.35	-287
Drypond2	56.7531	41.35	-287
Drypond2	57.0015	41.35	-287
Drypond2	57.2573	41.35	-287
Drypond2	57.5056	41.35	-287
Drypond2	57.7540	41.35	-287
Drypond2	58.0023	41.35	-287
Drypond2	58.2506	41.35	-287
Drypond2	58.5065	41.35	-287
Drypond2	58.7548	41.35	-287
Drypond2	59.0031	41.35	-287
Drypond2	59.2514	41.35	-287
Drypond2	59.5073	41.35	-287
Drypond2	59.7556	41.35	-287
Drypond2	60.0039	41.35	-287
Drypond2	60.2523	41.35	-287
Drypond2	60.5006	41.35	-287
Drypond2	60.7564	41.35	-287
Drypond2	61.0048	41.35	-287
Drypond2	61.2531	41.35	-287
Drypond2	61.5014	41.35	-287
Drypond2	61.7573	41.35	-287
Drypond2	62.0056	41.35	-287
Drypond2	62.2539	41.35	-287
Drypond2	62.5022	41.35	-287
Drypond2	62.7506	41.35	-287
Drypond2	63.0064	41.35	-287
Drypond2	63.2547	41.35	-287
Drypond2	63.5031	41.35	-287
Drypond2	63.7514	41.35	-287
Drypond2	64.0072	41.35	-287

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond2	64.2556	41.35	-287
Drypond2	64.5039	41.35	-287
Drypond2	64.7522	41.35	-287
Drypond2	65.0005	41.35	-287
Drypond2	65.2564	41.35	-287
Drypond2	65.5047	41.35	-287
Drypond2	65.7530	41.35	-287
Drypond2	66.0014	41.35	-287
Drypond2	66.2572	41.35	-287
Drypond2	66.5055	41.35	-287
Drypond2	66.7539	41.35	-287
Drypond2	67.0022	41.35	-287
Drypond2	67.2505	41.35	-287
Drypond2	67.5064	41.35	-287
Drypond2	67.7547	41.35	-287
Drypond2	68.0030	41.35	-287
Drypond2	68.2513	41.35	-287
Drypond2	68.5072	41.35	-287
Drypond2	68.7555	41.35	-287
Drypond2	69.0038	41.35	-287
Drypond2	69.2521	41.35	-287
Drypond2	69.5005	41.35	-287
Drypond2	69.7563	41.35	-287
Drypond2	70.0046	41.35	-287
Drypond2	70.2530	41.35	-287
Drypond2	70.5013	41.35	-287
Drypond2	70.7571	41.35	-287
Drypond2	71.0055	41.35	-287
Drypond2	71.2538	41.35	-287
Drypond2	71.5021	41.35	-287
Drypond2	71.7504	41.35	-287
Drypond2	72.0063	41.35	-287
Drypond3	0.0000	41.55	0
Drypond3	0.2511	41.51	-239
Drypond3	0.5050	41.47	-454
Drypond3	0.7522	41.44	-600
Drypond3	1.0005	41.42	-703
Drypond3	1.2564	41.40	-787
Drypond3	1.5047	41.39	-858
Drypond3	1.7530	41.38	-920
Drypond3	2.0014	41.37	-977
Drypond3	2.2572	41.36	-1030

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	2.5055	41.35	-1078
Drypond3	2.7539	41.34	-1123
Drypond3	3.0022	41.33	-1164
Drypond3	3.2505	41.32	-1204
Drypond3	3.5064	41.31	-1243
Drypond3	3.7547	41.30	-1279
Drypond3	4.0030	41.30	-1302
Drypond3	4.2513	41.30	-1302
Drypond3	4.5072	41.30	-1302
Drypond3	4.7555	41.30	-1302
Drypond3	5.0038	41.30	-1302
Drypond3	5.2521	41.30	-1302
Drypond3	5.5005	41.30	-1303
Drypond3	5.7563	41.30	-1303
Drypond3	6.0046	41.30	-1303
Drypond3	6.2530	41.30	-1303
Drypond3	6.5013	41.30	-1303
Drypond3	6.7571	41.30	-1303
Drypond3	7.0055	41.30	-1303
Drypond3	7.2538	41.30	-1303
Drypond3	7.5021	41.30	-1303
Drypond3	7.7504	41.30	-1303
Drypond3	8.0063	41.30	-1303
Drypond3	8.2546	41.30	-1303
Drypond3	8.5029	41.30	-1303
Drypond3	8.7513	41.30	-1303
Drypond3	9.0071	41.30	-1303
Drypond3	9.2554	41.30	-1303
Drypond3	9.5038	41.30	-1303
Drypond3	9.7521	41.30	-1303
Drypond3	10.0004	41.30	-1303
Drypond3	10.2563	41.30	-1303
Drypond3	10.5046	41.30	-1303
Drypond3	10.7529	41.30	-1303
Drypond3	11.0012	41.30	-1303
Drypond3	11.2571	41.30	-1303
Drypond3	11.5054	41.30	-1303
Drypond3	11.7537	41.30	-1303
Drypond3	12.0021	41.30	-1303
Drypond3	12.2504	41.30	-1303
Drypond3	12.5062	41.30	-1303
Drypond3	12.7546	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	13.0029	41.30	-1303
Drypond3	13.2512	41.30	-1303
Drypond3	13.5071	41.30	-1303
Drypond3	13.7554	41.30	-1303
Drypond3	14.0037	41.30	-1303
Drypond3	14.2520	41.30	-1303
Drypond3	14.5004	41.30	-1303
Drypond3	14.7562	41.30	-1303
Drypond3	15.0045	41.30	-1303
Drypond3	15.2529	41.30	-1303
Drypond3	15.5012	41.30	-1303
Drypond3	15.7570	41.30	-1303
Drypond3	16.0054	41.30	-1303
Drypond3	16.2537	41.30	-1303
Drypond3	16.5020	41.30	-1303
Drypond3	16.7503	41.30	-1303
Drypond3	17.0062	41.30	-1303
Drypond3	17.2545	41.30	-1303
Drypond3	17.5028	41.30	-1303
Drypond3	17.7511	41.30	-1303
Drypond3	18.0070	41.30	-1303
Drypond3	18.2553	41.30	-1303
Drypond3	18.5036	41.30	-1303
Drypond3	18.7520	41.30	-1303
Drypond3	19.0003	41.30	-1303
Drypond3	19.2561	41.30	-1303
Drypond3	19.5045	41.30	-1303
Drypond3	19.7528	41.30	-1303
Drypond3	20.0011	41.30	-1303
Drypond3	20.2570	41.30	-1303
Drypond3	20.5053	41.30	-1303
Drypond3	20.7536	41.30	-1303
Drypond3	21.0019	41.30	-1303
Drypond3	21.2503	41.30	-1303
Drypond3	21.5061	41.30	-1303
Drypond3	21.7544	41.30	-1303
Drypond3	22.0028	41.30	-1303
Drypond3	22.2511	41.30	-1303
Drypond3	22.5069	41.30	-1303
Drypond3	22.7553	41.30	-1303
Drypond3	23.0036	41.30	-1303
Drypond3	23.2519	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	23.5002	41.30	-1303
Drypond3	23.7561	41.30	-1303
Drypond3	24.0044	41.30	-1303
Drypond3	24.2527	41.30	-1303
Drypond3	24.5011	41.30	-1303
Drypond3	24.7569	41.30	-1303
Drypond3	25.0052	41.30	-1303
Drypond3	25.2536	41.30	-1303
Drypond3	25.5019	41.30	-1303
Drypond3	25.7502	41.30	-1303
Drypond3	26.0061	41.30	-1303
Drypond3	26.2544	41.30	-1303
Drypond3	26.5027	41.30	-1303
Drypond3	26.7510	41.30	-1303
Drypond3	27.0069	41.30	-1303
Drypond3	27.2552	41.30	-1303
Drypond3	27.5035	41.30	-1303
Drypond3	27.7519	41.30	-1303
Drypond3	28.0002	41.30	-1303
Drypond3	28.2560	41.30	-1303
Drypond3	28.5044	41.30	-1303
Drypond3	28.7527	41.30	-1303
Drypond3	29.0010	41.30	-1303
Drypond3	29.2569	41.30	-1303
Drypond3	29.5052	41.30	-1303
Drypond3	29.7535	41.30	-1303
Drypond3	30.0018	41.30	-1303
Drypond3	30.2501	41.30	-1303
Drypond3	30.5060	41.30	-1303
Drypond3	30.7543	41.30	-1303
Drypond3	31.0026	41.30	-1303
Drypond3	31.2510	41.30	-1303
Drypond3	31.5068	41.30	-1303
Drypond3	31.7551	41.30	-1303
Drypond3	32.0035	41.30	-1303
Drypond3	32.2518	41.30	-1303
Drypond3	32.5001	41.30	-1303
Drypond3	32.7560	41.30	-1303
Drypond3	33.0043	41.30	-1303
Drypond3	33.2526	41.30	-1303
Drypond3	33.5009	41.30	-1303
Drypond3	33.7568	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	34.0051	41.30	-1303
Drypond3	34.2534	41.30	-1303
Drypond3	34.5018	41.30	-1303
Drypond3	34.7501	41.30	-1303
Drypond3	35.0059	41.30	-1303
Drypond3	35.2543	41.30	-1303
Drypond3	35.5026	41.30	-1303
Drypond3	35.7509	41.30	-1303
Drypond3	36.0068	41.30	-1303
Drypond3	36.2551	41.30	-1303
Drypond3	36.5034	41.30	-1303
Drypond3	36.7517	41.30	-1303
Drypond3	37.0001	41.30	-1303
Drypond3	37.2559	41.30	-1303
Drypond3	37.5042	41.30	-1303
Drypond3	37.7526	41.30	-1303
Drypond3	38.0009	41.30	-1303
Drypond3	38.2567	41.30	-1303
Drypond3	38.5051	41.30	-1303
Drypond3	38.7534	41.30	-1303
Drypond3	39.0017	41.30	-1303
Drypond3	39.2500	41.30	-1303
Drypond3	39.5059	41.30	-1303
Drypond3	39.7542	41.30	-1303
Drypond3	40.0025	41.30	-1303
Drypond3	40.2509	41.30	-1303
Drypond3	40.5067	41.30	-1303
Drypond3	40.7550	41.30	-1303
Drypond3	41.0034	41.30	-1303
Drypond3	41.2517	41.30	-1303
Drypond3	41.5000	41.30	-1303
Drypond3	41.7559	41.30	-1303
Drypond3	42.0042	41.30	-1303
Drypond3	42.2525	41.30	-1303
Drypond3	42.5008	41.30	-1303
Drypond3	42.7567	41.30	-1303
Drypond3	43.0050	41.30	-1303
Drypond3	43.2533	41.30	-1303
Drypond3	43.5016	41.30	-1303
Drypond3	43.7575	41.30	-1303
Drypond3	44.0058	41.30	-1303
Drypond3	44.2541	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	44.5025	41.30	-1303
Drypond3	44.7508	41.30	-1303
Drypond3	45.0066	41.30	-1303
Drypond3	45.2550	41.30	-1303
Drypond3	45.5033	41.30	-1303
Drypond3	45.7516	41.30	-1303
Drypond3	46.0075	41.30	-1303
Drypond3	46.2558	41.30	-1303
Drypond3	46.5041	41.30	-1303
Drypond3	46.7524	41.30	-1303
Drypond3	47.0008	41.30	-1303
Drypond3	47.2566	41.30	-1303
Drypond3	47.5049	41.30	-1303
Drypond3	47.7533	41.30	-1303
Drypond3	48.0016	41.30	-1303
Drypond3	48.2574	41.30	-1303
Drypond3	48.5058	41.30	-1303
Drypond3	48.7541	41.30	-1303
Drypond3	49.0024	41.30	-1303
Drypond3	49.2507	41.30	-1303
Drypond3	49.5066	41.30	-1303
Drypond3	49.7549	41.30	-1303
Drypond3	50.0032	41.30	-1303
Drypond3	50.2516	41.30	-1303
Drypond3	50.5074	41.30	-1303
Drypond3	50.7557	41.30	-1303
Drypond3	51.0041	41.30	-1303
Drypond3	51.2524	41.30	-1303
Drypond3	51.5007	41.30	-1303
Drypond3	51.7566	41.30	-1303
Drypond3	52.0049	41.30	-1303
Drypond3	52.2532	41.30	-1303
Drypond3	52.5015	41.30	-1303
Drypond3	52.7574	41.30	-1303
Drypond3	53.0057	41.30	-1303
Drypond3	53.2540	41.30	-1303
Drypond3	53.5024	41.30	-1303
Drypond3	53.7507	41.30	-1303
Drypond3	54.0065	41.30	-1303
Drypond3	54.2549	41.30	-1303
Drypond3	54.5032	41.30	-1303
Drypond3	54.7515	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	55.0073	41.30	-1303
Drypond3	55.2557	41.30	-1303
Drypond3	55.5040	41.30	-1303
Drypond3	55.7523	41.30	-1303
Drypond3	56.0006	41.30	-1303
Drypond3	56.2565	41.30	-1303
Drypond3	56.5048	41.30	-1303
Drypond3	56.7531	41.30	-1303
Drypond3	57.0015	41.30	-1303
Drypond3	57.2573	41.30	-1303
Drypond3	57.5056	41.30	-1303
Drypond3	57.7540	41.30	-1303
Drypond3	58.0023	41.30	-1303
Drypond3	58.2506	41.30	-1303
Drypond3	58.5065	41.30	-1303
Drypond3	58.7548	41.30	-1303
Drypond3	59.0031	41.30	-1303
Drypond3	59.2514	41.30	-1303
Drypond3	59.5073	41.30	-1303
Drypond3	59.7556	41.30	-1303
Drypond3	60.0039	41.30	-1303
Drypond3	60.2523	41.30	-1303
Drypond3	60.5006	41.30	-1303
Drypond3	60.7564	41.30	-1303
Drypond3	61.0048	41.30	-1303
Drypond3	61.2531	41.30	-1303
Drypond3	61.5014	41.30	-1303
Drypond3	61.7573	41.30	-1303
Drypond3	62.0056	41.30	-1303
Drypond3	62.2539	41.30	-1303
Drypond3	62.5022	41.30	-1303
Drypond3	62.7506	41.30	-1303
Drypond3	63.0064	41.30	-1303
Drypond3	63.2547	41.30	-1303
Drypond3	63.5031	41.30	-1303
Drypond3	63.7514	41.30	-1303
Drypond3	64.0072	41.30	-1303
Drypond3	64.2556	41.30	-1303
Drypond3	64.5039	41.30	-1303
Drypond3	64.7522	41.30	-1303
Drypond3	65.0005	41.30	-1303
Drypond3	65.2564	41.30	-1303

Node Name	Relative Time [hrs]	Stage [ft]	Stored Volume (Geometry Based)
Drypond3	65.5047	41.30	-1303
Drypond3	65.7530	41.30	-1303
Drypond3	66.0014	41.30	-1303
Drypond3	66.2572	41.30	-1303
Drypond3	66.5055	41.30	-1303
Drypond3	66.7539	41.30	-1303
Drypond3	67.0022	41.30	-1303
Drypond3	67.2505	41.30	-1303
Drypond3	67.5064	41.30	-1303
Drypond3	67.7547	41.30	-1303
Drypond3	68.0030	41.30	-1303
Drypond3	68.2513	41.30	-1303
Drypond3	68.5072	41.30	-1303
Drypond3	68.7555	41.30	-1303
Drypond3	69.0038	41.30	-1303
Drypond3	69.2521	41.30	-1303
Drypond3	69.5005	41.30	-1303
Drypond3	69.7563	41.30	-1303
Drypond3	70.0046	41.30	-1303
Drypond3	70.2530	41.30	-1303
Drypond3	70.5013	41.30	-1303
Drypond3	70.7571	41.30	-1303
Drypond3	71.0055	41.30	-1303
Drypond3	71.2538	41.30	-1303
Drypond3	71.5021	41.30	-1303
Drypond3	71.7504	41.30	-1303
Drypond3	72.0063	41.30	-1303

BID ATTACHMENT 10, SWALE CAPACITY CALS

ERIE RD. AND SR 62 IMPROVEMENTS

SWALE CAPACITY CALCULATION

MANATEE COUNTY PUBLIC WORKS

DATE: 08/31/20

GRIGORY BERIKHMAN
LICENSE
No. 76896
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Grigory Berikhman, P.E. 76896

Date: 08/31/2020

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Sep 3 2020

Erie Rd. and SR 62 Impr. roadside swale Sta:121+39 25yr storm(10ft bottom)

Trapezoidal

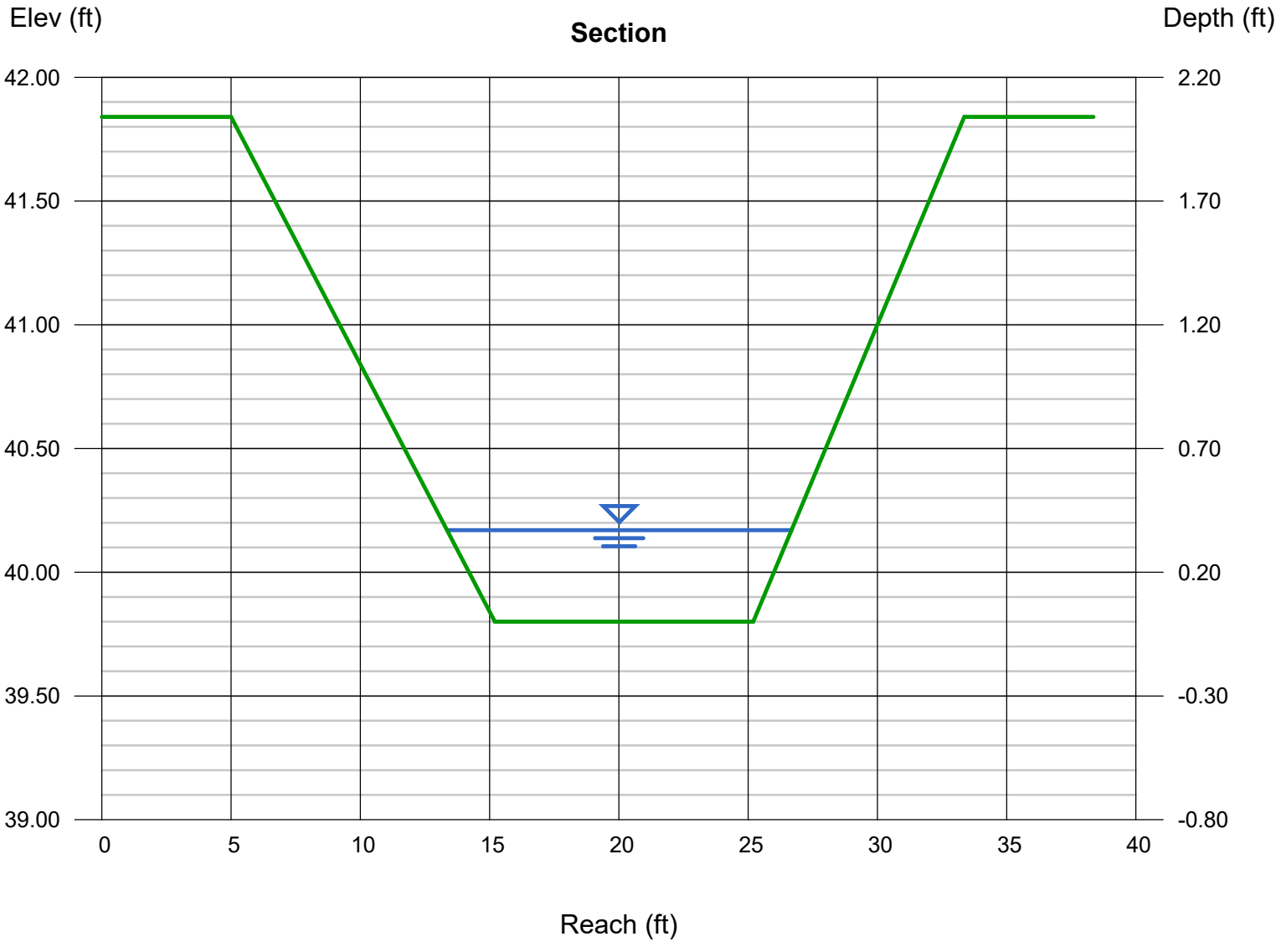
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 2.04
Invert Elev (ft)	= 39.80
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.54

Highlighted

Depth (ft)	= 0.37
Q (cfs)	= 3.540
Area (sqft)	= 4.32
Velocity (ft/s)	= 0.82
Wetted Perim (ft)	= 13.41
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 13.33
EGL (ft)	= 0.38



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Sep 3 2020

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Trapezoidal

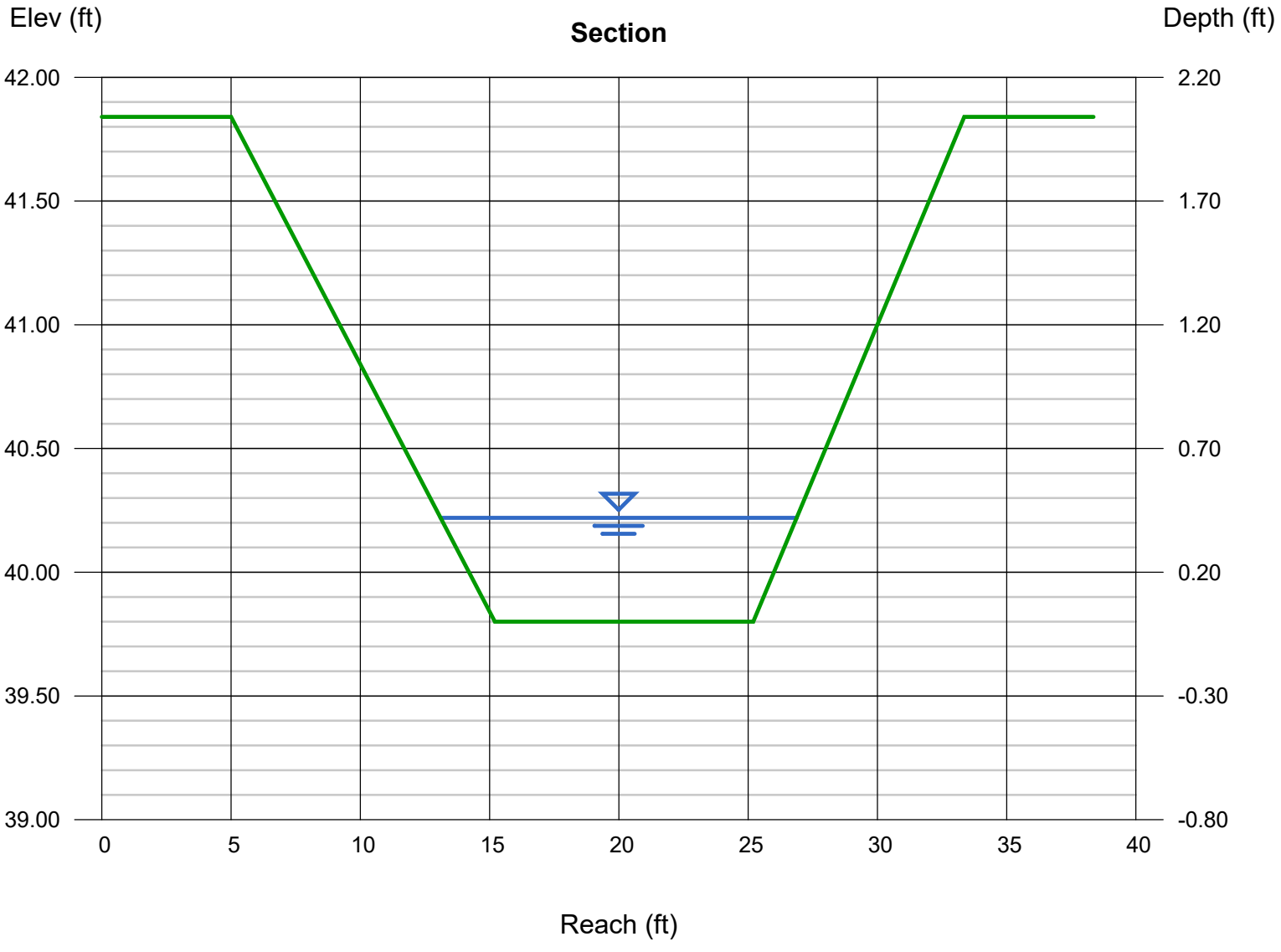
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 2.04
Invert Elev (ft)	= 39.80
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.34

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 4.340
Area (sqft)	= 4.99
Velocity (ft/s)	= 0.87
Wetted Perim (ft)	= 13.87
Crit Depth, Yc (ft)	= 0.18
Top Width (ft)	= 13.78
EGL (ft)	= 0.43



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Sep 3 2020

Erie Rd. and SR 62 Impr. roadside swale Sta:123+00 25yr storm(10ft bottom)

Trapezoidal

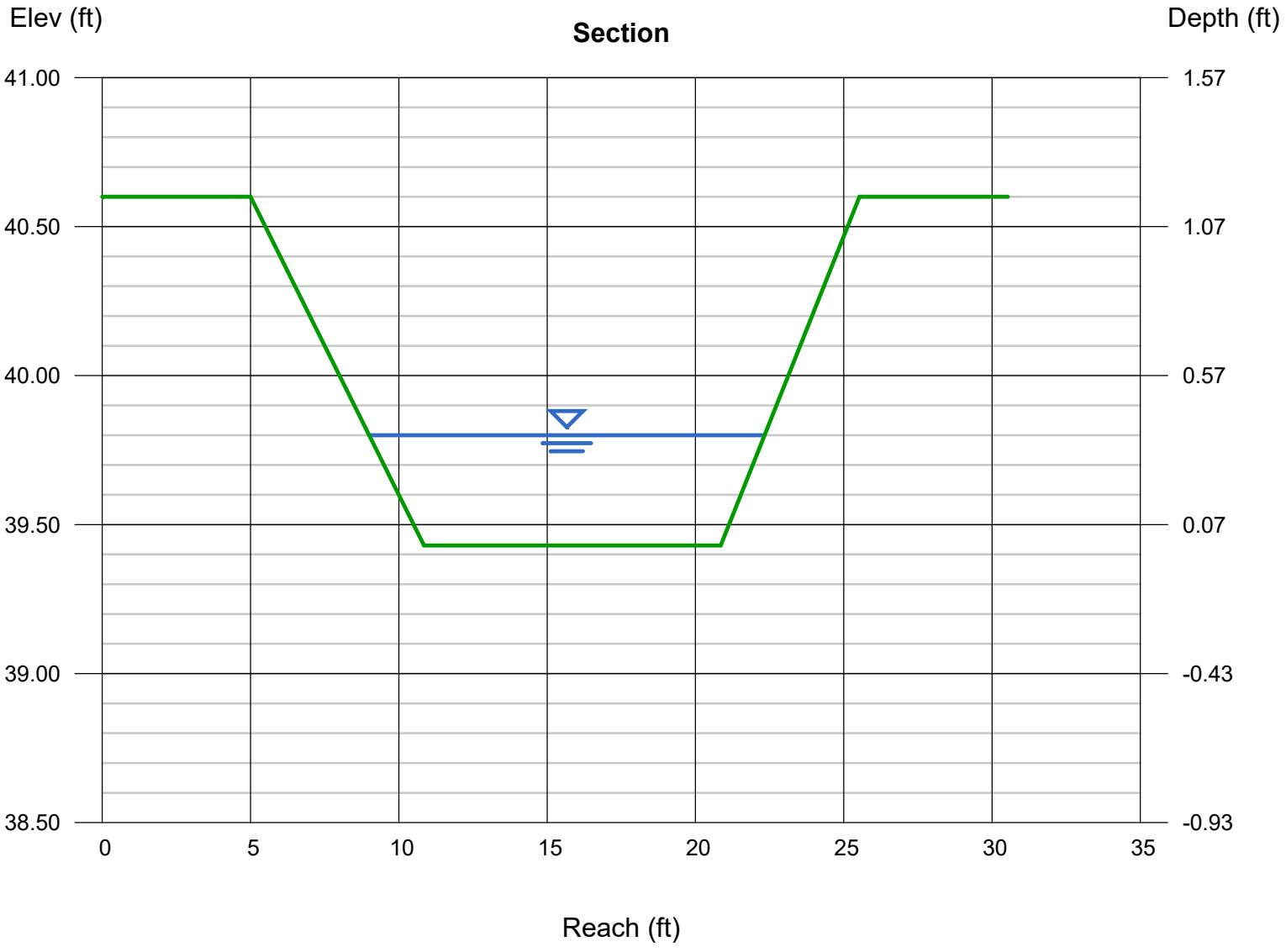
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 1.17
Invert Elev (ft)	= 39.43
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.54

Highlighted

Depth (ft)	= 0.37
Q (cfs)	= 3.540
Area (sqft)	= 4.32
Velocity (ft/s)	= 0.82
Wetted Perim (ft)	= 13.41
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 13.33
EGL (ft)	= 0.38



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Sep 3 2020

Erie Rd. and SR 62 Impr. roadside swale Sta:123+00 100yr storm(10ft bottom)

Trapezoidal

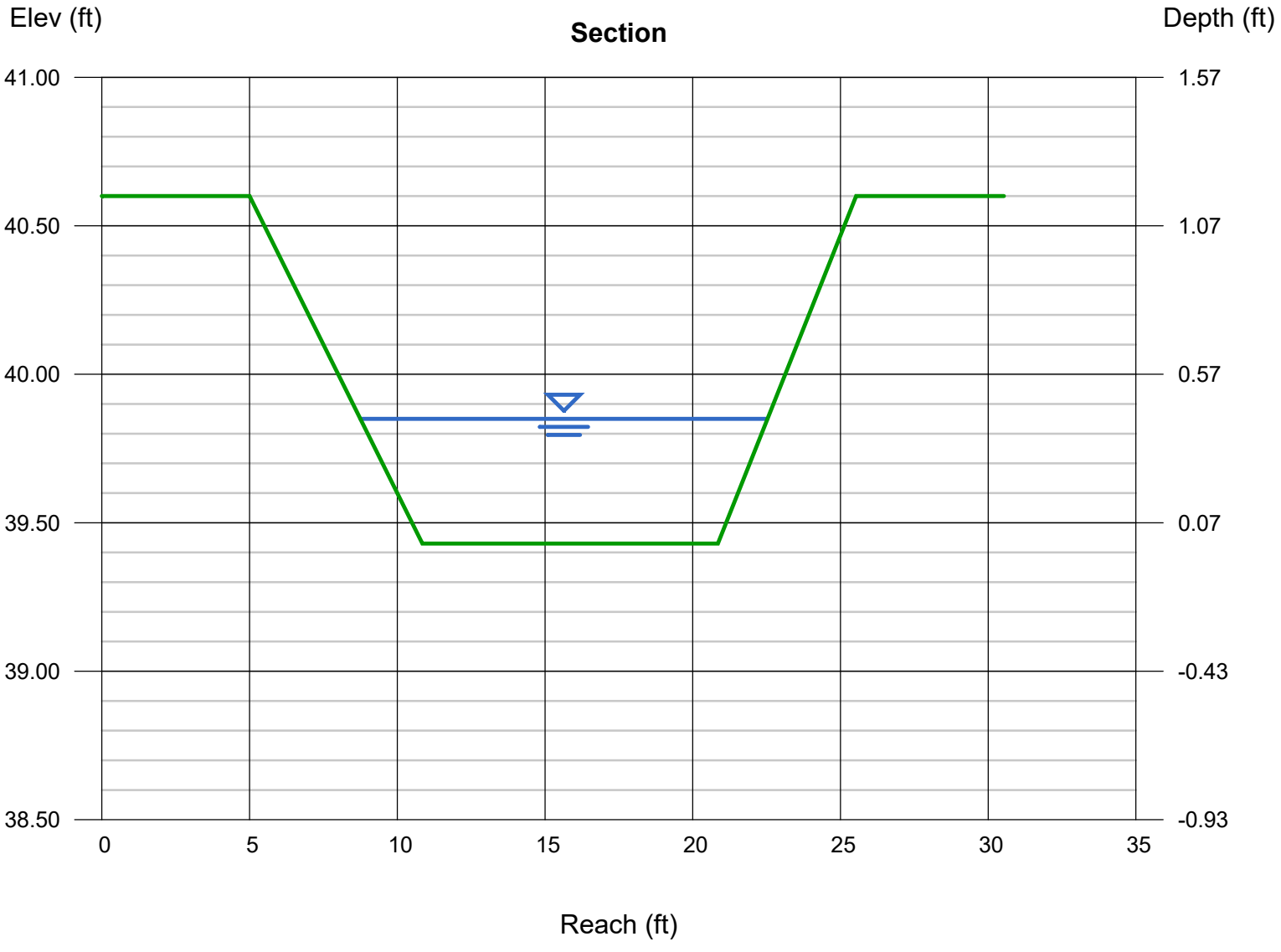
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 1.17
Invert Elev (ft)	= 39.43
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.34

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 4.340
Area (sqft)	= 4.99
Velocity (ft/s)	= 0.87
Wetted Perim (ft)	= 13.87
Crit Depth, Yc (ft)	= 0.18
Top Width (ft)	= 13.78
EGL (ft)	= 0.43



Channel Report

Erie Rd. and SR 62 Impr. roadside swale Sta:124+00 25yr storm(10ft bottom)

Trapezoidal

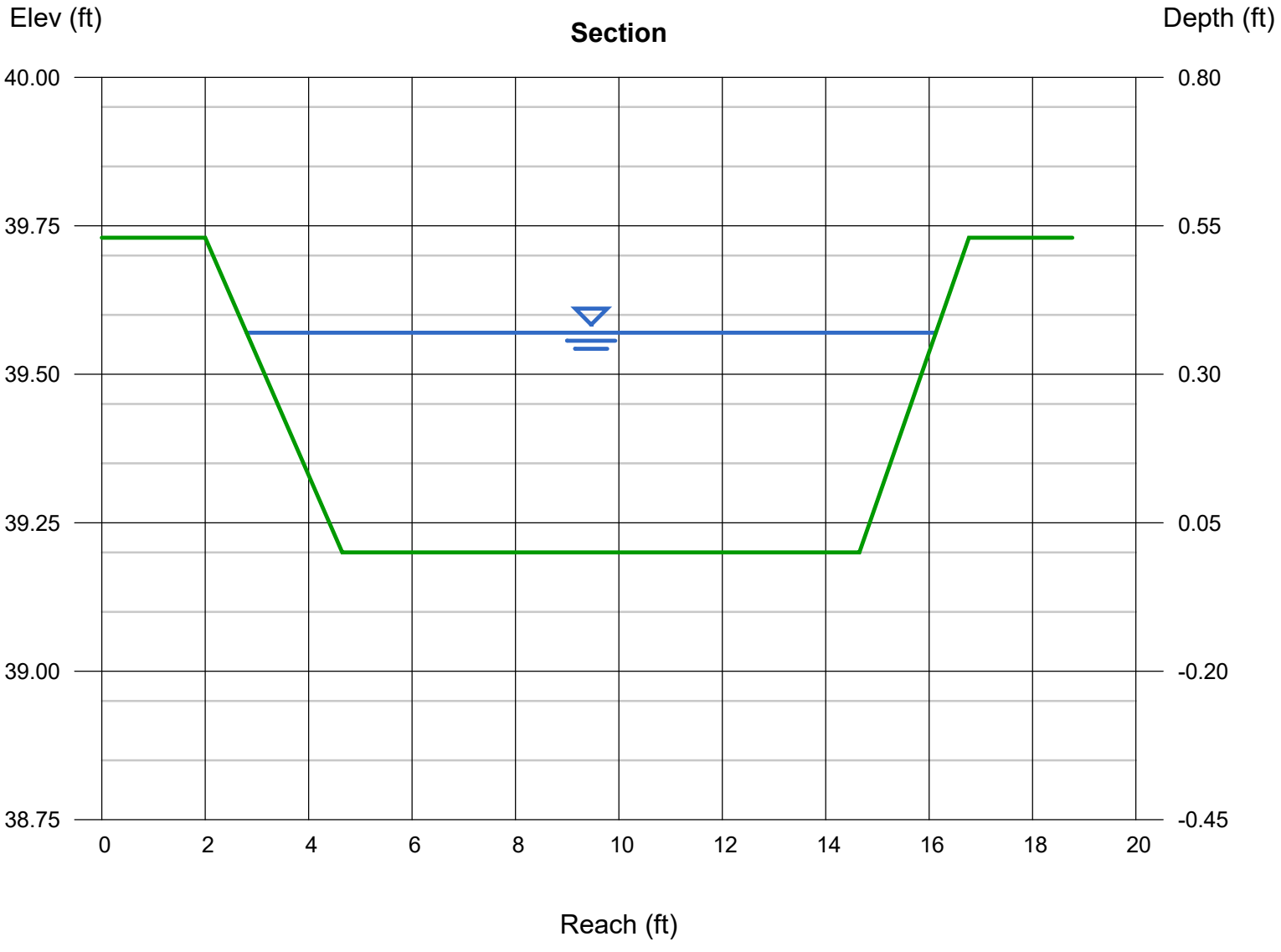
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 0.53
Invert Elev (ft)	= 39.20
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 3.54

Highlighted

Depth (ft)	= 0.37
Q (cfs)	= 3.540
Area (sqft)	= 4.32
Velocity (ft/s)	= 0.82
Wetted Perim (ft)	= 13.41
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 13.33
EGL (ft)	= 0.38



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Sep 3 2020

Erie Rd. and SR 62 Impr. roadside swale Sta:124+00 100yr storm(10ft bottom)

Trapezoidal

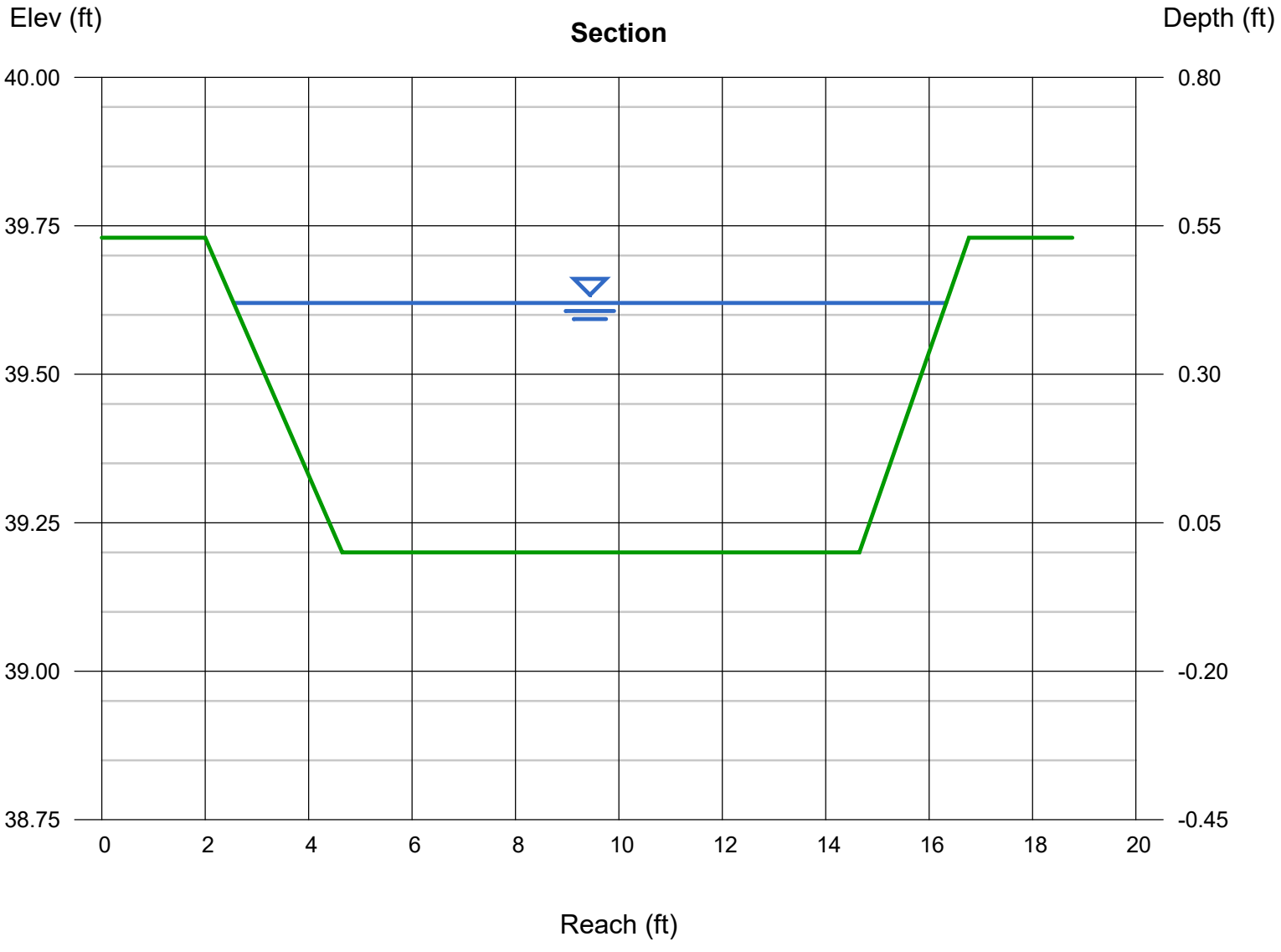
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 5.00, 4.00
Total Depth (ft)	= 0.53
Invert Elev (ft)	= 39.20
Slope (%)	= 0.23
N-Value	= 0.040

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.34

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 4.340
Area (sqft)	= 4.99
Velocity (ft/s)	= 0.87
Wetted Perim (ft)	= 13.87
Crit Depth, Yc (ft)	= 0.18
Top Width (ft)	= 13.78
EGL (ft)	= 0.43



BID ATTACHMENT 11, MISCELLANEOUS STRUCTURES DESIGN REPORT

NOTE - This attachment is uploaded as a separate document on the Procurement page of the County website with the solicitation document and available for download.

SECTION D, SAMPLE CONSTRUCTION AGREEMENT WITH GENERAL CONDITIONS OF THE CONSTRUCTION AGREEMENT AND AGREEMENT EXHIBITS

CONSTRUCTION AGREEMENT

for

STIPULATED SUM

between

MANATEE COUNTY (AS OWNER)

and

_____ (AS CONTRACTOR)

AGREEMENT NO.

CONSTRUCTION AGREEMENT FOR
STIPULATED SUM
[PROJECT NAME]

THIS AGREEMENT ("Agreement") is made and entered into by and between Manatee County, a political subdivision of the State of Florida, referred to herein as "Owner", and the firm of _____, incorporated in the State of _____ and registered and licensed to do business in the State of Florida (license #_____), referred to herein as "Contractor."

WHEREAS, the Owner intends to construct **[PROJECT DESCRIPTION]**, the aforementioned improvements being hereinafter referred to and defined as the "Project"; and

WHEREAS, in response to Owner's Invitation for Bid Construction No. _____ (the "IFBC"), Contractor has submitted its Bid (the "Contractor's Bid") to provide the aforementioned construction services.

NOW THEREFORE, the Owner and the Contractor, in consideration of the mutual covenants hereinafter set forth, the sufficiency of which is hereby acknowledged, agree as follows:

1. Contract Documents. The Contract Documents consist of this Agreement and attached Exhibits, the attached General Conditions of the Construction Agreement, Supplementary Conditions (if any), Special Conditions (if any), Drawings (the titles of which are attached hereto as Exhibit A), Specifications (the titles of which are attached hereto as Exhibit B), Addenda issued prior to execution of this Agreement, the Invitation for Bid (including any Instructions to Bidders, Scope of Work, Bid Summary, Supplements, and Technical Specifications), any interpretations issued pursuant to the Invitation for Bid, the Contractor's Bid, permits, notice of intent to award, Notice to Proceed, purchase order(s), any other documents listed in this Agreement, and Modifications [to include written Amendment(s), Change Order(s), Work Directive Change(s) and Field Directive(s)] issued after execution of this Agreement. These form the Agreement, and are as fully a part of the Agreement as if attached or repeated herein. This Agreement represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. No other documents shall be considered Contract Documents.

2. Work. The Contractor shall fully execute the Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

3. Date of Commencement and Substantial Completion.

A. Date of Commencement. The date of commencement of the Work shall be the date fixed in a Notice to Proceed issued by the Owner.

B. Contract Time. The Contract Time shall be measured from the date of commencement.

C. Substantial Completion. The Contractor shall achieve Substantial Completion of the entire Work not later than ___ days from the date of commencement, or as follows:

Portion of Work	Substantial Completion Date

subject to adjustments of this Contract Time as provided in the Contract Documents.

Time is of the essence in the Contract Documents and all obligations thereunder. If the Contractor fails to achieve Substantial Completion of the Work within the Contract Time and as otherwise required by the Contract Documents (to include not only the entire Work but any portion of the Work as set forth above), the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the sum of $_____ per calendar day, commencing upon the first day following expiration of the Contract Time and continuing until the actual date of Substantial Completion. Such liquidated damages are hereby agreed to be a reasonable estimate of damages the Owner will incur because of delayed completion of the Work. The Owner may deduct liquidated damages as described in this paragraph from any unpaid amounts then or thereafter due the Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner, together with interest from the date of the demand at the maximum allowable rate.

4. Contract Sum.

A. Payment. The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be _____ Dollars and Zero Cents ($_____), subject to additions and deductions as provided in the Contract Documents.

B. Alternates. The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner. *(State the numbers or other identification of accepted alternates. If decisions on other alternates are to be made by the Owner subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)*

C. Unit Prices. Unit prices, if any, are reflected in the Contractor's Bid.

5. Payments.

A. Progress Payments.

(1) Based upon Applications for Payment submitted to the Architect/Engineer by the Contractor and Certificates for Payment issued by the Architect/Engineer, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

(2) The period covered by each Application for Payment shall be one calendar month ending on the last day of the month.

(3) Payments shall be made by Owner in accordance with the requirements of Section 218.735, Florida Statutes.

(4) Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect/Engineer may require. This schedule, unless objected to by the Owner or Architect/Engineer, shall be used as a basis for reviewing the Contractor's Applications for Payment.

(5) Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

(6) Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

i. Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of five percent (5.00%). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 3.3.B. of the General Conditions;

ii. Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), supported by paid receipts, less retainage of five percent (5.00%);

iii. Subtract the aggregate of previous payments made by the Owner; and

iv. Subtract amounts, if any, for which the Architect/Engineer has withheld or nullified an Application for Payment, in whole or in part as provided in Section 3.3.C. of the General Conditions.

(7) The progress payment amount determined in accordance with Section 5.A(6) shall be further modified under the following circumstances:

i. Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect/Engineer shall determine for

incomplete Work, retainage applicable to such work and unsettled claims.

ii. Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 3.2.B. of the General Conditions.

(8) Reduction or limitation of retainage, if any, shall be as follows:

Notwithstanding the foregoing, upon completion of at least 50% of the Work, as determined by the Architect/Engineer and Owner, the Owner may, with the concurrence of the Architect/Engineer, reduce to two and one-half percent (2.5%) the amount of retainage withheld from each subsequent progress payment.

(9) Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

B. Final Payment. Final Payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when:

(1) The Contractor has fully performed the Work except for the Contractor's responsibility to correct Work as provided in Section 2.4.C. of the General Conditions, and to satisfy other requirements, if any, which extend beyond final payment; and

(2) A final Application for Payment has been approved by the Architect/Engineer.

6. Termination or Suspension.

A. Termination. The Agreement may be terminated by the Owner or the Contractor as provided in Article XIV of the General Conditions.

B. Suspension by Owner. The Work may be suspended by the Owner as provided in Article XIV of the General Conditions.

7. Other Provisions.

A. Substantial Completion Defined. Substantial Completion shall be defined as provided in Article I of the General Conditions. In the event a temporary certificate of occupancy or completion is issued establishing Substantial Completion, the Contractor shall diligently pursue the issuance of a permanent certificate of occupancy or completion.

B. Project Meetings. There shall be a project meeting, at the jobsite or other location acceptable to the parties, on a regularly scheduled basis. The meeting will be attended by a representative of the Contractor, Architect/Engineer and Owner. These representatives shall be authorized to make decisions that are not otherwise contrary to the requirements of this Agreement.

C. Weather. Any rainfall, temperatures below 32 degrees Fahrenheit or winds greater than 25 m.p.h. which actually prevents Work on a given day, shall be considered lost time and an additional day added to the Contract Time, provided no work could be done on site, and provided written notice has been submitted to the Owner by the Contractor documenting same.

D. Shop Drawings; Critical Submittals. In consideration of the impact of timely review of submittals and shop drawings on the overall progress of the Work, it is hereby agreed that the Owner shall cause his agents and design professionals to accomplish the review of any particular "critical" submittals and/or shop drawings and return same to the Contractor within fourteen (14) days.

E. Applications for Payment. Applications for Payment shall be submitted once monthly at regular intervals and shall include detailed documentation of all costs incurred.

F. Punch List. Within 30 days after obtainment of Substantial Completion, the Owner shall generate a "punch list" of all work items requiring remedial attention by the Contractor. Within 5 days thereafter the Architect/Engineer shall assign a fair value to the punch list items, which sum shall be deducted from the next scheduled progress payment to the Contractor. Upon satisfactory completion of the punch list items, as certified by the Architect/Engineer, the previously deducted sum shall be paid to the Contractor.

G. Closeout documentation. Within 30 days after obtainment of Substantial Completion and before final payment, Contractor shall gather and deliver to Owner all warranty documentation, all manufacturer's product and warranty literature, all manuals (including parts and technical manuals), all schematics and handbooks, and all as-built drawings.

H. Governing Provisions; Conflicts. In the event of a conflict between this Agreement and the Specifications or as between the General Conditions and the Specifications, the Specifications shall govern.

I. E-Verify. The Contractor's employment of unauthorized aliens is a violation of Section 274(e) of the Federal Immigration and Employment Act. The Contractor shall utilize the U.S. Department of Homeland Security E-Verify system to verify the employment eligibility of all new employees hired during the term of this Agreement, and shall require the same verification procedure of all Subcontractors.

8. Insurance and Bonding. If and to the extent required by the Invitation for Bid documents, the Contractor shall furnish insurance coverage for (but not necessarily limited to) workers' compensation, commercial general liability, auto liability, excess liability, and builder's risk. The Contractor shall furnish to the Owner all appropriate policies and Certificate(s) of Insurance. The Contractor shall also post a Payment and Performance Bond for the Contract Sum, within ten (10) days following notification of intent to award, and otherwise in accordance with the Invitation for Bid documents.

9. Independent Contractor. The Contractor acknowledges that it is functioning as an independent contractor in performing under the terms of this Agreement, and it is not acting as an employee of the Owner.

10. Entire Agreement. This Agreement (inclusive of the Contract Documents incorporated herein by reference) represents the full agreement of the parties.

11. Amendments; Waivers; Assignment.

A. Amendments. This Agreement may be amended only pursuant to an instrument in writing that has been jointly executed by authorized representatives of the parties hereto.

B. Waivers. Neither this Agreement nor any portion of it may be modified or waived orally. However, each party (through its governing body or properly authorized officer) shall have the right, but not the obligation, to waive, on a case-by-case basis, any right or condition herein reserved or intended for the benefit or protection of such party without being deemed or considered to have waived such right or condition for any other case, situation, or circumstance and without being deemed or considered to have waived any other right or condition. No such waiver shall be effective unless made in writing with an express and specific statement of the intent of such governing body or officer to provide such waiver.

C. Assignment. The rights and obligations of either party to this Agreement may be assigned to a third party only pursuant to a written amendment hereto.

12. Validity. Each of the Owner and Contractor represents and warrants to the other its respective authority to enter into this Agreement.

13. Covenant to Defend. Neither the validity of this Agreement nor the validity of any portion hereof may be challenged by any party hereto, and each party hereto hereby waives any right to initiate any such challenge. Furthermore, if this Agreement or any portion hereof is challenged by a third party in any judicial, administrative, or appellate proceeding (each party hereby covenanting with the other party not to initiate, encourage, foster, promote, cooperate with, or acquiesce to such challenge), the parties hereto collectively and individually agree, at their individual sole cost and expense, to defend in good faith its validity through a final judicial determination or other resolution, unless all parties mutually agree in writing not to defend such challenge or not to appeal any decision invalidating this Agreement or any portion thereof.

14. Disclaimer of Third-Party Beneficiaries; Successors and Assigns. This Agreement is solely for the benefit of the parties hereto, and no right, privilege, or cause of action shall by reason hereof accrue upon, to, or for the benefit of any third party. Nothing in this Agreement is intended or shall be construed to confer upon or give any person, corporation, partnership, trust, private entity, agency, or other governmental entity any right, privilege, remedy, or claim under or by reason of this Agreement or any provisions or conditions hereof. This Agreement shall be binding upon, and its benefits and advantages shall inure to, the successors and assigns of the parties hereto.

15. Construction.

A. Headings and Captions. The headings and captions of articles, sections, and paragraphs used in this Agreement are for convenience of reference only and are not intended to define or limit their contents, nor are they to affect the construction of or be taken into consideration in interpreting this Agreement.

B. Legal References. All references to statutory sections or chapters shall be construed to include subsequent amendments to such provisions, and to refer to the successor provision of any such provision. References to "applicable law" and "general law" shall be construed to include provisions of local, state and federal law, whether established by legislative action, administrative rule or regulation, or judicial decision.

16. Severability. The provisions of this Agreement are declared by the parties hereto to be severable. In the event any term or provision of this Agreement shall be held invalid by a court of competent jurisdiction, such invalid term or provision should not affect the validity of any other term or provision hereof; and all such terms and provisions hereof shall be enforceable to the fullest extent permitted by law as if such invalid term or provision had never been part of this Agreement; provided, however, if any term or provision of this Agreement is held to be invalid due to the scope or extent thereof, then, to the extent permitted by law, such term or provision shall be automatically deemed modified in order that it may be enforced to the maximum scope and extent permitted by law.

17. Governing Law; Venue. This Agreement shall be governed by the laws of the State of Florida. Venue for any petition for writ of certiorari or other court action allowed by this Agreement shall be in the Circuit Court of the Twelfth Judicial Circuit in and for Manatee County, Florida.

18. Attorney's Fees and Costs. In any claim dispute procedure or litigation arising from this Agreement, each party hereto shall be solely responsible for paying its attorney's fees and costs.

19. Notices. All notices, comments, consents, objections, approvals, waivers, and elections under this Agreement shall be in writing and shall be given only by hand delivery for which a receipt is obtained, or certified mail, prepaid with confirmation of delivery requested, or by electronic mail with delivery confirmation. All such communications shall be addressed to the applicable addressees set forth below or as any party may otherwise designate in the manner prescribed herein.

To the Owner: _____
_____
_____
_____
Email: _____

To the Contractor:

_____
_____
_____
_____
Email: _____

Notices, comments, consents, objections, approvals, waivers, and elections shall be deemed given when received by the party for whom such communication is intended at such party's address herein specified, or such other physical address or email address as such party may have substituted by notice to the other.

20. Public Records Law. The Contractor shall comply with the Florida Public Records Act (Chapter 119, Florida Statutes), and shall:

A. Keep and maintain public records required by the Owner to perform the services called for in this Agreement.
B. Upon request from the Owner's custodian of public records, provide the Owner with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes or as otherwise provided by law.
C. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of this Agreement and following completion of this Agreement if the Contractor does not transfer the records to the Owner.
D. Upon completion of this Agreement, transfer, at no cost, to the Owner all public records in possession of the Contractor or keep and maintain such public records. If the Contractor transfers all public records to the Owner upon completion of the Agreement, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Agreement, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the Owner, upon request from the Owner's custodian of public records, in a format that is compatible with the information technology systems of the Owner.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE OWNER'S CUSTODIAN OF PUBLIC RECORDS AT 941-748-4501, EXT. 5845; DEBBIE.SCACCIANOCE@MYMANATEE.ORG; POST OFFICE BOX 1000, BRADENTON, FLORIDA 34206.

21. Exhibits. Exhibits to this Agreement are as follows:

Exhibit A—Title(s) of Drawings

Exhibit B—Title(s) of Specifications

Exhibit C—Affidavit of No Conflict

Exhibit D—Certificate(s) of Insurance

Exhibit E—Payment and Performance Bond

Exhibit F—Standard Forms

1—Application for Payment
2—Certificate of Substantial Completion
3—Final Reconciliation / Warranty / Affidavit
4—Change Order

(*Remainder of this page intentionally left blank*)

WHEREFORE, the parties hereto have executed this Agreement as of the date last executed below.

_____
Name of Contractor

By: _____

Printed Name: _____

Title: _____

Date: _____

MANATEE COUNTY, a political subdivision of the State of Florida

By: _____

Printed Name: _____

Title: _____

Date: _____

GENERAL CONDITIONS

of the

CONSTRUCTION AGREEMENT

TABLE OF CONTENTS FOR GENERAL CONDITIONS

GENERAL CONDITIONS
ARTICLE I
DEFINITIONS

1.1 Definitions. For purposes of the Contract Documents, the following terms shall have the following meanings.

A. Acceptance: The acceptance of the Project into the Owner's operating public infrastructure.

B. Application for Payment: The form approved and accepted by the Owner, which is to be used by Contractor in requesting progress payments or final payment and which is to include such supporting documentation as is required by the Contract Documents.

C. Architect/Engineer: _____, a _____ corporation or limited liability company, registered and licensed to do business in the State of Florida, OR _____, an employee of Owner.

D. Change Order: A written order signed by the Owner, the Architect/Engineer and the Contractor authorizing a change in the Project Plans and/or Specifications and, if necessary, a corresponding adjustment in the Contract Sum and/or Contract Time, pursuant to Article V.

E. Construction Services: The Construction Services to be provided by Contractor pursuant to Section 2.4, in accordance with the terms and provisions of the Contract Documents.

F. Construction Team: The working team established pursuant to Section 2.1.B.

G. Contract Sum: The total compensation to be paid to the Contractor for Construction Services rendered pursuant to the Contract Documents, as set forth in Contractor's Bid (or Guaranteed Maximum Price Addendum), unless adjusted in accordance with the terms of the Contract Documents

H. Contract Time: The time period during which all Construction Services are to be completed pursuant to the Contract Documents, to be set forth in the Project Schedule.

I. Contractor's Personnel: The Contractor's key personnel designated by Contractor.

J. Days: Calendar days except when specified differently. When time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or legal holiday, such day will be omitted from the computation.

K. Defective: When modifying the term "Work", referring to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or that does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or that has been damaged prior to Owner's approval of final payment (unless responsibility for the protection thereof has been assumed by Owner).

L. Field Directive: A written order issued by Owner which orders minor changes in the Work not involving a change in Contract Time, to be paid from the Owner's contingency funds.

M. Final Completion Date: The date upon which the Project is fully constructed and all Work required on the Project and Project Site is fully performed as verified in writing by the Owner.

N. Float Time: The time available in the Project Schedule during which an unexpected activity can be completed without delaying Substantial Completion of the Work.

O. Force Majeure: Those conditions constituting excuse from performance as described in and subject to the conditions described in Article XII.

P. Notice to Proceed: Written notice by Owner (after execution of Contract) to Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform the Work.

Q. Owner: Manatee County, a political subdivision of the State of Florida.

R. Owner's Project Representative: The individual designated by Owner to perform those functions set forth in Section 7.8.

S. Payment and Performance Bond: The Payment and Performance Bond security posted pursuant to Section 2.4.Y to guarantee payment and performance by the Contractor of its obligations hereunder.

T. Permitting Authority: Any applicable governmental authority acting in its governmental and regulatory capacity which is required to issue or grant any permit, certificate, license or other approval which is required as a condition precedent to the commencement or approved of the Work, or any part thereof, including the building permit.

U. Procurement Ordinance: The Manatee County Procurement Code, Chapter 2-26 of the Manatee County Code of Laws, as amended from time to time.

V. Progress Report: A report to Owner that includes all information required pursuant to the Contract Documents and submitted in accordance with Section 2.4.EE, hereof.

W. Project: The total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by Owner and by separate contractors. For the purposes of the Contract Documents, the term Project shall

include all areas of proposed improvements and all areas which may reasonably be judged to have an impact on the Project.

X. Project Costs: The costs incurred by the Contractor to plan, construct and equip the Project and included within, and paid as a component of, the Contract Sum.

Y. Project Manager: Subject to the prior written consent of Owner, the individual designated to receive notices on behalf of the Contractor, or such other individual designated by the Contractor, from time to time, pursuant to written notice in accordance with the Contract Documents.

Z. Project Plans and Specifications: The one hundred percent (100%) construction drawings and specifications prepared by the Architect/Engineer, and any changes, supplements, amendments or additions thereto approved by the Owner, which shall also include any construction drawings and final specifications required for the repair or construction of the Project, as provided herein.

AA. Project Schedule: The schedule and sequence of events for the commencement, progression and completion of the Project, developed pursuant to Section 2.3., as such schedule may be amended as provided herein.

BB. Project Site: The site depicted in the Project Plans and Specifications, inclusive of all rights of way, temporary construction easements or licensed or leased sovereign lands.

CC. Subcontractor: Any individual (other than a direct employee of the Contractor) or organization retained by Contractor to plan, construct or equip the Project pursuant to Article IV.

DD. Substantial Completion and Substantially Complete: The stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use; provided, however, that as a condition precedent to Substantial Completion, the Owner has received all certificates of occupancy or completion and other permits, approvals, licenses, and other documents from any governmental authority which are necessary for the beneficial occupancy of the Project or any designated portion thereof.

EE. Substantial Completion Date: The date on which the Project or designated portion thereof is deemed to be Substantially Complete, as evidenced by receipt of (i) the Architect/Engineer's certificate of Substantial Completion, (ii) written Acceptance of the Project by the Owner, and (iii) approvals of any other authority as may be necessary or otherwise required.

FF. Substitute: Materials or equipment offered by the Contractor as an alternative to that set forth in the Project Plans and Specifications, where (i) the Project Plans and Specifications do not authorize an "approved equal", or (ii) the Owner, in its reasonable discretion, determines that a pre-authorized "approved equal" will result in a substantial change to the Work because of cost, quality or other difference in comparison to the materials or equipment specified.

GG. Unit Price Work: Work to be paid for on the basis of unit prices.

HH. Work: The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

II. Work Directive Change: A written directive to Contractor, issued on or after the effective date of the Agreement pursuant to Section 5.8 and signed by Owner's Project Representative, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or responding to emergencies.

ARTICLE II
RELATIONSHIP AND RESPONSIBILITIES

2.1 Relationship between Contractor and Owner. The Contractor accepts the relationship of trust and confidence established with Owner pursuant to the Contract Documents. The Contractor shall furnish its best skill and judgment and cooperate with Owner and Owner's Project Representative in furthering the interests of the Owner. The Contractor agrees to provide the professional services required to complete the Project consistent with the Owner's direction and the terms of the Contract Documents. All services provided hereunder by Contractor, either directly or through Subcontractors, shall be provided in accordance with sound construction practices and applicable professional construction standards.

A. Purpose. The purpose of the Contract Documents is to provide for the provision of construction services for the Project on the Project Site by the Contractor, and construction of the Project by the Contractor in accordance with the Project Plans and Specifications. The further purpose of the Contract Documents is to define and delineate the responsibilities and obligations of the parties to the Contract Documents and to express the desire of all such parties to cooperate to accomplish the purposes and expectations of the Contract Documents.

B. Construction Team. The Contractor, Owner and Architect/Engineer shall be called the "Construction Team" and shall work together as a team commencing upon full execution of the Contract Documents through Substantial Completion. As provided in Section 2.2, the Contractor and Architect/Engineer shall work jointly through completion and shall be available thereafter should additional services be required. The Contractor shall provide leadership to the Construction Team on all matters relating to construction. The Contractor understands, acknowledges and agrees that the Architect/Engineer shall provide leadership to the Construction Team on all matters relating to design.

C. Owner's Reliance on Bid (or Guaranteed Maximum Price Addendum). The Contractor acknowledges that the representations, statements, information and pricing contained in its Bid (or Guaranteed Maximum Price Addendum) have been relied upon by the Owner and have resulted in the award of this Project to the Contractor.

2.2 General Contractor Responsibilities. In addition to the other responsibilities set forth herein, the Contractor shall have the following responsibilities pursuant to the Contract Documents:

A. Personnel. The Contractor represents that it has secured, or shall secure, all personnel necessary to perform the Work, none of whom shall be employees of the Owner. Primary liaison between the Contractor and the Owner shall be through the Owner's Project Representative and Contractor's Project Manager. All of the services required herein shall be performed by the Contractor or under the Contractor's supervision, and all personnel engaged in the Work shall be fully qualified and shall be authorized or permitted under law to perform such services.

B. Cooperation with Architect/Engineer. The Contractor's services shall be provided in conjunction with the services of the Architect/Engineer. In the performance of professional services, the Contractor acknowledges that time is critical for Project delivery. The Contractor acknowledges that timely construction utilizing the services of an Architect/Engineer and a Contractor requires maximum cooperation between all parties.

C. Timely Performance. The Contractor shall perform all services as expeditiously as is consistent with professional skill and care and the orderly progress of the Work, in accordance with the Project Schedule. Verification of estimated Project Schedule goals will be made as requested by the Owner.

D. Duty to Defend Work. In the event of any dispute between the Owner and any Permitting Authority that relates to the quality, completeness or professional workmanship of the Contractor's services or Work, the Contractor shall, at its sole cost and expense, cooperate with the Owner to defend the quality and workmanship of the Contractor's services and Work.

E. Trade and Industry Terminology. 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 at the time of execution of the Guaranteed Maximum Price Addendum), 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 Owner or Contractor, or any of their agents or employees from those set forth in the Contract Documents. Computed dimensions shall govern over scaled dimensions.

2.3 Project Schedule. The Contractor, within ten (10) days after being awarded the Agreement, shall prepare and submit for the Owner's and Architect/Engineer's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the

extent required by the Contract Documents, and shall provide for expeditious and practicable execution of Work.

A. The Project Schedule shall show a breakdown of all tasks to be performed, and their relationship in achieving the completion of each phase of Work, subject to review of Owner and Architect/Engineer and approval or rejection by Owner. The Project Schedule shall show, at a minimum, the approximate dates on which each segment of the Work is expected to be started and finished, the proposed traffic flows during each month, the anticipated earnings by the Contractor for each month and the approximate number of crews and equipment to be used. The Project Schedule shall include all phases of procurement, approval of shop drawings, proposed Change Orders in progress, schedules for Change Orders, and performance testing requirements. The Project Schedule shall include a construction commencement date and Project Substantial Completion Date, which dates shall accommodate known or reasonably anticipated geographic, atmospheric and weather conditions.

B. The Project Schedule shall serve as the framework for the subsequent development of all detailed schedules. The Project Schedule shall be used to verify Contractor performance and to allow the Owner's Project Representative to monitor the Contractor's efforts.

C. The Project Schedule may be adjusted by the Contractor pursuant to Article V. The Owner shall have the right to reschedule Work provided such rescheduling is in accord with the remainder of terms of the Contract Documents.

D. The Contractor shall prepare a submittal schedule, promptly after being awarded the Agreement and thereafter as necessary to maintain a current submittal schedule, and shall submit the schedule(s) for the Architect/Engineer's approval. The Architect/Engineer's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect/Engineer reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

E. The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect/Engineer.

2.4 Construction Services. The Contractor shall provide the following Construction Services:

A. Construction of Project. The Contractor shall work from the receipt of a Notice to Proceed through the Substantial Completion of the Project in accordance with the terms of the Contract Documents to manage the construction of the Project. The Construction Services provided by the Contractor to construct the Project shall include without limitation (1) all services

necessary and commensurate with established construction standards, and (2) all services described in the Invitation for Bid (or Request for Proposal) and the Bid (or Guaranteed Maximum Price Addendum).

B. Notice to Proceed. A Notice to Proceed may be given at any time within thirty (30) days after the effective date of the Agreement. Contractor shall start to perform the Work on the date specified in the Notice to Proceed, but no Work shall be done at the site prior to the issuance of the Notice to Proceed.

C. Quality of Work. If at any time the labor used or to be used appears to the Owner as insufficient or improper for securing the quality of Work required or the required rate of progress, the Owner may order the Contractor to increase its efficiency or to improve the character of its Work, and the Contractor shall conform to such an order. Any such order shall not entitle Contractor to any additional compensation or any increase in Contract Time. The failure of the Owner to demand any increase of such efficiency or any improvement shall not release the Contractor from its obligation to secure the quality of Work or the rate of progress necessary to complete the Work within the limits imposed by the Contract Documents. The Owner may require the Contractor to remove such personnel as the Owner deems incompetent, careless, insubordinate or otherwise objectionable, or whose continued employment on the Project is deemed to be contrary to the Owner's interest. The Contractor shall provide good quality workmanship and shall promptly correct construction defects without additional compensation. Acceptance of the Work by the Owner shall not relieve the Contractor of the responsibility for subsequent correction of any construction defects.

D. Materials. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Architect/Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instruction of the applicable supplier except as otherwise provided in the Contract Documents.

E. Accountability for Work. The Contractor shall be solely accountable for its Work, including plans review and complete submittals. The Contractor shall be solely responsible for means, methods, techniques, sequences and procedures of construction. If a specific means, method, technique, sequence or procedure of construction is required by the Contract Documents, the Contractor may utilize an alternative means, method, technique, sequence or procedure acceptable to the Architect/Engineer if the Contractor submits sufficient information to allow the Architect/Engineer to determine that the alternative is equivalent to that required by the Contract Documents.

F. Contract Sum. The Contractor shall construct the Project so that the Project can be built for a cost not to exceed the Contract Sum.

G. Governing Specifications. In the absence of specified Owner design standards or guidelines, the Architect/Engineer shall use, and the Contractor shall comply with, the most recent version of the applicable FDOT or AASHTO design standards. In general, the Project shall be constructed by the Contractor in accordance with applicable industry standards. The Contractor shall be responsible for utilizing and maintaining current knowledge of any laws,

ordinances, codes, rules, regulations, standards, guidelines, special conditions, specifications or other mandates relevant to the Project or the services to be performed.

H. Adherence to Project Schedule. The development and equipping of the Project shall be undertaken and completed in accordance with the Project Schedule, and within the Contract Time described therein.

I. Superintendent. The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project Site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

(1) The Contractor, as soon as practicable after award of the Agreement, shall furnish in writing to the Owner through the Architect/Engineer the name and qualifications of the proposed superintendent. The Architect/Engineer may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect/Engineer has reasonable objection to the proposed superintendent or (2) that the Architect/Engineer requires additional time to review. Failure of the Architect/Engineer to reply within 14 days shall constitute notice of no reasonable objection.

(2) The Contractor shall not employ a proposed superintendent to whom the Owner or Architect/Engineer has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not be unreasonably withheld or delayed.

J. Work Hours. Contractor shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and Contractor shall not permit overtime work or the performance of Work on a Saturday, Sunday or legal holiday without Owner's written consent given after prior notice to Architect/Engineer (at least seventy-two (72) hours in advance).

K. Overtime-Related Costs. Contractor shall pay for all additional Architect/Engineer charges, inspection costs and Owner staff time for any overtime work which may be authorized. Such additional charges shall be an obligation of Contractor and no extra payment shall be made by Owner because such overtime work. At Owner's option, such overtime costs may be deducted from Contractor's monthly payment request or Contractor's retainage prior to release of final payment. Contractor's obligation to pay all overtime-related costs shall not apply if Contractor is directed by Owner to work overtime solely for Owner's convenience.

L. Insurance, Overhead and Utilities. Unless otherwise specified, Contractor shall furnish and assume full responsibility for all bonds, insurance, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

M. Cleanliness. The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials from and about the Project Site. Contractor shall restore to original conditions all property not designated for alteration by the Contract Documents If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and Owner shall be entitled to reimbursement from Contractor.

N. Loading. Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

O. Safety and Protection. Contractor shall comply with all applicable federal, state and local safety regulations. 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:

(1) All employees on the Work and other persons and organizations who may be affected thereby;

(2) All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Project Site; and

(3) Other property at the Project Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement during 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 provide and maintain all passageways, guard fences, lights and other facilities for the protection required by public authority or local conditions. Contractor shall provide reasonable maintenance of traffic for the public and preservation of the Owner's business, taking into full consideration all local conditions. Contractor's duties and responsibilities for safety and protection with regard to the Work shall continue until such time as all the Work is completed.

P. Emergencies. In emergencies affecting the safety or protection of persons or the Work or property at the Project Site or adjacent thereto, Contractor, without special instruction or authorization from Architect/Engineer or Owner, shall act to prevent threatened damage, injury or loss. Contractor shall give Owner prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If Owner determines that a change in the Project 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 variation.

Q. Substitutes. For Substitutes not included with the Bid (or Guaranteed Maximum Price Addendum), but submitted after the effective date of the Agreement (or

Guaranteed Maximum Price Addendum), Contractor shall make written application to Architect/Engineer for acceptance thereof, certifying that the proposed Substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will also contain an itemized estimate of all costs and delays or schedule impacts that will result directly or indirectly from review, acceptance and provision of such Substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by the Architect/Engineer in evaluating the proposed Substitute. Architect/Engineer may require Contractor to furnish at Contractor's expense, additional data about the proposed Substitute. In rendering a decision, Owner, Architect/Engineer and Contractor shall have access to any available Float Time in the Project Schedule. If Substitute materials or equipment not included as part of the Bid (or Guaranteed Maximum Price Addendum), but proposed after the effective date of the Agreement, are accepted and are less costly than the originally specified materials or equipment, then the net difference in cost shall be credited to the Owner and an appropriate Change Order executed to adjust the Contract Sum.

(1) Architect/Engineer will be allowed a reasonable time within which to evaluate each proposed Substitute. Architect/Engineer will be the sole judge of acceptability and no Substitute will be ordered, installed or utilized without Architect/Engineer's prior written acceptance which will be evidenced by either a Change Order or an approved shop drawing. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any Substitute.

(2) Contractor shall reimburse Owner for the charges of Architect/Engineer and Architect/Engineer's Consultants for evaluating each proposed Substitute submitted after the effective date of the Agreement and all costs resulting from any delays in the Work while the Substitute was undergoing review.

R. Surveys and Stakes. The Contractor shall furnish, as part of the Contract Sum, all labor, stakes, surveys, batter boards for structures, grade lines and other materials and supplies and shall set construction stakes and batter boards for establishing lines, position of structures, slopes and other controlling points necessary for the proper prosecution of the Work. Where rights-of-way, easements, property lines or any other conditions which make the lay-out of the Project or parts of the Project critical are involved, the Contractor shall employ a competent surveyor who is registered in the State of Florida for lay-out and staking. These stakes and marks shall constitute the field control by and in accord with which the Contractor shall govern and execute the Work. The Contractor shall be held responsible for the preservation of all stakes and marks and if for any reason any of the stakes or marks or batter boards become destroyed or disturbed, they shall be immediately and accurately replaced by the Contractor.

S. Suitability of Project Site. The Contractor has, by careful examination, satisfied itself as to the nature and location of the Work and all other matters which can in any way affect the Work, including, but not limited to details pertaining to borings, as shown on the drawings. Such boring information is not guaranteed to be more than a general indication of the materials likely to be found adjacent to holes bored at the Project Site, approximately at the locations indicated. The Contractor has examined boring data, where available, made its own interpretation of the subsurface conditions and other preliminary data, and has based its Bid (or Guaranteed Maximum Price Addendum) on its own opinion of the conditions likely to be

encountered. Except as specifically provided in Sections 2.4.U., 5.4 and 5.5, no extra compensation or extension of time will be considered for any Project Site conditions that existed at the time of bidding (or at the time of execution of the Guaranteed Maximum Price Addendum). No verbal agreement or conversation with any officer, agent or employee of the Owner, before or after the execution of the Agreement, shall affect or modify any of the terms or obligations herein contained.

T. Project Specification Errors. If the Contractor, during the Work, finds that the drawings, specifications or other Contract Documents cannot be followed, the Contractor shall immediately inform the Owner in writing, and the Owner shall promptly check the accuracy of the information. Any Work done after such discovery, until any necessary changes are authorized, will be done at the Contractor's sole risk of non-payment and delay.

U. Remediation of Contamination. Owner and Contractor recognize that remediation of subsurface conditions may be necessary due to potential hazardous materials contamination. Because the presence or extent of any contamination is not known, Contractor shall include no cost in the Contract Sum, and no time in the Project Schedule, for cost or delays that might result from any necessary remediation. The Project Schedule will provide a period of time between demolition activities and the start of the next activity to commence any remediation if needed. Contractor shall use all reasonable efforts in scheduling the Project to minimize the likelihood that remediation delays construction. Any hazardous materials remediation Work which Contractor agrees to perform shall be done pursuant to a Change Order or amendment consistent with the following:

(1) The dates of Substantial Completion shall be equitably adjusted based on delays, if any, incurred in connection with remediation efforts.

(2) Contractor, and any Subcontractors which have mobilized on the Project Site, shall be paid for demonstrated costs of overhead operations at the Project Site during any period of delay of more than seven (7) days, except to the extent that Work proceeds concurrently with remediation. The categories of costs to be reimbursed are limited to those reasonably incurred at the jobsite during the delay period (such as trailers or offices, telephones, faxes, and the like); equipment dedicated to the Project and located at the Project Site; salaries and associated costs of personnel dedicated to the Project to the extent that they do not perform work on other projects; and other jobsite costs that are reasonable and which are incurred during the delay period. Subcontractors and suppliers which have not mobilized are limited to the costs set forth in Section 2.4.U(3).

(3) Contractor and any Subcontractor or supplier on the Project who is eligible for compensation shall be paid any demonstrated costs of escalation in materials or labor, and reasonable costs of off-site storage of materials identified to the Project, arising because of any delay of more than seven (7) days. Such Contractor, Subcontractors and suppliers are obligated to take all reasonable steps to mitigate escalation costs, such as through early purchase of materials.

(4) Contractor, for itself and all Subcontractors and suppliers on the Project, hereby agrees that the extension of time for delays under Section 2.4.U(1), and payment of the costs identified in Sections 2.4.U(2) and/or Section 2.4.U(3), are the sole remedies for costs and delays described in this Section, and waives all claims and demands for extended home office overhead (including, but not limited to, "Eichleay" claims), lost profit or lost opportunities, and any special, indirect, or consequential damages arising as a result of delays described in this Section. The Contract Sum shall be adjusted to reflect payment of allowable costs.

(5) If any delay described in this section causes the time or cost for the Project to exceed the Contract Time or the Contact Sum, then the Owner may terminate the Agreement pursuant to Section 14.2.

(6) Contractor and any Subcontractor or supplier seeking additional costs under this Section 2.4.U. shall promptly submit estimates or any costs as requested by Owner, and detailed back-up for all costs when payment is sought or whenever reasonably requested by Owner. All costs are auditable, at Owner's discretion. Bid, estimate and pricing information reasonably related to any request for additional compensation will be provided promptly upon request.

(7) Contractor shall include provisions in its subcontracts and purchase orders consistent with this Section.

V. Interfacing.

(1) The Contractor shall take such measures as are necessary to ensure proper construction and delivery of the Project, including but not limited to providing that all procurement of long-lead items, the separate construction Subcontractors, and the general conditions items are performed without duplication or overlap to maintain completion of all Work on schedule. Particular attention shall be given to provide that each Subcontractor bid package clearly identifies the Work included in that particular separate subcontract, its scheduling for start and completion, and its relationship to other separate contractors.

(2) Without assuming any design responsibilities of the Architect/Engineer, the Contractor shall include in the Progress Reports required under this Section 2.4 comments on overlap with any other separate subcontracts, omissions, lack of correlation between drawings, and any other deficiencies noted, in order that the Architect/Engineer may arrange for necessary corrections.

W. Job Site Facilities. The Contractor shall arrange for all job site facilities required and necessary to enable the Contractor and Architect/Engineer to perform their respective duties and to accommodate any representatives of the Owner which the Owner may choose to have present on the Project Site.

X. Weather Protection. The Contractor shall provide temporary enclosures of building areas to assure orderly progress of the Work during periods when extreme weather conditions are likely to be experienced. The Contractor shall also be responsible for providing weather protection for Work in progress and for materials stored on the Project Site. A contingency plan shall be prepared upon request of the Owner for weather conditions that may affect the construction.

Y. Payment and Performance Bond. Prior to the construction commencement date, the Contractor shall obtain, for the benefit of and directed to the Owner, a Payment and Performance Bond satisfying the requirements of Section 255.05, Florida Statutes, covering the faithful performance by the Contractor of its obligations under the Contract Documents, including but not limited to the construction of the Project on the Project Site and the payment of all obligations arising thereunder, including all payments to Subcontractors, laborers, and materialmen. The surety selected by the Contractor to provide the Payment and Performance Bond shall be approved by the Owner prior to the issuance of such Bond, which approval shall not be unreasonably withheld or delayed provided that the surety is rated A or better by Best's Key Guide, latest edition. For Changes in the Work that result in an increase in the Contract Sum, Owner reserves the right to require the Contractor to secure and deliver additive riders to the Payment and Performance Bond.

Z. Construction Phase; Building Permit; Code Inspections. Unless otherwise provided, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work.

(1) Building Permit. The Owner and Architect/Engineer shall provide such information to any Permitting Authority as is necessary to obtain approval from the Permitting Authority to commence construction prior to beginning construction. The Contractor shall pull any required building permit, and shall be responsible for delivering and posting the building permit at the Project Site prior to the commencement of construction. The cost of the building permit is included in the Contract Sum. The Owner and Architect/Engineer shall fully cooperate with the Contractor when and where necessary.

(2) Code Inspections. The Project requires detailed code compliance inspection during construction in disciplines determined by any Permitting Authority. These disciplines normally include, but are not necessarily limited to, structural, mechanical, electrical, plumbing, general building and fire. The Contractor shall notify the appropriate inspector(s) and the Architect/Engineer, no less than 24 hours in advance, when the Work is ready for inspection and before the Work is covered up. All inspections shall be made for conformance with the applicable ordinances and building codes. Costs for all re-inspections of Work found defective and subsequently repaired shall not be included as Project Costs and shall be borne by the Contractor or as provided in the contract between Contractor and Subcontractor.

(3) Contractor's Personnel. The Contractor shall maintain sufficient off-site support staff and competent full-time staff at the Project Site authorized to act on behalf of the Contractor to coordinate, inspect, and provide general direction of the Work and progress of the Subcontractors. At all times during the performance of the Work, the Owner shall have the right to demand replacement of Contractor Personnel to whom the Owner has reasonable objection, without liability to the Contractor.

(4) Lines of Authority. To provide general direction of the Work, the Contractor shall establish and maintain lines of authority for its personnel and shall provide this information to the Owner and all other affected parties, such as the code inspectors of any Permitting Authority, the Subcontractors, and the Architect/Engineer. The Owner and Architect/Engineer may attend meetings between the Contractor and his Subcontractors; however, such attendance is optional and shall not diminish either the authority or responsibility of the Contractor to administer the subcontracts.

AA. Quality Control. The Contractor shall develop and maintain a program, acceptable to the Owner and Architect/Engineer, to assure quality control of the construction. The Contractor shall be responsible for and supervise the Work of all Subcontractors, providing instructions to each when their Work does not conform to the requirements of the Project Plans and Specifications, and the Contractor shall continue to coordinate the Work of each Subcontractor to ensure that corrections are made in a timely manner so as to not affect the efficient progress of the Work. Should a disagreement occur between the Contractor and the Architect/Engineer over the acceptability of the Work, the Owner, at its sole discretion and in addition to any other remedies provided herein, shall have the right to determine the acceptability, provided that such determination is consistent with standards for construction projects of this type and generally accepted industry standards for workmanship in the State of Florida.

BB. Management of Subcontractors. All Subcontractors shall be compensated in accordance with Article IV. The Contractor shall solely control the Subcontractors. The Contractor shall negotiate all Change Orders and Field Orders with all affected Subcontractors and shall review the costs and advise the Owner and Architect/Engineer of their validity and reasonableness, acting in the Owner's best interest. When there is an imminent threat to health and safety, and Owner's Project Representative concurrence is impractical, the Contractor shall act immediately to remove the threats to health and safety and shall subsequently fully inform Owner of all such action taken. The Contractor shall also carefully review all shop drawings and then forward the same to the Architect/Engineer for review and actions. The Architect/Engineer will transmit them back to the Contractor, who will then issue the shop drawings to the affected Subcontractor for fabrication or revision. The Contractor shall maintain a suspense control system to promote expeditious handling. The Contractor shall request the Architect/Engineer to make interpretations of the drawings or specifications requested of him by the Subcontractors and shall maintain a business system to promote timely response. The Contractor shall inform the Architect/Engineer which shop drawings or requests for clarification have the greatest urgency, to enable the Architect/Engineer to prioritize requests coming from the Contractor. The Contractor shall advise the Owner and Architect/Engineer when timely response is not occurring on any of the above.

CC. Job Requirements.

(1) The Contractor shall provide each of the following as a part of its services hereunder:

(a) Maintain a log of daily activities, including manpower records, equipment on site, weather, delays, major decisions, etc;

(b) Maintain a roster of companies on the Project with names and telephone numbers of key personnel;

(c) Establish and enforce job rules governing parking, clean-up, use of facilities, and worker discipline;

(d) Provide labor relations management and equal opportunity employment for a harmonious, productive Project;

(e) Provide and administer a safety program for the Project and monitor for subcontractor compliance without relieving them of responsibilities to perform Work in accordance with best acceptable practice;

(f) Provide a quality control program as provided under Section 2.4.C above;

(g) Provide miscellaneous office supplies that support the construction efforts which are consumed by its own forces;

(h) Provide for travel to and from its home office to the Project Site and to those other places within Manatee County as required by the Project;

(i) Verify that tests, equipment, and system start-ups and operating and maintenance instructions are conducted as required and in the presence of the required personnel and provide adequate records of same to the Architect/Engineer;

(j) Maintain at the job site orderly files for correspondence, reports of job conferences, shop drawings and sample submissions, reproductions of original Contract Documents including all addenda, change orders, field orders, additional drawings issued after execution of the Agreement, Owner/Architect/Engineer's clarifications and interpretations of the Contract Documents, Progress Reports, as-built drawings, and other project related documents;

(k) Keep a diary or log book, recording hours on the job site, weather conditions, data relative to questions of extras or deductions; list of visiting officials and representatives or manufacturers, fabricators,

suppliers and distributors; daily activities, decisions, observations in general and specific observations in more detail as in the case of observing test procedures, and provide copies of same to Owner/Architect/Engineer;

(l) Record names, addresses and telephone numbers of all Contractors, Subcontractors and major suppliers of materials and equipment;

(m) Furnish Owner/Architect/Engineer periodic reports, as required, of progress of the Work and Contractor's compliance with the approved progress schedule and schedule of shop drawing submissions;

(n) Consult with Owner/Architect/Engineer in advance of scheduling major tests, inspections or start of important phases of the Work;

(o) Verify, during the course of the Work, that certificates, maintenance and operations manuals and other data required to be assembled and furnished are applicable to the items actually installed, and deliver same to Owner/Architect/Engineer for review prior to final Acceptance of the Work; and

(p) Cooperate with Owner in the administration of grants.

(2) The Contractor shall provide personnel and equipment, or shall arrange for separate Subcontractors to provide each of the following as a Project Cost:

(a) Services of independent testing laboratories, and provide the necessary testing of materials to ensure conformance to contract requirements; and

(b) Printing and distribution of all required bidding documents and shop drawings, including the sets required by Permitting Authority inspectors.

DD. As-Built Drawings. The Contractor shall continuously review as-built drawings and mark up progress prints to provide as much accuracy as possible. Prior to, and as a requirement for authorizing final payment to the Contractor due hereunder, the Contractor shall provide to the Owner an original set of marked-up, as-built Project Plans and Specifications and an electronic format of those records showing the location and dimensions of the Project as constructed, which documents shall be certified as being correct by the Contractor and the Architect/Engineer. Final as-built drawings shall be signed and sealed by a registered Florida surveyor.

EE. Progress Reports. The Contractor shall forward to the Owner, as soon as practicable after the first day of each month, a summary report of the progress of the various parts of the Work, to include those parts of the Work in fabrication and in the field, stating the existing status, estimated time of completion and cause of delay, if any. Together with the summary report, the Contractor shall submit any necessary revisions to the original schedule for the Owner's review

and approval. In addition, more detailed schedules may be required by the Owner for daily traffic control.

FF. Contractor's Warranty. The Contractor warrants to the Owner and Architect/Engineer that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements will be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect/Engineer, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

(1) Contractor shall use its best efforts and due diligence to ensure that during the warranty period, those entities or individuals who have provided direct warranties to the Owner as required by the Contract Documents perform all required warranty Work in a timely manner and at the sole cost and expense of such warranty providers. Any such cost or expense not paid by the warranty providers shall be paid by the Contractor, to include any costs and attorney's fees incurred in warranty-related litigation between Contractor and any Subcontractors.

(2) The Contractor shall secure guarantees and warranties of Subcontractors, equipment suppliers and materialmen, and assemble and deliver same to the Owner in a manner that will facilitate their maximum enforcement and assure their meaningful implementation. The Contractor shall collect and deliver to the Owner any specific written guaranties or warranties given by others as required by subcontracts.

(3) At the Owner's request, the Contractor shall conduct, jointly with the Owner and the Architect/Engineer, no more than two (2) warranty inspections within three (3) years after the Substantial Completion Date.

GG. Apprentices. If Contractor employs apprentices, their performance of Work shall be governed by and shall comply with the provisions of Chapter 446, Florida Statutes.

HH. Schedule of Values. Unit prices shall be established for this Agreement by the submission of a schedule of values within ten (10) days of receipt of the Notice to Proceed. The schedule shall include quantities and prices of items equaling the Contract Sum and will subdivide the Work into components in sufficient detail to serve as the basis for progress payments during construction. Such prices shall include an appropriate amount of overhead and profit applicable to each item of Work. Upon request of the County, the Contractor shall support the values with data which will substantiate their correctness.

II. Other Contracts. The Owner 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 execution of their work, and promptly connect and coordinate the Work with theirs.

ARTICLE III
COMPENSATION

3.1 Compensation. The Contract Sum constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract Sum.

A. Adjustments. The Contract Sum may only be changed by Change Order or by a written amendment. Any claim for an increase or decrease in the Contract Sum shall be based on written notice delivered by the party making the claim to the other party. Notice of the amount of the claim with supporting data shall be delivered within fifteen (15) days from the beginning of such occurrence and shall be accompanied by claimant's written statement that the amount claimed covers all amounts to which the claimant is entitled as a result of the occurrence of said event. Failure to deliver a claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.

B. Valuation. The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Sum shall be determined in one of the following ways (at Owner's discretion):

(1) In the case of Unit Price Work, in accordance with Section 3.1.C, below; or

(2) By mutual acceptance of a lump sum; or

(3) On the basis of the cost of the Work, plus a negotiated Contractor's fee for overhead and profit. Contractor shall submit an itemized cost breakdown together with supporting data.

C. Unit Price Work. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment pursuant to a requested Change Order under the following conditions:

(1) If the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract Sum and the variation in the quantity of the particular item of Unit Price Work performed by Contractor differs by more than 15% from the estimated quantity of such item indicated in the Agreement; and

(2) If there is no corresponding adjustment with respect to any other item of Work; and

(i) If Contractor believes that it has incurred additional expense as a result thereof; or

(ii) If Owner believes that the quantity variation entitles it to an

adjustment in the unit price; or

(iii) If the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

3.2 Schedule of Compensation. All payments for services and material under the Contract Documents shall be made in accordance with the following provisions.

A. Periodic Payments for Services. The Contractor shall be entitled to receive payment for Construction Services rendered pursuant to Section 2.4 in periodic payments which shall reflect a fair apportionment of cost and schedule of values of services furnished prior to payment, subject to the provisions of this Section.

B. Payment for Materials and Equipment. In addition to the periodic payments authorized hereunder, payments may be made for material and equipment not incorporated in the Work but delivered and suitably stored at the Project Site, or another location, subject to prior approval and acceptance by the Owner on each occasion.

C. Credit toward Contract Sum. All payments for Construction Services made hereunder shall be credited toward the payment of the Contract Sum as Contractor's sole compensation for the construction of the Project.

3.3 Invoice and Payment. All payments for services and materials under the Contract Documents shall be invoiced and paid in accordance with the following provisions.

A. Invoices. The Contractor shall submit to the Owner periodic invoices for payment, in a form acceptable to the Owner, which shall include a sworn statement certifying that, to the best of the Contractor's knowledge, information and belief, the construction has progressed to the point indicated, the quality and the Work covered by the invoice is in accord with the Project Plans and Specifications, and the Contractor is entitled to payment in the amount requested, along with the cost reports required pursuant to Article II, showing in detail all monies paid out, Project Costs accumulated, or Project Cost incurred during the previous period. This data shall be attached to the invoice.

B. Additional Information; Processing of Invoices. Should an invoiced amount appear to exceed the Work effort believed to be completed, the Owner may, prior to processing of the invoice for payment, require the Contractor to submit satisfactory evidence to support the invoice. All Progress Reports and invoices shall be delivered to the attention of the Owner's Project Representative. Invoices not properly prepared (mathematical errors, billing not reflecting actual Work done, no signature, etc.) shall be returned to the Contractor for correction.

C. Architect/Engineer's Approval. Payment for Work completed shall be subject to the Architect/Engineer approving the payment requested by the Contractor and certifying the amount thereof that has been properly incurred and is then due and payable to the Contractor, and identifying with specificity any amount that has not been properly incurred and that should not be paid.

D. Warrants of Contractor with Respect to Payments. The Contractor warrants that (1) upon payment of any retainage, materials and equipment covered by a partial payment

request will pass to Owner either by incorporation in construction or upon receipt of payment by the Contractor, whichever occurs first; (2) Work, materials and equipment covered by previous partial payment requests shall be free and clear of liens, claims, security interests, or encumbrances; and (3) no Work, materials or equipment covered by a partial payment request which has been acquired by the Contractor or any other person performing Work at the Project Site, or furnishing materials or equipment for the Project, shall be subject to an agreement under which an interest therein or an encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or any other person.

E. All Compensation Included. Contractor's compensation includes full payment for services set forth in the Contract Documents, including but not limited to overhead, profit, salaries or other compensation of Contractor's officers, partners and/or employees, general operating expenses incurred by Contractor and relating to this Project, including the cost of management, supervision and data processing staff, job office equipment and supplies, and other similar items.

ARTICLE IV
SUBCONTRACTORS

4.1 Subcontracts. At the Owner's request, the Contractor shall provide Owner's Project Representative with copies of all proposed and final subcontracts, including the general and supplementary conditions thereof.

A. Subcontracts Generally. All subcontracts shall: (1) require each Subcontractor to be bound to Contractor to the same extent Contractor is bound to Owner by the terms of the Contract Documents, as those terms may apply to the portion of the Work to be performed by the Subcontractor, (2) provide for the assignment of the subcontracts from Contractor to Owner at the election of Owner, upon termination of Contractor, (3) provide that Owner will be an additional indemnified party of the subcontract, (4) provide that Owner will be an additional insured on all insurance policies required to be provided by the Subcontractor, except workers' compensation, (5) assign all warranties directly to Owner, and (6) identify Owner as an intended third-party beneficiary of the subcontract.

(1) A Subcontractor is a person or entity who has a direct contract with Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.

(2) A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

B. No Damages for Delay. Except when otherwise expressly agreed to by Owner in writing, all subcontracts shall provide:

> "LIMITATION OF REMEDIES – NO DAMAGES FOR DELAY. The Subcontractor's exclusive remedy for delays in the performance of the

contract caused by events beyond its control, including delays claimed to be caused by the Owner or Architect/Engineer or attributable to the Owner or Architect/Engineer and including claims based on breach of contract or negligence, shall be an extension of its contract time and shall in no way involve any monetary claim."

Each subcontract shall require that any claims by the Subcontractor for delay must be submitted to the Contractor within the time and in the manner in which the Contractor must submit such claims to the Owner, and that failure to comply with the conditions for giving notice and submitting claims shall result in the waiver of such claims.

C. Subcontractual Relations. The Contractor shall require each Subcontractor to assume all the obligations and responsibilities which the Contractor owes the Owner pursuant to the Contract Documents, by the parties to the extent of the Work to be performed by the Subcontractor. Said obligations shall be made in writing and shall preserve and protect the rights of the Owner and Architect/Engineer, with respect to the Work to be performed by the Subcontractor, so that the subcontracting thereof will not prejudice such rights. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with its sub-subcontractors.

D. Insurance; Acts and Omissions. Insurance requirements for Subcontractors shall be no more stringent than those requirements imposed on the Contractor by the Owner. The Contractor shall be responsible to the Owner for the acts and omissions of its employees, agents, Subcontractors, their agents and employees, and all other persons performing any of the Work or supplying materials under a contract to the Contractor.

4.2 Relationship and Responsibilities. Except as specifically set forth herein with respect to direct materials acquisitions by Owner, nothing contained in the Contract Documents or in any Contract Document does or shall create any contractual relation between the Owner or Architect/Engineer and any Subcontractor. Specifically, the Contractor is not acting as an agent of the Owner with respect to any Subcontractor. The utilization of any Subcontractor shall not relieve Contractor from any liability or responsibility to Owner, or obligate Owner to the payment of any compensation to the Subcontractor or additional compensation to the Contractor.

4.3 Payments to Subcontractors; Monthly Statements. The Contractor shall be responsible for paying all Subcontractors from the payments made by the Owner to Contractor pursuant to Article III, subject to the following provisions:

A. Payment. The Contractor shall, no later than ten (10) days after receipt of payment from the Owner, out of the amount paid to the Contractor on account of such Subcontractor's Work, pay to each Subcontractor the amount to which the Subcontractor is entitled in accordance with the terms of the Contractor's contract with such Subcontractor. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to sub-Subcontractors in a similar manner. After receipt of payment from Owner, if the need should arise to withhold payments to Subcontractors for any reason, as solely determined by Contractor, the Contractor shall promptly restore such monies to the Owner, adjusting subsequent pay requests and Project bookkeeping as required.

B. Final Payment of Subcontractors. The final payment of retainage to Subcontractors shall not be made until the Project has been inspected by the Architect/Engineer or other person designated by the Owner for that purpose, and until both the Architect/Engineer and the Contractor have issued a written certificate that the Project has been constructed in accordance with the Project Plans and Specifications and approved Change Orders. Before issuance of final payment to any Subcontractor without any retainage, the Subcontractor shall submit satisfactory evidence that all payrolls, material bills, and other indebtedness connected with the Project have been paid or otherwise satisfied, warranty information is complete, as-built markups have been submitted, and instruction for the Owner's operating and maintenance personnel is complete. Final payment may be made to certain select Subcontractors whose Work is satisfactorily completed prior to the completion of the Project, but only upon approval of the Owner's Project Representative.

4.4 Responsibility for Subcontractors. As provided in Section 2.4.BB, Contractor shall be fully responsible to Owner for all acts and omissions of the Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect Contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions.

4.5 Contingent Assignment of Subcontracts. Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that:

(1) assignment is effective only after termination of the Contract by the Owner for cause pursuant to Article XIV and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and

(2) assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Agreement.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract. Upon such assignment, if the Work has been suspended for more than thirty (30) days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension. Upon such assignment to the Owner, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE V
CHANGES IN WORK

5.1 General. Changes in the Work may be accomplished after execution of the Agreement, and without invalidating the Agreement, by Change Order, Work Directive Change or order for a minor change in the Work, subject to the limitations stated in this Article V and elsewhere in the Contract Documents. A Change Order shall be based upon agreement among the Owner, Contractor and Architect/Engineer; a Work Directive Change requires agreement by the Owner and Architect/Engineer and may or may not be agreed to by the Contractor; an order for a minor change in the Work may be issued by the Architect/Engineer alone. Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the Contractor

shall proceed promptly, unless otherwise provided in the Change Order, Work Directive Change or order for a minor change in the Work.

5.2 Minor Changes in the Work. The Owner or Architect/Engineer shall have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such change will be effected by written order signed by the Architect/Engineer and shall be binding on the Owner and Contractor. The Contractor shall abide by and perform such minor changes. Such changes shall be effected by a Field Directive or a Work Directive Change. Documentation of changes shall be determined by the Construction Team, and displayed monthly in the Progress Reports. Because such changes shall not affect the Contract Sum to be paid to the Contractor, they shall not require a Change Order pursuant to Section 5.6.

5.3 Emergencies. In any emergency affecting the safety of persons or property, the Contractor shall act at its discretion to prevent threatened damage, injury, or loss. Any increase in the Contract Sum or extension of time claimed by the Contractor because of emergency Work shall be determined as provided in Section 5.6. However, whenever practicable, the Contractor shall obtain verbal concurrence of the Owner's Project Representative and Architect/Engineer where the act will or may affect the Contract Sum or Contract Time.

5.4 Concealed Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect/Engineer before conditions are disturbed and in no event later than ten (10) days after first observance of the conditions. The Architect/Engineer will promptly investigate such conditions and, if the Architect/Engineer determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum or Contract Time, or both. If the Architect/Engineer determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect/Engineer shall promptly notify the Owner and Contractor in writing, stating the reasons. If the Contractor disputes the Architect/Engineer's determination or recommendation, the Contractor may proceed as provided in Article VIII. If the Owner disputes the Architect/Engineer's determination or recommendation, the Owner may appeal directly to the Purchasing Official and shall thereafter follow the process set forth in Section 8.5.

5.5 Hazardous Materials. In the event the Contractor encounters on the Project Site material reasonably believed to be hazardous, petroleum or petroleum related products, or other hazardous or toxic substances, except as provided in Section 2.4.U, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and the Architect/Engineer in writing. The Work in the affected area shall not thereafter be resumed except by Change Order or written amendment, if in fact the material or substance has not been rendered harmless. The Work in the affected area shall be resumed when the Project Site has been rendered harmless, in accordance with the final determination by the Architect/Engineer or other appropriate professional employed by Owner. The Contractor shall not be required to perform without its consent any Work relating to hazardous materials, petroleum or petroleum related products, or

other hazardous or toxic substances. In the event the Contractor encounters on the Project Site materials believed in good faith to be hazardous or contaminated material, and the presence of such hazardous or contaminated material was not known and planned for at the time the Contractor submitted its Bid (or Guaranteed Maximum Price proposal), and it is necessary for the Contractor to stop Work in the area affected and delays Work for more than a seven (7) day period, adjustments to the Contract Sum and/or Contract Time shall be made in accordance with this Article V.

5.6 Change Orders; Adjustments to Contract Sum.

A. Change Orders Generally. The increase or decrease in the Contract Sum resulting from a change authorized pursuant to the Contract Documents shall be determined:

(1) By mutual acceptance of a lump sum amount properly itemized and supported by sufficient substantiating data, to permit evaluation by the Architect/Engineer and Owner; or

(2) By unit prices stated in the Agreement or subsequently agreed upon; or

(3) By any other method mutually agreeable to Owner and Contractor.

If Owner and Contractor are unable to agree upon increases or decreases in the Contract Sum and the Architect/Engineer certifies that the work needs to be commenced prior to any such agreement, the Contractor, provided it receives a written Change Order signed by or on behalf of the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be determined on the basis of the reasonable expenditures of those performing the Work attributed to the change. However, in the event a Change Order is issued under these conditions, the Owner, through the Architect/Engineer, will establish an estimated cost of the Work and the Contractor shall not perform any Work whose cost exceeds that estimated without prior written approval by the Owner. In such case, the Contractor shall keep and present in such form as the Owner may prescribe an itemized accounting, together with appropriate supporting data of the increase in overall costs of the Project. The amount of any decrease in the Contract Sum to be allowed by the Contractor to the Owner for any deletion or change which results in a net decrease in costs will be the amount of the actual net decrease.

5.7 Owner-Initiated Changes. Without invalidating the Agreement and without notice to any Surety, Owner may, at any time, order additions, deletions or revisions in the Work. These will be authorized by a written amendment, a Field Directive, a Change Order, or a Work Directive Change, as the case may be. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided). A Work Directive Change may not change the Contract Sum or the Contract Time; but is evidence that the parties expect that the change directed or documented by a Work Directive Change will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Sum or Contract Time.

5.8 Unauthorized Work. Contractor shall not be entitled to an increase in the Contract Sum or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents.

5.9 Defective Work. Owner and Contractor shall execute appropriate Change Orders (or written amendments) covering changes in the Work which are ordered by Owner, or which may be required because of acceptance of defective Work, without adjustment to the Contract Sum.

5.10 Estimates for Changes. At any time Architect/Engineer may request a quotation from Contractor for a proposed change in the Work. Within twenty-one (21) calendar days after receipt, Contractor shall submit a written and detailed proposal for an increase or decrease in the Contract Sum or Contract Time for the proposed change. Architect/Engineer shall have twenty-one (21) calendar days after receipt of the detailed proposal to respond in writing. The proposal shall include an itemized estimate of all costs and time for performance that will result directly or indirectly from the proposed change. Unless otherwise directed, itemized estimates shall be in sufficient detail to reasonably permit an analysis by Architect/Engineer of all material, labor, equipment, subcontracts, overhead costs and fees, and shall cover all Work involved in the change, whether such Work was deleted, added, changed or impacted. Notwithstanding the request for quotation, Contractor shall carry on the Work and maintain the progress schedule. Delays in the submittal of the written and detailed proposal will be considered non-prejudicial.

5.11 Form of Proposed Changes. The form of all submittals, notices, Change Orders and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Owner. Standard Owner forms shall be utilized.

5.12 Changes to Contract Time. The Contract Time may only be changed pursuant to a Change Order or a written amendment to the Contract Documents. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered by the party making the claim to the other party. Notice of the extent of the claim with supporting data shall be delivered within fifteen (15) days from detection or beginning of such occurrence and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled to because of the occurrence of said event. The Contract time will be extended in an amount equal to time lost due to delays beyond the control of Contractor. Such delays shall include, but not be limited to, acts or neglect by Owner or others performing additional Work; or to fires, floods, epidemics, abnormal weather conditions or acts of God. Failure to deliver a written notice of claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.

ARTICLE VI
ROLE OF ARCHITECT/ENGINEER

6.1 General.

A. Retaining. The Owner shall retain an Architect/Engineer (whether an individual or an entity) lawfully licensed to practice in Florida. That person or entity is identified as the Architect/Engineer in the Agreement and is referred to throughout the Contract Documents as if singular in number.

B. Duties. Duties, responsibilities and limitations of authority of the Architect/Engineer as set forth in the Contract Documents shall not be restricted, modified or

extended without written consent of the Owner and Architect/Engineer. Consent shall not be unreasonably withheld.

C. Termination. If the employment of the Architect/Engineer is terminated, the Owner shall employ a successor Architect/Engineer as to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect/Engineer.

6.2 Administration. The Architect/Engineer will provide administration of the Agreement as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect/Engineer approves the final Application for Payment. The Architect/Engineer will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

A. Site Visits. The Architect/Engineer will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work complete, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. Unless specifically instructed by Owner, the Architect/Engineer will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect/Engineer will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

B. Reporting. Based on the site visits, the Architect/Engineer will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and report to the Owner (1) known deviations from the Contract Documents and from the most recent construction schedule submitted by the Contractor, and (2) defects and deficiencies observed in the Work. The Architect/Engineer will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect/Engineer will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

6.3 Interpretation of Project Plans and Specifications. The Architect/Engineer will be the interpreter of the requirements of the Project Plans and Specifications. Upon receipt of comments or objections by Contractor or Owner, the Architect/Engineer will make decisions on all claims, disputes, or other matters pertaining to the interpretation of the Project Plans and Specifications.

6.4 Rejection of Non-Conforming Work. Upon consultation with Owner, the Architect/Engineer shall have the authority to reject Work which does not conform to the Project Plans and Specifications.

6.5 Correction of Work. The Contractor shall promptly correct all Work rejected by the Architect/Engineer for being defective or as failing to conform to the Project Plans and Specifications, whether observed before or after the Substantial Completion Date and whether or not fabricated, installed, or completed. The Contractor shall bear all costs of correcting such

rejected Work, including compensation for Architect/Engineer's additional services made necessary thereby.

6.6 Timely Performance of Architect/Engineer. The Contractor shall identify which requests for information or response from the Architect/Engineer have the greatest urgency and those items which require prioritizing in response by the Architect/Engineer. The Contractor shall also identify the preferred time period for response and shall request a response time which is reasonably and demonstrably related to the needs of the Project and Contractor. If Architect/Engineer claims that Contractor's expectations for a response are unreasonable, Owner shall require Architect/Engineer to communicate such claim to Contractor in writing together with the specific time necessary to respond and the date upon which such response will be made. If Contractor believes that Architect/Engineer is not providing timely services or responses, Contractor shall notify Owner of same in writing not less than two (2) weeks before Contractor believes performance or response time from Architect/Engineer is required without risk of delaying the Project.

ARTICLE VII
OWNER'S RIGHTS AND RESPONSIBILITIES

7.1 Project Site; Title. The Owner shall provide the lands upon which the Work under the Contract Documents is to be done, except that the Contractor shall provide all necessary additional land required for the erection of temporary construction facilities and storage of his materials, together with right of access to same. The Owner hereby represents to the Contractor that it currently has and will maintain up through and including the Substantial Completion Date, good title to all of the real property constituting the Project Site. Owner agrees to resolve, at its expense, any disputes relating to the ownership and use of the Project Site which might arise during construction.

7.2 Project Plans and Specifications; Architect/Engineer. The parties hereto acknowledge and agree that Owner has previously entered into an agreement with Architect/Engineer. Pursuant to the terms of such agreement, the Architect/Engineer, as an agent and representative of Owner, is responsible for the preparation of Project Plans and Specifications which consist of drawings, specifications, and other documents setting forth in detail the requirements for the construction of the Project. All such Project Plans and Specifications shall be provided either by Owner or the Architect/Engineer, and Contractor shall be under no obligation to provide same and shall be entitled to rely upon the accuracy and completeness of the Project Plans and Specifications provided by the Architect/Engineer and all preliminary drawings prepared in connection therewith. The Contractor will be furnished a reproducible set of all drawings and specifications reasonably necessary for the performance of Contractor's services hereunder and otherwise ready for printing. The Contractor shall be notified of any written modification in the agreement between Owner and Architect/Engineer.

7.3 Surveys; Soil Tests and Other Project Site Information. Owner shall be responsible for providing a legal description and certified land survey of the Project Site in a form and content and with such specificity as may be required by the Architect/Engineer and Contractor to perform their services. To the extent deemed necessary by Owner and Architect/Engineer, and solely at Owner's expense, Owner may engage the services of a geotechnical consultant to perform test borings and other underground soils testing as may be deemed necessary by the Architect/Engineer or the Contractor. Contractor shall not be obligated to provide such surveys or

soil tests and shall be entitled to rely upon the accuracy and completeness of the information provided; subject, however, to the provisions of Section 2.4.S hereof. Owner shall provide Contractor, as soon as reasonably possible following the execution of the Contract Documents, all surveys or other survey information in its possession describing the physical characteristics of the Project Site, together with soils reports, subsurface investigations, utility locations, deed restrictions, easements, and legal descriptions then in its possession or control. Upon receipt of all surveys, soils tests, and other Project Site information, Contractor shall promptly advise Owner of any inadequacies in such information and of the need for any additional surveys, soils or subsoil tests. In performing this Work, Contractor shall use the standard of care of experienced contractors and will use its best efforts timely to identify all problems or omissions. Owner shall not be responsible for any delay or damages to the Contractor for any visible or disclosed site conditions or disclosed deficiencies in the Project Site which should have been identified by Contractor and corrected by Owner prior to the execution of the Contract Documents.

7.4 Information; Communication; Coordination. The Owner's Project Representative shall examine any documents or requests for information submitted by the Contractor and shall advise Contractor of Owner's decisions pertaining thereto within a reasonable period of time to avoid unreasonable delay in the progress of the Contractor's services. Contractor shall indicate if any such documents or requests warrant priority consideration. However, decisions pertaining to approval of the Project Schedule as it relates to the date of Substantial Completion, the Project Cost, Contractor's compensation, approving or changing the Contract Sum shall only be effective when approved by Owner in the form of a written Change Order or amendment to the Contract Documents. Owner reserves the right to designate a different Owner's Project Representative provided Contractor is notified in writing of any such change. Owner and Architect/Engineer may communicate with Subcontractors, materialmen, laborers, or suppliers engaged to perform services on the Project, but only for informational purposes. Neither the Owner nor the Architect/Engineer shall attempt to direct the Work of or otherwise interfere with any Subcontractor, materialman, laborer, or supplier, or otherwise interfere with the Work of the Contractor. Owner shall furnish the data required of Owner under the Contract Documents promptly.

7.5 Governmental Body. The Contractor recognizes that the Owner is a governmental body with certain procedural requirements to be satisfied. The Contractor has and will make reasonable allowance in its performance of services for such additional time as may be required for approvals and decisions by the Owner and any other necessary government agency.

7.6 Pre-Completion Acceptance. The Owner shall have the right to take possession of and use any completed portions of the Work, although the time for completing the entire Work or such portions may not have expired, but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents.

7.7 Ownership and Use of Drawings, Specifications and Other Instruments of Service.

(1) The Architect/Engineer and the Architect/Engineer's consultants shall be deemed the authors and owners of their respective instruments of service, including the Project Plans and Specifications, and will retain all common law, statutory and other reserved rights, including copyrights. The

Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers shall not own or claim a copyright in the instruments of service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be constructed as publication in derogation of the Architect/Engineer's or Architect/Engineer's consultants' reserved rights.

(2) The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce the drawings and specifications provided to them solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Project Plans and Specifications or other instruments of service. The Contractor, Subcontractors, Sub-subcontractors, and material or equipment suppliers may not use the drawings or specifications on other projects or for additions to this Project outside the scope of the Work without the specific written consent of the Owner, Architect/Engineer and the Architect/Engineer's consultants.

7.8 Owner's Project Representative. Owner's Project Representative is Owner's Agent, who will act as directed by and under the supervision of the Owner, and who will confer with Owner/Architect/Engineer regarding his actions. The Owner's Project Representative's dealings in matters pertaining to the on-site Work shall, in general, be only with the Owner/Architect/Engineer and Contractor and dealings with Subcontractors shall only be through or with the full knowledge of Contractor.

A. Responsibilities. Except as otherwise instructed in writing by Owner, the Owner's Project Representative will:

(1) Attend preconstruction conferences; arrange a schedule of progress meetings and other job conferences as required in consultation with Owner/Architect/Engineer and notify those expected to attend in advance; and attend meetings and maintain and circulate copies of minutes thereof;

(2) Serve as Owner/Architect/Engineer's liaison with Contractor, working principally through Contractor's superintendent, to assist in understanding the intent of the Contract Documents. As requested by Owner/Architect/Engineer, assist in obtaining additional details or information when required at the job site for proper execution of the Work;

(3) Report to Owner/Architect/Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents;

(4) Accompany visiting inspectors representing public or other agencies having jurisdiction over the project; record the outcome of these inspections and report to Owner/Architect/Engineer;

(5) Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Owner/Architect/Engineer; and

(6) Perform those duties as set forth elsewhere within the Contract Documents.

B. Limitations. Except upon written instructions of Owner, Owner's Project Representative shall not:

(1) Authorize any deviation from the Contract Documents or approve any substitute materials or equipment;

(2) Exceed limitations on Owner/Architect/Engineer's authority as set forth in the Contract Documents;

(3) Undertake any of the responsibilities of Contractor, Subcontractors or Contractor's superintendent, or expedite the Work;

(4) Advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents;

(5) Advise on or issue directions as to safety precautions and programs in connection with the Work;

(6) Authorize Owner to occupy the project in whole or in part; or

(7) Participate in specialized field or laboratory tests.

ARTICLE VIII
RESOLUTION OF DISAGREEMENTS; CLAIMS FOR COMPENSATION

8.1 Owner to Decide Disputes. The Owner shall reasonably decide all questions and disputes (with the exception of matters pertaining to the interpretation of the Project Plans and Specifications which shall be resolved by the Architect/Engineer pursuant to Section 6.3) that may arise in the execution and fulfillment of the services provided for under the Contract Documents, in accordance with the Procurement Ordinance.

8.2 Finality. The decision of the Owner upon all claims, questions, disputes and conflicts shall be final and conclusive, and shall be binding upon all parties to the Contract Documents, subject to judicial review as provided in Section 8.5 below.

8.3 No Damages for Delay. If at any time Contractor is delayed in the performance of Contractor's responsibilities under the Contract Documents as the result of a default or failure to perform in a timely manner by Owner or Owner's agents or employees, Contractor shall not be entitled to any damages except for compensation specifically authorized in Article III. Contractor's sole remedy will be a right to extend the time for performance. Nothing herein shall preclude Contractor from any available remedy against any responsible party other than Owner.

Contractor shall be responsible for liquidated damages for delay if otherwise provided for in the Contract Documents.

8.4 Permitted Claims Procedure. Where authorized or permitted under the Contract Documents, all claims for additional compensation by Contractor, extensions of time affecting the Substantial Completion Date, for payment by the Owner of costs, damages or losses due to casualty, Force Majeure, Project Site conditions or otherwise, shall be governed by the following:

(1) All claims must be submitted as a request for Change Order in the manner as provided in Article V.

(2) The Contractor must submit a notice of claim to Owner's Project Representative and to the Architect/Engineer within fifteen (15) days of the beginning of such occurrence. Failure to submit a claim within the requisite 15-day period shall constitute a waiver of the right to pursue said claim.

(3) Within twenty (20) days of submitting its notice of claim, the Contractor shall submit to the Owner's Project Representative its request for Change Order, which shall include a written statement of all details of the claim, including a description of the Work affected.

(4) After receipt of a request for Change Order, the Owner's Project Representative, in consultation with the Architect/Engineer, shall deliver to the Contractor, within twenty (20) days after receipt of request, its written response to the claim.

(5) In the event the Owner and Contractor are unable to agree on the terms of a Change Order, the Owner shall have the option to instruct the Contractor to proceed with the Work. In that event, the Owner shall pay for those parts of the Work, the scope and price of which are not in dispute. The balance of the disputed items in the order to proceed will be resolved after completion of the Work, based upon completed actual cost.

(6) The rendering of a decision by Owner with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment) will be a condition precedent to any exercise by Owner or Contractor of such right 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.

8.5 Contract Claims and Disputes. After completion of the process set forth in Section 8.4 above, any unresolved dispute under this Agreement shall be decided by the Purchasing Official in accordance with Section 2-26-63 of the Manatee County Code of Laws, subject to an administrative hearing process as provided in Section 2-26-64. The decision of the hearing officer in accordance with Section 2-26-64 of the Manatee County Code of Laws shall be the final and conclusive decision subject to exclusive judicial review in circuit court by a petition for certiorari.

8.6 Claims for Consequential Damages. The Contractor and Owner waive claims against each other for consequential damages arising out of or relating to this Agreement. This mutual waiver includes:

(1) damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons, unless any of such damages or losses are covered by insurance placed by the Contractor; and

(2) damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article XIV. Nothing contained in this Section 8.6 shall be deemed to preclude assessment of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

ARTICLE IX
INDEMNITY

9.1 Indemnity.

A. Indemnification Generally. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect/Engineer, Architect/Engineer's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorney's fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor or anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 9.1.

B. Indemnification; Enforcement Actions. The Contractor's duty to indemnify and hold harmless the Owner in Section 9.1 above shall extend to fines, penalties and costs incurred by the Owner as related to any enforcement action taken by local, state, regional or federal regulatory entities. The Owner may deduct any of such fines, penalties and costs as described in this Section from any unpaid amounts then or thereafter due the Contractor under the Contract Documents. Any of such fines, penalties and costs not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner, together with interest from the date of the demand at the maximum allowable rate.

C. Claims by Employees. In claims against any person or entity indemnified under this Section 9.1 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly

employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 9.1.A. shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

9.2 Duty to Defend. The Contractor shall defend the Owner in any action, lawsuit, mediation or arbitration arising from the alleged negligence, recklessness or intentionally wrongful conduct of the Contractor and other persons employed or utilized by the Contractor in the performance of the Work. Notwithstanding any other provisions within this Article IX, so long as Contractor, through its own counsel, performs its obligation to defend the Owner pursuant to this Section, Contractor shall not be required to pay the Owner's costs associated with the Owner's participation in the defense.

ARTICLE X
ACCOUNTING RECORDS; OWNERSHIP OF DOCUMENTS

10.1 Accounting Records. Records of expenses pertaining to all services performed shall be kept in accordance with generally accepted accounting principles and procedures.

10.2 Inspection and Audit. The Contractor's records shall be open to inspection and subject to examination, audit, and/or reproduction during normal working hours by the Owner's agent or authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments or claims submitted by the Contractor or any of its payees during the performance of the Work. These records shall include, but not be limited to, accounting records, written policies and procedures, Subcontractor files (including proposals of successful and unsuccessful bidders), original estimates, estimating worksheets, correspondence, Change Order files (including documentation covering negotiated settlements), and any other supporting evidence necessary to substantiate charges related to the Contract Documents. They shall also include, but not be limited to, those records necessary to evaluate and verify direct and indirect costs (including overhead allocations) as they may apply to costs associated with the Contract Documents. For such audits, inspections, examinations and evaluations, the Owner's agent or authorized representative shall have access to said records from the effective date of the Contract Documents, for the duration of Work, and until three (3) years after the date of final payment by the Owner to the Contractor pursuant to the Contract Documents.

10.3 Access. The Owner's agent or authorized representative shall have access to the Contractor's facilities and all necessary records to conduct audits in compliance with this Article. The Owner's agent or authorized representative shall give the Contractor reasonable advance notice of intended inspections, examinations, and/or audits.

10.4 Ownership of Documents. Upon obtainment of Substantial Completion or termination of the Agreement, all records, documents, tracings, plans, specifications, maps, evaluations, reports, transcripts and other technical data, other than working papers, prepared or developed by the Contractor shall be delivered to and become the property of the Owner. The Contractor at its own expense may retain copies for its files and internal use.

ARTICLE XI
PUBLIC CONTRACT LAWS

11.1 Equal Opportunity Employment.

A. Employment. The Contractor shall not discriminate against any employee or applicant for employment because of race, creed, sex, color, national origin, disability or age, and will take affirmative action to ensure that all employees and applicants are afforded equal employment opportunities without discrimination because of race, creed, sex, color, national origin, disability or age. Such action will be taken with reference to, but shall not be limited to, recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, rates of training or retraining, including apprenticeship and on-the-job training.

B. Participation. No person shall, on the grounds of race, creed, sex, color, national origin, disability or age, be excluded from participation in, be denied the proceeds of, or be subject to discrimination in the performance of the Agreement.

11.2 Immigration Reform and Control Act of 1986. Contractor acknowledges that it is responsible for complying with the provisions of the Immigration Reform and Control Act of 1986, located at 8 U.S.C. Section 1324, et seq., and regulations relating thereto. Failure to comply with the above statutory provisions shall be considered a material breach and shall be grounds for immediate termination of this Agreement.

11.3 No Conflict of Interest. The Contractor warrants that it 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 it has not paid or agreed to pay any person, company, corporation, individual, or firm other than a bona fide employee working solely for the Contractor, any fee, commission, percentage, gift or any other consideration, contingent upon or resulting from the award or making of this Agreement.

A. No Interest in Business Activity. By accepting award of this Agreement, the Contractor, which shall include its directors, officers and employees, represents that it presently has no interest in and shall acquire no interest in any business or activity which would conflict in any manner with the performance of services required hereunder, including without limitation as described in the Contractor's own professional ethical requirements. An interest in a business or activity which shall be deemed a conflict includes but is not limited to direct financial interest in any of the material and equipment manufacturers, suppliers, distributors, or contractors who will be eligible to supply material and equipment for the Project for which the Contractor is furnishing its services required hereunder.

B. No Appearance of Conflict. The Contractor shall not knowingly engage in any contractual or professional obligations that create an appearance of a conflict of interest with respect to the services provided pursuant to the Agreement. The Contractor has provided the Affidavit of No Conflict, incorporated into the Contract Documents as Exhibit "C", as a material inducement for Owner entering the Agreement. If, in the sole discretion of the County Administrator or designee, a conflict of interest is deemed to exist or arise during the term of this Agreement, the County Administrator or designee may cancel this Agreement, effective upon the date so stated in a written notice of cancellation, without penalty to the Owner.

11.4 Truth in Negotiations. By execution of the Contract Documents, the Contractor certifies to truth-in-negotiations and that wage rates and other factual unit costs supporting the compensation are accurate, complete and current at the time of contracting. Further, the original Contract Sum and any additions thereto shall be adjusted to exclude any significant sums where the Owner determines the Contract Sum was increased due to inaccurate, incomplete or non-current wage rates and other factual unit costs. Such adjustments must be made within one (1) year after final payment to the Contractor.

11.5 Public Entity Crimes. The Contractor is directed to the Florida Public Entity Crimes Act, Section 287.133, Florida Statutes, specifically section 2(a), and the Owner's requirement that the Contractor comply with it in all respects prior to and during the term of the Agreement.

ARTICLE XII
FORCE MAJEURE, FIRE OR OTHER CASUALTY

12.1 Force Majeure.

A. Unavoidable Delays. Delays in any performance by any party contemplated or required hereunder due to fire, flood, sinkhole, earthquake or hurricane, acts of God, unavailability of materials, equipment or fuel, war, declaration of hostilities, revolt, civil strife, altercation or commotion, strike, labor dispute, or epidemic, archaeological excavation, lack of or failure of transportation facilities, or any law, order, proclamation, regulation, or ordinance of any government or any subdivision thereof, or for any other similar cause to those enumerated, beyond the reasonable control and which with due diligence could not have been reasonably anticipated, shall be deemed to be events of Force Majeure and any such delays shall be excused. In the event such party is delayed in the performance of any Work or obligation pursuant to the Contract Documents for any of the events of Force Majeure stated in this Section 12.1, the date for performance required or contemplated by the Contract Documents shall be extended by the number of calendar days such party is actually delayed.

B. Concurrent Contractor Delays. If a delay is caused for any reason provided in Section 12.1.A.and during the same time period a delay is caused by Contractor, the date for performance shall be extended as provided in 12.1.A. but only to the extent the time is or was concurrent.

C. Notice; Mitigation. The party seeking excuse for nonperformance based on Force Majeure shall give written notice to the Owner, if with respect to the Contractor, or to the Contractor if with respect to the Owner, specifying its actual or anticipated duration. Each party seeking excuse from nonperformance based on Force Majeure shall use its best efforts to rectify any condition causing a delay and will cooperate with the other party, except that neither party shall be obligated to incur any unreasonable additional costs and expenses to overcome any loss of time that has resulted.

12.2 Casualty; Actions by Owner and Contractor. During the construction period, if the Project or any part thereof shall have been damaged or destroyed, in whole or in part, the Contractor shall promptly make proof of loss; and Owner and Contractor shall proceed promptly to collect, or cause to be collected, all valid claims which may have arisen against insurers or others based upon such damage or destruction. The Contractor shall diligently assess the damages or

destruction and shall prepare an estimate of the cost, expenses, and other charges, including normal and ordinary compensation to the Contractor, necessary for reconstruction of the Project substantially in accordance with the Project Plans and Specifications. Within fifteen (15) days following satisfaction of the express conditions described in subsections (1), (2) and (3) below, the Contractor covenants and agrees diligently to commence reconstruction and to complete the reconstruction or repair of any loss or damage by fire or other casualty to the Project to substantially the same size, floor area, cubic content, and general appearance as prior to such loss or damage:

(1) Receipt by the Owner or the trustee of the proceeds derived from collection of all valid claims against insurers or others based upon such damage or destruction, and receipt of other sums from any source such that the funds necessary to pay the Project Cost and any additions to the Project Cost necessitated for repair or reconstruction are available;

(2) Written agreement executed by the Contractor and the Owner, by amendment to the Contract Documents or otherwise, authorizing and approving the repair or reconstruction and any additions to the Project Cost necessitated thereby, including any required adjustment to the Contract Sum; and

(3) Final approval by the Owner of the Project Plans and Specifications for such repair or reconstruction and issuance of any required building permit.

12.3 Approval of Plans and Specifications. The Owner agrees to approve the plans and specifications for such reconstruction or repair if the reconstruction or repair contemplated by such plans and specifications is economically feasible, and will restore the Project, or the damaged portion thereof, to substantially the same condition as prior to such loss or damage, and such plans and specifications conform to the applicable laws, ordinances, codes, and regulations. The Owner agrees that all proceeds of any applicable insurance or other proceeds received by the Owner or the Contractor as a result of such loss or damage shall be used for payment of the costs, expenses, and other charges of the reconstruction or repair of the Project.

12.4 Notice of Loss or Damage. The Contractor shall promptly give the Owner written notice of any significant damage or destruction to the Project, defined as loss or damage which it is contemplated by Contractor will increase the Contract Sum or extend the Substantial Completion Date, stating the date on which such damage or destruction occurred, the then expectations of Contractor as to the effect of such damage or destruction on the use of the Project, and the then proposed schedule, if any, for repair or reconstruction of the Project. Loss or damage which the Contractor determines will not affect the Contract Sum or Substantial Completion Date will be reported to Owner and Architect/Engineer immediately, and associated corrective actions will be undertaken without delay.

ARTICLE XIII
REPRESENTATIONS, WARRANTIES AND COVENANTS

13.1 Representations and Warranties of Contractor. The Contractor represents and warrants to the Owner each of the following.

A. The Contractor is a construction company, organized under the laws of the State of _____, authorized to transact business in the State of Florida, with _____ as the primary qualifying agent. Contractor has all requisite power and authority to carry on its business as now conducted, to own or hold its properties, and to enter into and perform its obligations hereunder and under each instrument to which it is or will be a party, and is in good standing in the State of Florida.

B. Each Contract Document to which the Contractor is or will be a party constitutes, or when entered into will constitute, a legal, valid, and binding obligation of the Contractor enforceable against the Contractor in accordance with the terms thereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, or similar laws from time to time in effect which affect creditors' rights generally and subject to usual equitable principles in the event that equitable remedies are involved.

C. There are no pending or, to the knowledge of the Contractor, threatened actions or proceedings before any court or administrative agency, within or without the State of Florida, against the Contractor or any partner, officer, or agent of the Contractor which question the validity of any document contemplated hereunder, or which are likely in any case, or in the aggregate, to materially adversely affect the consummation of the transactions contemplated hereunder, or materially adversely affect the financial condition of the Contractor.

D. The Contractor has filed or caused to be filed all federal, state, local, or foreign tax returns, if any, which were required to be filed by the Contractor, and has paid, or caused to be paid, all taxes shown to be due and payable on such returns or on any assessments levied against the Contractor.

E. Neither Contractor nor any agent or person employed or retained by Contractor has acted fraudulently or in bad faith or in violation of any statute or law in the procurement of this Agreement.

F. The Contractor shall timely fulfill or cause to be fulfilled all of the terms and conditions expressed herein which are within the control of the Contractor or which are the responsibility of the Contractor to fulfill. The Contractor shall be solely responsible for the means and methods of construction.

G. It is recognized that neither the Architect/Engineer, the Contractor, nor the Owner has control over the cost of labor, materials, or equipment, over a Subcontractor's methods of determining bid prices, or over competitive bidding, market, or negotiating conditions.

H. During the term of the Contract Documents, and the period of time that the obligations of the Contractor under the Contract Documents shall be in effect, the Contractor shall cause to occur and to continue to be in effect those instruments, documents, certificates, and events contemplated by the Contract Documents that are applicable to, and the responsibility of, the Contractor.

I. The Contractor shall assist and cooperate with the Owner and shall accomplish the construction of the Project in accordance with the Contract Documents and the Project Plans and Specifications, and will not knowingly violate any laws, ordinances, rules, regulations, or orders that are or will be applicable thereto.

J. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective, and that Owner, representatives of Owner, and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. Contractor shall give Architect/Engineer timely notice of readiness of the Work for all required approvals and shall assume full responsibility, including costs, in obtaining required tests, inspections, and approval certifications and/or acceptance, unless otherwise stated by Owner.

K. If any Work (including Work of others) that is to be inspected, tested, or approved is covered without written concurrence of Architect/Engineer, it must, if requested by Architect/Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Architect/Engineer timely notice of Contractor's intention to cover the same and Architect/Engineer has not acted with reasonable promptness in response to such notice. Neither observations by Architect/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.

L. 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, Owner may order Contractor to stop the Work, or any portion thereof and terminate payments to the Contractor until the cause for such order has been eliminated. Contractor shall bear all direct, indirect and consequential costs for satisfactory reconstruction or removal and replacement with non-defective Work, including, but not limited to fees and charges of Architect/Engineers, attorneys and other professionals and any additional expenses experienced by Owner due to delays to other Contractors performing additional Work and an appropriate deductive change order shall be issued. Contractor shall further bear the responsibility for maintaining the schedule and shall not be entitled to an extension of the Contract Time or the recovery of delay damages due to correcting or removing defective Work.

M. If Contractor fails within seven (7) days after written notice to correct defective Work, or fails to perform the Work in accordance with the Contract Documents, or fails to comply with any other provision of the Contract Documents, Owner may correct and remedy any such deficiency to the extent necessary to complete corrective and remedial action. Owner may temporarily exclude Contractor from all or part of the site, temporarily take possession of all or part of the Work, Contractor's tools, construction equipment and machinery at the site or for which Owner has paid Contractor but which are stored elsewhere, all for such duration as is reasonably necessary to correct the deficiency. All direct and indirect costs of Owner in exercising such rights and remedies will be charged against Contractor in an amount approved as to reasonableness by Architect/Engineer and a Change Order will be issued incorporating the necessary revisions.

N. If within three (3) years after the Substantial Completion Date or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner’s written instructions, either correct such defective Work or if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. If Contractor does not promptly comply with the

terms of such instruction, Owner may have the defective Work corrected/removed and all direct, indirect and consequential costs of such removal and replacement will be paid by Contractor. Failing payment by the Contractor and notwithstanding any other provisions of the Contract Documents to the contrary, Owner shall have the right to bring a direct action in the Circuit Court to recover such costs.

13.2 Representations of the Owner. To the extent permitted by law, the Owner represents to the Contractor that each of the following statements is presently true and accurate:

A. The Owner is a validly existing political subdivision of the State of Florida.

B. The Owner has all requisite corporate or governmental power and authority to carry on its business as now conducted and to perform its obligations under the Contract Documents and each Contract Document contemplated hereunder to which it is or will be a party.

C. The Contract Documents and each Contract Document contemplated hereby to which the Owner is or will be a party has been duly authorized by all necessary action on the part of, and has been or will be duly executed and delivered by, the Owner, and neither the execution and delivery thereof nor compliance with the terms and provisions thereof or hereof: (a) requires the approval and consent of any other person or party, except such as have been duly obtained or as are specifically noted herein; (b) contravenes any existing law, judgment, governmental rule, regulation or order applicable to or binding on the Owner; or (c) contravenes or results in any breach of, default under, or result in the creation of any lien or encumbrance upon the Owner under any indenture, mortgage, deed of trust, bank loan, or credit agreement, the charter, ordinances, resolutions, or any other agreement or instrument to which the Owner is a party, specifically including any covenants of any bonds, notes, or other forms of indebtedness of the Owner outstanding on the date of the Contract Documents.

D. The Contract Documents and each document contemplated hereby to which the Owner is or will be a party constitutes, or when entered into will constitute, a legal, valid, and binding obligation of the Owner enforceable against the Owner in accordance with the terms thereof, except as such enforceability may be limited by applicable bankruptcy, insolvency, or similar laws from time to time in effect which affect creditors' rights generally, and subject to usual equitable principles in the event that equitable remedies are involved.

E. There are no pending or, to the knowledge of the Owner, threatened actions or proceedings before any court or administrative agency against the Owner which question the validity of the Contract Documents or any document contemplated hereunder, or which are likely in any case or in the aggregate to materially adversely affect the consummation of the transactions contemplated hereunder or the financial or corporate condition of the Owner.

F. The Owner shall use due diligence to timely fulfill or cause to be fulfilled all of the conditions expressed in the Contract Documents which are within the control of the Owner or which are the responsibility of the Owner to fulfill.

G. During the pendency of the Work and while the obligations of the Owner under the Contract Documents shall be in effect, the Owner shall cause to occur and to continue to be in effect and take such action as may be necessary to enforce those instruments, documents,

certificates and events contemplated by the Contract Documents that are applicable to and the responsibility of the Owner.

H. The Owner shall assist and cooperate with the Contractor in accomplishing the construction of the Project in accordance with the Contract Documents and the Project Plans and Specifications, and will not knowingly violate any laws, ordinances, rules, regulations, orders, contracts, or agreements that are or will be applicable thereto or, to the extent permitted by law, enact or adopt any resolution, rule, regulation, or order, or approve or enter into any contract or agreement, including issuing any bonds, notes, or other forms of indebtedness, that will result in the Contract Documents or any part thereof, or any other instrument contemplated by and material to the timely and effective performance of a party's obligations hereunder, to be in violation thereof.

ARTICLE XIV
TERMINATION AND SUSPENSION

14.1 Termination for Cause by Owner. This Agreement may be terminated by Owner upon written notice to the Contractor should Contractor fail substantially to perform a material obligation in accordance with the terms of the Contract Documents through no fault of the Owner. In the event Owner terminates for cause and it is later determined by a court of competent jurisdiction that such termination for cause was not justified, then in such event such termination for cause shall automatically be converted to a termination without cause pursuant to Section 14.2.

A. Nonperformance. If the Contractor fails to timely perform any of its obligations under the Contract Documents, including any obligation the Contractor assumes to perform Work with its own forces, or if it persistently or repeatedly refuses or fails, except in case for which extension of time is provided, to supply enough properly skilled workmen or proper materials, or fails, without being excused, to maintain an established schedule (failure to maintain schedule shall be defined as any activity that falls thirty (30) days or more behind schedule) which has been adopted by the Construction Team, or it fails to make prompt payment to Subcontractors for materials or labor, or disregards laws, rules, ordinances, regulations, or orders of any public authority having jurisdiction, or otherwise is guilty of substantial violations of the Agreement the Owner may, after seven (7) days written notice, during which period the Contractor fails to perform such obligation, make good such deficiencies and perform such actions. The Contract Sum shall be reduced by the cost to the Owner of making good such deficiencies, and the Contractor's compensation shall be reduced by an amount required to manage the making good of such deficiencies. Provided, however, nothing contained herein shall limit or preclude Owner from pursuing additional damages from Contractor because of its breach.

B. Insolvency. If the Contractor is adjudged bankrupt, or if it makes a general assignment for the benefit of its creditors, or if a receiver is appointed because its insolvency, then the Owner may, without prejudice to any other right or remedy, and after giving the Contractor and its surety, if any, fourteen (14) days written notice, and during which period the Contractor fails to cure the violation, terminate the Agreement. In such case, the Contractor shall not be entitled to receive any further payment. Owner shall be entitled to recover all costs and damages arising because of failure of Contractor to perform as provided in the Contract Documents, as well as reasonable termination expenses, and costs and damages incurred by the Owner may be deducted from any payments left owing the Contractor.

C. Illegality. Owner may terminate the Agreement if Contractor disregards laws or regulations of any public body having jurisdiction.

D. Rights of Owner. The Owner may, after giving Contractor (and the surety, if there is one) seven (7) days written notice, terminate the services of Contractor for cause; exclude Contractor from the Project Site and take possession of the Work and of all Contractor's tools, construction equipment and machinery at the Project Site and use the same to the full extent they could be used (without liability to Contractor for trespass or conversion); incorporate in the Work all materials and equipment stored at the Project Site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment beyond an amount equal to the value of material and equipment not incorporated in the Work, but delivered and suitably stored, less the aggregate of payments previously made. If the direct and indirect costs of completing the Work exceed the unpaid balance of the Contract Sum, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Owner in writing; but in finishing the Work, Owner shall not be required to obtain the lowest quote for the Work performed. Contractor's obligations to pay the difference between such costs and such unpaid balance shall survive termination of the Agreement. In such event and notwithstanding any other provisions of the Contract Documents to the contrary, Owner shall be entitled to bring a direct action in the Circuit Court to recover such costs.

14.2 Termination without Cause by Owner. The Owner, through its County Administrator or designee, shall have the right to terminate the Agreement, in whole or in part, without cause upon sixty (60) calendar days' written notice to the Contractor. In the event of such termination for convenience, the Owner shall compensate Contractor for payments due through the date of termination, and one subsequent payment to cover costs of Work performed through the date of termination, subject to the terms and conditions of Section 3.1. The Contractor shall not be entitled to any other further recovery against the Owner, including, but not limited to, anticipated fees or profit on Work not required to be performed, or consequential damages or costs resulting from such termination.

A. Release of Contractor. As a condition of Owner's termination rights provided for in this subsection, Contractor shall be released and discharged from all obligations arising by, through, or under the terms of the Contract Documents, and the Payment and Performance Bond shall be released. Owner shall assume and become responsible for the reasonable value of Work performed by Subcontractors prior to termination plus reasonable direct close-out costs, but in no event shall Subcontractors be entitled to unabsorbed overhead, anticipatory profits, or damages for early termination.

B. Waiver of Protest. Contractor hereby waives any right to protest the exercise by Owner of its rights under this Section that may apply under the Procurement Ordinance.

14.3 Suspension without Cause. Owner may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety (90) days by written notice to Contractor, which will fix the date on which Work will be resumed. Contractor shall be allowed an increase in the Contract Sum or an extension of the Contract Time, or both, directly attributable to any suspension if Contractor makes an approved claim therefor.

14.4 Termination Based Upon Abandonment, Casualty or Force Majeure. If, after the construction commencement date (i) Contractor abandons the Project (which for purposes of this paragraph shall mean the cessation of all construction and other activities relating to the Project, excluding those which are necessary to wind down or otherwise terminate all outstanding obligations with respect to the Project, and no recommencement of same within one hundred twenty (120) days following the date of cessation), or (ii) the Project is stopped for a period of thirty (30) consecutive days due to an instance of Force Majeure or the result of a casualty resulting in a loss that cannot be corrected or restored within one hundred twenty (120) days (excluding the time required to assess the damage and complete the steps contemplated under Section 12.2), the Owner shall have the right to terminate the Agreement and pay the Contractor its compensation earned or accrued to date.

14.5 Vacation of Project Site; Delivery of Documents. Upon termination by Owner pursuant to Section 14.2 or 14.4, Contractor shall withdraw its employees and its equipment, if any, from the Project Site on the effective date of the termination as specified in the notice of termination (which effective date shall not be less than two (2) working days after the date of delivery of the notice), regardless of any claim the Contractor may or may not have against the Owner. Upon termination, the Contractor shall deliver to the Owner all original papers, records, documents, drawings, models and other material set forth and described in the Contract Documents.

14.6 Termination by the Contractor. If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) consecutive days by Owner or under an order of court or other public authority, or Owner fails to act on any Application for Payment or fails to pay Contractor any sum finally determined to be due; then Contractor may, upon fourteen (14) days written notice to Owner terminate the Agreement and recover from Owner payment for all Work executed, any expense sustained plus reasonable termination expenses. In lieu of terminating the Agreement, if Owner has failed to act on any Application for Payment or Owner has failed to make any payment as aforesaid, Contractor may upon fourteen (14) days written notice to Owner stop the Work until payment of all amounts then due.

(Remainder of this page intentionally left blank)

Exhibit A
Title(s) of Drawings

Exhibit B
Title(s) of Specifications

Exhibit C
Affidavit of No Conflict

Exhibit D
Contractor's Certificate(s) of Insurance

Exhibit E
Contractor's Payment and Performance Bond

Exhibit F
Standard Forms

APPLICATION FOR PAYMENT

Request No.: ____ Project No.: _____
Purchase Order No.: _____
County Bid No.: _____
Consultant: _____

Project: _____
From: _____ To: _____

CONTRACT PAYMENT SUMMARY

Original Contract Amount:				$ -
Change Order(s):				$ -
Change order summary:				
Number	Date Approved	Additive	Deductive	
SUBTOTALS:		$ -	$ -	
Net change order subtotal (Additive less Deductive):				$ -
Current Contract Amount (CCA): (Original Amount + Change Order(s))				$ -
		Previous Status	Total WIP	
Value of the Work in Place (WIP)		$ -	$ -	
Value of Stored Materials		$ -	$ -	
Total Earned ($ and % of CCA)		$ -	$ -	
Retainage ($ and % of CCA)		$ -	$ -	
Net Earned (Total earned minus retainage)				$ -
TOTAL PREVIOUS PAYMENTS				$ -
AMOUNT DUE THIS PAYMENT (Net Earned minus Previous Payments)				$ -

CONTRACTOR'S AFFIDAVIT OF NOTICE

CERTIFICATE: The undersigned CONTRACTOR certifies that all items and amounts shown on this Application for Payment are on account of work performed, materials supplied and/or materials stored on site and paid for by Contractor in accordance with the Contract Documents with due consideration for previous Payment(s), if any, received by the Contractor from the County, and that the Amount Due this Payment shown is now due.

NOTARY:

State of Florida, County of _____

Sworn to (or affirmed) and subscribed before me this _____ day of _____ by

_____
(Name of person giving notice)

_____
(Signature of Notary Public - State of Florida)
Print, Type or Stamp Commissioned Name of Notary Public:

Personally Known ____ or Produced Identification ____
Type of Identification Produced: _____

CONTRACTOR:

_____
Name of person authorized to sign Affidavit of Notice

_____
TITLE

Contractor name, address and telephone no.:

_____
_____
_____
_____
_____

VERIFICATION, RECOMMENDATION, CONCURRENCES AND APPROVALS

	(Signatures)	(Date)
Quantities verified by:	_____	_____
Consultant/Engineer:	_____	_____
Project Management:	_____	_____
Department Head:	_____	_____
Payment approved by the Board of County Commissioners:	_____	_____
Attested to by the Clerk of Circuit Court:	_____	_____

CERTIFICATE OF SUBSTANTIAL COMPLETION (S.C.)	CHECK ONE:	
	Partial	Total
Project Title:	Date Submitted:	
Contractor Data: Name: Address: City/State/Zip:	Project No: S. C. Date (Proposed)	

If the "Partial" completion box above is checked, the following description applies to the work for which substantial completion is being sought. Otherwise, the work described in the Contract including approved changes, if any, is certified to be substantially complete:
(Description of the portion of work substantially completed):

(USE CONTINUATION SHEETS IF NECESSARY)

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item does not alter the Contractor's responsibility to complete all of the contract work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by the Contractor within _____ days of substantial completion. The approved substantial completion date is: _____

Contractor Signature	Date	Engineer's Approval	Date
Printed Name and Title		Printed Name and Title	

The Contractor shall be responsible for security, operation, safety, maintenance, HVAC, insurance and warranties in accordance with the Contract. The County will assume the responsibility for paying the cost of electrical power from midnight of the date of Engineer's approval as indicated above.

ATTACH THE INSPECTOR'S FINAL WALKTHROUGH LIST OF DEFICIENCIES.

FINAL RECONCILIATION, WARRANTY PERIOD DECLARATION AND CONTRACTOR'S AFFIDAVIT

Project Title:	Date Submitted:
Contractor Data: Name: Address: City/State/Zip:	Project No: Warranty (months):

This Final Reconciliation is for the work performed for Manatee County by the above named contractor, hereinafter called CONTRACTOR, pursuant to the contract dated _____ as amended, and acts as an addendum thereto.

It is agreed that all quantities and prices in the attached Final Pay Estimate No. _____ are correct and that the amount of $_____ including retainage is due to the CONTRACTOR, that no claims are outstanding as between the parties, and that the above stated sum represents the entirety of monies owed the CONTRACTOR.

It is further agreed that the warranty period for CONTRACTOR'S work pursuant to the Contract is from _____ to _____

As (title) _____ for CONTRACTOR, I have authority to bind said CONTRACTOR, and as such make this final reconciliation, declaration and affidavit for the purpose of inducing Manatee County to make final payment to CONTRACTOR for work done at/upon _____ under said contract:

CONTRACTOR has paid all social security and withholding taxes accrued in connection with the construction project.

CONTRACTOR has paid all workers' compensation and other insurance premiums incurred in connection with this construction project.

CONTRACTOR has paid for all required permits in connection with this construction project.

All laborers, material, men, suppliers, subcontractors and service professionals who worked for and/or supplied materials, equipment and/or services to the CONTRACTOR under this construction contract have been paid in full.

_____
(Affiant Signature)

NOTARY:
State of Florida, County of _____ , Sworn to (or affirmed) and subscribed before me this _____ day of _____ , ____, by _____ (person giving notice).

Signature of Notary Public - State of Florida: _____
Print, Type or Stamp Commissioned Name of Notary Public:

Personally Known ☐ or Produced Identification ☐
Type of Identification Produced _____

CONTRACT CHANGE ORDER

(for Total Contract Adjusted Amount Greater than $1,000,000)

PROJECT:

Change Order No.:

Contract Amount (Present Value)

Project Number:

NO. OF ITEM	DESCRIPTION OF ITEM AND CHANGE	DECREASE	INCREASE
	BY EXECUTION OF THIS CHANGE ORDER THE CONTRACTOR AGREES THAT ALL CLAIMS FOR ADDITIONAL CONTRACT TIME AND FEES FOR THE ITEMS IN THIS CHANGE ORDER HAVE BEEN SATISFIED.		
		TOTAL DECREASE:	**TOTAL INCREASE:**

Contractor: _____

Address: _____

City / State: _____

Contractor Signature: _____ Date: _____

THE NET CHANGE OF

ADJUSTS THE CURRENT CONTRACT AMOUNT FROM

TO

____ CALENDAR DAYS ARE ADDED TO THE SCHEDULE WHICH CHANGES THE FINAL COMPLETION DATE TO

MONTH DAY, YEAR

RECOMMENDATION, CONCURRENCES AND APPROVALS

	SIGNATURES	DATE
Consultant / Engineer:	_____	_____
Project Manager:	_____	_____
Division Manager:	_____ **Project Management Division Manager**	_____
Manatee County Purchasing:	_____ **Purchasing Official**	_____

Authority to execute this contract per Manatee County Code, Chapter 2-26, and per the delegation by the County Administrator effective 1/26/2009

JUSTIFICATION FOR CHANGE	Change Order No : Project Number:

1. NECESSITY FOR CHANGE:

2. Is change an alternate bid? (If yes, explain)

3. Does change substantially alter the physical size of the project? (If yes, explain)

4 Effect of this change on other "Prime" contractors?

5 Has the Surety and insurance company been notified, if applicable? CONTRACTOR RESPONSIBILITY