



**INVITATION FOR BID
IFB #13-2222CD
FORT HAMER PARK EXPANSION- PHASE II**

Manatee County, a political subdivision of the State of Florida, (hereinafter the "County") will receive sealed Bids from individuals, corporations, partnerships, and other legal entities organized under the laws of the State of Florida or authorized to conduct business in the State of Florida.

NON-MANDATORY INFORMATION CONFERENCE

In order to ensure that all prospective Bidders have sufficient information and understanding of the County's needs, an Information Conference will be held on: **Wednesday, October 16, 2013 at 9:00 AM** at the **Manatee County Administration Center, Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205..** Attendance is not mandatory, but is highly encouraged.

NOTE: **Article B.05 Inspection of Site (page 00020-2)** – All potential Contractors, it is mandatory that a site visit be performed at the location to familiarize yourselves with the full scope of the construction site.

DEADLINE FOR CLARIFICATION REQUESTS: **October 25, 2013 at 3:00 PM**
(Reference Bid Article A.06)

TIME AND DATE DUE: **November 7, 2013 at 3:00 PM**

Important Note: Lobbying is prohibited (reference Bid Article A.08).

FOR INFORMATION CONTACT:

Chris Daley-CPPB, Contract Specialist
(941) 749-3048, Fax (941) 749-3034
chris.daley@mymanatee.org
Manatee County Financial Management Department
Purchasing Division

AUTHORIZED FOR RELEASE: 

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SECTION 00010
INFORMATION TO BIDDERS

A.01 OPENING LOCATION

Sealed Bids will be **publicly opened** at **Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, Florida 34205** in the presence of County officials at the time and date stated, or soon thereafter. All Bidders or their representatives are invited to be present.

Any Bids received after the stated time and date will not be considered. It shall be the sole responsibility of the Bidder to have their Bid **delivered to the Manatee County Purchasing Division** for receipt on or before the stated time and date. If a Bid is sent by **U.S. Mail**, the Bidder shall be responsible for its timely delivery to the Purchasing Division. Bids delayed by mail shall not be considered, shall not be opened at the public opening, and arrangements shall be made for their return at the respondent's request and expense.

A.02 SEALED & MARKED

One original and two copies of your **signed Bid** shall be submitted in one **sealed** package, clearly marked on the outside **"Sealed Bid #13-2222CD, Fort Hamer Park Expansion-Phase II"** with your company name.

Address package to: Manatee County Purchasing Division
1112 Manatee Avenue West, Suite 803
Bradenton, Florida 34205

A.03 SECURING OF DOCUMENTS

Complete individual copies of the Bidding documents for the project and/or products can be obtained, free of charge, at the Manatee County Property Management Department, 1112 Manatee Avenue West, Suite 868 , Bradenton, FL 34205; (941) 748-4501, extension 3097 or 3003 Documents may be obtained between the hours of 8:00 AM and 4:00 PM Monday through Friday, with the exception of holidays. Complete set of the Bidding document must be used in preparing Bids. The County assumes no responsibility for errors and misinterpretations resulting from the use of incomplete sets of Bidding documents.

A.04 BID DOCUMENTS

Bids on <http://www.mymanatee.org>, Bid documents and the Notices of Source Selection related to those Bids are available for download in a portable document format (.PDF) file on the Manatee County web page on the Purchasing tab under "Bids." You may view and print these files using Adobe Acrobat software. You may download a free copy of this software (Adobe) from the Owner's web page if you do not have it.

A.04 BID DOCUMENTS (Continued)

Manatee County collaborates with the Manatee Chamber of Commerce on distributing solicitations using the RFP Tool web page on the Chambers website: <http://www.Manateechamber.com> to post Bid documents in a portable document format (.PDF) file. This step is in addition to the posting on Manatee County Government web pages.

Manatee County may also use an internet service provider to distribute Bids. A link to that service, <http://www.DemandStar.com>, is provided on this web site under the Tab "DemandStar". Participation in the DemandStar system is not a requirement for doing business with Manatee County.

Note: The County posts the Notice of Source Selection seven (7) calendar days prior to the effective date of the Award.

IT IS THE RESPONSIBILITY OF EACH CONTRACTOR, PRIOR TO SUBMITTING THEIR BID, TO CONTACT THE MANATEE COUNTY PURCHASING DIVISION (see contact information on page one of this document) TO DETERMINE IF ADDENDA WERE ISSUED AND TO MAKE SUCH ADDENDA A PART OF THEIR BID .

A.05 MODIFICATION OF BID SPECIFICATIONS

If a Bidder wishes to recommend changes to the Bid specifications, the Bidder shall furnish in writing, data and information necessary to aid the Owner in evaluating the request to modify the specifications. The Owner is not obligated to make any changes to the Bid specifications. Unless an addendum is issued, the Bid specifications shall remain unaltered. **Bidders must fully comply with the Bid specifications, terms, and conditions.**

A.06 DEADLINE FOR CLARIFICATION REQUESTS

October 25, 2013 at 3:00 PM shall be the deadline to submit all inquiries, suggestions, or requests concerning interpretation, clarification or additional information pertaining to the Invitation for Bids to the Manatee County Purchasing Division.

This deadline has been established to maintain fair treatment for all potential Bidders, while maintaining the expedited nature of the Economic Stimulus that the contracting of this Work may achieve.

A.07 CLARIFICATION & ADDENDA

Each Bidder shall examine all Invitation for Bid documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries, suggestions or requests concerning interpretation, clarification or additional information pertaining to the Invitation for Bids shall be made through the Manatee County Purchasing Division. The County shall not be responsible for oral interpretations given by any County employee, representative, or others. The

A.07 CLARIFICATION & ADDENDA (Continued)

issuance of a written addendum is the only official method whereby interpretation, clarification or additional information can be given.

If any addenda are issued to this Invitation for Bid, the County will broadcast the addenda on the DemandStar distribution system to "Planholders" on this web service, and post the documents on the Purchasing Division's web page at <http://www.mymanatee.org> which can be accessed by clicking on the "Purchasing" button and then clicking on the "Bids" button. It shall be the responsibility of each Bidder, prior to submitting their Bid, to contact Manatee County Purchasing (see contact on page 1) to determine if addenda were issued and to make such addenda a part of their Bid.

A.08 LOBBYING

After the issuance of any Invitation for Bid, prospective Bidders, or any agent, representative or person acting at the request of such Bidder shall not contact, communicate with or discuss any matter relating in any way to the Invitation for Bid with any officer, agent or employee of Manatee County other than the Purchasing Official or as directed in the Invitation for Bid. This prohibition includes the act of carbon copying officers, agents or employees of Manatee County on email correspondence. This requirement begins with the issuance of an Invitation for Bid, and ends upon execution of the final Contract or when the invitation has been canceled. Violators of this prohibition shall be subject to sanctions as provided in the Manatee County Purchasing Code of Law Chapter 2-26.

A.09 UNBALANCED BIDDING PROHIBITED

Manatee 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 specifications and industry and market conditions, the Bid will be presumed to be unbalanced. Examples of unbalanced Bids will include:

1. Bids showing omissions, alterations of form, additions not specified or required conditional or unauthorized alternate Bids.
2. 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.
3. Bids where the unit costs offered are in excess of or below reasonable cost analysis values.

A.09 UNBALANCED BIDDING PROHIBITED (Continued)

In the event the 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, etc., which the Bidder obtained and upon which the Bidder relied upon to develop the Bid. The County reserves the right to reject as non-responsive any presumptive unbalanced Bids where the Bidder is unable to demonstrate the validity and/or necessity of the unbalanced unit costs.

A.10 FRONT END LOADING OF BID PRICING PROHIBITED

Prices offered for performance and/or acquisition activities to 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 end loaded. Front end loaded Bids could reasonably appear to be an attempt to obtain unjustified early payments creating a risk of insufficient incentive for the Contractor to complete the Work or otherwise creating an appearance of an under-capitalized Bidder.

In the event the County determines that a Bid is presumed to be front end loaded, it will request the opportunity to, and reserves the right to, review all source quotes, Bids, price lists, letters of intent, etc., which the Bidder obtained and upon which the Bidder relied upon to develop the pricing or acquisition timing for these Bid items. The County reserves the right to reject as non-responsive any presumptive front end loaded Bids where the Bidder is unable to demonstrate the validity and/or necessity of the front end loaded costs.

A.11 WITHDRAWAL OF OFFERS

Contractors may withdraw offers as follows: a) Mistakes discovered before the opening of a solicitation may be withdrawn by written notice from the Bidder submitting the offer. This request must be received in the office designated for receipt of offers in the solicitation document prior to the time set for delivery and opening of the offers. A copy of the request shall be retained and the unopened offer returned to that Contractor. b) After the responses to a solicitation are opened or a selection has been determined, but before a Contract is signed, a Contractor alleging a material mistake of fact may be permitted to withdraw their offer if: (1) the mistake is clearly evident on the solicitation document; or (2) the Bidder submits evidence which clearly and convincingly demonstrates that a mistake was made. Request to withdraw an offer must be in writing and approved by the Purchasing Official.

A.12 IRREVOCABLE OFFER

Any Bid may be withdrawn up until the date and time set for opening of the Bid. Any Bid not so withdrawn shall, upon opening, constitute an irrevocable offer for a period of ninety (90) days to sell to Manatee County the goods or services set forth in the attached specifications until one or more of the Bids have been duly accepted by the County.

A.13 BID EXPENSES

All expenses for making Bids to the County are to be borne by the Bidder.

A.14 RESERVED RIGHTS

The County reserves the right to accept or reject any and/or all Bids, to waive irregularities and technicalities, and to request resubmission. Also, the 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 the County. Any sole response received by the first submission date may or may not be rejected by the County depending on available competition and current needs of the 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 attached specifications or otherwise required by the County, and who is fit and capable to perform the Bid as made.

To be responsive, a Bidder shall submit a Bid which conforms in all material respects to the requirements set forth in the Invitation for Bid. To be a responsible Bidder, the Bidder shall have the capability in all respects to perform fully the Contract requirements, and the tenacity, perseverance, experience, integrity, reliability, capacity, facilities, equipment, and credit which will assure good faith performance. Also, the 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 the 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.15 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 any Manatee County procurement shall be in accordance with Manatee County Purchasing Ordinance as amended. Any actual or prospective Bidder who is aggrieved in connection with the solicitation or award of a Contract may protest to the Board of County Commissioners of Manatee County as required in Manatee County Code of Laws.

A.16 COLLUSION

By offering a submission to this Invitation for Bid, the Bidder certifies that he has not divulged, discussed or compared their Bid with other Bidder, and has not colluded with any other Bidder or parties to this Bid whatsoever. Also, Bidder certifies, and in the case of a joint Bid each party thereto certifies as to their own organization, that in connection with this Bid:

A.16 COLLUSION (Continued)

- a. any 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. any 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 the 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, principal or principals is/are named therein and that no person other than therein mentioned has any interest in this Bid or in the Contract to be entered into; and
- e. no person or agency has been employed or retained to solicit or secure this Contract upon an agreement or understanding or a commission, percentage, brokerage, or contingent fee excepting bona fide employees or established commercial agencies maintained by Bidder for purpose of doing business.

A.17 CODE OF ETHICS

With respect to this Bid, if any Bidder violates, directly or indirectly, the ethics provisions of the Manatee County Purchasing Ordinance 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 disqualified from eligibility to perform the Work described in this Invitation for Bid, and may also be disqualified from furnishing future goods or services to, and from submitting any future Bids to supply goods or services to, Manatee County.

By submitting a Bid, the Bidder represents to the County that all statements made and materials submitted are truthful, with no relevant facts withheld. If a Bidder is determined to have been untruthful in its Bid or any related presentation, such Bidder will be disqualified from eligibility to perform the Work described in this Invitation for Bid, and may also be disqualified from furnishing future goods or services to, and from submitting any future Bids to supply goods or services to, Manatee County.

A.18 BID FORMS

Bids must be submitted on attached County forms, although additional pages may be attached. **Bidders must fully complete all pages of the Bid Forms. Bid Forms must be executed by an authorized signatory who has the legal authority to make the offer and bind the company. Bidders must fully comply with all Bid specifications, terms and conditions.** Failure to comply shall result in Contract default, whereupon, the defaulting Contractor shall be required to pay for any and all re-procurement costs, damages, and attorney fees as incurred by the County.

A.19 LEGAL NAME

Bids shall clearly indicate the legal name, address and telephone number of the Bidder. Bids shall be signed above the typed or printed name and title of the signer. The signer must have the authority to bind the Bidder to the submitted Bid.

A.20 PUBLIC CONTRACTING AND ENVIRONMENTAL CRIMES

A person or affiliate who has been placed on the State's convicted vendor list following a conviction for a public entity crime, as that term is defined in Florida Statute (F.S.) § 287.133, may not submit a Bid, Proposal, or reply on a Contract to provide any goods or services to a public entity; may not submit a Bid, Proposal, or reply on a Contract with a public entity for the construction or repair of a public building or public work; may not submit Bids, Proposals or replies on leases of real property to a public entity; may not be awarded or perform work as a Contractor, Supplier, Subcontractor, or Consultant under a Contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in F.S. § 287.017 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 Contract 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 Purchasing Official, establishes reasonable grounds to believe the person or business entity will not conduct business in a responsible matter. To insure compliance with the foregoing, the Code requires all persons or entities desiring to Contract with the 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 the 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 for this purpose.

A.21 DISCOUNTS

Any and all discounts must be incorporated in the prices contained in the Bid and not shown separately. The prices as shown on the Bid Form shall be the price used in determining Award.

A.22 TAXES

Manatee County is exempt from Federal Excise and State Sales Taxes. (F.E.T. Exempt Cert. No. 59-78-0089K; FL Sales Tax Exempt Cert. No. 85-8012622206C-6); therefore, the Contractor is prohibited from delineating a separate line item in his Bid for any sales or service taxes. Nothing herein shall affect the Contractor's normal tax liability.

A.23 DESCRIPTIVE INFORMATION

Unless otherwise specifically provided in the specifications, all equipment, materials and articles incorporated in the Work covered by this Contract shall be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in the specifications, 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.24 AMERICANS WITH DISABILITIES ACT

The Board of County Commissioners of Manatee County, Florida, does not discriminate upon the basis of any individual's disability status. This non-discrimination policy involves every aspect of the 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 first page of this Bid document at least twenty-four (24) hours in advance of either activity.

A.25 EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

In accordance with the provisions of Title VI of the Civil Rights Act of 1964 and Title 15, Part 8 of the Code of Federal Regulations, Manatee County hereby notifies all prospective offerors that they will affirmatively ensure minority business enterprises will be afforded full opportunity to participate in response to this advertisement and will not be discriminated against on the grounds of race, color or national origin in consideration for an Award of Contract.

A.26 MBE/WBE

The State of Florida, **Office of Supplier Diversity** provides the certification process and the database for identifying certified MBE/WBE firms. This service may be directly accessed at: <http://www.osd.dms.state.fl.us/iframe.htm>

If you have any questions regarding this State service, please contact their office at (850) 487-0915.

A.27 MATHEMATICAL ERRORS

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. All Bids shall be reviewed mathematically and corrected, if necessary, using these standards, prior to additional evaluation.

A.28 DISCLOSURE

Upon receipt, all inquiries and responses to inquiries related to this Invitation for Bid becomes "Public Records", and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes.

Bids become subject to disclosure thirty (30) days after the opening or if a notice of intended Award decision is made earlier than this time as provided by F.S. 119.071(1)(b). No announcement or review of the offer shall be conducted at the public opening.

Based on the above, the County will receive Bids at the date and time stated, and will make public at the opening the names of the business entities of all that submitted an offer and any amount presented as a total offer without any verification of the mathematics or the completeness of the offer.

If the 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 the County provides notice of an intended decision concerning the reissued solicitation or until the County withdraws the reissued solicitation. A Bid is not exempt for longer than 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 that ordinarily and necessarily would be required by the County in order to perform the service;
- b. Provide the public with access to public records on the same terms and conditions that the County would provide and 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, and;

A.28 DISCLOSURE (Continued)

- d. Meet all requirements for retaining public records and transfer, at no cost, to the County all public records in possession of successful B/P/Q upon termination of the awarded Agreement and/or PO and destroy any duplicate public records that are exempt or confidential from public records disclosure requirements. All records stored electronically must be provided to the County in a format this is compatible with the County's information technology systems.

NOTE: ANY OR ALL STATEMENTS CONTAINED IN THE FOLLOWING SECTIONS: BASIS OF AWARD, TERMS AND CONDITIONS OF THE CONTRACT, OR SPECIFICATIONS, WHICH VARY FROM THE INFORMATION TO BIDDERS, SHALL HAVE PRECEDENCE.

END OF SECTION A

SECTION 00020
BASIS OF AWARD

B.01 BASIS OF AWARD

Award shall be to the lowest, responsive, responsible Bidder meeting specifications and having the lowest Total Bid Price for **Bid "A"** for the requirements listed on the Bid Form for the Work as set forth in this Invitation for Bid. Bid prices shall include costs for furnishing all labor, equipment and/or materials for the completion of the Work in accordance with and in the manner set forth and described in the Contract documents to the County's satisfaction within the prescribed time.

Only one schedule for Completion of the Work shall be considered. Only one Award shall be made.

NOTE: Inspection of the site is a pre-requisite to be considered for award of this Bid.

In evaluating Bids, the 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 Bids are equal with respect to price, the Bid received from a local business shall be given preference in Award. Whenever two or more Bids which are equal with respect to price are received, and neither of these Bids are from a local business, the Award shall be determined by a chance drawing, coin toss, or similar tie-breaking method conducted by the Purchasing Division and open to the public.

B.02 SUBCONTRACTORS

Subcontractors shall be bound by the terms and conditions of this Contract insofar as it applies to their work, but this shall not relieve the prime Contractor from the full responsibility of the County for the proper completion of all Work to be executed under this Contract.

The employment of unauthorized aliens by any Contractor is considered a violation of Section 274 (e) of the Immigration and Employment Act. If the Contractor knowingly employs unauthorized aliens, such violation shall be cause for unilateral cancellation of this Agreement.

B.03 QUALIFICATIONS OF BIDDERS

No person who is not certified or registered as a General Contractor pursuant to Florida Statutes, Chapter 489 on the day the Bid is submitted, and who has continuously held that certification or registration for a period of at least three (3) consecutive years immediately prior to the day the Bid is submitted, may be qualified to bid on this project. In the event that a Bidder is a business organization, including a partnership, corporation, business trust or other legal entity as set forth in F.S. 489.119(2), then the Bidder shall only be qualified to bid on this project if: 1) the Bidder (the business organization) is on the day the Bid is submitted, and for at least three (3) consecutive years immediately prior to the day the Bid is submitted has been, in continuous existence, properly licensed and registered as required by Florida law; and 2) the Bidder, on the day the Bid is submitted, has a certified or registered Qualifying Agent, as required by F.S. 489.119, and that Qualifying Agent has been the same Qualifying Agent of the Bidder for a period of at least three (3) consecutive years immediately prior to the day the Bid is submitted.

A complete list of all Subcontractors proposed for any portion of the Work may be requested of any Bidder deemed necessary by the County. Subcontracts shall be awarded only to those Subcontractors considered satisfactory by the County.

B.04 PREPARATION OF CONTRACT

A written notice confirming Award or recommendation thereof will be forwarded to the successful Bidder accompanied by the required number of unsigned counterparts of the Agreement. Within ten (10) days thereafter, successful Bidder shall sign and deliver the required number of counterparts of the Agreement with any other required documents to County. (Note: Contract must be approved in accordance with the Manatee County Code of Laws, Chapter 2-26, and the Administrative Standards and Procedures Manual approved by the County Administrator).

B.05 INSPECTION OF SITE

Inspection of the site is a requirement to be considered for award of this Bid. Prior to submitting a Bid, each Bidder shall examine the site and all conditions thereon fully familiarizing themselves with the full scope of the project. Failure to become familiar with 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 plans and specifications. Site visit (s) shall be acknowledged in Section 00300, Bid Form page # 00300-1.

END OF SECTION B

SECTION 00030
GENERAL TERMS AND CONDITIONS OF THE CONTRACT

C.01 CONTRACT FORMS

The Agreement resulting from the acceptance of a Bid shall be in the form of the Agreement stated in this Bid.

C.02 ASSIGNMENT OF CONTRACT

Contractor shall not assign, transfer, convey, sublet or otherwise dispose of this Contract or of his right, title, or interest therein, or his power to execute such Contract, or to assign any monies due or to become due there under to any other person, firm or corporation unless first obtaining the written consent of the County. The giving of such consent to a particular Subcontractor assignment shall not dispense with the necessity of such consent to any further or other assignment.

C.03 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. Only one Bid shall be considered based on **180 calendar days**. Only one Award shall be made.

C.04 LIQUIDATED DAMAGES

If the Contractor refuses or fails to prosecute the Work, or any separable part thereof, with such diligence as will hinder its completion within the time specified, the County may seek damages. The actual damages for delay will be impossible to determine and in lieu thereof, the Contractor shall pay to the County the sum of **\$1148** as fixed, agreed, and liquidated damages for each calendar day of the delay until the Work is finally accepted by the County and the Contractor and his Surety shall be liable for the amount thereof.

C.05 PAYMENT

Contractor may apply for partial payment on monthly estimates, based on the amount of work done or completed in compliance with the provisions of the Contract. Contractor shall submit an application, on a standard pay application form provided or approved by the County, of an approximate estimate of the proportionate value of the Work done, items and locations of the Work performed up to and including the last day of the period then ending. The County will then review said estimate and make any necessary revisions so that the estimate can receive approval for payment. If the Contractor and the County do not agree on the approximate estimate of the proportionate value of the Work done for any pay period, the determination of the County will be binding. The amount of said estimate after deducting any required retainage and all previous payments shall be due and payable to the Contractor, twenty (20) business days if County is its own Engineer of Record (EOR) or twenty-five (25) business days if outside agent

C.05 PAYMENT (Continued)

approval is required after the pay estimate has been approved by the agent for the County.

In accordance with the Prompt Payment Act, F.S. § 218.735(7), a Punch List shall be formulated.

Time allowed for development of punch list:

1. Awarded Contracts with an estimated cost of less than \$10 million will be within thirty (30) calendar days after reaching substantial completion. Substantial completion is defined as reaching beneficial occupancy or use.
2. Awarded Contracts with a cost of \$10 million dollars or more will be within thirty (30) calendar days OR if extended by Contract, up to sixty (60) calendar days after reaching substantial completion. Substantial completion is defined as reaching beneficial occupancy or use.

The final Contract completion date must be at least thirty (30) days after delivery of the list of items. If the list is not provided to the awarded Contractor by the agreed upon date, the Contract completion time must be extended by the number of days the County exceeds the delivery date.

It is the Contractor's responsibility for the care of the materials. Any damage to or loss of said materials is the full responsibility of the Contractor. Any periodical pay estimate signed by the Contractor shall be final as to the Contractor for any or all Work covered by the periodical pay estimate.

Any requests for payment of materials stored on site must be accompanied with a paid receipt. The Contractor warrants and guarantees that title to all work, materials and equipment covered by any application for payment, whether incorporated in the project or not, will pass to the County at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter referred to as "Liens").

The Contractor agrees to furnish an affidavit stating that all laborers, material men, and Subcontractors have been paid on the project for Work covered by the application for payment and that a partial or complete release of lien, as may be necessary, be properly executed by the material men, laborers, Subcontractors on the project for Work covered by the application for payment, sufficient to secure the County from any claim whatsoever arising out of the aforesaid Work.

When the Contractor has completed the Work in compliance with the terms of the Contract documents, he shall notify the County in writing that the project is ready for final inspection. The County will then advise the Contractor as to the arrangements for final inspection and what Work, if any, is required to prepare the project or a portion thereof for final inspection. When the County determines the project or portion thereof is ready for final inspection, the County shall perform same. Upon completion of final inspection, the County will notify Contractor of all particulars in

C.05 PAYMENT (Continued)

which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies. When all such errors have been corrected, a final re-inspection will be made. The process will be repeated until, in the opinion of the County, the project has been completed in compliance with the terms of the Contract documents.

When final acceptance has been made by the County, the County will make final payment of the Contract amount, plus all approved additions, less approved deductions and previous payments made. The Contract will be considered complete when all Work has been finished, the final inspection made, approved as-builts received, and the project finally accepted in writing by the County. The Contractor's responsibility shall then terminate except as otherwise stated.

C.06 RETAINAGE

A retainage of 10% of the total Work in place shall be withheld until 50% complete. After 50% completion, the retainage shall be reduced to 5% of the total Work in place until final completion and acceptance of the Work by the County. Upon final acceptance, the remaining retainage shall be included in the final payment.

C.07 WARRANTY AND GUARANTEE PROVISIONS

All work, materials, and equipment furnished as defined herein shall be guaranteed and warranted by the Contractor for a minimum period of three (3) years, unless otherwise specified, from final acceptance by the County to be free from defects due either to faulty materials or equipment or faulty workmanship.

All materials, equipment, and workmanship furnished and installed by the Contractor is warranted and guaranteed by the Contractor to meet the required standards and to accomplish the purposes and functions of the project as defined, detailed, and specified herein.

The County shall, following discovery thereof, promptly give written notice to the Contractor of faulty materials, equipment, or workmanship within the period of the guarantee and the Contractor shall promptly replace any part of the faulty equipment, material, or workmanship at his own cost. These warranty and guarantee provisions create no limitations on the County as to any claims or actions for breach of guaranty or breach of warranty that the County might have against parties other than the Contractor, and do not constitute exclusive remedies of the County against the Contractor.

C.08 ROYALTIES AND PATENTS

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

C.09 AUTHORIZED PRODUCT REPRESENTATION

The Contractor, 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 perform accordingly may, in the County's sole discretion, be deemed a breach of Contract, and shall constitute grounds for the County's immediate termination of the Contract.

C.10 REGULATIONS

It shall be the responsibility of the Bidder to assure compliance with any OSHA, EPA and/or other federal or State of Florida rules, regulations or other requirements, as each may apply.

C.11 CANCELLATION

Any failure of the Contractor to furnish or perform the Work (including, but not limited to, commencement of the Work, failure to supply sufficient skilled workers or suitable materials or equipment) in accordance with the Contract, the County may order the stop of the Work, or any portion thereof, until the cause for such order has been eliminated. If the Contractor persistently fails to perform the Work in accordance with the Contract, the County reserves the right to terminate the Contract and select the next qualified Bidder or re-advertise this procurement in part or in whole. The County reserves the right to cancel all or any undelivered or unexecuted portion of this Contract with or without cause.

C.12 INDEMNIFICATION

The Contractor covenants and agrees to indemnify and save harmless the County, its agents and employees, from and against all claims, suits, actions, damages, causes of action, or judgments arising out of the terms of the resulting Agreement for any personal injury, loss of life, or damage to the property sustained as a result of the performance or non-performance of services or delivery of goods; from and against any orders, judgments, or decrees, which may be entered against the County, its agents or employees; and from and against all costs, attorney's fees, expenses and other liabilities incurred in the defense of any such claim, suit or action, and the investigation thereof. Nothing in the Award, resulting Agreement, Contract or Purchase Order shall be deemed to affect the rights, privileges and immunities of the County as set forth in F.S. § 768.28.

C.13 MANUALS, SCHEMATICS, HANDBOOKS (IF APPLICABLE)

All manuals, schematics and handbooks shall be provided which are applicable to the equipment delivered. An operators manual, parts manual and technician manual must also be provided. Parts lists (manuals) must include OEM part numbers for items not manufactured by the Bidder. Contractor shall furnish two (2) copies of each.

C.14 INSURANCE

The Contractor will not commence Work under a Contract until all insurance under this section and such insurance coverage as might be required by the County has been obtained. The Contractor shall obtain, and submit to purchasing within ten (10) calendar days of request, at his expense, the following minimum amounts of insurance (inclusive of any amounts provided by an umbrella or excess policy):

a. Workers' Compensation/Employers' Liability

Part One - There shall be no maximum limit (other than as limited by the applicable statute) for liability imposed by Florida Workers' Compensation Act or any other coverage required by the Contract documents which are customarily insured under Part One of the standard Workers' Compensation Policy.

Part Two - The minimum amount of coverage required by the Contract documents which are customarily insured under Part Two of the standard Workers' Compensation Policy shall be:

(Each Accident)	<u>\$100,000</u>
(Disease-Policy Limit)	<u>\$500,000</u>
(Disease-Each Employee)	<u>\$100,000</u>

b. Commercial General Liability

The limits are to be applicable only to Work performed under this Contract and shall be those that would be provided with the attachment of the Amendment of Limits of Insurance (Designated Project or Premises) endorsement (ISO Form CG 25 03) a Commercial General Liability Policy with the following minimum limits.

General Aggregate:

Products/Completed Operations Aggregate	<u>\$1,000,000</u>
Personal and Advertising Injury	<u>\$1,000,000</u>
Each Occurrence	<u>\$1,000,000</u>
Fire Damage (Any One Fire)	<u>\$Nil</u>
Medical Expense (Any One Person)	<u>\$Nil</u>

ADDITIONAL INSURED: Manatee County, a political subdivision of the State of Florida, shall be specifically named as additional insured on the Commercial General Liability Policy.

c. Business Auto Policy

Each Occurrence Bodily Injury and	
Property Damage Liability Combined	<u>\$300,000</u>
Annual Aggregate (if applicable)	<u>\$1,000,000</u>

ADDITIONAL INSURED: Manatee County, a political subdivision of the State of Florida, shall be specifically named as additional insured on the Business Auto Policy.

C.14 INSURANCE (Continued)

d. Marine Insurance

United States Longshoreman's and Harbor worker's Act coverage shall be maintained where applicable to the completion of the work with a minimum limit of \$1,000,000 per occurrence.

e. County's Protective Liability Coverage

The minimum Owner's Protective OPC Policy limits per occurrence and, if subject to an aggregate, annual aggregate to be provided by the Contractor shall be the same as the amounts shown above as the minimum per occurrence and general policy aggregate limits respectively required for the Commercial General Liability coverage. The limits afforded by the OPC Policy and any excess policies shall apply only to the County and the County's officials, officers, agents and employees and only to claims arising out of or in connection with the Work under this Contract.

f. Property Insurance

If this Contract includes construction of or additions to above ground buildings or structures, Contractor shall provide "**Builder's Risk**" insurance with the minimum amount of insurance to be 100% of the value of such addition(s), building(s), or structure(s).

g. Installation Floater

If this Contract does not include construction of or additions to above ground building or structures, **but does involve** the installation of machinery or equipment, Contractor shall provide an "**Installation Floater**" with the minimum amount of insurance to be 100% of the value of such addition(s), building(s), or structure(s).

h. Certificates of Insurance and Copies of Policies

Certificates of Insurance in triplicate evidencing the insurance coverage specified herein shall be filed with the Purchasing Official before operations are begun. The required certificates of insurance shall name the types of policy, policy number, date of expiration, amount of coverage, companies affording coverage, and also shall refer specifically to the Bid number and title of the project. All insurance policies required herein shall be issued by companies that are authorized to do business under the laws of the State of Florida and hold an A.M. Best rating of A- or better. Insurance, as specified herein, shall remain in force and effect for the duration of the project including any warranty periods.

- i. **Complete Policies:** The entire and complete insurance policies required herein shall be provided to the County on request.

C.14 INSURANCE (Continued)

If the initial insurance expires prior to the completion of operations and/or services by the Contractor, renewal certificates of insurance and required copies of policies shall be furnished by the Contractor and delivered to the Purchasing Official thirty (30) days prior to the date of their expiration. Nothing herein shall in any manner create any liability of the County in connection with any claim against the Contractor for labor, services, or materials, or of Subcontractors; and nothing herein shall limit the liability of the Contractor or Contractor's sureties to the County or to any workers, suppliers, material men or employees in relation to this Contract.

- j. Certification Requirements – In order for the certificate of insurance to be accepted it must comply with the following:
 - 1. The certificate holder shall be:
Manatee County Board of Commissioners, a political subdivision of the State of Florida
P.O. Box 1000
Bradenton, FL 34206-1000
 - 2. Certificate shall be mailed to:
Manatee County Purchasing Division
1112 Manatee Avenue West, Suite 803
Bradenton, FL 34205
Attn: Chris Daley-CPPB, Contract Specialist
- k. By way of its submission of a Bid hereto, Bidder:
 - a. Represents that Bidder maintains, and will maintain during the term of any Contract arising from this solicitation, insurance coverage from responsible companies duly authorized to do business in the State of Florida, as set forth in this solicitation; and
 - 2. Agrees that, upon County's request, appropriate evidence of the insurance requirements set forth in this solicitation will be produced by Bidder within ten (10) calendar days from the date of Notice of Intent to Award.
 - 3. Agrees that, insurance should not be cancelled without thirty (30) days notice to County and must be endorsed to provide same. Failure of Bidder to obtain and maintain proper amounts of insurance as called for herein shall constitute a material breach of Contract by successful Bidder.

C.15 BID BOND/CERTIFIED CHECK

By offering a submission to this Invitation for Bid, the Bidder agrees should the Bidder's Bid be accepted, **to execute the form of Contract and present the same to Manatee County for approval within ten (10) calendar days after notice of Intent to Award.** The Bidder further agrees that failure to execute and deliver said form of Contract **within ten (10) calendar days** will result in damages to Manatee County and as guarantee of payment of same a Bid Bond/Certified Check shall be enclosed within the submitted sealed Bid in the amount of five (5%) percent of the total amount of the Bid. The Bidder further agrees that in case the Bidder fails to enter into a Contract, as prescribed by Manatee County, the Bid Bond/Certified Check accompanying the Bid shall be forfeited to Manatee County as agreed liquidated damages. If the County enters into a Contract with a Bidder, or if the County rejects any and/or all Bids, accompanying bond will be promptly returned.

C.16 PERFORMANCE AND PAYMENT BONDS

The successful Bidder shall furnish surety bonds using the Public Construction Bond form prescribed in F.S. § 255.05, which is provided herein, as security for faithful performance of the Contract awarded as a result of this Bid and for the payment of all persons performing labor and/or furnishing material in connection therewith. Failure to provide the required bonds on the prescribed form may result in successful Bidder being deemed nonresponsive. Bonds must be in the form prescribed in F.S. § 255.05, and must not contain notice, demand or other terms and conditions, including informal pre-claim meetings, not provided for in F.S. § 255.05.

Surety of such bonds shall be in an amount equal to the Bid Award (100% each) issued by a duly authorized and nationally recognized surety company, authorized to do business in the State of Florida, satisfactory to this County. The attorney-in-fact who signs the bonds must file with the bonds, a certificate and effective dated copy of power-of-attorney. Performance and Payment Bonds shall be issued to Manatee County, a political subdivision of the State of Florida, within ten (10) calendar days after notification of Intent to Award.

In addition, pursuant to F.S. § 255.05(1)(b), prior to commencing Work, the Contractor shall be responsible and bear all costs associated to record the Performance and Payment Bond with the Manatee County Clerk of the Circuit Court. A certified copy of said recording shall be furnished to the Purchasing Division upon filing. Pursuant to F.S. § 255.05(1)(b), the County will make no payment to the Contractor until the Contractor has complied with this paragraph.

Furnishing of the recorded Performance and Payment Bonds shall be requisite to execution of a Contract with the County. Said Performance and Payment Bonds will remain in force for the duration of the Contract with the premiums paid by the Contractor. Failure of the successful Bidder to execute such Contract and to supply the required bonds shall be just cause for cancellation of the Award. The County may then contract with another acceptable Bidder or re-advertise this Invitation for Bid. If another Bidder is accepted, and notice given within ninety (90) days after the opening of the Bids, this acceptance shall bind the Bidder as though they were originally the successful Bidder.

C.16 PERFORMANCE AND PAYMENT BONDS (Continued)

Failure of the County at any time to require performance by the Contractor of any provisions set out in the Contract will in no way affect the right of the County, thereafter, to enforce those provisions.

C.17 NO DAMAGES FOR DELAY

No claim for damages or any claim other than for an extension of time shall be made or asserted against the County by reason of any delays. The Contractor shall not be entitled to an increase in the Total Contract Price or payment or compensation of any kind from the County or direct, indirect, consequential impact or other costs, expenses for damages, including but not limited to costs of acceleration or inefficiency arising because of delay, disruption, interference or hindrance from any cause whatsoever; provided, however, that this provision shall not preclude recovery or damages by the Contractor for hindrance or delays due solely to fraud, bad faith, or active interference on part of the County or its agents. Otherwise, the Contractor shall only be entitled to extensions of the Contract time as the sole and exclusive remedy for such resulting delay, in accordance with and to the extent specifically provided above.

C.18 NO INTEREST

Any monies not paid by the County when claimed to be due to the Contractor under this Contract shall not be subject to interest including prejudgment interest. Any monies not paid by the County when claimed to be due to the Contractor for damages awarded in the case of construction delays shall not be subject to prejudgment interest.

C.19 CONSTRUCTION OF CONTRACT

This Contract and the rights and responsibilities hereunder shall not be construed more strongly against either party, regardless of the extent to which such party may have participated in the preparation hereof.

C.20 BE GREEN

All Bidders are encouraged to use as many **environmentally preferable** "green" products, materials, supplies, etc. as possible in order to promote a safe and healthy environment. **Environmentally preferable are products or services that have a reduced adverse effect on the environment.** Provide detail of your organization's initiative and its ability to meet the goal of environmental sustainability.

END OF SECTION C

SECTION 00100
BID SUMMARY

D.01 THE WORK

The Work included in this Bid consists of all labor, materials, equipment and incidentals required to perform site work necessary for the expansion and construction of new parking lot and drive aisles, and construction of a new floating dock with wooden deck at Fort Hamer Park located in Parrish, Florida. The site work shall consist of, but not limited to, drainage, paving, earthwork, irrigation, landscaping, site lighting, and construction of a new floating dock with wooden deck.

The successful Contractor shall furnish all shop drawings, working drawings, labor, materials, equipment, tools, services and incidentals necessary to complete all Work required by these specifications.

The successful Contractor 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 Owner.

The successful Contractor shall furnish and install all materials, equipment and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Bid documents or not.

D.02 SUBCONTRACTORS, SUPPLIERS AND OTHERS

The identity of Subcontractors, Suppliers, and other persons and organizations (including those who are to furnish the principal items of material and equipment) may be requested by the County for each Bid item from any of the Bidders; and the Bidder shall respond within five (5) days after the date of such request. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, persons or organization if requested by County. If County, after due investigation, has reasonable objection to any proposed Subcontractor, supplier, other person or organization, County may, before the Notice of Award is given, request the apparent successful Bidder to submit an acceptable substitute without an increase in Contract price or Contract time.

D.02 SUBCONTRACTORS, SUPPLIERS AND OTHERS (Continued)

If apparent successful Bidder declines to make any such substitution, County may award the Contract to the next lowest qualified Bidder that proposes to use acceptable Subcontractors, Suppliers, and other persons who County does not make written objection to. Contractor shall not be required to employ any Subcontractor, Supplier, other person or organization who Contractor has reasonable objection to.

Subcontractors shall be bound by the terms and conditions of this Contract insofar as it applies to their work, but this shall not relieve the prime Contractor from the full responsibility to the County for the proper completion of all Work to be executed under this Contract.

D.03 BIDS

Bids are to be submitted in **triplicate, one original and two copies**, upon the County supplied forms. All blank spaces must be filled in as noted with amounts extended and totaled and no changes shall be made in the wording of the forms or in the items mentioned therein. In the event a change is made in your submittal, the Bidder shall write its initials by the change. Any Bid may be rejected which contains any omissions, alterations, irregularities of any kind, or which shall in any manner fail to conform to Bid requirements.

A Bid made by an individual, either in his/her own or proper person or under a trade or firm name, shall be executed under the individual's signature. If made by a partnership, the Bid shall be executed by two or more of the general partners. If made by a corporation, the Bid shall be executed by its President or other legally authorized corporate officer or agent.

D.04 EXAMINATION OF BID DOCUMENTS AND SITE

It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Bid documents thoroughly; (b) visit the site 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 Bid documents; and (e) notify County of all conflicts, errors, or discrepancies in the Bid document.

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 site 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 Bid documents. County will provide each Bidder access to the site to conduct such explorations and tests.

D.04 EXAMINATION OF BID DOCUMENTS AND SITE (Continued)

Bidder shall fill all holes, clean up and restore the site 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 Contractor in performing the Work are identified in the Bid documents.

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

D.05 MATERIALS AND WORKMANSHIP

All materials and apparatus required for this Work, except as specified otherwise, shall be new, of first class quality, and shall be furnished, delivered, connected and finished in every detail. Construction shall be prescribed by good industry practice and in accordance with manufacturer's recommendations for the type being installed.

Use skilled workman trained and experienced in the necessary trades and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this section.

D.06 REGULATIONS AND MATERIAL DISPOSAL

It shall be the responsibility of the Contractor to assure compliance with any OSHA, EPA, federal, state, and/or local rules, regulations or other requirements as each may apply.

D.07 PROJECT CLOSE-OUT

Clean construction site and remove any and all excess materials. Correct any damages to property that may have occurred as a result of installation and/or delivery. Repair and patch all surfaces cut for installation. The Contractor shall remedy any deficiencies promptly should the County determine any Work is incomplete or defective.

When the County determines the Work is acceptable in accordance with this Invitation for Bid, the Contractor shall provide the close out submittals, including but not necessarily limited to the following:

- | | | |
|-------|-----------------------------------|-------------------|
| 1 set | Certificate of Warranties | |
| 1 set | Manufacturer's Product Literature | (when applicable) |
| 1 set | Project Record Drawings | |
| 1 set | Subcontractor Information | (when applicable) |

D.08 DISCRETIONARY WORK

This Bid item entails minor increases (that may be directed by staff) to existing Bid item quantities or minor modification items not bid which were unforeseen and necessary during the construction to provide a safe, complete project in accordance with Bid documents. (This will not affect the requirement for change orders involving major modifications to the project.) Payment for all Work under this item shall be made only at the County's discretion in order to satisfactorily complete the project. In general, this item is for unanticipated conflicts and/or design changes required during construction which are necessary to complete the project without changing the initial Scope of Work and without costly delays.

D.09 PROGRESS REQUIREMENTS

All Work done under this Contract shall be done with a minimum of inconvenience to the private property owners in the area. The Contractor shall coordinate his Work with private property owners such that existing utility services are maintained and they have access to their property at all times.

END OF SECTION D

SECTION 00150

MANATEE COUNTY LOCAL PREFERENCE LAW AND VENDOR REGISTRATION

E.01 Vendor Registration

All vendors are encouraged to register with Manatee County using the on-line "Vendor Registration" web page on www.mymanatee.org.

Enclosed are a copy of the current Manatee County law that details the County's Local Preference and the County's definition of a local business.

If you assert that your firm meets the stated definition of a local business, we ask that in addition to registering on the County's web page, you fill out the attached "**Affidavit As To Local Business Form**" that is included in this section, have the completed document notarized, and mail the original to the following address: Manatee County Purchasing Division, 1112 Manatee Avenue West, Suite 803, Bradenton, FL 34205.

Your cooperation in registering your business with Manatee County will enhance our opportunities to identify sources for goods and services, plus identify local businesses. This information is used for soliciting quotations up to \$250,000.00 and for competitive solicitations of larger purchases.

You will note that Manatee County collaborates with the Manatee Chamber of Commerce, posting Bids on www.manatee-chamber.com as well as using the same vendor categories for registration.

Our staff can assist you with your registration as needed. Our office hours are 8:00 A.M. to 5:00 P.M., Monday through Friday on regular business days. Please call (941) 749-3014 if you wish to have a Purchasing staff member assist you.

Quick steps to registration: **www.mymanatee.org**

A link to "Purchasing" is listed under "Quick Links" on page one of the County web site.

On the left hand side of the Purchasing web page, click on "Vendor Registration".

This will bring up the Vendor Registration form for on-line input. Please note that the definition of a "local business" changed on March 17, 2009. The web page will be updated to include the current law which has been provided in this section of the Bid.

Thank you for reviewing this information and considering registering your business with Manatee County. Registration is not mandatory; however, by taking the time to register, you are helping the County to provide timely notifications of Quotation, Bid and Proposal opportunities to your business.

E.02 Section 2-26-6. Local preference, tie Bids, **local business defined.**

- a) Whenever a responsible local business Bidder and a responsible non-local business Bidder are found, upon the opening of Bids, to have both submitted the lowest responsive Bid, the Bid of the local Bidder shall be awarded the Contract. Should more than one responsible local business Bidder match the responsible non-local business Bidder's lowest responsive Bid, or should no responsible local business Bidder match the lowest responsive Bid but two or more responsible non-local business Bidders submit lowest responsive Bids for equal amounts, then the Award of the Contract shall be determined by a chance drawing, coin toss, or similar tie-breaking method conducted by the Purchasing Division and open to the public. Any Bidders seeking to be recognized as local businesses for purposes of this local business preference provision may be required by the terms of the Bid announcement to certify they meet the definition of local business set forth in this section, and to register as a local business with the County in the manner prescribed by the County to facilitate the County's ability to track the Award of Contracts to local businesses and to allow the County to provide future notifications to its local businesses concerning other Bidding opportunities.
- b) Nothing herein shall be deemed to prohibit the inclusion of requirements with respect to operating and maintaining a local place of business in any Invitation for Bids when the Bidder's location materially affects the provisions of the services or supplies that are required by the invitation.
- c) **Local business is defined as a business legally authorized to engage in the sale of the goods and/or services to be procured, and which certifies within its Bid that for at least six (6) months prior to the announcement of the solicitation of Bids it has maintained a physical place of business in Manatee, Desoto, Hardee, Hillsborough, Pinellas or Sarasota County with at least one full-time employee at that location.**
- d) **Each solicitation for Bids made by the County shall contain terms expressly describing the local business preference policies of the County, and shall provide that by electing to submit a Bid pursuant to an Invitation for Bid, all Bidders are deemed to understand and agree to those policies.**
- e) For all Contracts for architecture, professional engineering, or other professional services governed by Florida Statute § 287.055, the Consultants' Competitive Negotiation Act, the County shall include the local business status of a firm among the factors considered when selecting which firms are "most highly qualified." In determining which firm is the "most qualified" for purposes of negotiating a satisfactory Contract, preference shall be given to a local business where all other relevant factors are equal.

E.02 Section 2-26-6. Local preference, tie Bids, **local business defined** (Continued)

f) Local preference shall not apply to the following categories of Contracts:

1. Goods or services provided under a cooperative purchasing agreement or similar "piggyback" contract;
2. Contracts for professional services subject to Florida Statute § 287.055, the Consultants' Competitive Negotiation Act, except as provided for in subsection (e) above;
3. Purchases or Contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and conditions of receipt of the funds prohibit the preference;
4. Purchases or Contracts made pursuant to a non-competitive award process, unless otherwise provided by this section;
5. Any Bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the County Commission or County Administrator, or where such suspension is, in the opinion of the County Attorney, required by law.

g) To qualify for local preference under this section, **a local business must certify to the County that it:**

1. Has not within the five (5) years prior to the Bid announcement admitted guilt or been found guilty by any court or state or federal regulatory enforcement agency of violation of any criminal law, or a law or administrative regulation regarding fraud;
2. Is not currently subject to an unresolved citation or notice of violation of any Manatee County Code provision, except citations or notices which are the subject of a current legal appeal, as of the date of the Bid announcement;
3. Is not delinquent in the payment of any fines, liens, assessments, fees or taxes to any governmental unit or taxing authority within Manatee County, except any such sums which are the subject of a current legal appeal.

Ref: Ordinance 09-21 and 09-23 **PASSED AND DULY ADOPTED** in open session, with a quorum present and voting, on the 17th day of March, 2009.

END OF SECTION E

**MANATEE COUNTY GOVERNMENT
AFFIDAVIT AS TO LOCAL BUSINESS
(Complete and Initial Items B-F)**

A. Authorized Representative

I, [name] _____, am the [title] _____ and the duly authorized representative of: [name of business] _____, and that I possess direct personal knowledge to make informed responses to these certifications and the legal authority to make this Affidavit on behalf of myself and the business for which I am acting; and by electing to submit a Bid pursuant to this Invitation for Bids, shall be deemed to understand and agree to the local business preference policies of Manatee County; and that I have the direct knowledge to state that this firm complies with all of the following conditions to be considered to be a local business as required by the Manatee County Code of Law, Section 2-26-6.

B. Place of Business: I certify that the above business is legally authorized to engage in the sale of goods and/or services and has a physical place of business in Manatee, DeSoto, Hardee, Hillsborough, Pinellas or Sarasota County with at least one (1) fulltime employee at that location. The physical address of the location which meets the above criteria is: _____ [Initial] _____

Business Phone Number: _____

Email Address: _____

C. Business History: I certify that business operations began at the above physical address with at least one fulltime employee on [date] _____ [Initial] _____

D. Criminal Violations: I certify that within the past five (5) years of the date of this Bid announcement, this business has not admitted guilt nor been found guilty by any court or local, state or federal regulatory enforcement agency of violation of any criminal law or administrative regulation regarding fraud. [Initial] _____

E. Citations or Code Violations: I certify that this business is not currently subject to any unresolved citation or notice of violation of any Manatee County Code provision, with the exception of citations or notices which are the subject of a legal current appeal within the date of this Bid announcement. [Initial] _____

F. Fees and Taxes: I certify that this business is not delinquent in the payment of fines, liens, assessments, fees or taxes to any governmental unit or taxing authority within Manatee County, with the exception of those which are the subject of a current legal appeal. [Initial] _____

Each of the above certifications is required to meet the qualification of "local business" under Manatee County Code of Laws, 2-26-6.

Signature of Affiant _____

STATE OF FLORIDA
COUNTY OF _____

Sworn to (or affirmed) and subscribed before me this _____ day of _____, 20____, by (name of person making statement).

(Notary Seal) Signature of Notary: _____

Name of Notary: (Typed or Printed) _____

Personally Known ____ OR Produced Identification ____ Type of Identification Produced _____

Submit executed copy to Manatee County Purchasing Division - 1112 Manatee Avenue West - Suite 803 - Bradenton, FL 34205

SECTION 00300
BID FORM
(SUBMIT IN TRIPLICATE)

For: IFB #13-2222CD-FORT HAMER PARK EXPANSION- PHASE II

TOTAL BID PRICE (BID "A"): _____
Based on a Completion Time of 180 calendar days

Only one schedule for Completion of the Work shall be considered. Only one Award shall be made.

We, the undersigned, hereby declare that we have carefully reviewed the Bid documents, and with full knowledge and understanding of the aforementioned herewith submit this Bid, meeting each and every specification, term, and condition contained in the Invitation for Bids, in its entirety.

We understand that the Bid package, in its entirety, including but not limited to, all specifications, terms, and conditions in their entirety shall be made a part of any Agreement or Contract between Manatee County and the successful Bidder. Failure to comply shall result in Contract default, whereupon, the defaulting Contractor shall be required to pay for any and all re-procurement costs, damages, and attorney fees as incurred by the County.

Communications concerning this Bid shall be addressed as follows: **(Complete all fields)**

BIDDER'S NAME: _____

MAILING ADDRESS: _____

TELEPHONE: (____) _____ FAX: (____) _____

EMAIL ADDRESS: _____

FL CONTRACTOR LICENSE# _____

LICENSE IN THE NAME OF: _____

STATE OF INCORPORATION _____ (if applicable)

I, _____ on [date] _____ attest that I have visited the project site(s) to familiarize myself with the full Scope of Work required for the Bid.

Acknowledge Addendum No. _____ Dated: _____ Acknowledge Addendum No. _____ Dated: _____

Acknowledge Addendum No. _____ Dated: _____ Acknowledge Addendum No. _____ Dated: _____

Acknowledge Addendum No. _____ Dated: _____ Acknowledge Addendum No. _____ Dated: _____

AUTHORIZED SIGNATURE(S): _____

Name and Title of Above Signer(s): _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
	DRAINAGE- (100 SERIES)				
100	6" PVC Storm (SDR 35)	LF	54	\$ _____	\$ _____
101	8" PVC Storm (SDR 35)	LF	342	\$ _____	\$ _____
102	12" PVC Storm (SDR 35)	LF	331	\$ _____	\$ _____
103	18" RCP	LF	537	\$ _____	\$ _____
104	24" RCP	LF	73	\$ _____	\$ _____
105	30" RCP	LF	183	\$ _____	\$ _____
106	36" RCP	LF	308	\$ _____	\$ _____
107	12" x 18" ERCP	LF	158	\$ _____	\$ _____
108	14" x 23" ERCP	LF	344	\$ _____	\$ _____
109	6" Treatment Underdrain System with Filter Material (complete per detail)	LF	100	\$ _____	\$ _____
110	Underdrain Cleanout	EA	1	\$ _____	\$ _____
111	18" Endwall	EA	1	\$ _____	\$ _____
112	30" Endwall	EA	1	\$ _____	\$ _____
113	36" Endwall	EA	2	\$ _____	\$ _____
114	12" x 18" Mitered End Section	EA	3	\$ _____	\$ _____
115	18" Mitered End Section	EA	1	\$ _____	\$ _____
116	24" Mitered End Section	EA	1	\$ _____	\$ _____
117	Roof Drain Connection (complete per detail)	EA	6	\$ _____	\$ _____
118	Throat Inlet	EA	1	\$ _____	\$ _____
119	Type 'D' Inlet (bubbler box)	EA	2	\$ _____	\$ _____
120	Type 'J' Inlet	EA	4	\$ _____	\$ _____
121	Valley Gutter Inlet	EA	1	\$ _____	\$ _____
122	Type 'C' Inlet	EA	2	\$ _____	\$ _____
123	Type 'E' Inlet (bubbler box)	EA	1	\$ _____	\$ _____
124	Type 'E' Inlet (with windows)	EA	2	\$ _____	\$ _____
125	Control Structure CS-1 (complete with skimmers)	EA	1	\$ _____	\$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
126	Control Structure CS-2 (complete with skimmers)	EA	1	\$ _____	\$ _____
127	12" Drain Basin with Standard Grate	EA	3	\$ _____	\$ _____
128	4' Diameter Storm Manhole	EA	2	\$ _____	\$ _____
129	Storm Cleanout	EA	7	\$ _____	\$ _____
130	Rip-rap with Filter Fabric	SY	109	\$ _____	\$ _____
131	Remove existing storm piping and structures where indicated on plans (includes offsite disposal)	LS	1	\$ _____	\$ _____
	SUBTOTAL (DRAINAGE 100 SERIES ONLY)				\$ _____
	IRRIGATION (200 SERIES)				
200	Irrigation (complete)	LS	1	\$ _____	\$ _____
	SUBTOTAL (IRRIGATION 200 SERIES ONLY)				\$ _____
	PAVING (300 SERIES)				
300	1-1/2" Type S-III Asphaltic Concrete	SY	6,416	\$ _____	\$ _____
301	Bituminous material prime and tack coat	SY	6,416	\$ _____	\$ _____
302	6" Crushed Concrete Base (LBR 100)	SY	10,453	\$ _____	\$ _____
303	8" Stabilized subgrade (LBR 40)	SY	10,981	\$ _____	\$ _____
304	1-1/2" of 1/2" Washed Shell	SY	3,638	\$ _____	\$ _____
305	6" of 1/2" Washed Shell	SY	882	\$ _____	\$ _____
306	Type 'D' Curb	LF	1,321	\$ _____	\$ _____
307	Type 'VW' Curb	LF	138	\$ _____	\$ _____
308	Type 'F' Curb (includes 5 ft curb transition)	LF	104	\$ _____	\$ _____
309	Type 'D' Drop Curb	LF	40	\$ _____	\$ _____
310	8" Concrete Band Curb	LF	72	\$ _____	\$ _____
311	12" Concrete Band Curb	LF	142	\$ _____	\$ _____
312	24" Concrete Band Curb	LF	51	\$ _____	\$ _____
313	4" Concrete Sidewalk	SY	980	\$ _____	\$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
314	5" Pervious Concrete Pavement with Compacted Subgrade	SY	398	\$ _____	\$ _____
315	7" Concrete Pavement with 24" Compacted Subgrade	SY	149	\$ _____	\$ _____
316	Handicap Ramps (includes curb & curb transitions)	EA	5	\$ _____	\$ _____
317	Regrade/Replace Existing Lift Station Access Drive with 6" of 1/2" Washed Shell	SY	64	\$ _____	\$ _____
318	Remove Existing Asphalt, Base, and Subgrade Where Indicated on Plans (includes offsite disposal)	SY	378	\$ _____	\$ _____
319	Mill and Replace Existing Asphalt with a Minimum of 1-1/2" Type S-III Asphaltic Concrete (includes offsite disposal)	SY	1,036	\$ _____	\$ _____
320	Asphalt Set Rumble Strips (set of 6 strips per each)	EA	3	\$ _____	\$ _____
321	Dumtper Pad with Enclosure and Gates (complete)	LS	1	\$ _____	\$ _____
322	Wheel Stops	EA	78	\$ _____	\$ _____
323	Signage and Striping (complete)	LS	1	\$ _____	\$ _____
324	Wetland Buffer Signs	EA	5	\$ _____	\$ _____
325	Detectable Warning Strips	EA	7	\$ _____	\$ _____
326	Maintenance of Traffic (includes preparation of Traffic Control Plans)	LS	1	\$ _____	\$ _____
327	Adjust Existing Utility Pads/Boxes to Finished Grade	LS	1	\$ _____	\$ _____
	SUBTOTAL (PAVING 300 SERIES ONLY)				\$ _____
	EARTHWORK (400 SERIES)				
400	Finish Grading (complete)	LS	1	\$ _____	\$ _____
401	Clearing & Grubbing (offsite disposal)	AC	7.0	\$ _____	\$ _____
402	Haul and Stockpile Excess Suitable Fill Material within 1,500 ft of property (final stockpile location to be determined by County)	CY	8,200	\$ _____	\$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
403	Regrade/Excavate Dry Retention Area #1	LS	1	\$ _____	\$ _____
404	Excavate Pond #2 to a depth of 8 ft below NWL	LS	1	\$ _____	\$ _____
405	Excavate Pond #3 to a depth of 6 ft below NWL	LS	1	\$ _____	\$ _____
406	Excavate Offsite Floodplain Compensation Area	LS	1	\$ _____	\$ _____
407	2' Wide Berm Construction	LF	625	\$ _____	\$ _____
408	Swale Construction	LF	119	\$ _____	\$ _____
409	Littoral Zone Plantings	AC	0.06	\$ _____	\$ _____
410	Staked Silt Fence	LF	4,060	\$ _____	\$ _____
411	Staked Hay Bales	LF	80	\$ _____	\$ _____
412	Floating Turbidity Barrier	LF	460	\$ _____	\$ _____
413	Tree Barricade (per Landscape Plans)	LF	2,880	\$ _____	\$ _____
	SUBTOTAL (EARTHWORK 400 SERIES ONLY)				\$ _____
	LANDSCAPE (500 SERIES)				
500	Southern Red Cedar (10'-12' OA Ht. x 4' Spd., 3" Cal., Full)	EA	10	\$ _____	\$ _____
501	Wax Myrtle (6' OA Ht., Full, ML)	EA	4	\$ _____	\$ _____
502	Southern Magnolia (14'-16' OA Ht. x 5' Spr., 4" Cal., Full to Base)	EA	7	\$ _____	\$ _____
503	Live Oak (15' OA Ht. x 6' Spr., 4" Cal.)	EA	7	\$ _____	\$ _____
504	Bald Cypress (12'-15' OA Ht. x 4' Spr., 3" Cal.)	EA	20	\$ _____	\$ _____
505	Winged Elm (15' Ht. x 7' Spr., 4" Cal., 6' CT)	EA	6	\$ _____	\$ _____
506	Cabbage Palm (10', 12', 14' CT, Mix, HC, Slick, Curved-Provide Pictures to LA for review)	EA	5	\$ _____	\$ _____
507	Cabbage Palm (10', 12', 14' CT, Mix, HC, Slick-CW to 6' below CT height)	EA	55	\$ _____	\$ _____
508	Leather Fern (7 Gal., 36" Ht. OA., Full)	EA	10	\$ _____	\$ _____
509	Florida Lantana (1 Gal., Full, 30" OC)	EA	650	\$ _____	\$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
510	Blazing Star Liatris (1 Gal., Full, 30" OC / Plant in clusters of 3-5 plants)	EA	154	\$ _____	\$ _____
511	Muhly Grass (1 Gal., 12" OA., 30" OC)	EA	518	\$ _____	\$ _____
512	Sand Cordgrass (1 Gal., 12" OA., 30" OC)	EA	865	\$ _____	\$ _____
513	Fakahatchee Grass (3 Gal., 18" OA, 48" OC)	EA	17	\$ _____	\$ _____
514	Mrs Shillers Delight Viburnum (3 Gal., 18" OA, 48" OC)	EA	273	\$ _____	\$ _____
515	Walters Viburnum (3 Gal., 24" OA, Space as indicated in plan)	EA	107	\$ _____	\$ _____
516	Coontie (3 Gal., 18" OA, 36" OC)	EA	210	\$ _____	\$ _____
517	Pinebark Mulch	CY	460	\$ _____	\$ _____
518	Tifway 419 Bermudagrass	SY	720	\$ _____	\$ _____
519	Sodding (Bahia)	SY	9,000	\$ _____	\$ _____
520	Hydroseed	AC	1	\$ _____	\$ _____
	SUBTOTAL (LANDSCAPE 500 SERIES ONLY)				\$ _____
	SITE LIGHTING (600 SERIES)				
600	Furnish and Install Lighting Control System	LS	1	\$ _____	\$ _____
601	Connect to and Modify Existing Panel 'A'	LS	1	\$ _____	\$ _____
602	Furnish and Install Conduit, Wiring, Raceways, Surge Protection Devices, and ancillary items for complete site electrical system	LS	1	\$ _____	\$ _____
603	Furnish and Install Parking Lot and Site Lighting, with one A1 - Luminaire on 30' pole	EA	18	\$ _____	\$ _____
604	Furnish and Install Parking Lot and Site Lighting, with one A2 - Luminaire on 20' pole	EA	16	\$ _____	\$ _____
605	Furnish and Install Bollard Light - B	EA	22	\$ _____	\$ _____

Bidder Name: _____

Authorized Signature: _____

BID FORM

(Submit in Triplicate) Section 00300

FORT HAMER PARK EXPANSION- PHASE II**Bid "A" Based on Completion Time of 180 Calendar Days**

BID ITEM NUMBER	DESCRIPTION	UNITS	QTY.	BID PRICE PER UNIT (\$)	TOTAL BID PRICE (\$)
606	Furnish and Install Wall Mounted Light Fixture - C	EA	5	\$ _____	\$ _____
607	Furnish and Install Surface Mounted Light Fixture - D	EA	3	\$ _____	\$ _____
	SUBTOTAL (SITE LIGHTING SERIES 600 ONLY)				\$ _____
	FLOATING DOCK AND DECK (700 SERIES)				
700	Floating Dock (complete)	LS	1	\$ _____	\$ _____
701	Wooden Deck (complete)	LS	1	\$ _____	\$ _____
	SUBTOTAL (FLOATING DOCK AND DECK 700 SERIES ONLY)				\$ _____
	MISCELLANEOUS (800 SERIES)				
800	Construction Surveying & Stakeout (includes collection of record information and record drawing preparation)	LS	1	\$ _____	\$ _____
801	Mobilization	LS	1	\$ _____	\$ _____
82	Nuisance and Exotic plant removal within Property Limits (per county final site plan requirements)	LS	1	\$ _____	\$ _____
803	Entry Gate (Automated Swing Gate) (complete)	EA	2	\$ _____	\$ _____
804	8' High Black Vinyl Chain Link Fence	LF	113	\$ _____	\$ _____
805	8' High x 12' Wide Black Vinyl Chain Link Double Swing Gates	EA	2	\$ _____	\$ _____
	SUBTOTAL (MISCELLANEOUS 800SERIES ONLY)				\$ _____
	DISCRETIONARY WORK (USED ONLY WITH COUNTY APPROVAL)				\$141,000.00
	TOTAL PRICE FOR BID "A" - Based on Completion Time of <u>180</u> Calendar Days				\$ _____

Bidder Name: _____

Authorized Signature: _____

SWORN STATEMENT
THE FLORIDA TRENCH SAFETY ACT

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR BY AN OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This Sworn Statement is submitted with IFB No. 13-2222CD
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, 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 Florida: _____

My commission expires: _____

SECTION 00430
CONTRACTOR'S QUESTIONNAIRE
(Submit in Triplicate)

The 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. License #: _____
License Issued to: _____
Date License Received (MM/DD/YR): _____
Company Name: _____

Company's Physical Address

City _____
_____ State of Incorporation, if applicable _____ (Zip Code) _____

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

For how many years? _____ Is this firm in bankruptcy? _____

Years holding a Certified General Contractors License

Years experience performing this type of project
(Attach a list of projects where this specific type of work was performed)

BIDDER: _____

4. (Continued)

Has license ever been suspended, revoked, removed or under investigation?

5. Describe and give the date and County of the last three government or private work of similar scope you've completed which are similar in cost, type, size, and nature as the one proposed (for a public entity), include contact name and phone number. Provide the budget, actual cost, size and summary of work for each project. Attach additional pages as necessary. (Note: If listing a Manatee County reference they should not be directly associated with this project)

6. 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.

7. Have you ever failed to complete work awarded to you? Or provide projects not completed within Contract time. If so, state when, where (contact name, address, phone number) and why.

8. Have you ever been debarred or prohibited from bidding on a governmental entity's construction project? If yes, name the entity and describe the circumstances:

BIDDER: _____

9. What specific steps have you taken to examine the physical conditions at or contiguous to the site, including but not limited to, the location of existing underground facilities?
Have you visited the site(s)? _____
Provide date(s) of site visit: _____

10. What specific physical conditions, including, but not limited to, the location of existing underground facilities have you found which will, in any manner, affect cost, progress, performance, or finishing of the Work?

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

12. If any, list (with Contract amount) WBE/MBE to be utilized:

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)

BIDDER: _____

15. List the following in connection with the Surety which is providing the Bond(s):

Surety's Name: _____

Surety's Address: _____

Surety's Address: _____

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

Phone: (_____) _____

Email _____

BIDDER: _____

SECTION 00491
PUBLIC CONTRACTING AND ENVIRONMENTAL CRIMES CERTIFICATION
SWORN STATEMENT PURSUANT TO ARTICLE V,
MANATEE COUNTY PURCHASING ORDINANCE

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 a County Contract for public improvements, procurement of goods or services (including professional services) or a County lease, franchise, concession or management Agreement, or shall receive a grant of County monies unless such person or entity has submitted a written certification to the County 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 the County'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.

(Cont'd.)

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 the County's Purchasing Official. Upon presentation of such satisfactory proof, the person or entity shall be allowed to contract with the County.

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 CONTRACT OR BUSINESS TRANSACTION SHALL PROVIDE FOR SUSPENSION OF PAYMENTS, OR TERMINATION, OR BOTH, IF THE CONTRACTING OFFICER OR THE COUNTY ADMINISTRATOR DETERMINES THAT **SUCH PERSON OR ENTITY HAS MADE FALSE CERTIFICATION.**

[Signature]

STATE OF FLORIDA
COUNTY OF _____

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

Personally known _____ OR Produced identification _____
[Type of identification]

Notary Public Signature My commission expires _____

[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.

SECTION 00500
**FORM OF AGREEMENT
BETWEEN THE
COUNTY OF MANATEE, FLORIDA
AND THE CONTRACTOR AS IDENTIFIED BELOW
ON THE BASIS OF A STIPULATED UNIT COST CONTRACT PRICE**

THIS AGREEMENT is made and entered into by and between the COUNTY OF MANATEE, a political subdivision of the State of Florida, hereinafter referred to as the "COUNTY" and **XXXXXXXXXX**, hereinafter referred to as the "CONTRACTOR," duly authorized to transact business in the State of Florida, with offices located at **XXXXXXXXXX**.

ARTICLE 1. WORK

CONTRACTOR shall furnish all labor, materials, supplies, and other items required to complete the Work for **IFB #13-2222CD Fort Hamer Park Expansion- Phase II** in strict accordance with Contract documents and any duly authorized subsequent addenda thereto, all of which are made a part hereof.

ARTICLE 2. COMPENSATION

As compensation to the CONTRACTOR, the COUNTY shall pay and the CONTRACTOR will accept as full consideration for the performance of all Work required by **IFB #13-2222CD Fort Hamer Park Expansion- Phase II**, subject to additions and deductions as provided therein, the sum of **\$XXXXXX** for Bid "**A**" based on a completion time of **180** calendar days.

ARTICLE 3. LIQUIDATED DAMAGES

Time is of the essence in this Agreement. As of the date of this Agreement, the damages that will be suffered by the County in the event of the Contractor's failure to timely complete the Work are impossible to determine. In lieu thereof, it is agreed that if the Contractor fails to achieve final completion of the Work within **180** calendar days of issuance of the Notice to Proceed (accounting, however, for any extensions of time granted pursuant to approved change orders), the Contractor shall pay to the County, as liquidated damages (and not as a penalty), the sum of **\$1148** per calendar day for

each day beyond 180 days until the Contractor achieves final completion. The County shall have the option of withholding said liquidated damages from any pay application(s) thereafter submitted by the Contractor. Alternatively, the Contractor shall immediately pay said sums to the County upon the County's demand for same.

ARTICLE 4. ENGINEER

The County of Manatee, Property Management Department, is responsible as the COUNTY and Stantec as "ENGINEER," designed this project and is responsible for technical/engineering reviews and decisions. The ENGINEER is a member of the COUNTY'S project management team which is collectively responsible in ensuring the Work is completed in accordance with the Contract documents.

All communications involving this project will be addressed to: Alan Meronek, Project Manager, Property Management Department and to the Engineer of Record, Dan Bond, Stantec. All invoicing will be addressed to the attention of: Alan Meronek (address noted below) with invoice copies sent to Dan Bond, (address noted below).

Manatee County Property Management Dept.
IFB# 13-2222CD
Attention: Alan Meronek
Project Manager
1112 Manatee Avenue West, Suite 862
Bradenton, Florida 34205
Phone (941) 745-4501 ext. 3097

Stantec
IFB# 13-2222CD
Attn: Dan Bond
Project Engineer
6900 Professional Parkway East
Sarasota, Florida 34240
Phone (941) 907-6900

Where the terms ENGINEER and/or COUNTY are used in the Contract Documents, it shall mean the COUNTY'S project management team.

ARTICLE 5. CONTRACTOR'S REPRESENTATIONS

In order to induce COUNTY to enter into this Agreement, CONTRACTOR makes the following representations:

- 5.1 CONTRACTOR has familiarized itself with the nature and extent of the Bid documents, Work, site, locality and all local conditions and laws and regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- 5.2 CONTRACTOR has studied carefully all drawings of the physical conditions upon which CONTRACTOR is entitled to rely.
- 5.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies which pertain to the physical conditions at or contiguous to the site or which otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract price, within the Contract time and in accordance with the other terms and conditions of the Bid documents; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.
- 5.4 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Bid documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities. Any additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground facilities conducted by the CONTRACTOR will be done at the CONTRACTOR'S expense.

- 5.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Bid.
- 5.6 CONTRACTOR has given COUNTY written notice of all conflicts, errors or discrepancies that have been discovered in the Bid documents and the written resolution thereof by OWNER is acceptable to CONTRACTOR.
- 5.7 CONTRACTOR shall schedule and perform the Work subject to COUNTY'S approval and shall hold COUNTY harmless from all liabilities incurred due to CONTRACTOR'S failure to coordinate with the COUNTY.

ARTICLE 6. CONTRACT DOCUMENTS

The Contract documents which comprise the entire Agreement between COUNTY and CONTRACTOR concerning the Work consist of the following:

- 6.1 This Agreement and Bid document **IFB #13-2222CD**
- 6.2 Public Construction Bond Form and Insurance Certificate(s)
- 6.3 Drawings/Plans (not attached)
- 6.4 Addendum number ?? to ?? inclusive
- 6.5 CONTRACTOR'S Bid Form
- 6.6 Reports
- 6.7 The following, which may be delivered or issued after the effective date of the Agreement and are not attached hereto: all written change orders and other documents amending, modifying, or supplementing the Contract documents.

- 6.8 The documents listed in paragraphs above are attached to this Agreement (except as noted otherwise above). There are no Contract documents other than those listed above in this Article 6.

ARTICLE 7. MISCELLANEOUS

- 7.1 Terms used in this Agreement are defined in Article 1 of the General Conditions.
- 7.2 No assignment by a party hereto of any rights under or interest in the Contract documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law); and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignee from any duty or responsibility under the Contract documents.
- 7.3 COUNTY and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements, and obligations contained in the Contract documents.

AGREEMENT
IFB #13-2222CD

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed by their authorized representatives.

CONTRACTOR

By: _____

Print Name & Title of Signer

Date: _____

COUNTY OF MANATEE, FLORIDA

By: _____
Melissa M. Wendel, CPPO
Purchasing Official

Date: _____

**MANATEE COUNTY GOVERNMENT
PUBLIC CONSTRUCTION BOND**

Bond No. _____

(Enter bond number)

BY THIS BOND, We _____, located at _____, as
(Name of Contractor) (Address)

Principal and _____, a corporation, whose address is
(Name of Surety)

are bound to Manatee County, a political subdivision of the State of Florida, herein called County, in the sum of \$ _____, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

WHEREAS, the Contractor has entered into Contract No. IFB #13-2222CD with the County for the project titled Fort Hamer Park Expansion- Phase II, with conditions and provisions as are further described in the aforementioned Contract, which Contract is by reference made a part hereof for the purposes of explaining this bond.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs Contract No. IFB #13-2222CD, between Principal and County for construction of

Fort Hamer Park Expansion- Phase II, the Contract being made a part of this bond by reference, at

(Title of Project)

the times and in the manner prescribed in the Contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Contract; and

3. Pays County all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that County sustains because of a default by Principal under the Contract; and

4. Performs the guarantee of all Work and materials furnished under the Contract for the time specified in the Contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the Contract documents and compliance or noncompliance with any formalities connected with the Contract or the changes does not affect Surety's obligation under this bond.

DATED ON _____.

CONTRACTOR AS PRINCIPAL

Company Name

Signature

Print Name & Title

(Corporate Seal)

SURETY

Company Name

Signature

Print Name & Title

(Corporate Seal)

AGENT or BROKER

Company Name

Address

Telephone

Licensed Florida Insurance Agent? ☐ **Yes** ☐ **No**

License #: _____

State of: _____

County of: _____

City of: _____

SECTION 00700
GENERAL CONDITIONS

ARTICLE 1. DEFINITIONS

Whenever used in the Bid documents, the following terms have the meaning indicated which are applicable to both the singular and plural thereof:

Addendum - Written or graphic instruments issued prior to the opening of Bids which clarify or change the Bidding documents or the Contract documents.

Agreement - The written Agreement between Owner and Contractor covering the Work to be performed; other Contract documents are attached to the Agreement and made a part thereof as provided therein.

Application for Payment - The form accepted by the Project Representative which is to be used by Contractor in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract documents.

Award - Acceptance of the Bid from the person, firm, or corporation which in the Owner's sole and absolute judgment will under all circumstances best serve the public interest. Award shall be made in accordance with Manatee County Code of Laws.

Bid - The offer of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

Bidder - One who submits a Bid directly to the Owner, as distinct from a Sub-bidder, who submits a Bid to a Bidder.

Bidding Documents - Consists of the Invitation for Bid, which includes but is not limited to the Bid Form, drawings, technical specifications, terms and conditions, and the proposed Contract documents (including all addenda issued prior to receipt of Bids); and becomes a part of the Agreement.

Bonds - Performance and payment bonds and other instruments of security.

Change Order - A document recommended by the Project Representative which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract price or the Contract time, issued on or after the effective date of the Agreement.

Compensable Delay - Any delay beyond the control and without the fault or negligence of the Contractor resulting from Owner-caused changes in the Work, differing site conditions, suspensions of the Work, or termination for convenience by Owner.

Contract Documents - The Agreement, addenda (which pertain to the Contract documents), Contractor's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award), the bonds, the specifications, special provisions and the drawings, together with all amendments, modifications and supplements issued on or after the effective date of the Agreement.

Contract Price - The monies payable by Owner to Contractor under the Contract documents as stated in the Agreement.

Contract Time - The number of days or the date stated in the Notice to Proceed for the completion of the Work.

Contractor - The person, firm or corporation with whom Owner has entered into an Agreement.

Days - All references to days are to be considered calendar days except as specified differently.

Defective - An adjective which when modifying the Work refers to work that is unsatisfactory, faulty or deficient, or does not conform to the Contract documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract documents, or has been damaged prior to Project Representative's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner).

Discretionary – Payment for all Work that shall be made only at the Owner's discretion in order to satisfactorily complete the project in accordance with the plans and specifications.

Drawings - The drawings which show the character and Scope of Work to be performed and which have been prepared or approved by Engineer and are referred to in the Bidding and Contract documents.

Effective Date of the Agreement - The date indicated in the Agreement on which it becomes effective (date of execution).

Excusable Delay - Any delay beyond the control and without the negligence of the Contractor, the Owner, or any other Contractor caused by events or circumstances such as, but not limited to, acts of God or of the public enemy, fires, floods, freight embargoes, acts of government other than Owner or epidemics. Labor disputes and above average rainfall shall give rise only to excusable delays.

Field Order - A written order issued by Project Representative which orders minor changes in the Work, but which does not involve a change in the Contract price or the Contract time.

Float or Slack Time - The time available in the progress schedule during which an unexpected activity can be completed without delaying substantial completion of the Work.

Inexcusable Delay - Any delay caused by events or circumstances within the control of the Contractor, such as inadequate crewing, slow submittals, etc., which might have been avoided by the exercise of care, prudence, foresight, or diligence on the part of the Contractor.

Non-prejudicial Delay - Any delay impacting a portion of the Work within the available total float or slack time and not necessarily preventing completion of the Work within the Contract time.

Notice of Award - The written notice to the successful Bidder stating Award has been approved by the Board of County Commissioners; or by the Purchasing Official in accordance with Manatee County Code of Laws, Chapter 2-26, Manatee County Purchasing Ordinance.

Notice of Intent to Award - The written notice to the apparent low Bidder stating Award has been recommended with final Award to be authorized by the Board of County Commissioners.

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 (ten (10) days from date of such notice) Contractor's obligations under the Contract documents.

Owner - Manatee County, Florida, Board of County Commissioners.

Preconstruction Conference - Prior to starting the Work, a meeting scheduled by Owner with Contractor to review the Work schedules, to establish procedures for handling shop drawings and other submissions, for processing periodical pay estimates, and such other matters as may be pertinent to the project.

Prejudicial Delay - Any excusable or compensable delay impacting the Work and exceeding the total float available in the progress schedule, thus preventing completion of the Work within the Contract time unless the Work is accelerated.

Pre-operation Testing - All field inspections, installation checks, water tests, performance tests and necessary corrections required of Contractor to demonstrate that individual components of the Work have been properly constructed and do operate in accordance with the Contract documents for their intended purposes.

Project - The total construction of which the Work to be provided under the Contract documents may be the whole or a part as indicated elsewhere in the Contract documents.

Project Representative - The authorized representative of Owner who is assigned to the project or any part thereof.

Schedule of Values – Unit prices shall be established for this Contract by the submission of a schedule of values. The Contractor shall submit a schedule of values within ten (10) days of Notice to Proceed date. The schedule shall include quantities and prices of items equaling the Total Bid Price and will subdivide the Work into components in sufficient detail to serve as the basis for progress payments during construction. Such prices will 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.

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

Special Provisions: As required to define work or procedures not covered in the standard specifications, and as necessary to supplement or modify items in the standard specifications.

Specifications - Those portions of the Contract documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

Subcontractor - An individual or corporation having a direct contact with Contractor or with any other Subcontractor for the performance of a part of the Work at the site. Such person or firm has contractual relations with the Contractor, not with the Owner.

Substantial Completion - The Work (or a specified part thereof) has progressed to the point when, in the opinion of the Engineer as evidenced by Engineer's definitive certificate of substantial completion, it is sufficiently complete in accordance with Contract documents so that the Work can be utilized for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due.

Successful Bidder - The lowest, responsible and responsive Bidder to whom an Award is made.

Supplier - A manufacturer, fabricator, supplier, distributor, material man or vendor.

Underground Facilities - All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments and any encasement containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or

other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

Unit Price Work - Work to be paid for on the basis of unit prices.

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

Work Directive Change - A written directive to Contractor, issued on or after the effective date of the Agreement and signed by Owner and recommended by 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 to emergencies. A work directive change may not change the Contract price 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 price or Contract time.

Written Amendment - A written amendment of the Contract documents, signed by Owner and Contractor on or after the effective date of the Agreement and normally dealing with the non-engineering or non-technical rather than strictly work related aspects of the Contract documents.

ARTICLE 2. PRELIMINARY MATTERS

Computation of Time: 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.

- 2.1 The Contractor must submit a proposed schedule of the Work at the preconstruction conference. The purpose of this schedule is to enable the Owner to govern the Work, to protect the functions of the local government and its citizens and to aid in providing appropriate surveillance. The Owner shall have the right to reschedule Work provided such rescheduling is in accord with the remainder of terms of the Contract. The schedule shall show, as 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 Owner, after necessary rescheduling and obtaining additional information for specific purposes, shall review and approve the schedule. The Contractor shall also 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 under the Contract, 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.

- 2.2 A Notice to Proceed may be given at any time within thirty (30) days after the effective date of the Agreement. The Contract time will commence at the time specified in such notice. 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 date on which the Contract time commences to run.
- 2.3 If at any time the materials and appliances to be used appear 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 his efficiency or to improve the character of his Work and the Contractor shall conform to such an order. The failure of the Owner to demand any increase of such efficiency of any improvement shall not release the Owner from his obligation to secure the quality of Work or the rate of progress necessary to complete the Work within the limits imposed by the Contract. The Owner may require the Contractor to remove from the Work such employees as the Owner deems incompetent, careless, insubordinate or otherwise objectionable, or whose continued employment on the Work is deemed to be contrary to the Owner's interest.
- 2.4 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 3. CONTRACT DOCUMENTS: INTENT, AMENDING, RE-USE

- 3.1 The Contract documents comprise the entire Agreement between Owner and Contractor concerning the Work. The Contract documents are complementary; what is called for by one is as binding as if called for by all. The Contract documents will be construed in accordance with the laws and ordinances of the State of Florida and Manatee County.

Should a conflict exist within the Contract documents, the precedence in ascending order of authority are as follows: 1) Standard Printed Contract Documents, 2) Special Conditions, 3) General Conditions, and 4) Drawings.

Note: Computed dimensions shall govern over scaled dimensions.

- 3.2 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, 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, Contractor or Engineer, or any of their agents or employees from those set forth in the Contract documents.

- 3.3 The Contract documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

- 3.3.1 A Formal Written Amendment

- 3.3.2 A Change Order

- 3.3.3 Administrative Contract Adjustment (ACA)

- 3.3.4 A Work Directive Change

- 3.4 In addition, the requirements of the Contract documents may be supplemented and minor variations and deviations in the Work may be authorized in one or more of the following ways:

- 3.4.1 Discretionary Work – Field Directive

- 3.4.2 Engineer's approval of a Shop Drawing or sample

ARTICLE 4. CONTRACTOR'S RESPONSIBILITIES

- 4.1 Contractor shall keep on the Work at all times during its progress a competent resident superintendent; who shall be the Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications given to the superintendent shall be as binding as if given to Contractor.
- 4.2 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 will not permit overtime work or the

performance of work on Saturday, Sunday or legal holiday without Owner's written consent given after prior notice to Engineer (at least seventy-two (72) hours in advance).

- 4.2.1 Contractor shall pay for all additional engineering charges to the Owner for any overtime work which may be authorized. Such additional engineering charges shall be a subsidiary obligation of Contractor and no extra payment shall be made by Owner on account of such overtime work. At Owner's option, overtime costs may be deducted from Contractor's monthly payment request or Contractor's retainage prior to release of final payment.
- 4.3 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.
- 4.4 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract documents. If required by 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.
- 4.5 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. Nothing in the Contract documents shall create any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of Owner to pay or to see to the payment of any monies due any such Subcontractor, Supplier or other person or organization.
- 4.6 Permits: 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.
- 4.7 During the progress of the Work, Contractor shall keep the premises free from accumulation of waste materials rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall remove all waste

materials, rubbish, and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to original conditions all property not designated for alteration by the Contract documents.

- 4.8 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.
- 4.9 Safety and Protection: Contractor shall comply with the Florida Department of Commerce Safety Regulations and any 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:
 - 4.9.1 all employees on the work and other persons and organizations who may be affected thereby;
 - 4.9.2 all the work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
 - 4.9.3 other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and underground facilities not designated for removal, relocation or replacement in the course of construction.
 - 4.9.4 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 way for the public and preservation of the Owner's business, taking into full consideration all local conditions. Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed.
- 4.10 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, without special instruction or authorization from Engineer or Owner, is obligated to 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 Contract documents is required because of the action taken in response to an emergency, a work directive change or change order will be issued to document the consequences of the changes or variation.

- 4.11 For substitutes not included with the Bid, but submitted after the effective date of the Agreement, Contractor shall make written application to 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 provisions 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 Engineer in evaluating the proposed substitute. Engineer may require Contractor to furnish at Contractor's expense, additional data about the proposed substitute. In rendering a decision, Owner/Engineer and Contractor shall have access to any available float time in the construction schedule. In the event that substitute materials or equipment not included as part of the Bid, 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.

4.11.1 If a specific means, method, technique, sequence of procedure of construction is indicated in or required by the Contract documents, Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to Engineer if Contractor submits sufficient information to allow Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract documents.

4.11.2 Engineer will be allowed a reasonable time within which to evaluate each proposed substitute. Engineer will be the sole judge of acceptability and no substitute will be ordered, installed or utilized without 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.

4.11.3 Contractor shall reimburse Owner for the charges of Engineer and 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.

- 4.12 The Contractor shall furnish, free of charge, 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 construction 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 will 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 will be held responsible for the preservation of all stakes, marks and if for any reason any of the stakes or marks or batter boards become destroyed or disturbed, they will be immediately and accurately replaced by the Contractor.
- 4.13 The Contractor has, by careful examination, satisfied himself as to the nature and location of the Work and all other matters which can in any way affect the Work under this Contract, including, but not limited to details pertaining to boring, as shown on the drawings, are not guaranteed to be more than a general indication of the materials likely to be found adjacent to holes bored at the site of the Work, approximately at the locations indicated. The Contractor shall examine boring data, where available, and make his own interpretation of the subsoil investigations and other preliminary data, and shall base his Bid on his own opinion of the conditions likely to be encountered. In no event shall an extension of time be considered for any conditions that existed at the time of bidding, nor shall the Contractor receive extra compensation for completion of the project as intended by the drawings and in keeping with the Contract documents. No verbal agreement or conversation with any officer, agent or employee of the Owner, before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.
- 4.14 If the Contractor, in the course of the Work, finds that the drawings and/or Contract documents cannot be followed, he 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 risk.

ARTICLE 5. OWNER'S RESPONSIBILITIES

- 5.1 Owner shall furnish the data required of Owner under the Contract documents promptly and shall make payments to the Contractor within a reasonable time (no more than twenty (20) days) after the Work has been accepted by the Owner. 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/Engineer. Standard County forms shall be utilized.

- 5.2 The Owner shall provide the lands upon which the Work under this Contract 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.
- 5.3 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.

ARTICLE 6. CHANGES IN THE WORK

- 6.1 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 change order, or a work directive change. 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).
- 6.2 Contractor shall not be entitled to an increase in the Contract price or an extension of the Contract time with respect to any Work performed that is not required by the Contract documents as amended, modified and supplemented.
- 6.3 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.
- 6.4 At any time Engineer may request a quotation from Contractor for a proposed change in the Work and within twenty-one (21) calendar days after receipt, Contractor shall submit a written and detailed proposal for an increase or decrease in the Contract price or Contract time for the proposed change. 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 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.

ARTICLE 7. CHANGE OF CONTRACT PRICE

- 7.1 The Contract price 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 his expense without change in the Contract price.
- 7.2 The Contract price may only be changed by change order or by a written amendment. Any claim for an increase or decrease in the Contract price 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 ten (10) days from the beginning of such occurrence and shall be accompanied by claimant's written statement that the amount claimed covers all known amounts (direct, indirect and consequential) to which the claimant is entitled as a result of the occurrence of said event.
- 7.3 The value of any Work covered by a change order or of any claim for an increase or decrease in the Contract price shall be determined in one of the following ways (at Owner's discretion):
- 7.3.1 Where the Work involved is covered by unit prices contained in the Contract documents, cost will be determined by application of such unit prices to the quantities of the items involved.
 - 7.3.2 By mutual acceptance of lump sum.
 - 7.3.3 On the basis of the cost of the Work, plus a 15% Contractor's fee for overhead and profit. (Contractor shall submit an itemized cost breakdown together with supporting data.)
- 7.4 Either Owner or Contractor may make a claim for an adjustment in the Contract price. The unit price of an item of Unit Price Work shall be subject to re-evaluation and adjustment under the following conditions:
- 7.4.1 If the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract price 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
 - 7.4.2 If there is no corresponding adjustment with respect to any other item of Work; and
 - 7.4.3 If a Contractor believes that it has incurred additional expense as a result thereof; or

7.4.4 If Owner believes that the quantity variation entitles it to an adjustment in the unit price; or

7.4.5 If the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 8. CHANGE OF CONTRACT TIME

8.1 Contract time may only be changed by a change order or a written amendment. 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 as a result of the occurrence of said event.

8.2 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.

8.3 All time limits stated in the Contract documents are of the essence.

ARTICLE 9. WARRANTY, TEST/INSPECTION, CORRECTION

9.1 Contractor warrants (for a minimum period of three (3) years or as otherwise stated herein) and guarantees to Owner that all Work will be in accordance with the Contract documents and will not be defective; that Owner, representatives of Owner, governmental agencies with jurisdictional interests will have access to the Work at reasonable time for their observation, inspecting and testing (Contractor shall give 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).

9.2 If any Work (including work of others) that is to be inspected, tested, or approved is covered without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation. Such uncovering shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice. Neither observations by Engineer nor inspections, tests, or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with the Contract documents.

9.3 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 engineers, architects, 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 schedule and shall not be entitled to an extension of the Contract time and the recovery of delay damages due to correcting or removing defective Work.

9.3.1 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 exclude Contractor from all or part of the site, 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 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 Engineer and a change order will be issued incorporating the necessary revisions.

9.3.2 If within three (3) years after the date of completion 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.

ARTICLE 10. SUSPENSION/TERMINATION OF WORK

10.1 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 price or an extension of the Contract

time, or both, directly attributable to any suspension if Contractor makes an approved claim therefore.

- 10.2 Owner may terminate the Contract if Contractor commences a voluntary case under any chapter of the Bankruptcy Code or any similar action by filing a petition under any other federal or state law relating to the bankruptcy or insolvency; if a petition is filed against the Contractor under any chapter of the Bankruptcy Code or similar relief under any other federal or state law; if Contractor persistently fails to perform the Work in accordance with the Contract documents; if Contractor disregards laws or regulations of any public body having jurisdiction or the Engineer; or otherwise violates in any substantial way any provisions of the Contract.

10.2.1 Owner may, after giving Contractor (and the Surety, if there is one) seven (7) days written notice and to the extent permitted by laws and regulations, terminate the services of Contractor; exclude Contractor from the site and take possession of the Work and of all Contractor's tools, construction equipment and machinery at the 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 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 price, Contractor shall pay the difference to Owner. Such costs incurred by Owner shall be verified by Owner and incorporated in a change order; but in finishing the Work, Owner shall not be required to obtain the lowest figure for the Work performed. Contractor's obligations to pay the difference between such costs and such unpaid balance shall survive termination of the Agreement.

- 10.3 If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) days by Owner or under an order of court or other public authority, or Engineer fails to act on any application or fails to pay Contractor any sum finally determined to be due; then Contractor may, upon seven (7) 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 Engineer has failed to act on any application of payment or Owner has failed to make any payment as aforesaid, Contractor may upon seven (7) days written notice to Owner stop the Work until payment of all amounts then due.

ARTICLE 11. CONTRACT CLAIMS

- 11.1 The rendering of a decision by Engineer 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. No action, either at law or at equity, shall be brought in connection with any such claim, dispute or other matter later than thirty (30) days after the date on which Owner/Engineer has rendered such written decision in respect thereof. Failure to bring an action within said thirty (30) day period shall result in Engineer's decision being final and binding on the Contractor. In no event may any such action be brought after the time at which instituting such proceedings would be otherwise barred by the applicable statute of limitations.
- 11.2 Before bringing any action in court pertaining to any claim, dispute or other matter in question(s) arising out of or relating to the Contract documents or the breach thereof, or Engineer's final decision, except for claims which have been waived by the making and acceptance of final payment, the Contractor shall first submit written notice(s) of Contract claims to the Purchasing Official for a decision; within the earlier of sixty (60) days after the last date on which the Contractor provided any goods or services required by the Contract or after the date on which the Contractor knew or should have known such a claim existed. The Manatee County Code of Laws, Section 2-26-63, Contract Claims, details the requirements and process for such a claim.

ARTICLE 12. RESIDENT PROJECT REPRESENTATIVE - DUTIES, RESPONSIBILITIES

- 12.1 Resident Project Representative is Engineer/Owner's Agent, who will act as directed by and under the supervision of the Engineer, and who will confer with Owner/Engineer regarding his actions. Resident Project Representative's dealing in matters pertaining to the on-site Work shall, in general, be only with the Owner/Engineer and Contractor and dealings with Subcontractors shall only be through or with the full knowledge of Contractor.
- 12.2 Resident Project Representative will:
- 12.2.1 Review the progress schedule, schedule of shop drawing submissions and schedule of values prepared by Contractor and consult with Owner/Engineer concerning their acceptability.
 - 12.2.2 Attend preconstruction conferences. Arrange a schedule of progress meetings and other job conferences as required in consultation with Owner/Engineer and notify those expected to attend in advance. Attend meetings and maintain and circulate copies of minutes thereof.

- 12.2.3 Serve as Owner/Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist him in understanding the intent of the Contract documents. As requested by Owner/Engineer, assist in obtaining additional details or information when required at the job site for proper execution of the Work.
- 12.2.4 Receive and record date of receipt of shop drawings and samples, receive samples which are furnished at the site by Contractor and notify Owner/Engineer of their availability for examination.
- 12.2.5 Advise Owner/Engineer and Contractor or his superintendent immediately of the commencement of any Work requiring a shop drawing or sample submission if the submission has not been approved by the Owner/Engineer.
- 12.2.6 Conduct on-site observations of the Work in progress to assist Owner/Engineer in determining if the Work is proceeding in accordance with the Contract documents and that completed Work will conform to the Contract documents.
- 12.2.7 Report to Owner/Engineer whenever he believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract documents, or does not meet the requirements of any inspections, tests or approvals required or if Work has been damaged prior to final payment; and advise Owner/Engineer when he believes Work should be corrected or rejected or should be uncovered of observation or requires special testing, inspection or approval.
- 12.2.8 Verify that tests, equipment and system start-ups and operating and maintenance instructions are conducted as required by the Contract documents and in the presence of the required personnel, and that Contractor maintains adequate records thereof; observe, record and report to Engineer appropriate details relative to the test procedures and start-ups.
- 12.2.9 Accompany visiting inspectors representing public or other agencies having jurisdiction over the project; record the outcome of these inspections and report to Owner/Engineer.
- 12.2.10 Transmit to Contractor, Owner/Engineer's clarifications and interpretations of the Contract documents.
- 12.2.11 Consider and evaluate Contractor's suggestions or modifications in drawings or Contract Documents and report them with recommendations to Owner/Engineer.

- 12.2.12 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 subsequent to the execution of the Contract, Owner/Engineer's clarifications and interpretations of the Contract documents, progress reports and other project related documents.
- 12.2.13 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. Send copies to Owner/Engineer.
- 12.2.14 Record names, addresses and telephone numbers of all Contractors, Subcontractors and major Suppliers of materials and equipment.
- 12.2.15 Furnish Owner/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.
- 12.2.16 Consult with Owner/Engineer in advance of scheduling major tests, inspections or start of important phases of the Work.
- 12.2.17 Report immediately the occurrence of any accident.
- 12.2.18 Review applications for payment with Contractor for compliance with the established procedure for their submission and forward them with recommendations to Owner/Engineer, noting particularly their relation to the Schedule of Values, Work completed and materials and equipment delivered at the site but not incorporated in the Work.
- 12.2.19 During the course of the Work, verify that certificates, maintenance and operations manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed, and deliver this material to Owner/Engineer for his review prior to final acceptance of the Work.
- 12.2.20 Before Owner/Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
- 12.2.21 Conduct final inspection in the company of Owner/Engineer and Contractor and prepare a final list of items to be completed or corrected.

12.2.22 Verify that all items on final list have been completed or corrected and make recommendations to Owner/Engineer concerning acceptance.

12.3 Except upon written instructions of Owner/Engineer, Resident Project Representative:

12.3.1 Shall not authorize any deviation from the Contract documents or approve any substitute materials or equipment;

12.3.2 Shall not exceed limitations on Owner/Engineer's authority as set forth in the Contract documents;

12.3.3 Shall not undertake any of the responsibilities of Contractor, Subcontractors or Contractor's superintendent, or expedite the Work;

12.3.4 Shall not 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;

12.3.5 Shall not advise on or issue directions as to safety precautions and programs in connection with the Work;

12.3.6 Shall not authorize Owner to occupy the project in whole or in part; and

12.3.7 Shall not participate in specialized field or laboratory tests.

ARTICLE 13. APPRENTICES

13.1 If successful Contractor employs apprentices, he shall be governed and comply with the provisions of F.S. § 446.011.

NOTE: The form of all submittals, notices, change orders and other documents permitted or required to be used or transmitted under the Contract shall be determined by the County. Standard County forms shall be utilized.

END OF SECTION

MAILING LABEL

Cut along the outside border and affix this label to your sealed Bid envelope to identify it as a "Sealed Bid". Be sure to include the name of the company submitting the Bid and the Bid due date and time where requested.

MAILING LABEL TO AFFIX TO OUTSIDE OF SEALED BID PACKAGE:

SEALED BID - DO NOT OPEN

CONTRACTOR: _____

SEALED BID NO: IFB #13-2222CD

BID TITLE: Fort Hamer Park Expansion- Phase II

DUE DATE/TIME: _____ @ _____



FT. HAMER PARK, PHASE II

TECHNICAL SPECIFICATIONS

PREPARED FOR

MANATEE COUNTY PROPERTY MANAGEMENT DEPARTMENT

FEBRUARY 2013



Stantec

Stantec Consulting Services Inc.
6900 Professional Parkway East
Sarasota, FL 34240

TECHNICAL SPECIFICATIONS

for

FT. HAMER PARK, PHASE II

PREPARED FOR

MANATEE COUNTY PROPERTY MANAGEMENT DEPARTMENT
1112 MANATEE AVENUE WEST, SUITE 803
BRADENTON, FLORIDA 34205

PREPARED BY

STANTEC CONSULTING SERVICES INC.
6900 PROFESSIONAL PARKWAY EAST
SARASOTA, FLORIDA 34240

AND

ENGINEERING MATRIX, INC.
2860 SCHERER DRIVE
ST. PETERSBURG, FLORIDA 33716

FT. HAMER PARK, PHASE II
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PART I - MEASUREMENT AND PAYMENT

FT. HAMER PARK, PHASE II

Manatee County, Florida

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and other Specification Sections, apply to this Section. See the construction plans listed below for reference:

Site Work plans by Stantec:

Sheets 1 – 13 of 13 and sheets LP-101, LP-401, LP-601, LS-401, LI-101, LI-501, and LI-502 (landscape and irrigation plans)

Site Lighting plans by Engineering Matrix:

Sheets E0.0, E0.1, E1.1, E1.2, and E1.3

1.2 SUMMARY

- A. The scope of this section of the Contract Documents is to further define the items included in each Bid Item in the Bid Form section of the Contract Documents. Payment will be made based on the specified items included in the description in this section for each bid item.
- B. All contract prices included in the Bid Form section will be full compensation for all shop drawings, working drawings, labor, materials, tools, testing, restoration, equipment and incidentals necessary to complete the construction as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Actual quantities of each item contracted on a unit price basis will be determined upon completion of the construction and payment will be based on actual quantities. Payment for all items listed in the Bid Form will constitute full compensation for all work shown and/or specified to be performed under this Contract.
- C. The quantities shown are approximate in-place quantities and are given only as a basis of calculation upon which the award of the Contract is to be made. The Owner/Engineer does not assume any responsibility for the final quantities, nor shall the Contractor claim misunderstanding or discrepancies because of such estimate of quantities. Final payment will be made only for satisfactorily completed in-place quantity of each item that is bid on a unit price basis.
- D. No payment will be made for work constructed outside the authorized limits of work.
- E. Unless otherwise specified for the particular items involved, all measurements of distance shall be taken horizontally.
- F. Where payment for items is shown to be paid for on a lump sum basis, no separate or additional payment will be made for any item of work required to complete the lump sum items. Lump sum items shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum items.

FT. HAMER PARK, PHASE II

Manatee County, Florida

MEASUREMENT AND PAYMENT

- G. Access to the site is provided by the existing Fort Hamer Road.
- H. Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed, but required for satisfactory completion of the work associated with the bid item shall be considered to be included in the scope of the appropriate listed bid items.

1.3 UNIT PRICE

- A. Actual quantities of each item contracted on a unit price basis will be determined upon completion of the construction and payment will be based on actual quantities.

1.4 BID ITEM DESCRIPTIONS

- A. A general description of the bid items contained in the various Bid Sections are described below. All items of work referenced in the contract documents, plans, and specifications shall be included in the various lump sum and unit prices in the contract if not specifically included as a pay item on the bid form.

Bid Items 100 - 131 (DRAINAGE): The various bid items for DRAINAGE shall include all drainage piping, drainage structures, rip-rap, underdrain, underdrain filter material, and removal of existing drainage piping/structures where indicated on the plans. **This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.**

Bid Item 200 (IRRIGATION): The lump sum pay item for IRRIGATION shall include the 4" well, pump, controller, rain sensor, pump station enclosure, piping, sleeves, fittings, valves, control wires, electrical service, connection to the existing irrigation system, and all appurtenances needed to construct the complete irrigation system per the contract documents, plans, and specifications. **This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with this bid item in accordance with the contract documents, plans, and specifications.**

Bid Items 300 - 327 (PAVING): The various bid items for PAVING shall include all asphalt, base, subgrade, shell, curbing, sidewalks, concrete pads/pavement, pervious concrete pavement, concrete surfaces, handicap ramps, detectable warning strips, rumble strips, removal and milling of existing roadway, dumpster pad/enclosure/gates, wheel stops, signage and striping, maintenance of traffic, and adjustments to existing utility boxes/pads. **This section includes preparation of traffic control plans as required for maintenance of traffic, as well as full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.**

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MEASUREMENT AND PAYMENT

Bid Items 400 - 413 (EARTHWORK): The various bid items for EARTHWORK shall include all finished grading, clearing and grubbing, hauling and stockpiling of excess suitable fill material (including the preparation and submittal of a surveyed as-built of the stockpile area), excavation of stormwater management areas, berm construction, swales, littoral zone plantings, tree barricades, tree root protection measures, and best management practices controls (installation, inspection, and removal). The best management practices controls shall include the preparation of a Stormwater Pollution Prevention Plan (SWPPP) and implementation of the SWPPP and temporary dewatering activities (if needed).

The stockpile of excess suitable fill material shall not exceed 6 feet in height and slopes shall not exceed 4:1. The contractor shall install silt fence around the entire perimeter of the stockpile. The contractor's surveyor shall also provide signed and sealed as-builts of the stockpile area (cross sections and spot elevations) inclusive of an estimated volume of stockpiled suitable fill material. All work described in this paragraph shall be included as part of Bid Item #402 as indicated on the Bid Form.

This section also includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.

Bid Items 500 - 520 (LANDSCAPE): The various bid items for LANDSCAPE shall include all trees, palms, shrubs, and groundcover materials. **This section also includes the preparation/installation of planting soil as required per the plans and specifications for all planting/groundcover materials, as well as full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.**

Bid Items 600 - 607 (SITE LIGHTING): The lump sum pay item for SITE LIGHTING shall include all poles, fixtures, shielding, wiring, conduits, switches, panels, circuits, grounding systems, structural design of pole bases (including signed and sealed structural drawings), signed and sealed as-builts, connection to existing control panel, and all appurtenances needed to construct the complete site lighting system per the contract documents, plans, and specifications. **This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with this bid item in accordance with the contract documents, plans, and specifications.**

Bid Items 700 - 701 (FLOATING DOCK AND DECK): The lump sum pay items for FLOATING DOCK AND DECK shall include all poles, piles, float sections, removal/relocation of existing gangway, removal of existing steel/PVC poles, anchors, chains, wood deck materials, signed and sealed structural design calculations/design plans for the wood deck, compliance with the construction guidelines included the USACE permit conditions, signed and sealed as-builts per USACE permit conditions, and all hardware/appurtenances needed to construct the complete floating dock and deck system per the contract documents, plans, and specifications. **This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with the bid items in accordance with the contract documents, plans, and specifications.**

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Manatee County, Florida

MEASUREMENT AND PAYMENT

Bid Items 800 - 805 (MISCELLANEOUS): The various pay items for MISCELLANEOUS shall include construction survey/stakeout/foundation survey/record survey/record drawings, mobilization, miscellaneous permits not already obtained by the County, bonding required per the contract documents, nuisance and exotic species removal per county requirements, automated entry gates, fencing, and gates. The contractor shall also provide signed and sealed plans and calculations as needed to obtain any permits required through the Manatee County Building Department. This section also includes the final design of the automated entry gates and key pad/knox-box systems, including the electrical service/conduits to the entry gates and access control sensors. **This section includes full compensation for furnishing all labor, materials, tools, equipment, testing, restoration, and incidentals and for doing all the work involved with these bid items in accordance with the contract documents, plans, and specifications.**

**PART II – TECHNICAL SPECIFICATIONS
(SITE WORK)**

**SECTION 01001
SUPPLEMENTARY TECHNICAL SPECIFICATIONS**

PART 1 GENERAL

1.01 SUMMARY

- A. This section includes Supplementary Technical Specifications, which amend or supplement the technical specifications of these Contract Documents. All specifications not amended or supplemented remain in full force and effect.

1.02 ADDITIONS

- A. Section 01411, Testing Services (Provided by Contractor)
 - 1. Add to the first paragraph under 4.01.B: Testing reports shall be provided with each Application for Payment request made by the CONTRACTOR. The testing reports shall include all required testing results for each requested pay item. The ENGINEER and/or COUNTY may withhold payment of pay items if passing testing reports are not provided.

1.03 MODIFICATIONS

- A. Section 02911, Asphaltic Concrete
 - 1. Paragraph 3.01.D: FM1-T166 shall be replaced with ASTM D1559

PART 2 SPECIAL PROVISIONS

These Special Provisions amend or supplement the contract documents and are intended to set forth conditions and requirements that are unique for this project. All other provisions not amended or supplemented shall remain in full force and effect. In case of a discrepancy, these Special Provisions shall govern over any other written specification or drawing.

- SP-1 The CONTRACTOR shall be responsible for the preparation and submittal of the NPDES permit and EPA Discharge Elimination Permit. The CONTRACTOR shall provide Stormwater Pollution Prevention Plan to ENGINEER and OWNER prior to commencing construction. The CONTRACTOR shall be responsible for the implementation of the NPDES and related stormwater pollution prevention plan for the duration of the project. Upon completion, the CONTRACTOR shall prepare and submit the Notice of Termination to the FDEP, remove all temporary stormwater management measures, and dispose of them as required.
- SP-2 The CONTRACTOR shall provide accurate, detailed, and complete (signed and sealed) record drawings, mylars, and a CD containing AutoCAD files of all record drawing sheets to the ENGINEER. The record drawings shall be signed and sealed by a Florida registered land surveyor. The record drawings shall meet the requirements of SWFWMD, MANATEE COUNTY, and the USACE and shall be included in the cost of the project.
- SP-3 The CONTRACTOR shall be responsible for obtaining any required temporary dewatering permits through the Florida Department of Environmental Protection (FDEP) and shall provide copies to the OWNER and ENGINEER.

- SP-4 The CONTRACTOR must have the all approved permits readily available at the job site prior to beginning construction. The CONTRACTOR shall be responsible for adhering to all applicable permit conditions. The CONTRACTOR is responsible for obtaining all local, state and federal construction permits not furnished by the COUNTY/ENGINEER, including any right-of-way use permits that may be necessary.
- SP-5 The CONTRACTOR shall be responsible for calling Sunshine State One to obtain information on existing utilities in project vicinity. The CONTRACTOR shall notify and cooperate with utility companies and agencies when the CONTRACTOR's operations are close to existing facilities in order to provide time for the utilities to stake the location of their existing facilities. The CONTRACTOR shall cooperate with the utility company and provide schedules, etc., when requested.

The drawings may or may not indicate the presence of existing utilities or facilities in the project area. Existing above or underground utilities, structures, or facilities that are shown on the plans are based on best information made available to the ENGINEER. The existing facilities may be in locations different than those shown on the drawings. It shall be the responsibility of the CONTRACTOR to acquaint himself with the exact location and to avoid conflict with all existing facilities. Where underground or aboveground utilities, structures, or facilities are damaged, they shall be immediately repaired to the specifications of the owner of the utility. If the owner of the utility elects to make such repairs with his own forces, CONTRACTOR shall make arrangements as to protect the COUNTY from all damages. Where such conflicts are unavoidable, every effort shall be made to construct the work so as to cause as little interference as possible with services rendered by the structure disturbed.

- SP-6 The CONTRACTOR shall follow the site preparation recommendations provided in the "Geotechnical Exploration" report prepared by Universal Engineering Sciences, Inc. dated October 18, 2010 for this project.
- SP-7 Measurement and payment for the Mobilization Bid Item shall include full compensation for the required 100 percent (100%) Performance Bond, 100 Percent (100%) Payment Bond, all required insurance for the project, and any permits not already obtained by the County. This may include those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, safety equipment and first aid supplies, and sanitary and other facilities/utilities. The mobilization pay item also includes demobilization of all equipment, personnel, supplies and incidentals from the project site upon final completion. Payment for mobilization shall not exceed 10 percent (10%) of the total Contract cost unless the Contractor can prove to the County that his actual mobilization cost exceeds 10 percent (10%). The basis of payment for all work associated with Mobilization shall be paid for under the Lump Sum Pay Item and in accordance with the following schedule:

Percent of Total Contract Amount Earned	Allowable Percent of the Lump Sum Price for Mobilization
5	25
10	50
25	75
100	100

END OF SECTION 01001

**SECTION 01050
SURVEYING (PROVIDED BY CONTRACTOR)**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Survey requirements for the project.

1.02 QUALITY CONTROL

- A. Employ a Land Surveyor registered in the State of Florida and acceptable to ENGINEER and OWNER to perform survey functions in this section.

1.03 SUBMITTALS

- A. Submit name, address, and telephone number of Surveyor before starting survey work.
- B. On request, submit documentation verifying accuracy of survey work.
- C. Submit a copy of registered site drawing and certificate signed by the Land Surveyor that the elevations and locations of the work are in conformance with Contract Documents.

1.04 PROJECT RECORD DOCUMENTS

- A. Maintain a complete and accurate log of control and survey work as it progresses.

1.05 EXAMINATION

- A. Verify locations of survey control points and reference points prior to starting work.
- B. Promptly notify ENGINEER of any discrepancies discovered.

1.06 SURVEY REFERENCE POINTS

- A. CONTRACTOR shall locate and protect survey control and reference points.
- B. Control datum for survey is that indicated on drawings.
- C. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- D. Promptly report to ENGINEER the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.
- E. The Registered Surveyor shall replace dislocated survey control points based on original survey control. Make no changes without prior written notice to ENGINEER.

1.07 SURVEY REQUIREMENTS

- A. Provide field engineering services. Utilize recognized engineering survey practices.
- B. Establish a minimum of two permanent benchmarks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.
- C. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
 - 2. Grid or axis for structures.
 - 3. Building foundation, column locations, and ground floor elevations.
- D. Periodically verify layouts by same means.

1.08 SURVEYS FOR MEASUREMENT AND PAYMENT

- A. Perform surveys to determine quantities of unit cost work, including control surveys to establish measurement reference lines. Notify ENGINEER prior to starting work.
- B. CONTRACTOR's Surveyor shall sign field notes or keep duplicate field notes.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. The cost of the work specified in this section shall be included in all the various pay items or work items described in the schedule and no separate payment will be made, unless a separate pay item is established in the Contract Documents.

END OF SECTION 01050

SECTION 01300 SHOP DRAWINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop drawing submittal procedures.

1.02 PROCEDURES

- A. Deliver a minimum of six copies of submittals to ENGINEER at address listed on cover sheet of specifications. Distribution is two copies for the ENGINEER, two copies for the OWNER and two copies returned to the CONTRACTOR. If additional copies are required by the CONTRACTOR, they shall submit them.
- B. Transmit each item under ENGINEER-accepted form. Identify Project, CONTRACTOR, Subcontractor, and major supplier. Identify pertinent drawing sheet and specification section number as appropriate. Identify deviations from contract documents. Approve all submittals prior to forwarding to ENGINEER by stamping and signing approval stamp. Provide space for CONTRACTOR and ENGINEER review stamps.
- C. After ENGINEER review of submittal, revise and resubmit as required, identifying changes made since previous submittal.
- D. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.
- E. Prior to any submittals, a Schedule of Shop Drawings must be submitted and approved by ENGINEER.

PART 2 PRODUCTS

2.01 SHOP DRAWING SUBMITTAL

- A. All Precast Structures, Frames, Grates, and Covers
- B. Non-Pressure and Pressure Pipe, Fittings, and Appurtenances (including irrigation)
- C. Concrete Pipe, Joints, Connections
- D. Concrete, Base, Asphalt Mix Design
- E. Entry Gate
- F. Floating Dock
- G. Fencing
- H. Dumpster Enclosure

- I. All Site Lighting/Electrical Components

PART 3 **EXECUTION**

Not Used

PART 4 **MEASUREMENT AND PAYMENT**

- A. The cost of the work specified in this section shall be included in all the various pay items or work items described in the schedule and no separate payment will be made unless a separate pay item is established in the Contract Documents.

END OF SECTION 01300

**SECTION 01310
PROGRESS SCHEDULES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Scheduling requirements, including submittal and revision procedures.

1.02 FORMAT

- A. Unless otherwise specified, the CONTRACTOR shall submit a schedule of activities in either of the forms listed below:
 - 1. A horizontal bar chart (minimum sheet size 24" x 36") with separate bar for each major work item. The time sequence shall be designated horizontally at the top of the chart in weeks, months and years. The position of each activity bar shall indicate the work period from beginning to the end of each activity work period.
 - 2. A logic diagram or CPM of all activities showing description, duration, early and late start/finish dates, predecessors, successors, and float time.

1.03 CONTENT

- A. The list of activities shall represent the complete scope of the project and shall be subject to approval by the OWNER's representative.
- B. Show complete sequence of construction by activity, with dates for beginning and completion of each activity listed.

1.04 REVISIONS TO SCHEDULES

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Show accumulated percentage of completion of each activity, and total percentage of work completed as of the Application for Payment date.
- C. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- D. Provide narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken, or proposed, and its effect.

1.05 SUBMITTALS

- A. Submit preliminary outline schedules within 15 days after date of OWNER-CONTRACTOR Agreement for coordination with OWNER's requirements. After review, submit detailed schedules within 15 days, modified to accommodate revisions recommended by ENGINEER.

- B. Submit revised progress schedules with each Application for Payment.

1.06 SUBMITTAL

- A. Submit six copies of schedules to ENGINEER.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. The cost of the work specified in this section shall be included in all the various pay items or work items described in the schedule and no separate payment will be made, unless a separate pay item is established in the Contract Documents.

END OF SECTION 01310

**SECTION 01411
TESTING SERVICES
(PROVIDED BY CONTRACTOR)**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Responsibilities of the CONTRACTOR, OWNER, and Testing Laboratory regarding specified tests.
- B. Report specifications.

1.02 SELECTION AND PAYMENT

- A. Unless otherwise stated in the Contract Documents, the CONTRACTOR will select and pay for the services of an independent testing laboratory to perform tests required by the technical specifications.
- B. Cost of retests due to failures shall be paid for by the CONTRACTOR in the form of a deduction from the contract amount.
- C. Utilization of a testing laboratory shall in no way relieve the CONTRACTOR of any obligation to perform work in accordance with the requirements of the Contract Documents.

1.03 SCHEDULING TESTS

- A. The CONTRACTOR will furnish the name of the testing laboratory to the OWNER at the preconstruction conference.
- B. The CONTRACTOR shall be responsible for scheduling each test by notifying the designated laboratory 24 hours prior to the time the test is to be taken.
- C. The specific requirements, including the type and amount of testing, shall be in accordance with the technical specifications or as otherwise stated in the Contract Documents.
- D. Ample time shall be allowed for the testing process by the CONTRACTOR, since an extension of time will not be allowed for testing delays or retests due to failures.

1.04 QUALITY ASSURANCE

- A. All tests shall be performed by qualified personnel under the direction and control of a Professional Engineer registered in the State of Florida and specializing in Geotechnical or Material analysis as applicable.
- B. In addition to the tests required by the Contract Documents, the OWNER's Representative may direct the testing laboratory to take any other tests or material inspections that he feels necessary to achieve the quality of construction that is specified in the Contract Documents.

1.05 LABORATORY RESPONSIBILITIES

- A. Perform inspection, sampling, and testing in accordance with the Contract Documents.
- B. Provide qualified personnel to perform all phases of required services and cooperate with OWNER's Representative and CONTRACTOR in the performance of those services.
- C. Ascertain compliance of materials and related procedures with requirements of the Contract Documents.
- D. Promptly notify the CONTRACTOR and the OWNER's Representative of any irregularities or non-conformance of work, materials, or product.
- E. Perform additional inspections or tests requested by the OWNER's Representative.
- F. Attend pre-construction conferences and progress meetings.

1.06 LABORATORY REPORTS

- A. After each inspection or test, promptly submit a laboratory report to the OWNER, the OWNER's Representative, and the CONTRACTOR.
- B. The report shall include the following:
 - 1. Date of report.
 - 2. Project title and number.
 - 3. Date, time, and location of each sample extraction or inspection.
 - 4. Identification of material and method of test.
 - 5. Results of tests.
 - 6. Evaluation of conformance to contract specifications.
 - 7. Notification of retest requirement due to test failure.
 - 8. Site map showing testing locations.
 - 9. At the completion of construction the testing firm shall provide a certification signed and sealed by a professional engineer licensed in the state of Florida, certifying that the testing program has been completed in accordance with the project specifications and that the completed project complies with the testing criteria contained in the project plans and specifications.

1.07 LIMITS ON TESTING LABORATORY AUTHORITY

- A. Laboratory may not release, revoke or alter the requirements of the Contract Documents.

- B. Laboratory may not approve or accept any portion of the work.
- C. Laboratory may not assume any duties of the CONTRACTOR.
- D. Laboratory has no authority to stop the work.

1.08 CONTRACTOR RESPONSIBILITIES

- A. Submit proposed mix designs and samples of proposed materials to the designated laboratory as required by the Contract Documents or as requested by the OWNER's Representative.
- B. Provide access to the site for any tests or inspections.
- C. Provide labor and facilities to obtain, handle, store, and cure test samples and to facilitate material inspection.
- D. Cooperate with laboratory personnel to maximize the efficiency of the testing procedure by periodically updating the construction schedule and adhering to the 24-hour advance notice requirement for tests.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. In accordance with Article 1.02, Selection and Payment, this section.
- B. Testing Services (Provided by CONTRACTOR)

Where no separate pay item for Testing Services (provided by CONTRACTOR) is established in the Contract Documents, the cost of all such work specified in this section shall be included in the prices for the other pay items which are included in the contract and no additional compensation will be allowed.

When an item of Testing Services (provided by CONTRACTOR) is included in the Contract Documents, the lump sum price and payment for such item shall be full compensation for all work and costs specified in this section except as may be specifically covered for payment under other items.

END OF SECTION 01411

**SECTION 01510
TEMPORARY UTILITIES AND CONTROLS**

PART 1 GENERAL

1.01 REQUIREMENTS

- A. Furnish, install, maintain and remove temporary utilities required for construction. See other sections for additional utilities coordination.

1.02 TEMPORARY TRAILER LOCATION

The CONTRACTOR shall obtain approval from the OWNER for any proposed temporary trailer (office) location on site.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code.
- B. Comply with federal, state and local codes and regulations and with utility company requirements.
- C. Comply with County Health Department Regulations.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with utility company and OWNER to provide service required for power and lighting, and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the OWNER as stipulated by the ENGINEER.
- B. Install circuit and branch wiring, with area distribution boxes located so that power and lighting are available throughout the construction by the use of construction type power cords.
- C. Provide adequate artificial lighting for all areas of work when natural light is not adequate for work, and for areas accessible to the public.

2.03 TEMPORARY HEAT AND VENTILATION

- A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the work, to meet specified minimum conditions for the

installation of materials, and to protect materials and finishes from damage due to temperature or humidity.

- B. Provide adequate forced ventilation of enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors or gases.
- C. Portable heaters shall be standard approved units complete with controls.
- D. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.
- E. Provide connections to existing facilities, extend and supplement with temporary units as required to comply with requirements. Pay all costs of installation, maintenance, operation and removal.

2.04 TEMPORARY TELEPHONE SERVICE

- A. Arrange with local telephone service company.
- B. Pay all costs for installation, maintenance and removal, and service charges.

2.05 TEMPORARY WATER

- A. Provide and pay for all required water for construction and consumptive purposes.
- B. CONTRACTOR may utilize existing on-site water supply system for water needed for construction purposes. However, all water used shall be coordinated with the utility company. A temporary meter may be required.
- C. Temporary potable water piping shall be chlorinated prior to use to remove bacteriological contaminants.

2.06 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations.
- B. Service, clean and maintain facilities and enclosures.

2.07 EROSION AND PROPERTY CONTROL

- A. Flow of drains and sewers maintained: Adequate provisions shall be made for the flow of sewers, drains and water courses encountered during construction, and the lines and structures which may have been disturbed shall be immediately restored to their original condition at the expense of the CONTRACTOR.
- B. Property Protection: Trees, grass, fences, signboards, poles and all other property shall be protected unless their removal is authorized; and any property damage shall be satisfactorily restored by the CONTRACTOR and at the expense of the CONTRACTOR.

- C. Provide all means necessary for prevention, control and abatement of erosion, siltation and water pollution resulting from construction until final acceptance by OWNER. Provide for mulching, sodding, sandbagging, berms, slope drains, sedimentation structures, or other devices necessary to meet county, state and federal regulation.

2.08 CLEANING DURING CONSTRUCTION

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.
- B. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

2.09 CHEMICALS, HAZARDOUS WASTES, AND PETROLEUM PRODUCTS

- A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions or government regulations as applicable. The CONTRACTOR shall legally dispose of and clean the project site of all chemicals, hazardous wastes, and petroleum products placed or used on the site by the CONTRACTOR.

PART 3 EXECUTION

3.01 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required as determined by the ENGINEER.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities.
- C. Restore permanent facilities used for temporary services to specified condition.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of temporary utilities and control shall be included in the various lump sum and unit prices in the contract.

END OF SECTION 01510

**SECTION 01600
MATERIAL AND EQUIPMENT**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This section provides general guidelines for products provided, including their transportation and handling, storage and protection, options, substitutions and systems demonstration.

1.02 SUBSTITUTIONS

- A. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- B. Request constitutes a representation that CONTRACTOR:
 - 1. Has investigated proposed product and determined that it meets or exceeds, in all aspects, specified product.
 - 2. Will provide the same warranty for substitution as for specified product.
 - 3. Will coordinate installation and make other changes which may be required for work to be complete in all respects.
 - 4. Waives claims for additional costs which may subsequently become apparent.
- C. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, or when acceptance will require substantial revision of Contract Documents.
- D. ENGINEER will determine acceptability of proposed substitution, and will notify CONTRACTOR of acceptance or rejection in writing within a reasonable time.

PART 2 PRODUCTS

- 2.01** Only new materials and equipment shall be incorporated in the work. All material and equipment furnished by CONTRACTOR shall be subject to inspection and approved by ENGINEER.
- 2.02** Comply with specifications and referenced standards as minimum requirements.
- 2.03** Components required to be supplied in quantity within a specification section shall be the same, and shall be interchangeable.
- 2.04** Products specified by reference standards or by description only: Any product meeting those standards.
- 2.05** Products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not specifically named.

PART 3 EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

3.02 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated products, place on sloped supports above ground. Cover products subject to deterioration with weather-tight enclosure as recommended by manufacturer. Provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area. Prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- E. Materials, which in the opinion of the ENGINEER, have become so damaged as to be unfit for the use intended or specified shall be removed from the site of the work. CONTRACTOR shall receive no compensation for the damaged material or its removal.

3.03 SYSTEMS DEMONSTRATION

- A. Prior to final inspection, demonstrate operation of each system to ENGINEER and OWNER.
- B. Instruct OWNER's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. The cost of the work in this section shall be included in all the various pay items or work items described in the schedule and no separate payment will be made, unless a separate pay item is established in the Contract Documents.

END OF SECTION 01600

**SECTION 01650
WETLANDS AND NATIVE VEGETATION
PRESERVATION & CONSERVATION AREAS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for performing work near or adjacent to wetlands or native vegetation preservation and conservation areas.

1.02 PERMITS AND REGULATIONS

- A. The CONTRACTOR shall read and understand all aspects of the environmental permits issued for the project, including requirements of the special conditions contained therein. The CONTRACTOR shall be responsible for compliance with all conditions of the permits which relate to construction activities or construction impacts.
- B. The CONTRACTOR shall be responsible for compliance with all applicable federal, state and local environmental rules and regulations pertaining to construction of the project.
- C. The CONTRACTOR shall be responsible to erect all required erosion control devices (BMPs) prior to major clearing adjacent to wetlands/preservation areas. The jurisdictional agencies shall be notified by the CONTRACTOR to review and approve the erosion control devices (BMPs) prior to land clearing.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of complying with this section of the specifications shall be included in the various lump sum and unit prices in the contract.

END OF SECTION 01650

**SECTION 01675
PRE-CONSTRUCTION VIDEO RECORD**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for pre-construction color audio-video.

1.02 SCOPE

- A. Prior to commencing work, take a continuous color audio-video tape OR DVD recording along entire length of Project to serve as a record of pre-construction conditions.

1.03 APPROVAL

- A. NO CONSTRUCTION SHALL BEGIN prior to submittal of tapes or DVDs covering construction area by CONTRACTOR. ENGINEER shall have authority to reject all or any portion of a video not conforming to specifications and order that it be redone at no additional charge. CONTRACTOR shall reschedule unacceptable coverage within five days after being notified. All tapes or DVDs and written records shall become property of the OWNER.

PART 2 PRODUCTS

2.01 AUDIO-VIDEO TAPES OR DVDs

- A. Audio-video tapes or DVDs shall be new. The video shall be high grade DVD or, one-half inch high energy, extended still frame capable, a VHS, color video cassette for a color video cassette recorder.

PART 3 EXECUTION

3.01 EQUIPMENT

- A. Furnish all equipment, accessories, materials and labor to perform this service. Audio-video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions.

3.02 RECORDED INFORMATION - AUDIO

- A. Each video shall begin with current date, project name and OWNER and followed by general location, i.e., name of street, house address, viewing side and direction of progress. Recording shall contain the narrative commentary of electrographer, recorded simultaneously with their fixed elevation video record of the zone of influence of construction.

3.03 RECORDED INFORMATION - VIDEO

- A. All video recordings must display the date and time of recording. Date information shall contain the month, day and year. Time information shall contain the hour and minutes. Additional information shall be displayed periodically. Such information shall include, but not be limited to, project name and number, name of street, house address, direction of travel and the viewing side. This transparent information shall appear on the extreme upper left hand third of the screen.

3.04 LIGHTING

- A. Perform all videoing during times of good visibility. No videoing shall be done during precipitation, mist or fog.

3.05 SPEED OF TRAVEL

- A. Rate of speed in the general direction of travel of the vehicle used during videoing shall not exceed 75 feet per minute. Planning, zoom-in and zoom-out rates shall be sufficiently controlled to maintain a clear view of the object.

3.06 AREA OF COVERAGE

- A. Video coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, ditches, mailboxes, landscaping, culverts, fences, signs, headwalls and trees that are contiguous or tree limbs that overhang onto the area of proposed construction activity.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of the pre-construction video shall be included in the various lump sum and unit prices in the contract.

END OF SECTION 01675

**SECTION 01700
CONTRACT CLOSE-OUT**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements and procedures for Contract Closeout.

1.02 CLOSE-OUT PROCEDURES

- A. Comply with procedures stated in General Conditions of the contract for issuance of Certificate of Substantial Completion.
- B. When CONTRACTOR considers work has reached final completion, submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for ENGINEER's inspection.
- C. In addition to submittals required by the conditions of the contract, provide submittals required by governing authorities, and submit a final statement of accounting giving total adjusted contract sum, previous payments, and sum remaining due.
- D. When ENGINEER finds the work is acceptable for final acceptance, close-out documents shall be submitted.

1.03 FINAL CLEANING

- A. Execute prior to final inspections.
- B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces. Clean equipment and fixtures to a sanitary condition. Clean or replace filters of mechanical equipment. Clean roofs, gutters, downspouts, and drainage systems.
- C. Clean site, sweep paved areas, rake clean other surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the project and from the site.

1.04 PROJECT RECORD DOCUMENTS

- A. Store documents separate from those used for construction.
- B. Keep documents current; do not permanently conceal any work until required information has been recorded.
- C. At Contract close-out, submit documents with transmittal letter containing date, project title, CONTRACTOR's name and address, list of documents, and signature of CONTRACTOR.

1.05 WARRANTIES AND BONDS

- A. Provide duplicate, notarized copies. Execute CONTRACTOR's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- B. Submit material prior to final application for payment. For equipment put into use with OWNER's permission during construction, submit within 30 days after first operation. For items of work delayed materially beyond date of substantial completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.06 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, and maintenance materials in quantities specified in each section, in addition to that used for construction of work. Delivery to OWNER and obtain receipt prior to final payment.

1.07 EVIDENCE OF PAYMENT AND RELEASE OF LIENS

- A. Submit complete and legally effective releases or waivers of all liens filed in connection with the work in compliance with Contract Documents.

1.08 FINAL APPLICATION FOR PAYMENT

- A. Submit final application for payment in accordance with procedures and requirements stated in the Contract Conditions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of complying with this section of the specifications shall be included in the various lump sum and unit prices in the contract.

END OF SECTION 01700

**SECTION 01730
OPERATION AND MAINTENANCE DATA**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Format and content of manuals.
- B. Instruction of OWNER's personnel.
- C. Schedule of submittals.

1.02 QUALITY ASSURANCE

- A. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

1.03 FORMAT

- A. Prepare data in the form of an instructional manual.
- B. Binders: Commercial quality, 8½ x 11 inch three-ring binders with hardback, cleanable, plastic covers. When multiple binders are used, correlate data into related consistent groupings.
- C. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; list title of project identify subject matter of contents.
- D. Arrange content by systems under section numbers and sequence of Table of Contents of this project manual.
- E. Provide tabbed flyleaf for each separate product and system, with typed description of product and major component parts of equipment.
- F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold large drawings to size of text pages.

1.04 CONTENTS, EACH VOLUME

- A. Table of Contents: Provide title of project; names, addresses, and telephone numbers of ENGINEER, sub-consultants, and CONTRACTOR with name of responsible parties; schedule of products and systems, indexed to content of the volume.
- B. For each Product or System: List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- C. Product Data - Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

- D. Drawings - Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

1.05 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: As specified in individual product specification sections.

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- B. Panelboard Circuit Directories: Provide electrical service characteristics, controls and communications.
- C. Include color-coded wiring diagrams as installed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.

- K. Provide CONTRACTOR's coordination drawings, with color-coded piping diagrams as installed.
- L. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- M. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

1.07 INSTRUCTION OF OWNER PERSONNEL

- A. Before final inspection, instruct OWNER's designated personnel in operation, adjustment, and maintenance of products, equipment, and systems. A minimum of two man-days shall be provided.
- B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with personnel in detail to explain all aspects of operation and maintenance.
- C. Prepare and insert additional data in Operation and Maintenance Manual when need for such data becomes apparent during instruction.

1.08 SUBMITTALS

- A. Submit four copies of preliminary draft or proposed formats and outlines of contents before start of work. ENGINEER will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by OWNER, submit documents within ten days after acceptance.
- C. Submit four copies of revised volumes of data in final form within ten days after final inspection.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of providing operation and maintenance data shall be included in the various lump sum and unit prices in the contract.

END OF SECTION 01730

**SECTION 02480
LANDSCAPE WORK**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and provisions of the Contract, including Contract Conditions, Division -1 Specification Sections, apply to work of this section.

1.02 SCOPE

- A. Provide all plants, materials, tools, equipment, labor, and services necessary to complete the landscape work and related work as indicated on the drawings and in these specifications.
- B. Grade Elevations: Excavation, filling and grading will be as specified on the related documents. Finished or fine grading is specified herein.

1.03 RELATED WORK

- A. Section 02817 - Clearing and Grubbing
- B. Section 02810 - Irrigation System
- C. Section 02485 - General Landscape Sodding
- D. Section 02487 - Bermuda Sprigging
- E. Section 02116 - Removal of Invasive Plants
- F. Section 02122 - Plant and Habitat Protection
- G. Section 02484 - Wetland Mitigation, Restoration & Littoral Zone Planting

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall be a firm specializing in landscape work with not less than five (5) years of experience installing landscape work on projects similar in size and scope to this project.
- B. The CONTRACTOR, as part of their bid, will list not less than six (6) projects completed by their company of similar size and scope to the work specified herein. The six (6) or more projects will be listed by project, name, location, owner's name and phone number, and the total paid cost of work executed. The listed projects will be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any CONTRACTOR's bid which either does not respond to this condition or does not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- C. General: Ship landscape materials with certificates of inspection required by governing authorities. Comply with regulations applicable to landscape materials.
- D. Grades and Standards: All plant material furnished by the CONTRACTOR unless otherwise specified shall be Florida No. 1 or better in accordance with the most recent edition; "Grades and Standards for Nursery Plants", parts 1 and 2, published by Florida Department of Agriculture, Division of Plant Industry, Gainesville, Florida. Provide healthy, vigorous stock, grown in recognized nursery standards in accordance with good horticultural practice and free of disease, insects, eggs, larvae and defects such as knots, sun-scald, injuries, abrasions, or disfigurement. Specialty or accent plant material as noted on the drawings or in the plant list shall be Florida Fancy as defined by said standards.

- E. Analysis and Standards: Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
- F. Verification: The CONTRACTOR shall provide photographic evidence or videocassette of a representative example of all plant material specified on this project. Other specialty plant material may require individual and specific photographs as noted on the drawings.
- G. Source: The CONTRACTOR will provide the name, address, and phone number of all nursery stock dealers or plant material sources providing material for the project. The CONTRACTOR shall submit certification or verification of source or purchase prior to delivery to the site. Approved equals will only be considered prior to bid opening and notified via addenda.
- H. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

1.05 JOB CONDITIONS

- A. Examination of the Site:
 - 1. The bidder must acknowledge that they have examined the site, plans and specifications. The submission of a quotation will be considered evidence that examinations have been made.
 - 2. The bidder will verify availability of materials prior to submittal of bid. Submission of a bid will be considered confirmation of availability of specified material.
- B. Field Conditions: The CONTRACTOR will verify drawing dimensions with actual field conditions and inspect related work and adjacent surfaces. The CONTRACTOR will report to the LANDSCAPE ARCHITECT all conditions which prevent proper execution of this work.
- C. The CONTRACTOR shall be responsible for determining the exact size, type, and location of all utilities, services, irrigation, and other underground or overhead appurtenances prior to commencing work. The CONTRACTOR agrees to be fully responsible for any damages which may be occasioned by their failure to locate any or all said utilities, services, and appurtenances at the expense of the CONTRACTOR.
- D. The CONTRACTOR will verify the accuracy of all finish grades within the work area. Maintain grade stakes set by others until removal is mutually agreed upon by parties concerned.
- E. Excavation: Should any objectionable material, such as concrete, limerock, bricks, roots or other debris, be encountered during landscape operations, they will be removed from the site and legally disposed of by the CONTRACTOR. All open excavations will be properly barricaded and lighted at night.

1.06 SUBMITTALS

- A. Certification: Submit certificates of inspection as required by governmental authorities. Submit manufacturer's or vendors certified analysis for soil amendments and fertilizer materials.

- B. Planting Schedule: Submit a planting schedule, indicating the dates of installation anticipated for this project. Once accepted, revise dates only as approved in writing by the LANDSCAPE ARCHITECT, after documentation of reasons for delay.
- C. The following submittals, defined more specifically in their relative paragraphs herein, are required to be approved by the LANDSCAPE ARCHITECT prior to the authorization or acceptance of any work. The submittals are, but not limited to:
 - 1. Manufacturer's or vendor's certified analysis for soil amendments and fertilizer.
 - 2. Plant material source.
 - 3. Mulch certification or sample.
 - 4. Itemized material cost breakdown.
 - 5. Topsoil and backfill analysis.
 - 6. Representative material photos or video.
 - 7. Certification of herbicides and pesticides.
- D. The following submittals, defined more specifically in their relative paragraphs herein, are required to be approved by the LANDSCAPE ARCHITECT prior to Final Acceptance. The submittals are, but not limited to:
 - 1. Maintenance Instructions: Provide typewritten instructions recommending procedures for maintenance over a one-year period. Submit prior to and in condition of Final Acceptance.
 - 2. Warranty.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.
- B. Protection During Transportation: All plant material will be protected from foliage and bark injury or breakage of branches. All plants transported by open trucks will be adequately covered to prevent windburn, drying or damage to plants. All palm trunks will be adequately supported so as not to damage their root balls or buds.
- C. Trees and Shrubs: Trees to be balled and burlapped shall be root pruned in advance, in accordance with good horticultural practice. Number and timing of root prunings may vary with species. Provide freshly dug trees and shrubs. Do not prune prior to delivery unless otherwise approved by Landscape Architect. Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery.
- D. Root Protection: Balled and burlapped plants (B&B) shall be dug with firm natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls shall be firmly wrapped with burlap or similar materials and bound with twine, cord or wire mesh. All collected plants shall be balled and burlapped. If balled plants are dropped or otherwise mishandled, or if the balling materials are broken prior to planting, the plant may be rejected by the Landscape Architect.

- E. Protection of Palms: Only a minimum of fronds shall be removed from the crown of the palm to facilitate moving and handling. Sabal palms shall have a minimum of eight fronds remaining and tied to protect the bud unless otherwise specified. Base sucker growth fronds shall be trimmed back to allow for easier handling, however, no stems should be cut off unless authorized by the LANDSCAPE ARCHITECT. Clear trunk (c.t.) measurement shall be as specified after the fronds have been removed. Sabal Palm boots and burns shall be removed except as otherwise directed. Cabbage palms shall be taken from moist soils. All single trunk palms shall be triple braced and staked with new, clean lumber at least six feet in length, to resist tree displacement. (See Planting Details.) All moving of palms shall be in accordance with the provisions for Heavy Trunk Palms, as described in "Florida Grades and Standards for Nursery Plants", Part II. All palms shall be tied and/or braced to protect the bud(s).
- F. Container Grown Plants: Plants grown in containers will be accepted as "B&B" providing that all other specified requirements are met. Container grown plants shall meet plant sizes as specified on the plant list and on the plans, and shall not be governed by container sizes. Minimum root balls of container grown material shall be no more than 25% less proportionately in size than that stated in "Grades & Standards" for nursery plants. Plants shall exhibit a fully developed root system when removed from the container.
- G. Use of Anti-desiccant: At any time between the delivery and installation of plant material exposed to wind, sun, or drying conditions, plant material will be treated with the anti-desiccant specified, in accordance with the manufacturer's directions. Wilting, drying or sunscald will be considered reason for plant rejection.
- H. Care will be taken to protect and properly handle balled and burlapped stock during delivery and installation. If balled plants are dropped or otherwise mishandled, or if the root balls are broken prior to planting, the plant may be rejected by LANDSCAPE ARCHITECT.
- I. Deliver field grown trees, palms, and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than four hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist by covering with mulch, burlap or other acceptable means of protection from drying wind and sun. All plants will be watered as necessary until planted. Storage period will not exceed 72 hours. The CONTRACTOR will assume responsibilities for unplanted materials on site at all times and under any circumstances.
- J. Do not prune trees or shrubs prior to delivery unless otherwise approved by LANDSCAPE ARCHITECT. Do not bend or bind-tie trees or shrubs in such manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. Do not drop balled and burlapped stock during delivery or installation.
- K. Cleanup: The CONTRACTOR will keep the premises free from accumulation of waste material, soil, and/or rubbish caused by their employees or work. CONTRACTOR will arrange their material storage so as to not interfere with the operation of the project. CONTRACTOR will clean behind their work immediately and will take necessary precautions to keep concrete, brick and other paving material clean of soil. This will include the use of drop-cloths, etc. Damage to grades or lawns will be repaired immediately and all debris and excess soil removed from the site. Should the CONTRACTOR fail to keep the premises in a clean satisfactory condition, the OWNER reserves the right to hire appropriate personnel to perform clean-up work and back charge the CONTRACTOR for all costs incurred.
- L. Do not remove container-grown stock from containers until time of installation.

1.08 MAINTENANCE

- A. Begin maintenance of plants upon delivery to the site. All plants will be maintained by the CONTRACTOR until final acceptance or by special maintenance agreement as specified or indicated in the Contract Documents. Maintenance by the CONTRACTOR through Final Acceptance shall include all measures necessary to assure a clean appearance and survivability of the plant material.
- B. Maintain trees, palms, shrubs and other plants by watering, pruning, cultivating and weeding as required for healthy growth. CONTRACTOR will be responsible for all landscape maintenance activities during this period including, weeding, fertilizing, mowing and watering. CONTRACTOR will be responsible for all costs associated with maintenance activities (including watering) during the maintenance period. CONTRACTOR will be responsible for the maintenance of "weed free" planting areas, beds and planters through final acceptance. All planting areas must be weed-free at the time of final acceptance. Restore planting saucers. Tighten and repair stake and guy supports and reset trees and shrubs to proper grades or vertical position as required. Spray as required to keep trees and shrubs free of insects and disease.
- C. At no time shall required maintenance applications by the CONTRACTOR exceed a period of 15 days. Maintenance by the CONTRACTOR shall be required through Final Acceptance.
- D. Cleanup: The CONTRACTOR shall at all times keep the premises free from accumulation of waste material, soil, and/or rubbish caused by their employees or work. CONTRACTOR shall clean behind their work immediately and shall take necessary precautions to keep concrete, brick and other paving material clean of soil. This shall include the use of drop-cloths, etc. Damage to grades or lawns shall be repaired immediately and all debris and excess soil removed. Should the CONTRACTOR fail to keep the premises in a clean satisfactory condition, the OWNER reserves the right to hire appropriate personnel to perform clean-up work and back charge the CONTRACTOR for all costs incurred.

1.09 COMPLETION AND ACCEPTANCE

- A. Completion of the work shall be in compliance and conformity with the provisions expressed or implied in the drawings and specifications, associated change orders and field orders.
- B. The acceptability of all material, workmanship, labor and compliance with the specifications, grades and standards will be solely determined by the LANDSCAPE ARCHITECT.
- C. Right to Reject: The LANDSCAPE ARCHITECT will have the right, at any stage of the work, to reject any and all work and materials which, in their opinion, does not meet the requirements of the plans and specifications. Rejected material will be immediately removed from the site and acceptable material substituted in its place.
- D. Substantial Completion site observation will be performed by the LANDSCAPE ARCHITECT, at the request of the CONTRACTOR to observe if the CONTRACTOR has completed the work in substantial compliance with the plans and specifications. All requirements of the specifications will apply until Final Acceptance of the work by the LANDSCAPE ARCHITECT. The request by the CONTRACTOR must be made at least three working days before the anticipated substantial completion site observation.

- E. Final Acceptance: Upon notification by the CONTRACTOR that all defects have been corrected, the LANDSCAPE ARCHITECT will perform a final site observation. Final acceptance will be given upon satisfactory completion of all work, including "punch list" items. The LANDSCAPE ARCHITECT will conduct one final inspection. Any additional inspections as a result of the CONTRACTOR's failure to comply with the punch list, will be done at the CONTRACTOR's expense, based on the LANDSCAPE ARCHITECT's standard hourly rates and expenses. The notification by the CONTRACTOR must be made at least three working days before the anticipated final site observation.

1.10 SEQUENCING AND SCHEDULING

- A. Plant Installation: Proceed with, and complete, landscape work as rapidly as portions of site become available as specified by the Contract Documents and the approved schedule submitted by the CONTRACTOR.
- B. Coordination with Turf Installation: Plant trees and shrubs after final grades are established and prior to planting of turf, unless otherwise acceptable to LANDSCAPE ARCHITECT. If planting of trees and shrubs occurs after turf work, protect turf areas and promptly repair damage to turf resulting from planting operations.
- C. CONTRACTOR will be responsible for coordinating with other Contractors on the job and in the proper sequencing of work.

1.11 WARRANTY

- A. All plant materials (trees, palms, shrubs, ground covers, etc.), landscape accessories (i.e., edging, etc.), and workmanship will be warranted for a period of not less than one year from the date of Final Acceptance of the landscape installation. Turf (sodding, seeding, sprigging) will be warranted for a period of not less than 90 days, unless otherwise specified.
- B. Landscape which was installed in accordance with the drawings and specifications and is damaged or destroyed through vandalism, theft, traffic or by phenomena considered an Act of God, will be replaced by the CONTRACTOR at the CONTRACTOR's expense through the construction period and until Final Acceptance.
- C. After Final Acceptance by the LANDSCAPE ARCHITECT and OWNER, the OWNER will be responsible for the maintenance of the landscape. It will be understood that in accordance with the terms of the warranty that the CONTRACTOR must promptly inform the OWNER if proper maintenance is not being given to the installation. Such notice will be in writing outlining corrective measures to be taken with a copy to the LANDSCAPE ARCHITECT.
- D. Inspections by the CONTRACTOR of the job will be made during the warranty period to determine and assure proper maintenance. No claim shall be made by the CONTRACTOR that invalidates the warranty based on the OWNER's lack of or improper maintenance of the landscape without written documentation by the CONTRACTOR to the OWNER, with a copy to the LANDSCAPE ARCHITECT, that identifies said maintenance concerns.
- E. At the end of the warranty period, inspections will be made jointly by the OWNER, LANDSCAPE ARCHITECT, and CONTRACTOR. All plants not in a healthy growing condition will be removed and replaced with plants of a like kind and size, except for defects resulting from neglect by OWNER, abuse or damage by others, or unusual phenomena or incidents which are beyond CONTRACTOR's control.
- F. All replacement plants will be guaranteed for an additional period of one year. Replacement turf will be guaranteed for an additional period of 90 days unless otherwise specified.

PART 2 PRODUCTS

2.01 QUANTITIES

- A. All quantities indicated on the plans are intended as a guide for the bidders and does not relieve the bidder of their responsibility to do a comprehensive estimation of plant and material quantities. The CONTRACTOR will be responsible for the quantities shown and illustrated on the drawings.
- B. Should a discrepancy occur between the bidder's bid quantity and the plant list quantity, the LANDSCAPE ARCHITECT is to be notified for clarification prior to the submission of bids.
- C. After receipt of bids any quantities added to or deleted from the bid schedule by the LANDSCAPE ARCHITECT will be at the agreed upon unit cost as reflected in the itemized breakdown submitted, and will not effect any other unit price within the contract whether the contract is based on unit costs or lump sum.

2.02 TOPSOIL

- A. For all landscape areas, the CONTRACTOR will provide and install topsoil as defined on the drawings or within the contract bid form.
- B. Topsoil will be fertile, natural topsoil, typical of the locality, obtained from a well-drained site where topsoil occurs not less than four inches deep. Do not obtain from bogs or marshes. It will be without admixture of subsoil or clay and will be free of stones, lumps, sticks, plants or their roots, toxic substances or other extraneous matter that maybe harmful to plant growth or would interfere with future maintenance.
 - 1. Obtain topsoil from local sources or from areas having similar soil characteristics to that found at the project site.
- C. Topsoil will contain at least two percent of organic matter and will have a pH range of 6.0 - 7.0, unless otherwise recommended by the soil analysis.

2.03 BACKFILL SOIL MIXTURE

- A. CONTRACTOR will provide backfill soil mixture for all trees, shrubs and ground covers.
- B. Backfill mixture:
 - 50% Topsoil (existing soil, if determined acceptable by the soil analysis, or topsoil provided by the CONTRACTOR).
 - 50% Soil Amendments (60% peat, 40% composted manure, unless soil analysis recommends otherwise).

2.04 SOIL AMENDMENTS (AS QUALIFIED BY THE SOIL ANALYSIS)

- A. Lime: Natural dolomitic limestone containing not less than 85% percent of total carbonates with a minimum of 30% magnesium carbonates, ground so that not less than 90% passes a 10-mesh sieve and not less than 50% passes a 100-mesh sieve.
- B. Aluminum Sulfate: Commercial grade.
- C. Peat Humus: Finely divided peat, so completely decomposed and free of fibers that biological identity is lost. Provide in granular form, free of hard lumps, and with a pH range suitable for intended use.

- D. Bonemeal: Commercial, raw, finely ground, 4% nitrogen and 20% phosphoric acid.
- E. Supersulfate: Soluble mixture of treated minerals; 20% available phosphoric acid.
- F. Sand: Clean washed sand, free of toxic materials.
- G. Perlite: Conforming to National Bureau of Standards PS 23.
- H. Vermiculite: Horticultural grade, free of toxic substances.
- I. Sawdust: Rotted sawdust, free of chips, stones, sticks, soil, or toxic substances and with 7.5 pounds of nitrogen uniformly mixed into each cubic yard of sawdust.
- J. Manure: Well rotted, unleached stable cattle manure containing not more than 20% by volume of straw, sawdust, or other bedding or materials and containing no chemical or ingredients harmful to plants.

2.05 FERTILIZER

- A. For trees, palms, shrubs, and ground covers, the CONTRACTOR will provide and install fertilizer. Submit fertilizer analysis to LANDSCAPE ARCHITECT for approval.
- B. All fertilizers will be uniform in composition, free flowing and suitable for application by mechanical spreader equipment. Fertilizers will be delivered to the site fully labeled according to applicable State Fertilizer Laws. The following information will be shown on the fertilizer bag or package or on a tag:
 - 1. Name and address of manufacturer
 - 2. Name, brand or trademark
 - 3. Number of net pounds of ready mixed material in the package
 - 4. Chemical composition or analysis
 - 5. Guarantee of analysis
 - 6. If a brand or grade of fertilizer is delivered in the bulk, a written statement having the above listed information must accompany each load
- C. All fertilizers shall have a written statement containing the following information with each load:
 - 1. Weight of each commercial fertilizer used in the custom mixing
 - 2. The guaranteed analysis of each commercial fertilizer used in the custom mixing
 - 3. Total weight of fertilizer delivered in each load
 - 4. The manufacturer of each of the commercial fertilizers used in the custom mix
 - 5. Guaranteed analysis of each load to be stated as follows:
 - a. Percent of Nitrogen
 - b. Percent of total available Phosphoric Acid
 - c. Percent of total Soluble Potash
 - 6. Name and address of the person providing the fertilizer

D. Fertilizer Formulation

1. Trees, shrubs, and ground covers will have an 8-10-10 analysis fertilizer containing a minimum of 2% magnesium, 2% water soluble magnesium, 2% manganese, 2% iron, and quantities of other secondaries or a fertilizer analysis as recommended by soil testing lab. A minimum of 1.75 units will be slow release nitrogen.
2. Palms will have a 13-3-13 analysis fertilizer containing a minimum of 5% magnesium, 5% water-soluble magnesium, 1.5% manganese, 1.5% iron, and other secondaries or a fertilizer analysis as recommended by soil testing lab. A minimum of 4.85 units will be slow release nitrogen and 2.45 units slow release potash.
3. Turf areas will have a 16-4-8-analysis fertilizer containing a minimum of 2% magnesium, 2% water-soluble magnesium, 2% manganese, 2% iron, and quantities of other secondaries or a fertilizer analysis recommended by soil testing lab unless otherwise specified. Season of application may warrant a differing analysis than indicated above.
4. No substitutions will be made without notification to and acceptance by the LANDSCAPE ARCHITECT. The CONTRACTOR will submit, fertilizer labels to the LANDSCAPE ARCHITECT, defining the guaranteed analysis of the proposed substitution.

2.06 MULCH

- A. Mulch material will be the type and grade as indicated on the drawings. Mulch will be of a relative uniform particle size, and will be free of sticks, stones, leaves, weed seeds, and any other debris.
- B. Submit certification of mulch or a one-quart sample to the LANDSCAPE ARCHITECT for approval.

2.07 PLANT MATERIALS

- A. Summary of Materials Lists: An itemized list of plants is shown on the drawings and complete requirements for these plants are part of these specifications.
- B. Description: Species and variety as specified on the drawings and delivered to the site will be certified true to their genus, species, and variety and as defined within the current edition of International Code of Nomenclature for Cultivated Plants, issued by the International Union of Biological Sciences.
- C. Quality: Provide trees, shrubs, and other plants of size, genus, species, and variety shown and scheduled for landscape work and complying with recommendations and requirements of ANSI 260.1 "American Standard or Nursery Stock" and Florida #1 or better "Grades and Standards for Nursery Plants", Parts I and II, State Plant Board of Florida (most recent edition) unless directed by the LANDSCAPE ARCHITECT. All accent and specialty plants will be Florida Fancy as defined by the above referenced standards.
- D. Plants will be nursery grown unless otherwise approved by LANDSCAPE ARCHITECT and will be of varieties specified on the plant list bearing botanical names.
- E. Planting stock will be well branched and well formed, sound, vigorous, healthy, free from disease, sun-scale, windburn, abrasion, weeds, and harmful insects or insects eggs; and will have healthy, normal unbroken root systems. Trees will be symmetrically developed, of uniform habit of growth, with straight trunks or stems, and free from objectionable disfigurements or scars.

- F. Container-grown trees, shrubs, and ground covers will have sufficient root growth to hold earth intact when removed from the container and will not be root-bound.
- G. Balled and burlapped plants (B&B) will be dug with firm natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Balls will be firmly wrapped with burlap or similar materials and bound with twine, cord or wire mesh. All collected plants will be balled and burlapped.
- H. Palms: Only a minimum of fronds will be removed from the crown of the palm to facilitate moving and handling. Sabal palms will have a minimum of eight fronds remaining and tied to protect the bud, unless otherwise noted on the drawings. Base sucker growth fronds will be trimmed back to allow for easier handling, however, no stems should be cut off unless authorized by the LANDSCAPE ARCHITECT. Clear trunk (c.t.) measurement will be as specified after the fronds have been removed. Sabal Palm boots and burns will be removed except as otherwise directed. Sabal palms will be taken from moist soils. All moving of palms will be in accordance with the provisions for Heavy Trunk Palms, as described in "Florida Grades and Standards for Nursery Plants", Part II (most recent edition). All palms will be tied and/or braced to protect the bud(s).
- I. Plants will have been grown under climatic conditions similar to those in the locality of the project. Plants budding into leaf or having soft growth will be sprayed with an anti-desiccant at the nursery before digging.
- J. Quality and Size
 - 1. Habit and growth will be normal for the species and will meet or exceed the measurements specified in the plant list, which are the minimum acceptable sizes.
 - 2. Measurement will be performed before pruning with branches in normal position and to the average extents of growth. Any necessary pruning will be done at the time of planting with the approval of the LANDSCAPE ARCHITECT.
 - 3. Where measurements are called out as a range in the plant list (e.g., 10-12'), the average height of the total of all such specified trees will fall at the middle of the range (e.g., 11'). The number of plants that are smaller than the average will not exceed the number that are larger than the average.
 - 4. Plants larger than specified may be used if approved by the LANDSCAPE ARCHITECT, but the use of such plants will not increase the Contract price. The size of container or root ball for large plants will be increased in proportion to the size of the plant specified.
- K. Substitutions
 - 1. Plant substitution requests by the CONTRACTOR will be considered by the LANDSCAPE ARCHITECT only upon submission of proof that any plant is not obtainable in the type or size specified. Under no circumstances will unauthorized substitutions be included in the Bid Proposal and breakdown.
 - 2. The LANDSCAPE ARCHITECT will determine the nearest equivalent replacement in an obtainable size and variety.
 - 3. If contract is based on unit costs, the unit price of the substitute item will not exceed the bid item replaced, unless authorized by LANDSCAPE ARCHITECT.

- L. Inspection: The LANDSCAPE ARCHITECT may inspect trees and shrubs either at place of growth or at site before planting, for compliance with requirements for genus, species, variety, size and quality. LANDSCAPE ARCHITECT retains right to further inspect trees and shrubs for size and condition of balls and root systems, insects, injuries and latent defects, and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected plant material immediately from the project site. If additional inspections are warranted, field verifications of specified plant material will be performed by the LANDSCAPE ARCHITECT at the CONTRACTOR's expense utilizing WilsonMiller, Inc. standard hourly rates, including expenses.

2.08 GUYING AND STAKING MATERIALS

- A. Guying and staking materials will be as indicated on the planting details.

2.09 ANTI-DESICCANT

- A. Anti-desiccant will be "Wilt-Pruf" or approved equal, delivered in manufacturer's unopened containers and used in accordance with manufacturer's instructions.
- B. Anti-desiccant will be an emulsion that will provide a film over plant surfaces permeable enough to permit transpiration, and not damage the plant.

2.10 HERBICIDES

- A. Herbicides used must comply with all applicable State and Federal Laws and be registered with the U.S. Environmental Protection Agency. Submit certification of type to the LANDSCAPE ARCHITECT for approval.
- B. Herbicide control will be:
 - 1. Pre-emergence application of "Treflan 5% Granules" or equivalent, applied according to manufacturer's recommendations and incorporated into soil as specified.
 - 2. Post-emergence application of "Roundup" or equivalent, applied as specified by manufacturer. Spray with extreme care to avoid contact with landscape plantings and adjoining turf areas.

2.11 PESTICIDES

- A. Pesticides used must comply with all applicable Federal, State and local laws and be registered with the U.S. Environmental Protection Agency.
- B. Pesticide Control shall utilize lindane or an approved equal. Submit certification of pesticide analysis to the LANDSCAPE ARCHITECT for approval.

2.12 EDGING

- A. Edging, where and when specified, will be as specified on the plans and will be one of the following:
 - 1. Ryerson 4" x 1/8" steel edging by Ryerson, Chicago, Illinois (312) 762-2121.
 - 2. Curv-Rite Aluminum Edging, Grand Rapids, Michigan (616) 878-3845.
 - 3. 1" x 4" Bender Board of sound new Southern Pine.
- B. If no specific edging is indicated or specified on the drawings, the CONTRACTOR will install five-inch-deep mulch trenches at all plant bed transitions.

2.13 SUPERABSORBENT POLYMER

- A. Material will be as specified on the plans and will be one of the following:
 - 1. Aqua Mend
 - 2. Terra Sorb
- B. Material to be installed at the amount and rates specified or in accordance to manufacturer's recommendations.

PART 3 EXECUTION

3.01 COORDINATION OF WORK

- A. The CONTRACTOR will be responsible for complete coordination of planting operations with the other Contractors on the job. Repair of damage to plants, grades, lawns, etc., during installation will not be considered as an extra, and not be charged to the "OWNER".

3.02 GENERAL PREPARATION

- A. Site Preparation and Soil Amendments
 - 1. Prior to beginning the work of this section, verify that rough grading and site preparation have been properly completed.
 - 2. CONTRACTOR will remove residual debris from the site and provide a finished grade that is in conformance with the plans.
 - 3. Eradicate any weak growth in all landscape planting areas prior to planting operations.
 - 4. Spray existing grass and weeds with Round-up. Use as many applications as necessary to completely kill all grass and weeds.
 - 5. All shrub, palm and tree planting areas to be 100% weed free. Kill existing weeds, water to encourage dormant weed seed germination and then spray the area until it is free of all noxious weed species.
 - 6. When grass and weeds are completely dead, add soil amendments in the planting and sod areas as specified. Soil amendments shall be thoroughly tilled in with existing soil, to a minimum depth of 12".
 - 7. CONTRACTOR shall keep all areas prepared for planting weed-free until planting takes place.
 - 8. Care and deposition of Existing Vegetation: All unpaved areas within the landscape contract limits as denoted on the drawings, shall be cleared of noxious weeds, dead material, together with any material noted for removal on the plans or within the Contract Documents.

3.03 FINISHED GRADING

- A. CONTRACTOR will be responsible for finished (fine) grading of all landscape bed and turf areas prior to commencement of any installation of plant material.

- B. General: As a final grading operation, the surface of the earthwork will be shaped to conform to the lines, grades, and contours shown on the plans. For cuts or fills where plant growth will be established, slopes will be left in a roughened condition as approved by the LANDSCAPE ARCHITECT. Hand dressing will be required in confined areas where equipment operation is restricted.

CONTRACTOR will take necessary precautions to prevent erosion of slopes before and after finish grading. Any erosion damage will be repaired at the expense of the CONTRACTOR until Final Acceptance of the project.

- C. Tolerances: In final shaping of the surface of earthwork, a tolerance of 0.1 foot above or below the plan elevations and contours will be allowed with the following exceptions:
1. In areas where sod, ground cover or other finish landscape surface will be used, an allowance shall be made for the thickness of sod, etc. that will result in the finish landscape elevation to be congruent with the adjoining surface.
 2. Earthwork shall be shaped to match adjacent pavement, curb, sidewalk, structures, etc. with applicable allowance for sod, etc.
 3. Ditch bottoms may have higher tolerances approved by the LANDSCAPE ARCHITECT or ENGINEER provided that no water will be impounded or that no stormwater flows will be imported.
 4. Absolutely no back of curb, or any other vertical or horizontal gaps in construction will be acceptable.
- D. CONTRACTOR will take the appropriate measures necessary to maintain the positive flow of surface water runoff away from buildings, structures, and walkways, etc. to stormwater conveyance systems. The CONTRACTOR will notify the LANDSCAPE ARCHITECT of any conflicts in general grading and the positive flow of surface water to stormwater conveyance systems. CONTRACTOR will not knowingly commence plant installation where drainage conditions will adversely affect newly installed plant materials and any reinstallation of plant materials will be at the CONTRACTOR's expense.

3.04 SOIL PREPARATION

A. Soil Testing:

1. CONTRACTOR will be responsible for having samples of the existing soil tested. Samples will be taken from several representative areas, and are to be tested for acidity, fertility and general composition by a recognized commercial or governmental agency. The CONTRACTOR will furnish three copies of the soil analysis and recommended amendments (to meet the desired pH, nutritional and organic levels determined to be adequate for the area) prepared by the testing agency.
 2. Existing soil must meet the requirements for topsoil as specified in Section 2.02, B and C. If existing soil does not meet the specified requirements, CONTRACTOR will provide soil amendments as recommended by the approved testing agency to bring soil analysis up to the proper levels. If the existing soil cannot be amended to the proper levels, the CONTRACTOR will excavate the unacceptable soil and replace with clean topsoil.
- B. CONTRACTOR will excavate all limerock, compacted subgrade or any other deleterious material from all landscape areas, and replace excavated material with acceptable topsoil. Any compacted fill or subgrade must be pierced through completely to allow for percolation and drainage from the entire bed area in question.

- C. Additional soil amendments will be added as recommended by the soil analysis to the areas as indicated on the plans. Additional soil amendment will be added to all landscape bed areas and to all trees, palms, shrubs, ground covers as indicated herein. Soil amendments will be thoroughly tilled in with the existing soil to a minimum depth of 12 inches from existing grade.

3.05 EXISTING VEGETATION

- A. Relocated Existing Plants: Existing plants shown on the drawings to be relocated will be root-pruned sufficiently in advance of planting time to assure safe moving and will be protected and treated as new material in all respects. Pruning of the canopy or foliage will be conducted by the CONTRACTOR under the direction of the LANDSCAPE ARCHITECT. Plant installation will be in accordance with these specifications.
- B. Existing plant material shown on the plans to remain will not be disturbed. New plant material to be installed will be field adjusted to accommodate existing plant material such as overhead canopy trees, understory trees and shrubs or ground cover. Therefore, no existing plant material will be altered by removing cutting, trimming or destroying in order to install new plant material unless directed to do so by the LANDSCAPE ARCHITECT.
- C. If lawns have been established prior to planting operations, CONTRACTOR will make all efforts to protect turf areas during planting operations. If lawn is damaged by the CONTRACTOR, it will be restored to its original condition by the CONTRACTOR and at their time and expense.

3.06 TREE, SHRUB AND GROUND COVER PLANTING

- A. All planting will be performed by personnel familiar with accepted horticultural procedures of planting and under the constant supervision of a qualified Foreman. The LANDSCAPE ARCHITECT reserves the right to have the Foreman removed from the job if, in the opinion of the LANDSCAPE ARCHITECT, the Foreman is not demonstrating an acceptable knowledge of horticultural standards or construction procedures. Any time delays or expenses incurred by the Foreman's dismissal will be at the CONTRACTOR's expense.
- B. All planting is to be conducted as shown on drawings and as specified herein and in strict accordance with standard horticultural practices.
- C. Coordination with Lawns: Plant trees and shrubs after final grades are established and prior to planting of lawns, unless otherwise acceptable to LANDSCAPE ARCHITECT. If planting of trees and shrubs occurs after lawn work, protect lawn areas and promptly repair damage to lawns resulting from planting operations. Any damage to lawns caused by these procedures will be corrected by the CONTRACTOR.
- D. Layout:
 - 1. Plant material locations and bed outlines will be staked out on site according to the plans by CONTRACTOR and approved by LANDSCAPE ARCHITECT prior to the commencement of material installations.
 - 2. Layout: Location for plants and outlines of areas to be planted are indicated on the drawings. All plants will be located in the field by the CONTRACTOR, to the satisfaction of the LANDSCAPE ARCHITECT. Where construction or utilities below ground or overhead are encountered, or where changes have been made in the construction, necessary adjustments will be approved by the LANDSCAPE ARCHITECT. The CONTRACTOR must receive approval of LANDSCAPE ARCHITECT prior to installation of plant material. Failure to do so may result in the CONTRACTOR re-executing work at the request of the LANDSCAPE ARCHITECT and at the CONTRACTOR's expense.

E. Installation of Trees, Palms, Shrubs, and Ground Covers:

1. Plant pits will be circular in outline with sides approximately vertical with bottom excavation slightly raised at center to provide proper drainage and will extend to the required sub-grades as determined by the plant's root ball or growing container size. Loosen hard subsoil in bottom of excavation. The minimum depth of plant pits specified below will be measured from the finish grade.
2. For balled and burlapped (B&B trees and shrubs) make excavations at least half again as wide as the ball diameter and equal to the ball depth, plus following allowance for setting of ball on a layer of compacted backfill. The top of the root ball shall be even with the surrounding finished grade. Allow for three-inch-thick setting layer of planting soil mixture. Refer to planting details for minimum pit sizes.
3. Balled and Burlapped Plants: After final setting loosen burlap wrappings exposing the top of the root ball, leaving the ball unbroken. Remove excessive amounts of burlap and string wrapping materials to eliminate voids which may be caused upon decomposition (See planting details).
4. Container Grown Plants: Plant pits for container materials will be formed flat on the bottom. Containers will be removed carefully to prevent damage to plant or root system. Excavate as specified for balled and burlapped stock, adjusted to size of container width and depth. Refer to planting details for minimum pit sizes.
5. All excavated soils from plant pits or beds will be used on site, if needed, or removed from the site at no additional cost to the OWNER. Excavated soils, if acceptable topsoil quality, may be mixed with soil amendments to compose the backfill soil mixture.
6. Mass annual planting beds as specified on the drawings will be excavated, to a minimum depth of six inches. Only planting mixture as specified on the planting details will be used to backfill annual beds areas.
7. Setting Trees, Palms, and Shrubs: Unless otherwise specified, all trees and shrubs will be planted in pits, centered, and set on compacted soils to such depths that the finished level of the plant after settlement will be the same as that at which the plant was grown. They will be planted upright and faced to give the best appearance or relationship to viewing stations, approaches, or adjacent structures. Remove burlap from upper 1/2 of balls. When set, place additional backfill around base and sides of ball and work each layer to settle backfill and eliminate voids and air pockets. No burlap will be pulled out from under the balls. Platforms, wire and surface binding from top and sides of the balls will be removed. All broken or frayed roots will be cut off cleanly. After placing approximately 2/3 of planting backfill, water thoroughly before placing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill. No filling around trunks will be permitted. Additional soils will be filled in to the level of the finished grade, allowing for minimum three inches of mulch or as otherwise specified. Form a shallow saucer around each tree to a size needed for adequate water retention (See planting details).
8. Set container grown stock, as specified for balled burlapped stock, except cut cans on two sides with an approved can cutter; remove bottoms or wooden boxes after partial backfilling so as not to damage root system.
9. Back Fill Soils: Plant pits will be backfilled with backfill soil mixture as specified on the plans. All backfill soils will be free of all clods, sticks, roots, stones or other extraneous matter.
10. Fertilizer will be placed during backfilling, at the ratio recommended by the soil analysis.

11. Dish top of backfill to allow for mulching in tree/palm pits.

12. Protection During Planting: Trees and palms moved by winch or crane will be thoroughly protected from chain marks, girdling or bark slippage by means of burlap, wooden battens or other approved methods. No nails or spikes will be driven into palm or tree trunks. Any damage to tree/palm trunks, limbs, structure, etc. will be grounds for rejection.

F. Pruning

1. Prune, thin out and shape trees, palms, and shrubs in accordance with standard horticultural practices. Dead and broken limbs will be removed. Balled and burlapped trees and shrubs will be pruned to reduce total amount of anticipated foliage by 1/5. Typical growth habit of individual plant will be retained with as much height and spread as is practicable. Cuts will be made with sharp instruments, and will be flush with trunk or adjacent branch to insure elimination of stubs. "Headback" cuts at right angles to line of growth will not be permitted. Tree will not be poled or the leader removed, nor will the leader be pruned or "topped off". Trimming will be removed from the site. Cuts one inch in diameter and larger will be painted with black asphalt antiseptic paint or an approved equal.

2. Remove and replace excessively pruned or misformed stock resulting from improper pruning.

G. Anti-desiccant: If deciduous trees or shrubs are moved in full-leaf, out of season, spray with anti-desiccant at nursery before moving and again two weeks after planting, using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage.

H. Staking and Guying

1. Stakes and Guys: Provide stakes and deadmen of sound new southern pine, unless otherwise specified. Provide wire ties and guys of 2-strand, twisted pliable galvanized iron wire not lighter than 12 gauge with one-coated turnbuckles. Provide not less than ½ inch diameter protective hose of uniform color, material, and size to protect trunks and branches from the wire, unless otherwise specified.

2. Plants will be staked and guyed as indicated on plans within 24 hours of planting.

3. Stakes will be driven vertically into the ground to a depth specified in details and in such a manner as not to damage the ball or roots.

4. Ground stakes for tree guying will be driven into the firm ground outside of the plant pit, and the top of the stake will be flush with the ground.

5. Flags will be securely fastened on each guy wire approximately 2/3 of the distance up from ground level.

I. Mulch:

1. All trees, shrubs and planting beds will be mulched immediately after planting. The CONTRACTOR shall place mulch to a three-inch depth or as specified on the drawings or as approved by the LANDSCAPE ARCHITECT. Mulch will be thoroughly watered-in to prevent wind displacement. All landscape beds will have a five-inch mulch trench installed at all edges except adjacent to sidewalks, curbs, buildings, and structures.

2. Prior to the installation of either bark or stone mulch and weed barrier (if required) all areas to be covered will be weed free and will be treated with a pre-emergent herbicide. Submittal as required.

3. Mulch will be kept out of the crowns of shrubs and off buildings, sidewalks, light standards, and other structures.
4. Mulch type and grade are as specified on the drawings.

3.07 RECONDITIONING EXISTING LAWNS

- A. Existing lawn areas which have been damaged during construction will be repaired by the CONTRACTOR at their expense.
- B. Recondition existing lawn areas damaged by CONTRACTOR's operations including storage of materials and equipment and movement of vehicles. Also, recondition existing lawn areas where minor regrading is required.
- C. Provide new topsoil, as required, to fill low spots and meet new finish grades.
- D. Cultivate bare and compacted areas thoroughly to provide a satisfactory planting bed.
- E. Remove diseased and unsatisfactory lawn areas; do not bury into soil. Remove topsoil containing foreign materials resulting from CONTRACTOR operations, including oil drippings, stone, gravel, and other loose building materials.
- F. The CONTRACTOR shall repair existing lawns under the direction of LANDSCAPE ARCHITECT where existing conditions warrant. CONTRACTOR shall be responsible for all damage and wear to existing lawns caused by construction activities. Remove weeds before seeding or, if extensive, apply selective chemical weed killers as required. Apply a seed bed mulch to maintain moist condition.
- G. Water newly planted lawn areas and keep moist until new grass is established.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS FOR PAYMENT

- A. CONTRACTOR shall submit a lump sum bid and will receive full compensation for conforming to the provisions of this section and related drawings. Lump sum paid for the complete installation as shown and specified will be categorized as follows:
 1. Trees/Palms
 2. Accents (Specialties)
 3. Shrubs/Ground Covers/Vines
 4. Sod/Mulch
- B. No additional compensation will be allowed excluding relative change orders. A complete unit cost breakdown, based on the included Plant Lists (pay items), will be included as a separate item and submitted with the CONTRACTOR's bid or submitted prior to executing any work on the project. The OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02480

**SECTION 02488
BERMUDA SODDING**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and provisions of the Contract including Contract Conditions, Division-1 Specifications, apply to work of this section.

1.02 SCOPE

- A. The work specified in this section consists of the establishing of a consistent, dense, healthy stand of bermuda grass within the areas specified on the drawings. The work shall consist of grading, preparing the soil, fumigating (if specified on plans), and furnishing and placing of grass sod, fertilizing, watering, and maintaining the sodded areas through construction and until final acceptance by the OWNER and LANDSCAPE ARCHITECT.
- B. Grade Elevations: Excavation, filling, rough and finish grading shall be as specified on the drawings and other related documents.

1.03 RELATED WORK

- A. Section 02480 - Landscape Work
- B. Section 02810 - Irrigation System

1.04 QUALITY ASSURANCE

- A. CONTRACTOR shall be a firm with not less than five-years experience in the type of work specified in this section, or provide satisfactory substitute evidence with the OWNER, at its sole discretion, may accept the CONTRACTOR as qualified to perform the work herein specified.
- B. The CONTRACTOR, as part of their bid, shall list not less than six projects completed by their company of similar size and scope to the work specified herein. The six or more projects shall be listed by project name, location, owner's name and phone number, and the total paid cost of work executed. The listed projects shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any bids which either do not respond to this condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- C. Subcontract sodding work to a single firm specializing in sod work, if service not provided by the CONTRACTOR.
- D. Perform tests in accordance with standards hereinafter specified.

- E. Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
- F. The following publications of the issues listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto:
 - 1. Florida State Plant Board Standards for Nursery Plants (latest edition).
 - 2. Florida Nurserymen and Growers Association, Approved Planting Practice.
 - 3. Bailey's Hortus Second.
 - 4. State Department of Agriculture Regulations.

1.05 SUBMITTALS

- A. All submittals shall be submitted to the LANDSCAPE ARCHITECT.
- B. Submit certificates of inspection as required by governmental authorities.
- C. Submit manufacturer's or vendors certified analysis for soil amendments and fertilizer materials.
- D. Submit other data substantiating that materials comply with specified requirements, when applicable.
- E. Submit soil analysis results.
- F. A letter of certification from the sodding contractor as to when the sod was cut, and what type shall be provided to the LANDSCAPE ARCHITECT, at their request, upon delivery of sod to the job site.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery, and while stored at site.
- B. No sod, which has been cut for more than 48 hours, may be used unless specifically authorized by the LANDSCAPE ARCHITECT after their careful inspection thereof.
- C. Transportation: Sod must be in a moist condition at the time of cutting and kept in a moist condition until it is placed. Transport sod in either a closed van or in open truck properly covered to prevent windburn, drying, or damage to sod.
- D. Disposal of Surplus Material: Surplus and waste materials resulting from sodding operations shall be legally disposed of by the CONTRACTOR off-site.

1.07 JOB CONDITIONS

- A. Examination of site: The bidder must acknowledge that they have examined the site, plans and specifications and the submission of a quotation shall be considered evidence that examinations have been made.
- B. The sodding contractor shall be fully responsible to acquaint himself with the exact location of all utilities and to avoid conflict with all existing facilities. Hand excavate, as required. Maintain stakes set by others until removal is mutually agreed upon by parties concerned.
- C. If the quantity of the existing or excavated topsoil is inadequate to establish finish grades as specified on the drawings, it shall be the sodding CONTRACTOR's responsibility to provide topsoil in accordance with these specifications.
- D. The sodding CONTRACTOR shall be responsible for complete coordination of sodding operations with the other CONTRACTORS on the job. Repair of damage to plants, grades, lawns, etc., during installation shall not be considered as an extra, and not be charged to the OWNER. Damage caused by other CONTRACTORS will be the responsibility of said CONTRACTOR.

1.08 COMPLETION AND ACCEPTANCE

- A. Completion of the work is defined as the full and exact compliance and conformity with the provisions expressed or implied in the drawings and specifications, and associated change orders.
- B. The acceptability of all material, workmanship, labor and compliance with the specifications, grades and standards is to be solely determined by the LANDSCAPE ARCHITECT.
- C. Right to Reject: The LANDSCAPE ARCHITECT has the right, at any stage of the work, to reject any and all work and materials which, in their opinion, does not meet the requirements of the plans and specifications. Rejected material shall be immediately removed from the site and acceptable material substituted in its place.
- D. Substantial Completion: Upon notification by the CONTRACTOR that the installation is complete, the LANDSCAPE ARCHITECT, will perform a substantial completion site observation to determine if the CONTRACTOR has completed the work in accordance with the plans and specifications. If final acceptance is not given, the LANDSCAPE ARCHITECT will prepare a "punch list". The notification by the CONTRACTOR must be made at least three working days before the anticipated substantial completion site observation.
- E. Final Acceptance: Upon notification by the CONTRACTOR that all defects have been corrected, the LANDSCAPE ARCHITECT will perform a final site observation. Any additional final site observations due to the CONTRACTOR's inability to meet the items listed on the initial or subsequent "punch lists", will be at the expense of the CONTRACTOR according to the LANDSCAPE ARCHITECT's standard hourly rate. Final acceptance will be given upon satisfactory completion of all work, including "punch list" items. The notification by CONTRACTOR must be made at least three working days before the anticipated final site observation.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. For all landscape areas, the CONTRACTOR shall provide and install topsoil as defined on the drawings or within the contract bid forms.
- B. Topsoil shall be fertile, natural topsoil, typical of the locality, obtained from a well-drained site. It shall be without admixture of subsoil or clay and shall be free of stones, lumps, sticks, plants or their roots, toxic substances or other extraneous matter that may be harmful to plant growth or would interfere with future maintenance.
- C. Topsoil shall contain at least two percent of organic matter and shall have a pH range of 6.2-7.2.
- D. Topsoil shall be free from Johnson grass (*Sorghum Halpense*), nut grass (*Cyperus Rotundus*) and all other objectionable herbaceous weeds, grasses and toxic substances. Said topsoil shall be sifted to remove sticks, stones, and debris larger than one-half inch in size.
- E. Soil Testing: The CONTRACTOR shall be responsible for having topsoil tested. Representative samples are to be tested for acidity, fertility and general composition by a recognized commercial or government agency. The CONTRACTOR shall furnish one copy of the soil analysis and recommended amendments (to meet the desired pH, nutritional and organic levels determined to be adequate for the area) prepared by the testing agency, to the LANDSCAPE ARCHITECT prior to application of any amendments or fertilizer.

2.02 FERTILIZER

- A. All fertilizers shall be uniform in composition, free flowing and suitable for application by mechanical spreader equipment. Deliver fertilizers to the site fully labeled according to applicable State Fertilizer Laws. The following information must be shown on the fertilizer bag or package or on a tag:
 - 1. Name and address of manufacturer.
 - 2. Name, brand or trademark.
 - 3. Number of net pounds of ready mixed material in the package.
 - 4. Chemical composition or analysis.
 - 5. Guarantee of analysis.
 - 6. If a brand or grade of fertilizer is delivered in the bulk, a written statement having the above listed information must accompany each load.

- B. Bermuda sod shall have a 27-3-10-analysis fertilizer containing a minimum 2% magnesium, 2% water-soluble magnesium, 2% manganese, 1.5% iron, 3% sulfur and other trace secondaries. A minimum of 6.0 units shall be slow release nitrogen. At least 50 percent of the phosphoric acid shall be from normal super phosphate or an equivalent source, which will provide a minimum of two units of sulfur. Unless otherwise approved by the LANDSCAPE ARCHITECT, Type I fertilizer shall be used.

2.03 SOD

- A. Bermuda sod shall be as specified on the Landscape Drawings.
- B. Pad Size: Cut individual pieces of sod to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be five percent. Extensively broken pads and torn or uneven ends will not be acceptable.
- C. Strength of Sod Sections: Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.
- D. Moisture Content: Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
- E. Time Limitations: Sod shall be harvested, delivered and installed within a period of 72 hours.
- F. Class of Sod and Composition: The sod used shall be as specified on the plans; nursery grown and well rooted. Each shipment shall be accompanied by a certification verifying the sod as specified. Sod shall be subject to review by the LANDSCAPE ARCHITECT prior to being cut and again before it is laid. The consistency of adherent soil shall be such that it will not break, crumble, or tear during handling and placing of the sod.
- E. Each piece of sod shall be well covered with turf grass, free from noxious weeds and other objectionable plants and shall not contain thatch quantities and substances injurious to growth. The grass shall be mown to a length of no less than 1½-inch nor more than four inches before the sod is cut.
- F. Comply with State and Federal laws with respect to inspection for plant diseases and insect infestation. An inspection certificate to this effect is required by law and shall accompany each shipment and on arrival shall be filed with the LANDSCAPE ARCHITECT.
- G. Thickness of Cut: Machine cut sod at a uniform soil thickness of three-fourths inch, plus or minus one-fourth inch, at the time of cutting. Measurement for thickness excludes top growth and thatch.

PART 3 EXECUTION

3.01 GRADE AND SOIL PREPARATION

- A. Remove all debris, brush, large roots, weeds, and old tree stumps. If extensive grading is needed, remove topsoil and stockpile it for replacement after the rough grade is established. Rough grade should conform to final grade after topsoil is replaced. (See Earthwork Section for required soil preparation in regards to deleterious material.) Replaced topsoil will be sifted as specified.
- B. Remove all debris, brush, large roots, weeds and any other deleterious materials from the top six inches of soil.
- C. Verify grades established during final site preparation as being true to finish contours shown, and maintain such areas until the effective date to begin sodding operations. In such instances where a split responsibility exists between grading and sodding contractors, it shall be the responsibility of the sodding CONTRACTOR to maintain a suitable grade for sodding once they have accepted the grade provided to him.
- D. No sod shall be placed on soil which has been treated with soil sterilants until sufficient time has elapsed to permit dissipation of toxic materials. The CONTRACTOR assumes full responsibility for any loss or damage to sod or seed arising from improper use of sterilants or due to their failure to allow sufficient time to permit dissipation of toxic materials, whether or not such sterilants are specified herein.
- E. Perform a soil analysis on each area to be sodded and shall include a lime requirement analysis if pH is below 6.2. If fill material is to be brought in, it must be tested prior to delivery to the site. Obtain a representative soil sample by collecting samples from 10 locations in the area from the top six inches of soil. Samples shall be combined and thoroughly mixed. Submit a portion for analysis at a Soil Testing Laboratory approved by the LANDSCAPE ARCHITECT with a copy of the testing results given to the LANDSCAPE ARCHITECT for approval. The acceptable pH range shall be 6.2-7.2. OWNER shall pay for this testing.
- F. If the soil is too acidic, (pH too low), dolomite limestone (dolomite) shall be used for increasing soil pH. Application shall be based on a lime requirement analysis which considers both soil buffering capacity and soil pH value.
- G. If the soil is too alkaline, (pH too high), a water degradable form of sulfur shall be used for decreasing soil pH. Application shall be based on soil analysis.
- H. Sifting: All areas to be sodded with bermuda will have the top four inches of topsoil sifted to remove all sticks, stones, and debris greater than one-eighth inch in diameter. No sprigs, shall be set until sifting is complete.
- I. Placing Topsoil: Areas to be sodded shall have a minimum topsoil cover of eight inches. Topsoil shall not be placed when the subgrade is excessively wet, extremely dry, or in a condition otherwise detrimental to the proposed planting or to proper grading.

- J. Tillage: Thoroughly till the area to be sodded to a depth of 12 inches using a plow and disc harrow or rotary tilling machine until a suitable bed has been prepared and no clods or clumps remain. The seed bed should be soft enough to permit penetration of the grass stolons to an adequate depth. The prepared soil shall be loose and reasonably smooth and reasonably free of large clods, roots, and other material which will interfere with the work or subsequent mowing and maintenance operations. No subsequent operations shall be commenced until the LANDSCAPE ARCHITECT has approved the condition of the prepared areas.
- K. Applying Fertilizer: Apply granular fertilizer at the rate of one pound per 1000 square feet and shall be thoroughly incorporated into the top three to four inches of soil for spriggings. Spread the fertilizer uniformly to one or more applications as specified below. The rate and number of applications may vary based on weather conditions and shall be determined by LANDSCAPE ARCHITECT.
1. An initial application of 500 pounds per acre with 10-20-30 fertilizer.
 2. One week after initial fertilizing and sprigs are planted, fertilize with an application of ammonia nitrate at the rate of 150 pounds per acre.
 3. Apply three additional applications of ammonia nitrate if soil pH is low (below 6.2), ammonia sulfate if soil pH is high (above 7.2), each at the rate of 150 pounds per acre, beginning one week after the first application of ammonia nitrate/ammonia sulfate specified in paragraph above, each application applied one week apart, resulting in a total of four applications of ammonia nitrate/ammonia sulfate fertilizer.
 4. On the fourth week after planting, fertilize with a complete (10-10-10) fertilizer at the rate of 50 pounds per acre. Repeat the above cycle (three applications 33-0-0 one week apart followed by 10-10-10 or 8-8-8) until the grass has covered. To avoid burning, fertilize when the grass is dry and water immediately following application.
- L. Soil Fumigation: Sterilize the planting area after tillage, but prior to final grading. Apply Methyl Bromide at the rate of one pound (0.45 kg) per 1000 square feet (9.3m²). Treated areas must be covered with a polyethylene cover under which methyl bromide is injected. Follow manufacturer's recommendations and precautions for any soil fumigant used.
- M. Final Grading: Final grade just prior to planting to provide a smooth planting bed. Rake, harrow, or use a grading box to leave the soil surface smooth. Follow contours from design drawings. Roll or cultipack the area to firm the planting bed. Irrigation can be used to settle the soil before planting. Avoid rolling or cultipacking wet soil as compaction may occur.

3.02 FERTILIZATION

- A. Apply fertilizer at a minimum rate of 10 pounds per 1,000 square feet and required additional soil amendments in accordance with the soil sample results.

- B. Incorporate fertilizer and soil amendments into the top two to three inches of soil and rake to provide a final smooth even grade.

3.03 SODDING

- A. Sodding Time: Place sod when the ground is in a workable condition and temperatures are less than 90 degrees Fahrenheit (when possible). Sod shall not be placed during extended drought, unless irrigation is available.
- B. Sod cut for more than 48 hours shall not be used without the concurrence of the LANDSCAPE ARCHITECT. Keep all sod moist and protected from exposure to sun, wind and freezing prior to placing.
- C. Moistening the Soil: During periods of high temperature and after all unevenness in the soil surface has been corrected, lightly irrigate the soil immediately prior to laying the sod.
- D. Starter Strip: Lay the first row of sod in a straight line with subsequent rows placed parallel to and tightly against each other. Stagger lateral joints to promote more uniform growth and strength. Exercise care to insure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air-drying of the roots.
- E. Sloping Surfaces: In ditches place the sod with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope, place the sod with the longer dimension paralleled to the contours of the ground. Bury the exposed edge of the sod shall be buried flush with the adjacent sod. On slopes where the sod may be displaced during sodding operations, the workmen shall work from ladders or treaded planks.
- F. Staking Sod: Stake sod on all slopes of 2:1 or steeper. Stake sod with not less than four stakes per square yard with at least one stake for each piece of sod. Stakes shall be of lath or similar material, pointed, and driven with the flat side against the slope, six inches into the ground, leaving approximately one-half inch of the top above the ground.
- G. Water sod immediately after installation to prevent excessive drying during progress of the work. CONTRACTOR will be responsible for watering sod through Final Acceptance.
- H. Finished Transitions: At no time will backs of curbs or gaps in transitions (i.e., walks, beds, structures, etc.) be accepted. All transitions will be horizontally and vertically smooth and congruent with adjacent transitions. Cut all buds with a machete or similar tool to provide a neat, uniform, and consistent bedline. Bedlines shall reflect the shape and form indicated on the drawings and shall be laid to the satisfaction of the LANDSCAPE ARCHITECT.

3.04 WATER AND ROLLING

- A. Roll sod with a mechanical roller of no less than two tons as sodding is completed in any one section. All sod areas must be rolled to provide an even sodded appearance with no high and low points.
- B. Immediately following rolling operations irrigate the sod thoroughly to a depth sufficient that the underside of the new sod pad and soil immediately below the sod are thoroughly wet.
- C. No equipment or vehicles shall be allowed to travel over the sodded areas after sodding by CONTRACTORS on the job site.
- D. Supplemental Watering: During periods of intense heat or abnormal rainfall, supplemental watering may be required prior to acceptance of the work.
- E. CONTRACTOR will be responsible for watering in all sodded areas and assure that sodded areas receive 2 to 2½ inches of water per week through Final Acceptance. CONTRACTOR shall make no claim for the loss of sod due to the failure of the irrigation system (if applicable).

3.05 MAINTENANCE

- A. Begin maintenance immediately following the last operation of sod installation. Maintenance includes watering, mowing, replanting, and all other work necessary to produce a uniform stand of grass. The maintenance program will continue for four months or until the newly sodded areas are fully-grown in and have passed final completion inspection by the LANDSCAPE ARCHITECT.
- B. Pest Management: Apply Oftanol at the following rates per 1000 square feet, depending on the formulation used: 5G at 0.9 pounds, 1.5G at three pounds or 2E liquid at three fluid ounces. The application shall be watered into the soil with approximately one-half to one inch of water. All pesticides shall be used in a manner consistent with manufacturer's specifications.
- C. Insects: Inspect the grass daily for the presence of worms. For control, use insecticides such as Diazinon, Dursban, Lannate, and Proxol. Should other turf insects become a problem contact LANDSCAPE ARCHITECT for control recommendations. All insecticides shall be used in a manner consistent with manufacturer's specifications.
- D. Weeds: Begin a weed control program three to four weeks after sod installation. However, do not begin spraying for weeds if the Bermuda grass has not greened up and become established. Also, be sure the soil contains adequate moisture before each application of spray. All herbicides shall be used in a manner consistent with manufacturer's specifications.
 - 1. For control of grassy weeds such as crabgrass, goosegrass, and watersedge apply Monosodium Methanearsonate (MSMA) at the rate of one to two pounds active ingredient per acre. Repeat the application every five to seven days until the weeds are controlled. For grassy weed control use MSMA at the rate of one pound per acre.

2. Broadleaf weeds such as mousseear, chickweed, pennyport and Carolina geranium can be controlled using Buctril at the rate of one-half pound active ingredient per acre. 2-4D should be used at the rate of 1/8 pound per acre. Of the two materials, Buctril is safer than 2-4D for use on Bermuda grass; however, for effective control, it must be applied when the weeds are in the one to two leaf stage.
- E. Water: The CONTRACTOR will assure that all sodded areas are receiving a consistent and uniform amount of water during the maintenance period. CONTRACTOR shall test, if necessary, the irrigation system and check the controller so that the newly sodded areas are receiving 2 to 2½ inches of water per week. The sodding CONTRACTOR is responsible for assuring and providing, if necessary, water to all sodded areas during the maintenance period.
 - F. Mowing: Mow at regular intervals using a reel-type mower set to cut at one inch for 419 Bermuda.
 - G. Rolling: To provide a smooth, firm surface for future play and operation of mowing equipment, all areas will need to be rolled. The first rolling should begin when the grass is approximately 25 to 50 percent covered.

3.06 WARRANTY

- A. The CONTRACTOR as part of their contract, shall furnish three written guarantees warranting all materials, workmanship, and products for a period of not less than 60 days from the time of Final Acceptance.
- B. The CONTRACTOR will repair all washouts that occur within the warranty period at no additional cost to the OWNER. Repairs that are considered excessive by the LANDSCAPE ARCHITECT and the OWNER (i.e., damage associated with or caused by other Contractors) shall be subject to review and negotiation between the OWNER and CONTRACTOR.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. CONTRACTOR will submit a lump sum bid and shall receive full compensation for conforming to the provisions of this section and related drawings. Lump sum paid will be for the complete installation as shown and specified, including any addenda or change orders.
- B. No additional compensation will be allowed. A complete unit cost breakdown, based on a square foot unit, shall be included as a separate item and submitted with the CONTRACTOR's bid. The OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02488

**SECTION 02703
TRENCHING AND BACKFILLING FOR PIPING**

PART 1 GENERAL

1.01 SCOPE

- A. The work specified in this section consists of the excavation, bedding, and backfilling of trenches for water main, storm sewer, sanitary sewer, force main, irrigation lines, and utility lines. Also included is the excavation and backfilling of pertinent structures, such as manholes, inlets, pump stations, etc.

1.02 REFERENCES

- A. Referenced standards or specifications such as ASTM, AASHTO, or AWWA, shall be the latest edition.
- B. WilsonMiller Specifications Sections:

02817 CLEARING AND GRUBBING
02820 EXCAVATION AND EMBANKMENT
- C. Attachments

Figure A (Section 02703)

1.03 SUPPLEMENTAL REQUIREMENTS

- A. The requirements in this section are the minimum for this project. Any additional requirements stated in the Contract Documents or otherwise specified by the manufacturer or any governmental agency in a permit, code, or ordinance shall take precedence over the requirements of this section.

1.04 SUBSURFACE CONDITIONS

- A. The CONTRACTOR shall be responsible for determining the subsurface conditions in areas where excavation can be anticipated. The type of soil, depth and thickness of rock and unsuitable materials, ground water table, and other factors that affect cost shall be evaluated prior to submitting a bid.
- B. The method used to determine subsurface conditions shall be the responsibility of the CONTRACTOR. Soil borings (if provided) only supply information in the exact location of each boring; therefore, on-site exploration of the subsurface is the CONTRACTOR's responsibility. All on-site exploration shall be scheduled with the OWNER and coordinated with jurisdictional agencies and utility companies.

1.05 PROTECTION

- A. With the exception of sheeted excavations for deep pipe installations, wet wells or other poured in place construction activity, all excavations or trenches shall be backfilled immediately after the work is completed. The CONTRACTOR shall plan the daily construction activity whereby trenches are backfilled and compacted in accordance with the accompanying specifications at the end of each work day. Should it be necessary for reasons other than standard construction procedures to leave an excavation open the CONTRACTOR shall isolate and protect the workers and the general public from the entire excavation by barricades, fences, signs, lights or other devices required by the contract documents and/or local agency codes.

- B. The CONTRACTOR shall comply with the applicable trench safety standards specifically set forth in Florida's Trench Safety Act.
- C. Pavement, sidewalk, driveway, curb and gutter, and other structures shall be protected from damage during excavation wherever possible and as directed in the Contract Documents.

PART 2 PRODUCTS

2.01 BEDDING MATERIALS

- A. Crushed stone bedding material: Crushed, washed, and graded in accordance with ASTM C-33, gradation 67.
- B. Sand bedding: Clean sand, free of clay, silt, debris, roots, vegetation, or rock larger than one-half inch in diameter.
- C. Clean 3/8 inch washed shell material.

2.02 BACKFILLING MATERIALS

- A. Select fill: Materials excavated from the limits of construction or imported that conform to AASHTO Standard M-145, Groups A-1 and A-3 and free of rocks or gravel, clay, silt, debris, roots and vegetation.
- B. Common fill: Material that conforms to AASHTO Standard M-145, Groups A-1, A-2, or A-3, free of rocks or gravel, clay, silt, debris, roots and vegetation.

PART 3 EXECUTION

3.01 PREPARATION

- A. Investigate existing conditions and identify line and grade stakes as applicable. Arrange for placement of materials required to minimize the duration of open trenches or excavated areas.
- B. Install well points or other approved methods of dewatering as required so that the discharged water complies with all pertinent ordinances, codes, permits, or requirements of the Contract Documents.
- C. Implement traffic control and protective devices as may be applicable.
- D. For pipe lines placed above the natural ground, embankment shall be placed and compacted to an elevation of at least two feet above the top of the pipe and to a width equal to four pipe diameters prior to trench excavation. The minimum side slopes shall be six feet (horizontal) to one foot (vertical).

3.02 CLEARING AND GRUBBING

- A. Prior to trench excavation, the existing surface that will be disturbed by the excavation operation shall be cleared and grubbed in accordance with WilsonMiller Specification Section 02817 CLEARING AND GRUBBING.

- B. The limits of clearing and grubbing for this section shall be as shown on the plans or as otherwise specified in the Contract Documents. Where the clearing limits are not shown or stated, the limits of clearing and grubbing shall be the smallest area that will facilitate the construction of work specified.

3.03 TRENCH WIDTH

- A. Trenches for pipe construction shall be excavated to a width that will provide enough working space next to the pipe and facilitate proper compaction of backfill material around the haunches of the pipe. All such trench excavation shall comply with the manufacturer's recommendations for the type of pipe used.
- B. Excavation for structures such as manholes, inlets, pump stations, etc. shall be large enough to provide adequate working room. A minimum distance of two feet shall be provided between the outside edge of the structures and the side or wall of the excavation to allow for proper backfilling and compaction.

3.04. EXCAVATION

- A. All trenches shall be excavated by open cut unless otherwise indicated in the Contract Documents.
- B. The length of the open cut trench that is excavated ahead of the pipe laying operation shall not exceed half of the normal daily production length. The excavation and pipe laying operation shall be coordinated so that all pipe laid in one day is fully backfilled except for the last length of pipe in an unfinished run between structures.

3.05 ROCK EXCAVATION

- A. Where rock is encountered during the performance of work specified in this section, the rock shall be excavated in accordance with WilsonMiller Specifications Section 02820 EXCAVATION AND EMBANKMENT.

3.06 UNSUITABLE MATERIALS

- A. Where materials unsuitable for backfilling are encountered during trench excavation, these materials shall be separated from the suitable materials and disposed of off-site or utilized on-site in embankment areas as authorized by the OWNER's Representative.

3.07 REPLACEMENT MATERIAL

- A. Where unsuitable material including rock larger than six inches is excavated and hauled off-site, replacement material shall be acquired from on-site excavation as provided by the Contract Documents or as authorized by the OWNER. Where replacement material is not available from the site, the CONTRACTOR shall furnish fill material from an off-site borrow source. Only materials that conform to Article 2.02 of this section may be used for backfilling operations unless otherwise specified in the Contract Documents or authorized in writing by the OWNER's Representative.

3.08 PREPARATION OF TRENCH BOTTOM

- A. Where rock is encountered at the bottom of the trench, the trench shall be undercut to a depth of at least six inches below the bottom of the pipe to allow for a bedding cushion above the rock.

- B. Where muck, roots or other organic materials are encountered at the bottom of the trench, the trench shall be undercut to remove the unsuitable material to the satisfaction of the OWNER's Representative.
- C. The CONTRACTOR shall dewater the excavation operation as required to provide a dry trench bottom. Prior to beginning work CONTRACTOR shall prepare their dewatering plan and obtain all necessary permits.

3.09 BEDDING

- A. Where the exposed material at the bottom of the trench meets the requirements of Article 2.01 this section, the existing material may be used as bedding, provided it is compacted.
- B. Where the bottom of the trench has been undercut to remove rock or unsuitable material, the bottom shall be brought up to grade by placing and compacting bedding materials conforming to the requirements of Article 2.01 this section.
- C. In exceptionally wet conditions, the CONTRACTOR may request permission from the OWNER's representative to lay the pipe in water. If that request is authorized, the CONTRACTOR shall undercut the existing bottom a minimum of six inches and replace with "bedding material" conforming to Article 2.01A or 2.01C this section. This bedding material shall be tamped and consolidated to provide a solid and unyielding base for the pipe. During this operation, the CONTRACTOR shall continue the dewatering process to facilitate adequate installation of the pipe or structure and to permit observation of the process by the OWNER's representative. The additional undercut excavation, crushed stone bedding, and other associated costs shall be at the CONTRACTOR's expense and no extra compensation will be allowed.

3.10 BACKFILLING

- A. Backfilling of pipe trenches shall be done in three stages as follows:
 - 1. First Stage: Material above the bedding and beneath the haunches compacted in six-inch layers.
 - 2. Second Stage: Material along the sides of the pipe up to at least one foot above the top of the pipe compacted in six-inch layers.
 - 3. Third Stage: Material above the second stage up to the bottom of the subgrade or the finished surface as applicable compacted in 12-inch layers.
- B. Backfilling of structures shall be done in 12- inch compacted layers up to the top of the completed or partially completed structure.
- C. Materials used for backfilling shall comply with the requirements of Article 2.02 this section or as otherwise authorized in writing by the OWNER's representative. For backfilling of pipe, "Select Fill" shall be used for the first and second stages. "Common Fill" shall be used for the third stage of pipe backfill and for backfilling structures.

3.11 COMPACTION

- A. The compaction requirements for backfilling pipe trenches and around structures are listed below under the following categories. These requirements are the minimum percentages of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).

1. Under and adjacent (within ten feet) to pavement shall be 95 percent except within three feet of bottom of subbase grade it shall be 98 percent.
2. Not under pavement: Any area outside the 10 feet referred to above shall be 95% for all stages.

These requirements are the minimum percentages of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).

3. Under and adjacent (within ten feet) to structures shall be 95 percent except within three feet of finished grade it shall be 98 percent.
- B. The CONTRACTOR shall add water or dry out the material used for backfilling until the moisture content is within two percent of the optimum moisture required to achieve the maximum compaction.
 - C. A density test shall be taken for each 300 lineal foot section of trench or part thereof for each layer.
 - D. A density test shall be taken for every other layer for each structure.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Unless otherwise specified in the Contract Documents, the cost of trenching and backfilling shall be included in the various lump sum and unit prices in the contract.

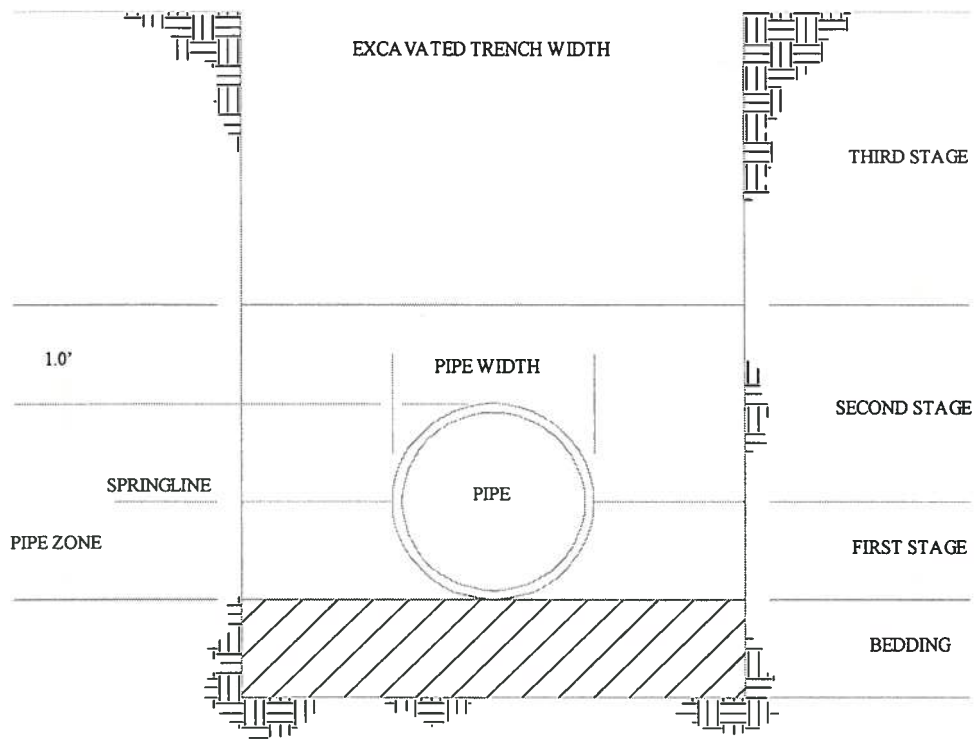


FIGURE A

N.T.S.

END OF SECTION 02703

SECTION 02704
TEMPORARY TRAFFIC CONTROL

PART 1 **GENERAL**

1.01 **SCOPE**

- A. This section specifies temporary traffic control for the project as shown on the plans and/or called for in the specifications. In general, all temporary traffic control shall comply with the latest editions of the Florida Department of Transportation's Standard Specifications for Road and Bridge Construction, herein referred to as FDOTSPEC, the Florida Department of Transportation's Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Index 600, and the Federal Highway Administration's Manual on Uniform Traffic Control Devices, Part 6, Temporary Traffic Control.

- B. The main objective of this section is to provide safe and efficient movement of vehicles, bicyclists and pedestrians through or around the work zone, and protect workers and equipment from the traveling public.

The secondary objective of this section is to provide efficient completion of the construction or maintenance activity causing the interruption of normal roadway use, and protection of the work in progress.

1.02 **SPECIFICATIONS AND STANDARDS**

- A. The work specified in this section shall be in accordance with the documents identified in Article 1.01.A. and the requirements of the authority having jurisdiction over the operation and maintenance of the roadway, bicycle and/or pedestrian path.

PART 2 **PRODUCTS**

2.01 **MATERIALS**

- A. All materials used for temporary traffic control, including but not limited to signs, signals, pavement markings, channelizing devices, warning lights and barriers shall meet the requirements of the documents identified in Articles 1.01.A. and 1.02.A.

PART 3 **EXECUTION**

3.01 **GENERAL REQUIREMENTS**

- A. All work required for temporary traffic control shall be executed in accordance with the requirements of the documents identified in Articles 1.01.A. and 1.02.A.

3.02 SPECIFIC REQUIREMENTS

- A. In addition to the CONTRACTOR providing a worksite traffic supervisor in accordance with FDOTSPEC Section 102-3.2, the Traffic Control Plan (TCP) shall be installed, maintained and removed under the direct supervision of an individual who is certified by a Florida Department of Transportation (FDOT) approved training agency, which meets the FDOT's maintenance of traffic training requirement for intermediate or advanced training.
- B. The CONTRACTOR will maintain the existing number of lanes of traffic in each direction at all times by using existing or constructing temporary pavement. There shall be no lane closures or road closures without the prior written approval of the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadway.
- C. The CONTRACTOR shall not provide detours to re-route vehicle, bicycle and/or pedestrian traffic around the work zone without prior written approval from the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadways.
- D. If approved by the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadway, the CONTRACTOR may concurrently construct portions of the work from different phases.
- E. If the CONTRACTOR cannot maintain the existing access to a current residence or business, then the CONTRACTOR shall provide an alternate access, as approved by the ENGINEER.
- F. All surfaces used to maintain traffic through the work zone shall be paved.
- G. Any alterations to the approved traffic patterns must be reviewed and approved by the ENGINEER prior to implementation, unless the alterations are required to avoid eminent danger to the public or the workers present within the approved work zone.
- H. All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Payment for temporary traffic control shall be on a lump sum basis in accordance with the accepted bid. Such payment shall constitute full compensation for furnishing all labor, materials, and equipment necessary to complete the construction in accordance with the plans and specifications.

END OF SECTION 02704

**SECTION 02705
RESTORATION AND GENERAL REQUIREMENTS**

PART 1 GENERAL

1.01 SCOPE

- A. The work specified in this section consists of restoring existing surfaces or any improvements such as but not limited to pavement, curb and gutter, sidewalk, structures, signs, or landscaping damaged during construction.

1.02 SPECIFICATIONS AND STANDARDS REFERENCE

- A. Any reference to a supplementary specification or standard such as ASTM, AWWA, AASHTO, is intended to be a reference to the latest edition of that specification or standard.
- B. All references to "FDOTSPEC" shall mean the latest edition of the "Florida Department of Transportation Standard Specifications for Road and Bridge Construction."
- C. WilsonMiller Specifications Section:

02703 TRENCHING AND BACKFILLING FOR PIPING

PART 2 PRODUCTS

2.01 MATERIALS

- A. Flexible Pavement: Comply with requirements of Sections 901, 902, 911, 913, 914, 916, and 917 of the FDOTSPEC.
- B. Concrete Pavement, Driveway, Sidewalk, Curb and Gutter: Comply with requirements of Sections 901, 902, 921, 923, 924, and 925 of the FDOTSPEC.
- C. Grassing: Comply with requirements of Section 981, 982, and 983 of the FDOTSPEC.

PART 3 EXECUTION

3.01 GENERAL

- A. Existing property damaged during construction shall be restored to a condition at least equal to the original condition of the property, unless otherwise specified in the Contract Documents.
- B. Existing roadway or drainage improvements damaged within a roadway or drainage right-of-way or easement shall be restored in accordance with the requirements of the state, county, and city agencies having jurisdiction thereof.

3.02 UNDERGROUND FACILITIES

- A. Existing underground utilities and drainage systems damaged during construction shall be immediately repaired to the specifications of the owner of the damaged system. Where the utility owner elects to make said repairs under their direction, the CONTRACTOR shall pay for such repair costs directly.
- B. Where damage to existing underground utilities is anticipated due to unavoidable conflicts, the CONTRACTOR shall construct their work so as to cause the least amount of interruption of service as possible.
- C. Where construction changes the land surface elevation and existing valve boxes are present, the valve box will be extended or reduced by means of new extension pieces of proper length for the finished grade.

3.03 TRENCHING AND BACKFILLING

- A. Any trenching and backfilling required to satisfy the requirements of this section shall be in accordance with Section 02703, TRENCHING AND BACKFILLING FOR PIPING.

3.04 PAVEMENT CUTS

- A. On dead end streets, collector streets, and high traffic streets, trenching and pipe laying shall be performed in such a manner that at least one-way traffic is maintained at all times.
- B. All trench lines across existing pavements, driveways, sidewalks, curbs, etc. shall be saw cut in straight parallel lines prior to trench excavation.
- C. CONTRACTOR shall exercise care to minimize amount of pavement, sidewalk, driveways, and curbing to be removed.

3.05 CONCRETE PAVEMENT, CURB AND GUTTER, ETC.

- A. Concrete pavement, driveway, sidewalk, and curb and gutter damaged during construction shall be restored to the same dimensions as that removed or as specified in the Contract Documents. All such restoration shall be in accordance with the applicable Sections 345, 350, 520, 522, of FDOTSPEC.
- B. Prior to placing concrete, the subgrade shall be compacted to at least 98% of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).

3.06 FLEXIBLE PAVEMENT

- A. Stabilized subgrade damaged during construction shall be restored in accordance with Section 160 of FDOTSPEC. The restored stabilized subgrade shall have a minimum bearing value of LBR-40, and be compacted to at least 98% of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).

- B. Soil cement or shell base damaged during construction shall be restored in accordance with Section 200 of FDOTSPEC. The minimum density of the restored base shall be 98% of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557). After completion of the base course, a bituminous prime coat shall be applied in accordance with Section 300 of FDOTSPEC when applicable prior to placement of asphalt surface course.
- C. Asphalt surfaces damaged during construction shall be replaced with a similar surface in accordance with Section 330 of FDOTSPEC. The material used shall be the same type and the thickness of that damaged, except that the minimum thickness shall be one inch. In the case of multiple layers, each layer or course of the damaged asphalt surface shall be reconstructed to duplicate the original.

3.07 LANDSCAPING AND MISCELLANEOUS

- A. Trees and bushes damaged during construction shall be removed and replaced with equal size and type by the CONTRACTOR at their expense unless otherwise specified in the Contract Documents.
- B. Grassed areas damaged during construction shall be repaired with the same type sod unless otherwise specified in the Contract Documents.
- C. Sodding and grassing and mulching operations shall begin within a maximum of three (3) weeks after utility installation, except in cases of front and back slopes which shall be done immediately following installation completion. Any yards or part of right-of-way in front of private property, that has a grass mat, shall be re-sod with like sod. CONTRACTOR shall maintain disturbed areas until acceptable vegetation is re-established.
- D. Areas without established grass mats in front of vacant lands shall be restored by seeding and mulching. The grass mat shall be restored to the required design or finished grade to permit proper drainage.
- E. Unimproved areas such as an open field or lot having its surface disturbed during construction shall be graded to duplicate the existing conditions and seeded and mulched unless otherwise specified in the Contract Documents.
- F. Any damage to an existing irrigation system caused by the construction operations shall be repaired by the CONTRACTOR prior to the installation of sod, seed, or other landscaping unless otherwise specified in the Contract Documents.
- G. Mailboxes, railroad ties, or any other miscellaneous items damaged during construction shall be repaired to the satisfaction of the OWNER's representative unless otherwise specified in the Contract Documents.

3.08 DENSITY TESTS

- A. Density tests shall be performed in accordance with 3.08B and elsewhere in the specifications as may apply. The CONTRACTOR shall pay for all tests related to restoration work.

- B. Field density tests shall be required for each stage of fill, stabilized subgrade, soil cement base, and asphalt surface in accordance with the frequency listed below unless otherwise authorized by the OWNER's representative.
- * Transverse Trench Crossing - one/location/stage
 - * Longitudinal Trench - one/300 LF/stage
 - * Pavement Repair - one/1000 SY/stage
- C. Concrete shall be tested for slump, air content, and compressive strength every 50 cubic yards for continuous pours. For smaller volume work, the same tests shall be taken for each separate pour. A minimum of four (4) sample cylinders shall be made when testing for compressive strength.

3.09 GENERAL REQUIREMENTS

- A. Maintenance of Service - CONTRACTOR shall provide facilities and be responsible for protection of all structures, buildings and utilities, underground, on the surface, or above ground, against trenching, dewatering or any other activity connected with work covered by this modifications of existing utilities, CONTRACTOR shall provide for maintaining continuous water electric, telephone, gas, sewage and other utilities, to all present customers of such utilities unless approval is obtained in writing from the utility company or OWNER for the interruption of such services.
- B. Existing Facilities - Underground structures shown on the plans are according to the best available information, but it shall be the responsibility of the CONTRACTOR to acquaint himself with the exact location and to avoid conflict with all existing facilities. Where underground structures are damaged, they shall be immediately repaired to the specifications of the owner of the utility. If the owner of the utility elects to make such repairs with their own forces, CONTRACTOR shall make arrangements as to protect the OWNER from all damages. Where such conflicts are unavoidable, every effort shall be made to construct the work so as to cause as little interference as possible with services rendered by the structure disturbed.
- C. Utility Installation Permits - CONTRACTOR shall obtain necessary permits for construction across public and private property, streets, railroads, telephone lines, power lines, etc. CONTRACTOR shall abide by all rules, regulations and requirements of the owner of such property in regard to construction under this contract, including giving of notices, provisions for inspection and employment of such methods of construction as may be required. Costs of any permits shall be incidental to construction and reflected in unit prices bid.
- D. Work in State Rights-of-Way - Construction in state rights-of-way shall comply with the State of Florida Department of Transportation (FDOT) Utility Accommodation Guide.
- E. Work in County/City Rights-of-Way - Construction in county/city rights-of-way shall comply with the utility accommodation manual for the agency having jurisdiction.

- F. Clearing of Excavation Corridor - Only items necessary to provide adequate work space including space for hubs, batter boards, and equipment shall be removed within the right-of-way, easement, or designated construction corridor. Trees, shrubbery, poles, mailboxes, and other items not to be removed shall be protected from damage during construction. When necessary to cut tree roots and branches, such cutting shall be performed with saws in a neat and workmanlike manner.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. There shall be no separate payment for any work defined in this section. The cost of any such restoration work shall be included in the various work items that necessitate the restoration unless otherwise specified in the Contract Documents. Any reference to unit price payment in the FDOTSPEC shall not be applicable.

END OF SECTION 02705

SECTION 02707
STORM SEWERS, PIPE AND STRUCTURES

PART 1 **GENERAL**

1.01 **SCOPE**

- A. Work specified in this section consists of furnishing and installing a storm drainage system with all the component parts specified in the Contract Documents. Included are storm sewers, pipe culverts, manholes, crossing boxes, inlets, catch basins, pipe end treatments, restoration, and other similar items defined in this section.

1.02 **SPECIFICATION AND STANDARDS REFERENCE**

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc., are referenced, such references shall be the latest edition.
- B. WilsonMiller Specifications Sections:

02703 TRENCHING AND BACKFILLING FOR PIPING
02705 RESTORATION AND GENERAL REQUIREMENTS
03030 CONCRETE CONSTRUCTION
- C. All references to "FDOTSPEC" shall mean the latest edition of the "Florida Department of Transportation Standard Specifications for Road and Bridge Construction".
- D. All references to "FDOT INDEX BOOK" shall mean the latest edition of the "FDOT Roadway and Traffic Design Standards".

PART 2 **PRODUCTS**

2.01 **CORRUGATED ALUMINUM ALLOY CULVERTS**

- A. Aluminum alloy culvert pipe shall meet requirements of Section 945, FDOTSPEC. Where bituminous-coated aluminum pipe is specified, bituminous coating shall meet requirements of AASHTO M 190, for Type A, (Fully Bituminous Coated).

2.02 **CORRUGATED STEEL PIPE AND PIPE ARCH**

- A. Corrugated steel pipe, including round culvert pipe, pipe arch and under-drain, and coupling bands for each type, shall conform to requirements of Section 943, FDOTSPEC. Corrugated steel pipe shall be bituminous coated, both sides, in accordance with requirements of AASHTO M 190, Type A, (Fully Bituminous Coated).

2.03 **REINFORCED CONCRETE PIPE**

- A. Reinforced concrete pipe materials shall conform to Section 941, FDOTSPEC.

- B. Reinforced Concrete Pipe (Round) - Unless otherwise specified, reinforced concrete pipe shall meet the requirements of ASTM Designation C 76, "Standard Specification for Reinforced Concrete Pipe", Class III, Wall Thickness B. Lifting holes will not be permitted in pipe. CONTRACTOR shall only use pipe joint lubricants supplied by or recommended by pipe manufacturer. Lubricant shall be water-soluble, non-toxic, and inhibitor to bacterial growth, and shall be non-detrimental to the elastomeric seal and pipe. Mineral oil, petroleum jelly, hydrogenated vegetable fat (i.e. Crisco(r), cooking oil, grease, etc.) shall not be used. Joints for round reinforced concrete pipe shall be made by use of "O-Ring", round synthetic rubber gaskets meeting the requirements of Sections 430-7 and 942-1, FDOTSPEC. An 18-inch wide Mirafi wrap shall be centered on each joint.
- C. Reinforced Concrete Pipe (Elliptical) - Elliptical concrete pipe shall meet the requirements of ASTM C 507, except exceptions and modifications to ASTM C 76, as specified in Section 941-1.3, FDOTSPEC shall apply also to elliptical pipe. Standard elliptical pipe shall meet requirements of Table I for Class HE-III and special elliptical pipe shall meet requirements of Table I for Class HE-IV. Lifting holes will not be permitted in pipe. Joints for elliptical concrete pipe shall be designed in accordance with ASTM C443 and AASHTO M198 and provide a rubber gasketed watertight connection. For pipe sizes greater than 58" X 91" use same joint as arch pipe. An 18-inch wide Mirafi wrap shall be centered on each joint.
- D. Reinforced Concrete Pipe (Arch Pipe) - Arch concrete pipe shall meet the requirements of ASTM C 506, except exceptions and modifications to ASTM C 76, as specified in 941.1.3., FDOTSPEC shall apply where applicable to arch pipe. Lifting holes will not be permitted in pipe. Joints for arch concrete pipe - field joints for arch concrete pipe shall be made with a pre-formed plastic gasket material. Gasket material shall meet the requirements of Section 942-2, FDOTSPEC. Material shall be "Ram Nek" as manufactured by K.T. Snyder Co. or approved equal. An 18-inch wide Mirafi wrap shall be centered on each joint.

2.04 CORRUGATED POLYETHYLENE PIPE

- A. Corrugated polyethylene pipe shall meet the requirements of AASHTO M294 specification except size range shall be expanded through 36-inch diameter. Minimum pipe values shall be as follows:

DIAMETER	INTERIOR	PIPE STIFFNESS	N FACTOR
12"	Smooth	45 psi	.12
15"	Smooth	42 psi	.12
18"	Smooth	40 psi	.12
24"	Smooth	34 psi	.12
30"	Smooth	28 psi	.12
36"	Smooth	22 psi	.12

2.05 MORTAR, BRICK, AND REINFORCING BARS

- A. Mortar used for constructing and plastering manholes, catch basins, drop inlets and junction boxes shall meet the requirements of ASTM Specification Serial Designation C 270. CONTRACTOR shall use either a Portland cement-hydrated lime mixture cement or a Portland cement mixture with masonry cement added for

improved workability. However, the same materials must be used throughout the project. Mortar materials shall be proportioned by volume and shall be as follows:

One (1) part Type I Portland Cement - ASTM C-150

Three (3) parts Aggregate (sand) - ASTM C-144

Addition of masonry cement, ASTM C-91 will be permitted to improve workability of mortar.

- B. Brick used in construction of manholes, catch basins, drop inlets and junction boxes shall be Portland cement concrete meeting the requirements of ASTM Serial Designation C-55, Grade P II.
- C. All bars shall be deformed Reinforcing Steel and shall meet the requirements of Specifications for Billet-Steel Bars for Concrete Reinforcement (ASTM A-15), and to Specifications for Deformation on Deformed Steel Bars (ASTM A-305) for concrete reinforcement. All bars shall be lapped and placed in accordance with ACI Requirements and Specifications.

2.06 STRUCTURES

- A. Structures shall be precast or cast in place. Work specified in this section shall consist of furnishing all concrete, reinforcing steel, ties, forms, labor, materials, and placing of all embedded pipe sleeves, fixtures, joist anchors, etc., necessary to complete the work shown on the plans and specified herein, all in accordance with the Southern Building Code and the American Concrete Institute Building Code Requirements for Reinforced Concrete (ACI 318). All concrete shall develop 3,000 psi compressive strength in 28 days. Coarse aggregate shall be no smaller than 1/2-inch in diameter.

2.07 IRON CASTINGS

- A. Frames, covers and gratings shall be of the type and duty shown on the plans. Iron castings shall conform to ASTM A-48, Class 30, gray cast iron. All castings shall be true to pattern in form and dimension, free from faults or other defects. Bearing surfaces between cast frames, cover and grates shall be machined fitted together and match-marked to prevent rocking. All covers shall have a concealed type pick-hole (non-penetrating), and shall have the words "storm sewer" cast thereon.

2.08 CROSSING BOXES (CONFLICT BOXES)

- A. Conflict boxes shall be constructed at the location and depth indicated on the plans and in accordance with details shown.

PART 3 EXECUTION

3.01 GENERAL

- A. Pipe and structures shall be constructed at the location and elevations specified on the plans and in accordance with the details specified in the Contract Documents.

3.02 TRENCHING AND BACKFILLING

- A. Excavation, bedding, and backfilling of trenches during the construction of a storm drainage system shall comply with the requirements of WilsonMiller Specifications Section 02703, TRENCHING AND BACKFILLING.

3.03 MATERIAL HANDLING

- A. Pipe and accessories shall be loaded and unloaded by lifting with hoists or skidding in a manner that will avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. In distributing material at the site of the work, each piece shall be off-loaded near the place where it is to be laid in the trench.

3.04 PIPE LAYING

- A. In general, corrugated metal pipe shall be installed in accordance with the Handbook for Steel Drainage and Highway Construction Products, published by the American Iron and Steel Institute. In general, concrete pipe shall be installed in accordance with the Concrete Pipe Installation Manual, published by the American Concrete Pipe Association.
- B. Laying of pipe in finished trenches shall be commenced at the lowest point, and shall progress up-grade. All pipe shall be carefully laid, true to the lines and grades given, with hubs up-grade and tongue end fully entered into the hub. When pipe with quadrant reinforcement, or circular pipe with elliptical reinforcement is used, pipe shall be installed in a position such that manufacturer's marks designating "top" and "bottom" of the pipe shall not be more than five degrees from the vertical plane through the longitudinal axis of the pipe. Any pipe that is not in true alignment or which shows any settlement after laying shall be taken up and re-laid without additional compensation. Pipe and joints shall be kept clean at all times.

3.05 SAND CEMENT RIP RAP

- A. Where the plans and specifications call for sand cement construction, bags shall be made of burlap. Paper bags will not be permitted.

3.06 PIPE END TREATMENTS

- A. Where storm drains connect to a lake, location of the headwall or end section shown on the plans shall be adjusted to fit the slope of the lake bank. Length of pipe at each end treatment shall be adjusted accordingly, and the quantity of pipe paid for shall be the actual length installed.
- B. If mitered ends are called for on the plans, mitered end section shall be constructed so that the top of the pipe end will match and intersect the designed slope of the lake bank, and the concrete collar slope shall conform to the mitered end detail.

- C. Storm drainage CONTRACTOR and lake excavation CONTRACTOR shall coordinate the location and installation of the headwall or mitered end section to be constructed at the lake bank. All "field adjustments" to end treatment location or elevation shall be approved by the ENGINEER of Record prior to construction.

3.07 JOINING ARCH CONCRETE PIPE

- A. Joint Design - CONTRACTOR shall furnish the ENGINEER with details in regard to configuration of the joint and the amount of gasket material required to affect a satisfactory seal. Joint surfaces which are to be in contact with the gasket material shall not be brushed or wiped with a cement slurry. Minor voids may be filled with cement slurry provided that all excess cement slurry is removed from the joint surface at the point of manufacture.
- B. Primer - Prior to application of gasket material, a primer of the type recommended by the manufacturer of the gasket material shall be applied to all joint surfaces which are to be in contact with the gasket material. The surface to be primed shall be thoroughly cleaned and dry when primer is applied.
- C. Application of Gasket - Prior to placing a section of pipe in the trench, gasket material shall be applied to form a continuous gasket around the entire circumference of the leading edge of the tongue. The paper wrapper on the exterior surface of the gasket materials shall be left in place until immediately prior to joining of sections. The gasket material shall be checked to assure it is bonded to the joint surface, immediately prior to placing a joint in the trench. Plastic gasket material shall be applied only to surfaces which are dry. A hand heating device shall be kept at the job site to dry joint surfaces immediately before application of the plastic gasket material. When the atmospheric temperature is below 60°F, plastic joint seal gaskets shall either be stored in an area warmed to above 70°F, or artificially warmed to this temperature in a manner satisfactory to the ENGINEER.
- D. Installation of Arch Concrete Pipe - Handling of a section of pipe after the gasket material has been affixed shall be carefully controlled to avoid displacement of gaskets or contamination of gasket material with dirt or other foreign material. Any gasket displaced or contaminated in handling of the pipe shall be removed and repositioned or replaced as directed. Pipe shall be installed in a dry trench. The bottom of the trench shall be carefully shaped so as to minimize the need for realignment of sections of pipe after they are placed in the trench. Care shall be taken to properly align each section of pipe to the gaskets coming into contact. Realignment of a joint after the gaskets come into contact tends to reduce the effectiveness of the seal and shall be held to a minimum. When pipes are joined, the entire joint shall be filled with gasket material and there shall be evidence of squeeze-out of gasket material for the entire internal and external circumference of the joint. Excess material on the interior of the pipe shall be trimmed to provide a smooth interior surface. After the pipe is in its final position, joint shall be carefully examined to determine the gasket material is satisfactorily adhering to all surfaces of the joint and the entire joint is filled with gasket material. If a joint is defective, the leading section of pipe shall be removed and the joint resealed.

- E. In addition to the required gasketed joint, a filter fabric jacket shall be included. The filter fabric jacket shall conform to FDOT Miscellaneous Drainage Detail Index No. 280 Sheet 1.

3.08 INSTALLATION OF CORRUGATED POLYETHYLENE PIPE

- A. Pipe shall be joined by split corrugated couplings at least seven corrugations wide and exceeding soil tightness requirements of the AASHTO Standard Specifications for Highway Bridges Section 23 (2.23.2). Unless otherwise specified by the ENGINEER, a mastic type gasket shall be utilized.
- B. Pipe and accessories shall be unloaded by using skidways, hoists or dropping on non-paved areas, in a manner that does not damage the pipe.
- C. Pipe shall be installed in accordance with ASTM 2321 specifications.

3.09 PLACING OF CONCRETE FOR STRUCTURES

- A. Concrete shall be deposited in clean wet form as nearly as practicable in its final position to avoid segregation. Concrete placing shall be carried on at such a rate that the concrete is, at all times, plastic and flows readily into the spaces between the bars. Concreting shall be a continuous operation until the panel or section is completed. Walls and slabs shall be poured monolithically unless shown otherwise on the plans. All structural concrete shall be mechanically vibrated.
- B. No concrete shall be allowed a free fall of more than four feet or allowed to strike against a vertical or inclined surface or reinforcement above point of deposit. Placing by means of pumping may be allowed, contingent upon the adequacy of the equipment for this particular work. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced.
- C. Placing of concrete shall be so regulated the pressure caused by wet concrete shall not exceed that used in the design of the forms. After the concrete has taken its initial set, care shall be exercised to avoid jarring the forms or placing any strain on the ends of projecting reinforcement.
- D. Joints between the junction box and manhole walls and incoming and out-going pipes shall be sealed with Portland Cement Mortar to form a watertight joint. All pipes in manholes or catch basins shall be sawed off flush with the inside face of the structure and sawed ends of these pipes shall be grouted with Portland Cement Mortar to a smooth uniform covering with no steel exposed.

3.10 FINAL INSPECTION OF STORM WATER SYSTEM

- A. Each sewer, upon completion, or at such time as the ENGINEER may direct, is to be cleaned and inspected. All repairs or alterations shown necessary by these inspections shall be made; all broken or cracked pipe removed; all excessive infiltration or exfiltration corrected; all deposits in pipe and manholes removed; and the sewer left clean, true to line and grade and ready for use. Each section of pipe from manhole to manhole is to show a full circle of light from either end. Each manhole shall be to the specified form and size, to the proper depth and watertight.

3.11 ADJUSTING EXISTING STRUCTURES

- A. Existing manholes, catch basins, inlets, conflict boxes, monument boxes, etc., within the limits of the proposed work, that do not conform to the finished grade of the proposed pavement, or to the finished grade designated on the plans for such structures, shall be cut down or extended, and made to conform to the grade of the new pavement, or to the designated grade of the structure if outside of the proposed pavement area. The materials and construction methods for this work shall conform to the requirements specified above. Where manholes are to be raised, the adjustment may, at the CONTRACTOR's option, be made by the use of adjustable extension rings of the type which do not require the removal of the existing manhole frame. The extension device shall provide positive locking action and shall permit adjustment in height as well as diameter. The particular type of device used shall be submitted to the ENGINEER for review.

3.12 RESTORATION

- A. Existing surfaces or property improvements damaged during the construction of work specified in this section shall be repaired in accordance with the requirements of WilsonMiller Specifications Section 02705 RESTORATION AND GENERAL REQUIREMENTS.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. The quantities of storm sewer and pipe culvert to be paid for under this section shall be the lengths of the various types and sizes of pipe satisfactorily completed according to the Contract Documents. The pay quantity shall be in linear feet measured along the centerline of the pipe with no deductions for manholes, inlets, crossing boxes, or catch basins.

For pipe other than the main line where the pipe connects to a manhole, inlet, conflict box, or catch basin, the measurement of the pipe shall extend to the center of the applicable structure.

Where a pipe terminates with a headwall, endwall, mitered end or other end treatment, the measurement of the pipe shall extend to the end of the pipe. This method also applies where pipe connects to a control structure, weir, or cast in place structures.

- B. The quantities for manholes, inlets, conflict boxes, and mitered end sections paid for under this section shall be the number of the various types and sizes satisfactorily completed according to the Contract Documents.
- C. The quantities of existing structure adjustment to be paid for under this section shall be the number of existing manholes, inlets, conflict boxes or other similar structure satisfactorily adjusted, unless otherwise specified.

4.02 BASIS OF PAYMENT

- A. The quantities, determined by the methods described above, shall be paid for at the contract unit prices established for each pay item. Such payment shall constitute full compensation for all work specified in this section including all labor, materials, equipment, and other incidental costs required to construct the work defined in this section.
- B. Unless otherwise specified in the Contract Documents, restoration work shall not be paid for separately. The cost of any such restoration work shall be included in the various work items that necessitate the restoration.

END OF SECTION 02707

**SECTION 02810
IRRIGATION SYSTEMS**

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and provisions of the Contract, including Contract Conditions and Division-1 and Division-2 Specification Sections, apply to work of this section.

1.02 SCOPE

- A. The work covered by this specification shall include the furnishing of all labor, materials, tools and equipment necessary to perform and complete the installation of an automatic irrigation system as specified herein and as shown on the drawings and any incidental work not shown or specified which can reasonably be determined to be part of the work and necessary to provide a complete and functional system.
- B. The work covered by this specification also includes all permits, federal, state and local fees and all other costs and tests, both foreseeable and unforeseeable at the time of construction.
- C. No deviation from these specifications, the accompanying drawings, or agreement is authorized or shall be made without prior written authorization signed by the OWNER or their duly appointed representative.

1.03 RELATED WORK

- A. Section 02485 - Landscape Sodding
- B. Section 02480 - Landscape Work

1.04 MANUFACTURER

- A. The manufacturer(s) for the components of the irrigation system will be as specified on the drawings. Approved equals must be submitted to the LANDSCAPE ARCHITECT, in writing, no less than 10 days prior to bid deadline. LANDSCAPE ARCHITECT shall determine acceptance of approved equals.

1.05 QUALITY ASSURANCE

- A. Contractor Qualifications: A firm specializing in irrigation work with not less than five years of experience in installing irrigation systems similar to those required for this project.
- B. The CONTRACTOR, as part of their bid, shall list not less than six projects completed by their company of similar size and scope to the work specified herein. The six or more projects shall be listed by project, name, location, owner's name and phone number, and the total paid cost of work executed. The listed project shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right

to reject any bids which either do not respond to this condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.

- C. Coordination: Coordinate and cooperate with other CONTRACTORS to enable the work to proceed as rapidly and efficiently as possible.
- D. Codes and Inspections: The entire installation shall comply fully with all local and state laws and ordinances and with all established codes applicable thereto. The CONTRACTOR shall obtain all required permits, arrange for all necessary inspections and shall pay all fees and expenses in connection with same, as part of the work under this contract. Upon completion of the work, they shall furnish to the OWNER all inspection certificates customarily issued in connection with the class of work involved.
- E. The CONTRACTOR shall keep on their work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the OWNER, or OWNER's representative.
- F. The superintendent shall represent the CONTRACTOR in their absence and all directions given to him shall be as bindings if given to the CONTRACTOR.
- G. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.
- H. In all cases where observation of the irrigation system work is required and/or where portions of the work specified to be performed under the direction of the OWNER's Representative, the CONTRACTOR shall notify same, at least 48 hours prior to the time such observation or direction is required.
- I. Any necessary re-excavation or changes to the system needed because of failure of the CONTRACTOR to have the required observations, shall be performed at the CONTRACTOR's expense.

1.06 SUBMITTALS

- A. Refer to Division 1-General Requirements, Section 01730 Operation and Maintenance Data, Section 01350 - Submittals, and Section 01003 - Supplementary Technical Specifications (when applicable to this contract).
- B. All materials shall be those specified and or approved by the LANDSCAPE ARCHITECT.
- C. Product Data: After the award of the contract and prior to beginning work, the CONTRACTOR shall submit for approval by the OWNER and LANDSCAPE ARCHITECT, six copies of the complete list of materials, manufacturer's technical data, shop drawings, and installation instructions which they propose to install. The CONTRACTOR shall forward all required submittals to the LANDSCAPE ARCHITECT within 14 days of award of contract.

- D. Installation Schedule: Submit a construction schedule, indicating the dates of installation anticipated for this project. Once accepted, revise dates only as approved in writing by the LANDSCAPE ARCHITECT, after documentation of reasons for delay.
- E. Commence no work before approval of material list and descriptive material by the LANDSCAPE ARCHITECT.
- F. Record Drawings: The OWNER shall furnish the CONTRACTOR with one set of reproducible reverse mylar sepia showing all work required under this contract for the purpose of having the CONTRACTOR record on these reproducibles all changes that may be made during actual installation of the system. "Record" locations shall be provided for all water source connection appurtenance, backflow preventer, controllers, valves, mainline fittings, wire splices, etc. Location shall include dimensions from two permanent points of reference (building corner, street corner, fence line, etc.).
1. Immediately upon installation of any piping, valves, wiring, sprinklers, etc., in locations other than shown on the original drawings or of sizes other than indicated, the CONTRACTOR shall clearly indicate such changes on a set of blueline prints. Records shall be made on a daily basis. All records shall be neat and subject to the approval of the OWNER and LANDSCAPE ARCHITECT.
 2. The CONTRACTOR shall also indicate on the record prints the location of all wire splices, original or due to repair, that are installed underground in a location other than the controller pedestal, remote control valve box, power source or connection to a valve-n-head sprinkler.
 3. Identify field changes of dimension and detail of changes made by Change Order or Field Order.
 4. These drawings shall also serve as work progress sheets. The CONTRACTOR shall make neat and legible notations thereon daily as the work proceeds, showing the work as actually installed. These drawings shall be available at all times for review and shall be kept in a location designated by the OWNER's Representative.
 5. Each month when CONTRACTOR submits their progress payment request to the OWNER it shall include the up to date record drawing information for all material installed to that date.
 6. Progress payment request and record drawing information must be approved by the LANDSCAPE ARCHITECT before payment is made.
 7. If in the opinion of the OWNER or LANDSCAPE ARCHITECT, the record drawing information is not being properly or promptly recorded, construction payment may be stopped until the proper information has been recorded and submitted.
 8. Upon completion, all information noted on the prints shall be transferred to a reproducible reverse mylar by the CONTRACTOR. Drawings shall be to scale and all information shall be recorded in a neat, orderly way.

9. Record Drawings: Before the date of the final site observation and approval, the CONTRACTOR shall deliver two sets (of blue-line prints) of the record drawing plans and notes to the LANDSCAPE ARCHITECT. Upon approval of the record drawings, the CONTRACTOR will forward the original marked reproducibles to the LANDSCAPE ARCHITECT. Upon approval of the record drawings, the LANDSCAPE ARCHITECT will forward the documents to the OWNER. Record drawing information shall be approved by the LANDSCAPE ARCHITECT and OWNER prior to final payments, including retentions. The delivery of the prints shall not relieve the CONTRACTOR of the responsibility of furnishing required information that may have been omitted. Incorrect or unacceptable record drawings will be returned to the CONTRACTOR for corrections and resubmittal.
- G. CONTRACTOR shall furnish one Manufacturer's service manual each to, the OWNER, or Tenant. Manuals may be loose-leaf and shall contain complete exploded drawings of all equipment installed showing components and catalog numbers together with the manufacturer's name and address.
- H. Loose equipment to furnish: Loose irrigation equipment, operating keys and spare parts will be furnished by the Irrigation Contractor in quantities as shown on the plans.
 1. Three quick coupler keys and matching swivel hose ends (if required).
 2. Two valve keys for gate valves (if required).
 3. Two keys for each controller.

1.07 JOB CONDITIONS

- A. Examination of the Site: The bidder acknowledges that they have examined the site, with the plans and specifications. The submission of a quotation shall be considered evidence that examinations have been made.
- B. Field Conditions: The CONTRACTOR shall acquaint himself with all site conditions, including underground utilities before construction is to begin. CONTRACTOR shall coordinate placement of underground materials with CONTRACTORS previously working underground in the vicinity or those scheduled to do underground work in the vicinity. CONTRACTOR is responsible for adjustments in the layout of the work to accommodate existing facilities.
- C. The CONTRACTOR shall verify the correctness of all finish grades within the work area to insure the proper soil coverage of the irrigation system pipes.
- D. Protection of Existing Plants and Site Conditions: The CONTRACTOR shall take necessary precautions to protect all existing vegetation. Contact LANDSCAPE ARCHITECT if minor adjustments are not sufficient to protect existing site conditions. All existing grades shall be maintained and restored to their previously existing condition immediately following installation and testing.
- E. Protection of Work and Property: The CONTRACTOR shall be liable for and shall take the following actions as required with regard to damage to any of the OWNER's property.

1. Any existing building, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, roads, grounds, landscaping or structure of any kind (including without limitation, damage from leaks in the piping system being installed or having been installed by CONTRACTOR) damaged by the CONTRACTOR, or by their agents, employees, or subcontractors, during the course of their work, whether through negligence or otherwise, shall be replaced or repaired by CONTRACTOR at their own expense in a manner satisfactory to OWNER, which repair or replacement shall be a condition precedent to OWNER's obligation to make final payment under the contract.
2. CONTRACTOR shall also be responsible for damage to any work covered by these specifications before final acceptance of the work. They shall securely cover all openings into the systems and over all apparatus, equipment and appliances, both before and after being set in place to prevent obstructions on the pipes and the breakage, misuse or disfigurement of the apparatus, equipment or appliance.

1.08 MATERIALS STORAGE AND CLEANUP

- A. The CONTRACTOR shall keep the premises free from rubbish and all debris at all times and shall arrange their material storage so as to not interfere with the operation of the project. All unused materials, rubbish and debris shall be removed from the site.
- B. Storage and Handling: Use care in handling, loading, storing and assembling components to avoid damage. Store plastic pipe and fittings under cover and protect from sunlight before using. Discolored plastic pipe and fittings shall be rejected.
- C. All metallic pipe and fittings shall be handled, stored, loaded and assembled with the same care used for plastic components. Metallic components shall be stored in an enclosure to prevent rusting and general deterioration.

1.09 COMPLETION AND ACCEPTANCE

- A. The completion of the contract will be accepted and Notice of Completion recorded only when the entire contract is completed to the satisfaction of the LANDSCAPE ARCHITECT.
- B. The acceptability of material, components, workmanship, labor, compliance with the specifications and required coverages shall be solely determined by the LANDSCAPE ARCHITECT.
- C. Right to Reject: The LANDSCAPE ARCHITECT will have the right, at any stage of the work, to reject any and all work, materials, and components which, in their opinion, does not meet the requirements of the drawings and specifications. Rejected material and components shall be immediately removed from the site and acceptable material substituted in its place.

- D. Substantial Completion: Upon notification by the CONTRACTOR that the installation is substantially complete, the LANDSCAPE ARCHITECT will perform a substantial completion site observation to determine if the CONTRACTOR has completed the work in accordance with the plans and specifications. If final acceptance is not given, the LANDSCAPE ARCHITECT will prepare a "punch list". The notification by CONTRACTOR must be at least three days before the anticipated substantial completion site observation.
- E. Final Completion: Upon notification by the CONTRACTOR that all defects have been repaired or replaced following substantial completion site observation, the LANDSCAPE ARCHITECT will perform one final site observation. The request by the CONTRACTOR must be made at least three working days before the anticipated final completion site observation. Any additional inspections as a result of the CONTRACTOR's failure to comply with punch list, will be done at the CONTRACTOR's expense, based on the LANDSCAPE ARCHITECT's standard hourly rates and expenses. The work will be accepted by the LANDSCAPE ARCHITECT upon satisfactory completion of all work including "punch list" items.
- F. "Record" Irrigation Drawings: Record drawings shall be delivered to the LANDSCAPE ARCHITECT, for approval. Upon approval the LANDSCAPE ARCHITECT will forward record drawings to the OWNER before final acceptance of work.

1.10 WARRANTY

- A. Warranty: The CONTRACTOR shall furnish three written warranties, stating that all work included under this contract shall be warranted against all defect and malfunction of workmanship and materials for a period of one year from the date of Final Acceptance of this project.
- B. The CONTRACTOR further agrees that they will at their own expense repair and/or replace all such defective work and materials and all other work damaged thereby and which becomes defective during the term of the guaranty-warranty in an expedient manner.
- C. The OWNER retains the right to make emergency repairs without relieving the CONTRACTOR's guaranty obligation. In the event the CONTRACTOR does not respond to the OWNER's request for repair work under their guaranty-warranty within a period of 48 hours, the OWNER may make such repairs as they deem necessary, at the full expense of the CONTRACTOR.
- D. Any settling of backfilled trenches which may occur during the guaranty-warranty period shall be repaired by the CONTRACTOR at no additional expense to the OWNER, including the complete restoration of all damaged planting, sod, paving or other improvement of any kind.

1.11 OPERATION AND MAINTENANCE

- A. Instructions: After completion and testing of the system, the CONTRACTOR will instruct the OWNER's personnel in the proper operation and maintenance of the system. The CONTRACTOR will submit proof to the LANDSCAPE ARCHITECT that said instructions were conducted. Submittal will include the name of attendees, attendees phone number, date, time, place, and content of instruction.
- B. CONTRACTOR will at the above on-site instruction with the OWNER's representative, supply complete manuals to the OWNER and/or the Tenant (three total) containing component description, operating instructions, and maintenance recommendations.

PART 2 PRODUCTS

2.01 GENERAL

- A. All products shall be as specified on the plans and in these specifications. The materials chosen for the design of the irrigation system have been specifically referred to by the manufacturer so as to enable the LANDSCAPE ARCHITECT to establish the level of quality and performance required by the system design. Equipment by other manufacturers may be used only if submittal of manufacturer's technical data and installation instructions are reviewed and approved by the LANDSCAPE ARCHITECT. Approval may be granted only if substitution is equal to the specified equipment as determined by the LANDSCAPE ARCHITECT.
- B. All materials to be incorporated in this system shall be new (latest model) and without flaws or defect and of quality and performance as specified and meeting the requirements of this system.

2.02 MATERIALS

- A. Water Meters: Shall be provided and installed per local requirements, if applicable.
- B. Well and Pump: Shall be as indicated on the drawings, if applicable.
- C. Centrifugal or Vertical Turbine Pump: Shall be as indicated on the drawings, if applicable.
- D. Backflow Preventor: The backflow prevention device shall be as specified on the drawings. Installation shall conform to the manufacturer's specifications and all applicable codes. If backflow prevention device is required by local or state laws or ordinances, it shall be considered part of this contract whether or not it is specified on the accompanying Contract Documents.
- E. Polyvinyl Chloride Pipe (PVC):
 - 1. All PVC pipe shall be homogeneous throughout, free from visible cracks, holes and foreign materials. The pipe shall be free from blisters, dents, ripples, extrusion die and heat marks.

2. All PVC pipe shall be continuously and permanently marked with the manufacturer's name or trademark, kind and size (IPS) of pipe, material, and manufacturer's lot number, schedule, class or type and the National Sanitation Foundation (NSF) seal of approval.
3. Piping under constant pressure, upstream of irrigation control valves:
 - a. Shall be PVC 1120/1220, Class 200, unless otherwise specified.
 - b. Pipe size three inches and larger shall be Bell End Gasket Type.
 - c. Pipe size 2½ inches and smaller shall be Solvent Weld Type.
 - d. Materials shall be in accordance with the latest revision of the following specifications:

American Society for Testing Materials
ASTM-D 1784, ASTM-D 2241
Department of Commerce, PS 22-70
National Sanitation Foundation Testing Laboratories
4. Piping on non-constant pressure side of irrigation control valves:
 - a. Shall be PVC 1120/1220, Class 160, unless otherwise specified.
 - b. Pipe size three inches and large shall be as specified on drawings.
 - c. Pipe size 2½ inches and smaller shall be Solvent Weld Type.
 - d. Materials shall be in accordance with the latest revision of the following specifications:

American Society for Testing and Materials
ASTM-D 1784, ASTM-D 2241
Department of Commerce, PS 22-70
National Sanitation Foundation Testing Laboratories
5. Schedule 40, High impact type, PVC 2110 pipe:
 - a. All solvent weld or bell end gasket Schedule 40 PVC pipe shall be in accordance with the latest revisions of the following specification:

ASTM-D 1785
Department of Commerce, PS 22-70
National Sanitation Foundation Testing Laboratories
6. Provide written certification from manufacturer that all PVC pipe has successfully passed all tests per ASTM D 1785.
7. Piping for Sleeving: High impact type pipe, PVC 2110, minimum Schedule 40.
8. PVC Pipe Fittings:
 - a. Molded solvent weld socket fittings shall be PVC Schedule 40, Type I/II in accordance with ASTM-D 2466. Sockets shall be tapered conforming to the outside diameter of the pipe, as

recommended by the pipe manufacturer. All fittings must conform to the 20-minute acetone test as for pipe and shall be approved.

- b. Molded threaded fittings shall be PVC Schedule 40 in accordance with ASTM-2464. All fittings shall withstand the 20-minute acetone test and be approved.
 - c. All molded fittings shall be marked with manufacturer's name and/or trademark, type PVC, schedule, size and NSF seal of approval. Extruded couplings shall be from NSF rated raw materials and meet ASTM standards. Supplier shall provide certification on extruded couplings when requested.
 - d. Schedule 40 threaded male/female adapters shall be used in connecting to threaded joints.
 - e. All changes in depth of mainline pipe shall be made using 45° fittings.
 - f. All threaded PVC to metallic connections shall be made in accordance with the PVC fitting manufacturers recommendations. Any sealant used shall be of the non-hardening, non-petroleum base type, and shall not adversely effect PVC pipe or fittings.
- F. PVC Solvent Cement: PVC solvent cement and primer/cleaner shall be compatible with the specific size and type of PVC pipe and fittings, of proper consistency in accordance with the pipe manufacturer's recommendations and will conform to ASTM D-2855, D-2564, F-656.
- G. Rubber Rings and Gasket Joint Lubricant: Rubber rings shall conform to ASTM F 477. CONTRACTOR shall only use pipe joint lubricant supplied by or recommended by the pipe manufacturer. Lubricant shall be water soluble, non-toxic, an inhibitor to bacterial growth, and shall be non-detrimental to the elastomeric seal and pipe. Mineral oil, petroleum jelly, hydrogenated vegetable fat (i.e. Crisco, petroleum products, cooking oil, grease, etc.) shall not be used.
- H. Automatic Field Controller: The irrigation controller shall be as specified on the plans. All field controllers shall be equipped with all available electrical surge/lightning protection devices for all circuits. Protection shall be factory supplied and installed whenever possible. Protection devices not supplied by the Manufacturer shall be as recommended by Manufacturer to provide a maximum degree of protection.
- I. Low Voltage Valve Control Wire (24 Volt): All 24 volt control wire shall be #14 AWG UL listed single conductor solid copper, type UF, 600 volt test for direct burial installation.
- 1. Provide one individual 24-volt valve control wire between the field controller terminal strip station lug and each control valve/sprinkler solenoid lead. Provide one consistently colored 24-volt common wire from the terminal strip common wire lug to all control valves/ sprinklers.

2. Valve common wire shall be white in color. Individual valve control wires shall be color-coded or identified by an approved tagging method.
 3. All wire shall be furnished in minimum 2,500-foot rolls and spliced only at the valve and the controller.
- J. Control Valves: The remote control valves shall be as specified on the plans, and shall perform to the manufacturer's specifications.
- K. Gate Valves: Gate valves one inch through four inch shall be Series 206 bronze threaded end gate valves manufactured by "Red-White" unless otherwise specified.
- L. Quick Coupling Valve: All quick coupling valves shall be solid bronze as specified on the plans, and shall perform to the manufacturer's specifications.
- M. Control Valve Boxes: All control valve, gate valve and quick coupling valve boxes shall be Ametek Box (unless otherwise specified) with Cover marked "Control Valve". Box shall be of sufficient size to allow easy operation and maintenance of valve. Where possible, gate valves shall be installed with control valves and occur in the same box. Ametek Jumbo Box Model 190101 w/cover 192101 shall be used for the pair.
1. Locking lids shall be green in color, boxes and extensions shall be black or green and constructed of high strength, light weight thermoplastic.
- N. Pop-Up Spray Head to PVC Pipe Fittings: All pop-up spray sprinkler heads are to be connected to PVC pipe with barbed x threaded adapters and an 18" minimum length of polyethylene tubing (i.e., funny pipe). All tubing ends shall be cut square to the outside diameter of the pipe. Pop-Up Spray Heads: All pop-up spray heads are to be of the type specified on the plans, and shall perform to the manufacturer's specifications. Spacing shall not exceed that which is graphically depicted on the plans or by the manufacturer's maximum recommendation.
- O. Rotor Sprinkler to PVC Pipe Fittings:
1. All rotor sprinklers are to be connected to PVC lateral lines using swing joints. Swing joints shall be the same size (IPS) as the inlet size of the sprinklers, unless otherwise indicated on the installation details. All swing joints shall be capable of 360 degrees of freedom.
- P. Rotor Sprinklers: All rotor sprinklers are to be of the type specified on the plans. The sprinklers shall perform to manufacturer's specifications concerning the diameter of throw and gallonage at given pressures. Sprinkler spacing shall not exceed the manufacturer's maximum recommendation.
1. Matched precipitation between full and part circle sprinklers will be required on all sprinklers operating on the same zone.
- Q. Swing Joints: Prefabricated swing joints (triple swing) shall be used as specified. Swing joints from individual nipples and fittings shall be assembled from PVC Schedule 40 or better.

- R. Teflon Tape: Any threaded connection using Teflon tapes as an anti seize device shall avoid excessive use of Teflon tape. Apply Teflon tape only in accordance with fittings and/or component manufacturer's recommendations.
- S. Rain shut-off devices shall be of the type on the plans, and shall perform to the manufacturer's specifications.
- T. Splicing Materials: 3M Direct Bury (DBY) splice kits by 3M Corporation, Austin TX (512) 984-5657 or "Snip-Snap" connector by Imperial, Lenexa, KS (913) 469-5700, unless otherwise noted.
- U. Metalized tape: CONTRACTOR shall provide metalized identification tape on all mainline piping (non-pressurized and pressurized).

PART 3 **EXECUTION**

3.01 GENERAL

- A. The CONTRACTOR shall carefully schedule their work with the General Contractor and all other trades on site.
- B. Sleeves are required wherever piping or electrical wires are placed under paved surfaces. CONTRACTOR will install sleeves prior to commencement of paving and will be responsible for coordinating with other trades. No additional compensation shall be made for the CONTRACTOR's failure to coordinate with other trades.
- C. CONTRACTOR will install the irrigation system as shown on the Contract Documents. Should any changes be deemed necessary after award of contract, for proper installation and operation of the system, such changes must be approved by the LANDSCAPE ARCHITECT. In the event that notification of the OWNER or LANDSCAPE ARCHITECT is not given, the CONTRACTOR shall assume full responsibility of all revisions.
- D. The plans and drawings are diagrammatic of the work to be performed. All piping, wires, field controllers, etc. shall be installed within the project boundaries. The CONTRACTOR shall not willfully install the irrigation system as shown on the plans when it is obvious in the field that obstructions, grade differences or discrepancies in area dimensions exist that might not have been known in the design of the system.
- E. Layout: The CONTRACTOR shall carefully review all relative drawings for this project and will be responsible for coordinating the irrigation system installation with all known improvements. If at any time the irrigation system conflicts with other improvements (i.e., structures, landscape, etc.), the CONTRACTOR will be responsible for relocating irrigation components at their time and expense.
- F. Design Pressures: Main line pressure at the source location shall be as required to operate the irrigation heads at the design pressures as specified on the plans. Pressure shall not exceed the manufacturer's specifications. Pressure at the last irrigation head on the circuit shall not be less than 35 psi, unless otherwise noted on plans.

- G. Minimum Water Coverage: In turf planting areas, 100 percent coverage shall be provided. Layout may be modified if necessary and approved by the LANDSCAPE ARCHITECT, to obtain coverage. Do not decrease number of heads specified unless otherwise approved by the LANDSCAPE ARCHITECT.
- H. Locate all irrigation system components within planting areas where possible. Do not install irrigation lines directly over another unrelated line in same trench.
- I. Final location of piping and wiring shall be done following CONTRACTOR ascertaining location of existing underground utilities. All work shall be installed in a manner to avoid conflicts with utilities and other construction elements.
- J. CONTRACTOR shall coordinate with other trades executing work on the project to avoid conflicts with locations of plant material, utilities and other site improvements.
- K. Sprinkler spacings are maximums. Do not exceed spacings shown or noted on the plans. Sprinkler spacings may be adjusted to accommodate changes in terrain, proposed planting locations, and existing site conditions, only if approved prior to installation by the LANDSCAPE ARCHITECT.
- L. Pipe sizes shall conform to those shown on the drawings. No substitutions of smaller pipe sizes will be permitted. However, substitutions of larger sizes may be approved.

3.02 EXCAVATION AND TRENCHING

- A. Perform all excavations as required for the installation of the work as defined and described on the irrigations plans, in accordance with the contract documents and under this section of specifications. Work may include shoring of earth banks, if necessary. Restore all surfaces, existing underground installation, etc., damaged or cut as a result of the excavations, to their original condition.
- B. All construction shall be done in a neat and workman like manner in strict accordance with manufacturer's recommendations. No sand or foreign material shall be allowed to enter the pipe. Ends shall be suitably plugged when pipe laying is not in progress.
- C. Main and Lateral Line Trenching - irrigation lines shall be installed in accordance with the installation details and by cutting and removing sod if necessary, trenching, laying pipe, backfilling, compacting soil, restoring grades, and replacing sod, if required.
- D. Should utilities not shown on the plans be found during excavation, CONTRACTOR shall promptly notify the OWNER or LANDSCAPE ARCHITECT for instructing as to further action. Failure to do so will make CONTRACTOR liable for any and all damage thereto arising from their operations subsequent to discovery of such utilities. Indicate such utility crossings on the record drawings promptly.
- E. Trenches shall be open, vertical sided construction wide enough to provide free working space around work installed and to provide ample space for backfilling and compacting. ABSOLUTELY NO PULLING OF PIPE SHALL BE PERMITTED.

Trench width shall not be greater than is necessary to permit satisfactory jointing and other installation procedures.

- F. Trench Bottom: Construct a continuous, firm, smooth trench bottom, free of rocks or other hard objects. Where ledge rock, hardpan, debris or boulders are encountered, undercut and fill the trench bottom with bedding material, using sand or compacted fine-grained soils to provide a minimum depth of bed between the pipe and rock of six inches. Where unstable trench bottom conditions are encountered, use stabilizing methods and materials to provide continuous and permanent support.
- G. When two pipes are to be placed in the same trench, a six-inch space is to be maintained between pipes. The CONTRACTOR shall not install two pipes with one directly above the other.
- H. The CONTRACTOR shall cut trenches for pipe to required grade lines and compact trench bottom provide accurate grade and uniform bearing and support for each section of pipe at every point along its entire length. Trench bottoms shall be free of rocks, gravel and all extraneous debris.
- I. Trenches located under paving shall be backfilled as specified in paragraph 3.16. Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:
 - 12 inches over non-pressure lateral lines, unless otherwise noted on the drawings
 - 18 inches over non-pressure lateral lines under paving, unless otherwise noted on the drawings
 - 18 inches over control wires, unless otherwise noted on the drawings
 - 24 inches over irrigation main line, unless otherwise noted on the drawings
 - 24 inches over an irrigation line under rigged paving, unless otherwise noted on the drawings
- J. Safety: Maintain all warning signs, shoring, barricades, flares and red lanterns as required by the Safety Orders of the Division of Industrial Safety and any applicable federal, state, and local ordinances.

3.03 EXCAVATION AND TRENCHING INSPECTION

- A. The following inspections are required. Notify the LANDSCAPE ARCHITECT in advance that each item is ready for inspection as indicated below in accordance with the contract documents.
 - 1. Inspection of all flagged pipeline locations at one single inspection prior to beginning construction - notify one week in advance.
 - 2. Inspection of all pipeline placed in trench must be done before any backfill is put in. All mainlines and laterals will be inspected in one single inspection - notify one week in advance.
 - 3. Pipeline hydrostatic pressure test - notify one week in advance.

4. Pipeline flushing - notify one week in advance.
5. Sprinkler coverage test - notify one week in advance.
6. Final inspection - notify one week in advance.

3.04 WATER METER AND BACKFLOW PREVENTION DEVICE (when applicable)

- A. Water Meter: Shall be installed according to all federal, state, and local codes and requirements.
 1. Installation of the backflow prevention device shall conform to the details on the drawings, local codes, and/or manufacturers specifications. All backflow prevention and piping shall be sized to allow no more than a 20 percent decrease in pressure from that which is available from the main source.

3.05 PIPE LINE ASSEMBLY

- A. General
 1. Install pipes and fittings in accordance with manufacturers latest printed instructions.
 2. Clean all pipes and fittings of dirt, scales and moisture before assembly.
 3. All pipe, fittings, and valves, etc. shall be carefully placed in the trenches. Interior of pipes shall be kept free from dirt and debris and when pipe laying is not in progress, open ends of pipe shall be closed by approved means.
 4. All lateral connections to the mainline as well as all other connections shall be made to the side of the mainline pipe. No connections to the top of the line shall be allowed.
 5. Plastic pipe shall be cut with PVC pipe cutters or hacksaw, or in a manner so as to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
- B. Above Ground Piping: All pipe and fittings permanently installed above ground shall be galvanized steel Schedule 40 pipe. Piping shall be painted or wrapped to prevent rusting. Paint color shall be approved by the OWNER.
 1. All pipe fittings intended for temporary use and installed above ground shall be UV resistant PVC Schedule 40.
- C. Solvent-Weld Joints for PVC Pipes
 1. Use only a color tinted cleaner/primer to prepare the outside diameter of the pipe and the inside diameter of the fitting socket. Cleaner/ primer and solvent cement shall be compatible with the specific sizes and types of PVC pipe and fittings being used.

2. Use only those applicator devices approved or recommended by the pipe and fitting manufacturer to apply the cleaner/primer and the solvent cement. Applications shall also be approved by the manufacturer of the cleaner/primer and solvent cement.
3. Priming the joints: Prime the socket side of the joint first, using an applicator. Prime the male pipe end to the length of the joint, making sure that all surfaces are entirely softened. Re-prime the sock and proceed immediately with cement.
4. Make all joints immediately after applying the solvent cement. Check all fittings for correct position. Hold joint steady so that pipe does not push out from fitting. Use a clean rag to remove any excess solvent from completed joint area.
5. Cure all joints a minimum of one hour before applying any external stress on the piping and at least 24 hours before placing the joint under water pressure, unless otherwise specified by manufacturer.

D. Threaded Joints for PVC Pipes

1. Use Teflon tape on all threaded PVC fittings. All threads shall be thoroughly cleaned of dirt, dust, and moisture before wrapping with teflon tape.
2. Use strap-type friction wrench only. Do not use metal-jawed wrench.
3. When connection is plastic to metal, male adapters shall be used. The male adaptor shall be hand tightened, plus one turn with a strap wrench.

E. Laying of Pipe

1. Pipes shall be bedded in at least two inches of finely divided material with no rocks or clods over one inch diameter to provide a uniform bearing.
2. Pipe shall be snaked from side to side of trench bottom to allow for expansion and contraction. One additional foot per 100 feet of pipe is the minimum allowance for snaking.
3. Do not lay PVC pipe when there is water in the trench.
4. Mainline trench depths will be as noted on the drawings and herein. Use 45° fittings for all changes in depth or direction of mainline pipe.

F. PVC Sleeves and Electrical Conduit

1. PVC sleeves shall be of Schedule 40 PVC, and sized as indicated on the drawings. All sleeves shall extend at least 24 inches beyond the edge of paving when passing under roadways, parking lots, sidewalks, or other paved surfaces.

2. All PVC control wire conduit shall be sufficient size to hold the required quantity of control and common wires. Electrical wires are not to be placed in the same sleeve with water pipes. However, in no case shall more than 50 percent of the control wire sleeve be filled with wire.

G. Thrust Blocks

1. Concrete thrust blocks must be provided on the thrust side of the mainline pipe wherever the pipe line:
 - a. Changes direction, as at tees or bends.
 - b. Dead ends.
 - c. Any other spot where thrust is to be expected.
2. All irrigation mainline and lateral pipes three inches and larger will be thrust blocked. See irrigation drawings for Thrust Block Details.

3.06 SHUT-OFF VALVES

- A. If indicated in plans, shut-off valves shall be located in the following locations:
 1. After backflow preventor and prior to main supply loop.
 2. Between mainline and each remote control valve.
- B. To be located within planting and lawn areas.
- C. All shut-off valves shall be housed in valve boxes. Shut-off (ball) valves shall be housed in the same box as Irrigation Control Valves, where applicable.

3.07 IRRIGATION CONTROL VALVES

- A. Install control valves in valve boxes, grouping together where practical. Place no closer than 12 inches to walk edges, buildings, and walls.
- B. Pressure regulating remote control valves shall be adjusted so that the most remote sprinkler heads operate at the pressure specified.
- C. Valves shall be installed as shown in details and in accordance with manufacturer's instructions and the specifications.

3.08 QUICK COUPLING VALVES

- A. Shall be set a minimum of 12 inches from walks, curbs or paved areas where applicable or as otherwise noted. Quick coupling valves shall be housed in valve boxes.
- B. Valves shall be installed on three elbow PVC Schedule 40 swing joint assembly as detailed on the drawings. Quick coupler shall be anchored with rebars as shown on the details.

- C. Where possible, quick coupling valves may be installed with control valves and occur in the same box.

3.09 VALVE BOXES

- A. Valve boxes shall be set flush with finish grade in lawn areas and one-half-inch above finish grade in ground cover and shrub bed areas.
- B. Install all valve boxes to avoid direct contact with PVC irrigation piping. Following valve box installation place gravel or sand as indicated in the detail.
- C. CONTRACTOR shall label/number all zone valve covers/boxes with the corresponding controller zone number and isolation valve box covers with record drawing numbers. Numbers shall be applied using a weather resistant tape or paint.

3.10 SPRINKLER HEADS

- A. Sprinkler Head Installation: Locate all sprinkler heads a minimum distance of six inches from walks, pavement, and back of curbs.
- B. Pop-Up Spray Heads in sodded areas shall be installed flush (+ one-half-inch tolerance) with finished sod elevations. In mulched and planted areas all heads are to be flush with finish mulch elevations or as otherwise indicated on the plans.
- C. Rotor Heads shall be installed to be flush (+ one-fourth-inch tolerance) with finish sod elevations except those rotor heads specifically designed to be mounted below grade.
- D. All sprinkler nozzles shall be adjusted for the proper radius and direction of spray pattern. Make adjustments where possible to prevent over spraying onto walks, pavement or buildings.
- E. Sprinkler heads and quick coupling valves shall be set perpendicular to finished grade unless otherwise designated on the plans.

3.11 DRAIN VALVES

- A. All laterals shall be provided with manual drain valves to be installed as shown in details.
- B. The mainline shall be drained with manual drain valves to be installed as shown in details.
- C. Drain valves are to be provided at sufficient intervals to provide complete drainage of all piping.

3.12 AUTOMATIC CONTROLLER

- A. The automatic controller shall be installed at the approximate location shown on the drawings. The actual location shall be approved by the LANDSCAPE ARCHITECT following stake-out in the field by the CONTRACTOR. CONTRACTOR shall be responsible for monitoring the integrity of the flag markings.
- B. Controllers shall be installed in accordance with the drawings, details, manufacturer's instruction and local codes.
- C. CONTRACTOR shall provide controller grounding in accordance with the manufacturer's requirements and/or recommendations. If specified ground resistance cannot be obtained consult manufacturer for prescribed methods. Use conduit for connection of power source to controller.
- D. Connect remote control valve to controller in the sequence shown on the plans. If plan is not labeled then connect remote control valves to controller in a clockwise sequence to correspond with station setting beginning with Stations 1, 2, 3, etc. CONTRACTOR shall verify that each station number corresponds with the same numbered control valve.
- E. Affix controller name (i.e. "Controller A") on inside of controller cabinet door with letters minimum of one inch high. Affix a non-fading copy of irrigation diagram to cabinet door below controller name. Irrigation diagram to be sealed between two sheets of 20 mil (minimum) plastic. Irrigation diagram shall be a reduced copy of the as-built drawing and shall show clearly all valves operated by the controller, showing station number, valve size and type of planting irrigated.
- F. The CONTRACTOR shall be responsible for stationing the Controller as shown in the Irrigation Station Schedule on the drawings, where applicable.

3.13 CONTROL WIRING AND ELECTRICAL

- A. CONTRACTOR shall be responsible for the placement of the 110 volt AC service necessary for the operation of electric controller as specified on the plans and in accordance with the manufacturer's specifications.
- B. All electrical equipment and wiring shall be installed in accordance with the latest provisions of the National Electrical Code, state and local code and be installed by those skilled and licensed in the trade.
- C. Electric control lines (24 volt) from controller to automatic valves shall be direct burial wire of a different color than the 110 volt service to controllers. The 24 volt common ground shall be of one continual color and a different color than the other 24 volt lines and the 110 volt service. All 110 volt AC wiring shall be installed in accordance with Federal, State, and local electric requirements.
- D. All 24 volt wire shall be encased in two-inch Schedule 40 PVC sleeves when extending under roadways, parking lots, sidewalks, or other rigged surfaces shown or not shown on the drawings.

- E. All wire passing under existing or future paving, or construction, shall be encased in plastic conduit extending at least 24 inches beyond edges of paving or construction as indicated on the irrigation drawings or elsewhere in these specifications.
- F. All above ground low voltage wiring shall be installed in UL listed plastic conduit and connectors in accordance with prevailing local codes.
- G. Install all 24-volt valve control wires and common wire to one side of mainline trench. Placement over pipes is not permitted. Installation depth shall conform to the depth of the mainline as indicated elsewhere in these specifications. Install all 24-volt wires in mainline trench except for distance between controller and mainline pipe location.
- H. All field repair splices shall be made using Scotch-Lok No 3500 or DBY connector sealing packs, or approved equivalent. Each individual wire splice requires one connector sealing pack.
- I. All in the field low voltage wire splices shall be made in a valve box as described within these specifications or in the pedestal of the field controller. Direct bury splices shall be prohibited.
- J. When more than one wire is placed in the same open trench, wires shall be bundled and taped together at intervals of ten feet, using black electrical tape.
- K. Provide an expansion curl within three feet of each wire connection and at each change of direction, and at least every 100 feet of wire length on runs of more than 100 feet in length. Each expansion curl shall be formed by wrapping at least six turns of wire around a two-inch diameter pipe, then removing the pipe.
- L. Provide an expansion coil of eight to 10 feet of wire or cable at each change in direction along the wire routing, where wire is direct buried in a trench. Provide an expansion coil of four to six feet of wire every 1,000 feet of straight wire run. Coil diameter to be 24 to 30 inches. Do not tape restrain the wire coil. Lay the wire coil flat in the trench.
- M. Provide an expansion coil of eight to 10 feet of wire or cable at each side of a road crossing. Coil diameters to be 24 to 30 inch. Do not tape restrain the wire coil. Lay the wire coil flat in the trench.
- N. The 24 VAC low voltage wiring system between field controller and remote control valves shall be properly grounded per manufacturer's instructions.
- O. The main line shall have two spare wires installed its entire length and to the automatic controller. Label each end "spare wire".

3.14 CLOSING OF PIPE AND FLUSHING OF LINES

- A. Cap or plug all openings as soon as lines have been installed to prevent the entrance of materials that would obstruct the pipe. Leave in place until removal is necessary for completion of installation.

1. Thoroughly flush out all water lines under a full head of water before installing heads, valves, quick coupler assemblies, etc. Maintain flushing for a minimum of three minutes at the valve located furthest from water supply.
2. Test as specified below.
3. Upon completion of testing, complete assembly and adjust sprinkler heads for proper grade and distribution.

3.15 TESTING

- A. Request the presence of the LANDSCAPE ARCHITECT or ENGINEER in writing or by phone at least 48 hours in advance of testing. Final testing is to be accomplished in the presence of the LANDSCAPE ARCHITECT or ENGINEER. Any additional tests required due to the failure of the initial test shall be accomplished at the expense of the CONTRACTOR.
- B. Hydrostatic Testing: Center load piping with small amount of backfill to prevent arching or slipping under pressure. A continuous and static water pressure of 120 psi will be applied for a period of not less than two hours. Repair all leaks resulting from pressure test. Expel air from system after testing, flush all lines.
- C. Tests shall be made between valves and as far as practicable in section of approximately 1,000 feet long or as approved by the LANDSCAPE ARCHITECT or ENGINEER. Potable water from an existing water distribution system shall be used if available. The test pressure for the water lines shall be 120 psi and this pressure shall be maintained for a period of not less than two hours. Pressure shall not vary more than two pounds from the above during the two-hour test period. Allowable leakage shall be computed on the basis of Table 3, Section 13.7. AWWA Standard C600-64, or the applicable formula for other than 18 foot lengths.

All leaks evident at the surface shall be uncovered and repaired regardless of the total leakage as indicated by the test, and all pipes, valves and fittings and other materials found defective under the test shall be removed and replaced at the CONTRACTOR's expense. Tests shall be repeated until leakage has been reduced below the allowable amount.

- D. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.
- E. Demonstration: The CONTRACTOR shall demonstrate to the LANDSCAPE ARCHITECT that the system meets coverage requirements and that automatic controls function properly. Coverage requirements are based on operation of one circuit at a time.
- F. Clearly list dates of all pressure tests on the record drawings.

3.16 INSPECTION

- A. The CONTRACTOR shall maintain proper facilities and provide safe access for inspection to all parts of the work.

- B. Irrigation inspection shall consist of a minimum of:
1. Mainline pressure test.
 2. Trench excavation and pipe coverage.
 3. Coverage/hydrological test.
 4. Final irrigation inspection.
- C. If the specifications, the LANDSCAPE ARCHITECT's instructions, laws, ordinances or any public authority require any work to be specifically tested or approved, the CONTRACTOR shall give three days notice of its readiness for inspection.
- D. The CONTRACTOR shall be solely responsible for notifying the LANDSCAPE ARCHITECT where and when such work is in readiness for testing.
- E. If any work should be covered up without approval, it must be uncovered, if required, for examination at CONTRACTOR's expense.
- F. No inspection shall commence without "Record" drawings and without completing previously noted corrections, or without preparing the system for inspection.

3.17 BACKFILL AND COMPACTING

- A. CONTRACTOR shall not backfill over fittings, valves, couplings, etc., until pressure tests have been executed and approved.
- B. After testing of system has occurred and inspections have been made, backfill excavations and trenches with clean soil, free of stones, sticks, construction debris and rubbish. Unsuitable material, including clods and rocks over two inches in size shall be removed from the site.
- C. Metallic identification tape shall be buried approximately three inches above PVC pipe. Metallic tape shall be buried approximately three inches above ductile iron pipe. Tape width shall be three inch minimum tape colors and imprints shall be as follows:

<u>Imprint</u>	<u>Color</u>
Caution - Non-Potable Irrigation Water Line Buried	Purple

- D. Water Packing: When water packing is used, the pipeline must first be filled with water, all air removed, and the pipe kept full during the backfill operation. The backfill, before wetting, shall be 12 to 18 inches deep over the top of the pipe. Water packing is accomplished by adding water in such quantity as to thoroughly saturate the initial backfill. While saturated, rods, shovels, concrete vibrators or other means may be used to help consolidate the backfill around the pipe, taking care not to float or damage the pipe. After saturation, the pipeline shall remain full until after final backfill is made. Allow the wetted fill to dry until firm enough to walk on before final backfill is begun.

- E. Hand or Mechanical Backfilling: Tamp the backfill in layers not to exceed six inches lift and compact firmly around the pipe and up to a least six inches above the top of the pipe. The backfill must be sufficiently damp to permit thorough compaction under and on each side of the pipe to provide support free from voids. Take care to avoid deforming, displacing, or damaging the pipe.
- F. Backfill for all trenches, regardless of the type of pipe covered, shall be compacted to minimum 98 percent modified (T-180) density under pavement, 85 percent under planted areas. Compact trenches in areas to be planted by thoroughly flooding the backfill. Jetting process shall be used when necessary in those areas.
- G. A fine granular material shall be placed initially on all lines with a minimum of three inches cover. No foreign matter large than one-half inch in size shall be permitted in the initial backfill.

Trenches located under paving shall be backfilled with sand (a layer six inches below the pipe and three inches above the pipe) and compacted in layers of 98 percent modified (T-180) compaction.
- H. Dress off all areas to finish grades and restore to condition previous to irrigation installation.
- I. Clean-Up: Remove from the site all debris and surplus earth resulting from work of this section. Clean-up shall be conducted continuously throughout the installation process to keep extraneous materials off the work site.

PART 4 **MEASUREMENT AND PAYMENT**

4.01 BASIS OF PAYMENT

- A. CONTRACTOR will submit a lump sum bid and shall receive full compensation for conforming to the provisions of this section and related drawings. Lump sum paid for the complete installation as shown and specified will be categorized as follows:
 - 1. Sleeving (Mains and Laterals)
 - 2. Primary Components (Mains/Controllers/Solenoid Valves)
 - 3. Secondary Components (Heads/Valves/Laterals/Wiring/Couplers)
- B. No additional compensation will be allowed excluding relative change orders. The CONTRACTOR shall provide a complete unit cost breakdown for all irrigation components shown on the drawings or noted in the legend and shall be included as part of the CONTRACTOR's bid. Said breakdown may be submitted after award of contract and prior to the execution of work. However, the OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02810

**SECTION 02813
SEEDING, MULCHING, AND SODDING**

PART 1 GENERAL

1.01 DESCRIPTION

- A. Work specified in this section consists of the required sodding, grassing and mulching, or hydro-seeding/mulching in conformity with the lines and grades shown on the plans.

PART 2 PRODUCTS

2.01 SODDING

- A. The sod shall be Argentine Bahia and shall be well matted with grass roots. It shall be sufficiently thick to secure a dense stand of live grass with a minimum thickness of two inches. The sod shall be live, fresh and uninjured at the time of planting. It shall be shaded and kept moist from the time of digging until planting.
- B. Fertilizer to be used shall be a standard balanced fertilizer, such as 6-6-6, 8-8-8, 10-10-10, with 25 percent organic.

2.02 GRASSING AND MULCHING

A. Seed

- 1. Unless other types of seed are called for in the plans or have been approved as an acceptable blend, permanent type grass seed shall be a mixture of 20 parts of Bermuda seed and 80 parts of Pensacola Bahia seed. Quick-growing type grass shall be species which will provide an early ground cover during the particular season when planting is done and will not later compete with the permanent grass. The separate types of seed used shall be thoroughly mixed immediately before sowing. Seed which has become wet shall not be used.
 - a. The Bermuda seed shall be an equal mixture of hulled and unhulled seed. The Pensacola Bahia seed shall be scarified seed, having a minimum active germination of 40 percent and a total germination of 85 percent. All seed shall meet the requirements of the State Department of Agriculture and Consumer Services and all applicable state laws.

B. Mulch

- 1. Unless otherwise approved by the ENGINEER, the mulch material used shall normally be dry mulch. Dry mulch shall be straw or hay consisting of oat, rye or wheat straw, or of pangola, peanut, coastal bermuda or bahia grass hay. Only undeteriorated mulch which can readily be cut into the soil shall be used.

C. Fertilizer

- 1. Commercial fertilizers shall comply with the state fertilizer laws. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1.)

total nitrogen, (2.) available phosphoric acid, and (3.) water soluble potash, contained in the fertilizer. The chemical designation shall be 12-8-8. At least 50 percent of the phosphoric acid shall be from normal super phosphate or an equivalent source which will provide a minimum of two units of sulfur. Unless otherwise approved by the ENGINEER, Type I fertilizer shall be used.

D. Dolomitic Limestone

1. Shall be an approved product, designated for agricultural use.

E. Water

1. The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream or municipal source. The water shall be free of excess and harmful chemicals, acids, alkalies or any substance which might be harmful to plant growth or obnoxious to local residents or traffic. Brackish or salt water shall not be used.

F. Fertilizer Spreader

1. The device for spreading fertilizer and dolomitic limestone shall be capable of uniformly distributing the material at the specified rate.

G. Seed Spreader

1. The seed spreader shall be an approved mechanical hand spreader or other approved type of spreader.

H. Equipment for Cutting Mulch into Soil

1. The mulching equipment shall be a type capable of cutting the specified materials uniformly into the soil and to the required depth. Harrows will not be allowed.

I. Rollers

1. A cultipacker, traffic roller or other suitable equipment will be required for rolling the grassed areas.

2.03 HYDRO-SEEDING/MULCHING

A. Seed (all seed shall meet the requirements of the State Department of Agriculture)

1. Argentine Bahia - Scarified seed
2. Gulf Rye (or Brown Top Millet as approved) Note: to be used in conjunction with permanent type seed (1) above, during particular seasons when early ground cover is desired, as directed by the ENGINEER.

B. Mulch

1. The mulch material shall be wood cellulose fiber material for use in hydro-seeding slurry, especially prepared for this purpose, or an approved substitute.

2. It shall be processed in such a manner that it will contain no growth-inhibiting or germination-inhibiting factors and shall be dyed an appropriate color for readily determining the rate of spread by visual observation. It shall be manufactured in such manner that after agitation in slurry tanks, with fertilizer, grass seed and water (and with other additives which may be approved for use), the fibers in the material will readily become uniformly suspended in the solution to form a homogeneous slurry; also that when the slurry is hydraulically sprayed on the ground, the mulch material will act to form a blotter-like ground cover impregnated uniformly with grass seed, and will allow the absorption of water and permit rainfall and watering to percolate to the undersoil.

The CONTRACTOR shall, if requested, submit appropriate certification from the producer or the supplier, that the material meets all of the above requirements, based upon laboratory and field tests of the product.

The air dry weight (as defined by the Technical Association of the Pulp and Paper Industry, for wood cellulose) shall be marked on each package by the producer.

C. Fertilizer

1. The fertilizer to be used shall be a standard balance fertilizer, such as 6-6-6, 8-8-8 or 10-10-10, with 25 percent organic unless otherwise recommended for any particular area as approved by the ENGINEER. Select acid forms of recommended fertilizer if pH adjustments is indicated by soil tests.

D. Water

1. The water used in the grassing operations may be obtained from any approved spring, pond, lake, stream or municipal water system. The water shall be free of excess and harmful chemicals, acids, alkalies, or any substance which might be harmful to plant growth or produce obnoxious odor. Salt water shall not be used.

E. Equipment

1. The equipment for mixing the slurry and for applying the slurry over the areas to be seeded shall be especially designed for this purpose, and shall meet the approval of the ENGINEER. It shall be capable of applying a uniform slurry, (and of the mulch, when specified to be included), in a uniform application over the entire area to be hydro-seeded.

PART 3 EXECUTION

3.01 SODDING

- A. Immediately before the sod is placed, fertilizer shall be applied evenly at the equivalent rate of approximately 20 pounds of 6-6-6 per 1,000 square feet and shall be cut into the soil with suitable equipment.
- B. The sod shall be taken up in 12-inch by 12-inch squares, except where the plans may call for narrower strips. The sod shall be firmly embedded by light tamping.

- C. After the sod has been placed, it shall be thoroughly watered. Water shall not be applied between the hours of 8:00 AM and 4:00 PM.
- D. Sodding includes maintaining sod until growth is established. All erosion, siltation and maintaining grades is the responsibility of the CONTRACTOR until the ENGINEER determines root system has adequately "survived" and taken "hold".

3.02 GRASSING AND MULCHING

- A. Fertilizing, seeding or mulching operations will not be permitted when wind velocities exceed 15 miles per hour. Seed shall be sown only when the soil is moist and in proper condition to induce growth. No seeding shall be done when the ground is frozen, unduly wet or otherwise not in a tillable condition.
- B. Whenever a suitable length of roadway slopes or adjacent areas has been graded, it shall be made ready, approved by the ENGINEER, and grassed in accordance with these specifications. Grassing shall be incorporated into the project at the earliest practical time in the life of the contract.
- C. All grassing shall be completed on shoulder areas prior to the placement of the friction course on adjacent pavement.
- D. The several operations involved in the work shall proceed in the following sequence: Fertilizing (and/or application of limestone) and preparation of the ground, spreading of mulch, seeding, cutting-in mulch and rolling.
- E. The ground over which the seed is to be sown shall be prepared by disk-harrowing and thoroughly pulverizing the soil to a suitable depth. The prepared soil shall be loose and reasonably smooth. It shall be reasonably free of large clods, roots, and other material which will interfere with the work or subsequent mowing and maintenance operation. No subsequent operations shall be commenced until the ENGINEER has approved the condition of the prepared areas.
- F. The fertilizer and/or limestone shall be spread uniformly in one or more applications as specified below:
 - 1. An initial application of 500 pounds per acre.
 - 2. Unless otherwise directed, a second application of 400 to 500 pounds per acre shall be applied within 90 calendar days after the initial application on projects which have not been accepted prior to this time.
 - 3. Unless otherwise directed, a third application of 400 to 500 pounds per acre shall be applied within 270 to 360 calendar days after the initial application on projects which have not been accepted prior to this time.
- G. On steep slopes or other areas where machine-spreading may not be practicable, the spreading may be done by hand. Immediately after the fertilizer is spread, it shall be mixed with the soil to a depth of approximately four inches.
- H. The plans or special provisions may designate that a separate application of fertilizer and/or dolomitic limestone be made subsequent to other operations.

- I. While the soil is still loose and moist, the seed shall be scattered uniformly over the grassing area. Unless shown otherwise in the plans or the special provisions, the rate of spread for the permanent type seed mixture shall be 150 pounds per acre.
- J. Seed of an approved quick-growing species of grass, such as rye, Italian rye, millet, or other cereal grass, shall be spread in conjunction with the permanent type seed mixture. The type of quick-growing seed used shall be appropriate to provide an early ground cover during the particular season when planting is done. The rate of spread shall be 30 pounds per acre.
- K. When mulching, approximately two inches, loose thickness, of the mulch material shall then be applied uniformly over the seeded area, and the mulch material cut into the soil with the equipment specified, so as to produce a loose mulched thickness of three to four inches. Care shall be exercised that the materials are not cut too deeply into the soil.
- L. Immediately after completion of the seeding, the entire grassed or mulched area shall be rolled thoroughly with the equipment specified. At least two trips over the entire area will be required.
- M. The seeded areas shall be watered so as to provide optimum growth conditions for the establishment of the grass. In no case, however, shall the period of maintaining such moisture be less than two weeks after the planting.
- N. On steep slopes, where the use of a machine for the cutting-in process described above is not practicable, the construction operations shall be modified as follows:
 - 1. The fertilizer shall be applied uniformly, at the rate specified, and shall be raked in and thoroughly mixed with the soil to a depth of approximately two inches.
 - 2. The seeding operations shall follow the fertilizing.
 - 3. The mulch material, in lieu of being cut into the soil, may be anchored down. Anchoring shall be done by either of the following methods:
 - a. Placing a layer of soil, approximately two inches thick by nine inches wide, along the upper limits of the mulch, and spotting soil piles over the rest of the area at a maximum spacing of four feet.
 - b. Spreading a string net over the mulch, using stakes driven flush with the top of the mulch, at six foot centers, and stringing parallel and perpendicular, with diagonals in both directions.

3.03 HYDRO-SEEDING/MULCHING

- A. The ground areas to be hydro-seeded/mulched shall be clean earth, free of tree limbs, stumps, roots, rocks, etc.
- B. Seed and Fertilizer - The proportions of seed and fertilizer used in the slurry shall be as follows or as otherwise approved by the ENGINEER.
 - 1. Gulf Rye or Brown Top Millet seed at 40 pounds per acre.

2. Scarified Argentine Bahia seed at 100 pounds per acre.
 3. Apply fertilizer at the equivalent rate of 10 pounds of 6-6-6 per 1,000 square feet unless otherwise approved by the ENGINEER.
- C. Mulching - When the mulch material is to be included in the slurry mixture, it shall be applied at the rate of 1,000 pounds of mulch material per acre, when the moisture content of the "air-dry" mulch does not exceed ten percent. If this moisture content exceeds ten percent, a proportional increase of mulch material shall be made, as directed by the ENGINEER. The application of the slurry over the seeding areas shall be in accordance with the directions of the manufacturer of the hydro-seeding equipment, and as directed by the ENGINEER. The slurry mixture shall be maintained uniform by continuous agitation during the application.
- D. Watering - The hydro-seeding areas shall be watered so as to provide optimum growth conditions for the establishment of the grass. In no case, however, shall the period of maintaining such moisture be less than four weeks after planting.

3.04 MAINTENANCE

The CONTRACTOR shall, at their expense, maintain the planted or sodded areas in a satisfactory condition until final acceptance or completion of the project, whichever is the latest. Such maintenance shall include the filling, leveling and repairing of any washed or eroded areas as may become necessary, equipment damaged areas, etc. The ENGINEER, at any time, may require replanting or resodding of any areas in which the establishment of the grass stand does not appear to be developing satisfactorily. Replanting or replacement shall be at the CONTRACTOR's expense.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

The quantity to be paid for shall be the area in square yards of sodding, grassing and mulching, or hydro-seeding/mulching, completed and accepted. The quantity shall be determined by the actual measurement in place within the lines which were authorized. When this work is required for restoration due to pipeline installation, all disturbed areas will be covered.

4.02 BASIS OF PAYMENT

The quantity of sodding, grassing and mulching, or hydroseeding/mulching, as determined above, shall be paid for at the contract unit price per square yard for these items, which price and payment shall be full compensation for all labor and material, transportation and any other items necessary for satisfactorily performing the work described on the plans and in conformity with these specifications. When this work is required for restoration due to pipeline installation, the costs will be included in the pipeline unit prices.

END OF SECTION 02813

SECTION 02814
CONCRETE CURBS, GUTTERS, MANHOLE FRAMES, STORM INLETS, ETC.

PART 1 GENERAL

1.01 SCOPE

- A. These specifications make reference to the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, hereafter referenced as FDOTSPEC. Work covered in this section consists of furnishing all labor, equipment, materials and the performing of all operations necessary for construction of:
 - 1. All concrete curbs, gutters, walks, medians, aprons, etc.
 - 2. All storm water inlets including throat inlets, catch basins, and grated inlets.
 - 3. Adjustment or installation of sanitary and storm manhole frames and covers, or grates, inlet grates, gate-valve boxes, and other similarly exposed utilities in paved areas.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc., are referenced, such references shall be the latest edition.

PART 2 PRODUCTS

2.01 CONCRETE CONSTRUCTION

- A. All concrete and concrete work shall conform to the following specifications unless otherwise noted on the plans. All concrete specified in this section shall attain a minimum compressive strength of 3,000 psi in 28 days.
- B. Concrete Mix Materials
 - 1. Coarse aggregate shall be hard, clean, washed gravel or crushed stone. Minimum aggregate size shall not be larger than one inch nor smaller than one-half inch equivalent diameter. Fine aggregate shall be clean, sharp sand. Water shall be clean, fresh, free from injurious amounts of minerals, organic substances, acids or alkalis. Cement shall be Type I, domestic Portland cement, meeting the requirements of ASTM C 150.
- C. Concrete Admixtures
 - 1. Air-entrainment admixtures in concrete are permitted in accordance with manufacturer's specifications provided specified strength and quality are maintained and unless admixtures appears to be causing abnormal field results, and total entrained air content does not exceed five percent. No other admixture of any type will be permitted without written approval of the ENGINEER.

D. Reinforcement Steel

1. Reinforcing bars shall be intermediate grade, new billet-steel, deformed bars, free of loose rust, scale, dirt or oil, and shall conform to ASTM A15 "Specifications for Billet-Steel Bars for Concrete Reinforcement." Rebar deformations shall conform to ASTM A305. Welded wire fabric for concrete reinforcement shall conform to ASTM A185, "Specifications for Welded Steel Wire Fabric for Concrete Reinforcement." All reinforcement steel shall be placed, spliced, lapped, etc. in accordance with the ACI Standard 318, Building Code Requirements For Reinforced Concrete.

E. Transit Or Ready-Mixed Concrete

1. Transit or ready-mixed concrete may be used provided it meets the requirements of ASTM C 94, Ready Mixed Concrete, and provided the central plant producing the concrete, the batching, mixing and transportation equipment, in the opinion of the ENGINEER, is suitable for the production and transportation of the specified concrete.

PART 3 EXECUTION

3.01 CONSTRUCTION METHODS

- A. Work shall be performed to lengths and cross-sections shown on the plans. Forms shall be of sufficient strength to resist pressure of the concrete without springing. Bottom forms shall not be removed within twenty-four hours after concrete has been placed. Side or top forms shall not be removed within 12 hours after concrete has been placed. Upon removal of forms, minor defects shall be corrected with a rich mix of cement mortar. Curbs, gutters, walks or medians shall be finished until a smooth surface is attained. Final finish shall be a light broom finish. When completed, concrete shall be cured as specified.

3.02 PLACING OF CONCRETE

- A. Concrete shall be deposited in clean wet forms and as nearly as practicable in its final position to avoid segregation. Concrete placing shall be carried on at such a rate the concrete is at all times plastic and flows readily into spaces between the bars. Concreting shall be a continuous operation until the panel or section is completed. All structural concrete shall be vibrated. No concrete shall be allowed a free fall of more than four feet or allowed to strike against a vertical or inclined surface or reinforcement above the point of deposit. Placing by means of pumping may be allowed, contingent upon the adequacy of the equipment for this particular work. The operation of the pump shall be such that a continuous stream of concrete without air pockets is produced. Placing of concrete shall be so regulated pressure caused by wet concrete shall not exceed that used in the design of the forms. After concrete has taken its initial set, care shall be exercised to avoid jarring the forms or placing any strain on the ends of projecting reinforcement.

3.03 MACHINE-LAYING

- A. Machine laying of work will be permitted, providing all quality conditions of conventional construction are met.

- B. As a specific requirement for machine-laid curb and gutter, contraction joints shall be sawed unless an alternate method of constructing them is approved in writing by the ENGINEER. Joints shall be sawed as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins. Contraction joints shall be spaced at intervals of ten feet except where a lesser interval is required for closure, but no section shall be less than four feet in length.

3.04 CURING

- A. As soon as practicable after finishing, all concrete shall be covered with burlap and kept moist for a period of seven days or, an approved membrane curing compound may be applied at the CONTRACTOR's option. Where membrane curing compound is used, no walking or other traffic will be allowed over the slab for 72 hours after application unless the surface is protected by burlap or heavy building paper. Curing shall meet the requirements of FDOTSPEC Section 520-8.

3.05 JOINTS

- A. Construction Joints: Joints not shown or specified shall be located as to least impair the strength and appearance of the work. Placement of concrete shall be carried on at such a rate that the surfaces of concrete which have not been carried to joint levels will not have attained initial set before additional concrete is placed thereon.
- B. Contraction Joints: Curbs-and-gutters, and valley gutters shall be constructed with contractions joints at intervals of ten feet except where shorter intervals are required for closures, but no joint shall be constructed at intervals of less than four feet. Sidewalks and concrete medians shall be constructed with contraction joints at intervals equal to the width of the walk or median respectively unless otherwise noted on the plans. Contraction joints may be of the open type, tooled or sawed. Construction and construction procedures of contraction joints shall conform to the specifications set forth in the FDOTSPEC.
- C. Expansion Joints: Curbs, curb-and-gutters, and valley gutters shall be constructed with expansion joints at all inlets, all radius points, all points where operations cease for any considerable time and at intervals of not more than 500 feet. Walks and concrete medians shall be constructed with expansion joints at points of walk or median termination against an unyielding surface and at intervals not to exceed 90 feet. Expansion joints shall be constructed with PVC slips encasing the reinforcing bars. Expansion joint material shall be one-half inch bituminous impregnated expansion joint material which meets the requirements of FDOTSPEC, 932-1.1. Expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections shall be one-half-inch joints, formed with a preformed joint filler meeting the requirements specified in FDOTSPEC, 932-1.1.

3.06 CONTRACTORS RESPONSIBILITIES

- A. Prior to placing any concrete, the CONTRACTOR shall give the ENGINEER sufficient advance notice of same. No concrete shall be placed on any subgrade or in any formwork until the subgrade, formwork, reinforcing steel, anchor bolts and other imbedded items have been reviewed.
- B. CONTRACTOR is fully responsible for all concrete and concrete work and finishes, and shall reject all delivered concrete and finishes not meeting these specifications. CONTRACTOR shall also be responsible for securing laboratory tests or reports if such tests or reports are requested by ENGINEER.
- C. ENGINEER may, at their discretion, request that specified tests be conducted and reports furnished at the CONTRACTOR's expense. Normally the ENGINEER will not require testing of more than one set of four compression test cylinders per 50 cubic yards, (or part thereof). In no case shall there be less than one test for each day concrete is poured.
- D. From each test, one cylinder shall be tested by the laboratory at seven days, and two at 28 days, or as directed by the ENGINEER. One cylinder shall be kept as a reserve.

3.07 EXCAVATION AND BACKFILL

- A. Excavation shall be to the required depth, and supporting earth, base, or subgrade shall be compacted. When the plans call for a stabilized subgrade under the curb or gutter, subgrade shall be stabilized, and tested if required, as set forth elsewhere in these specifications and as indicated on the plans. When the plans call for a soil-cement base, subgrade supporting the curb or gutter shall be compacted by watering, rolling or tamping to 95 percent of maximum density as determined by AASHTO-T-180. Subgrades for walks and concrete medians shall be compacted to a firm, even surface, by means of rolling, watering and/or tamping.
- B. After the concrete has set sufficiently, but not later than three days after placing, the spaces in front and back shall be backfilled with suitable material and compacted. When street bases are to be constructed adjacent to curbs, gutters, etc., the curbs, gutters, etc., shall be properly backfilled and shall cure for a period of not less than three days before any base material is placed against it.

3.08 STORM WATER INLETS

- A. Construction of storm water inlets shall include all work and materials necessary for final construction by CONTRACTOR of throat inlets, catch basins, grated manholes, or other storm water inlets.
- B. Construction of throat inlets shall be to the lines, elevations and dimensions shown on the plans and include forming of the throat and construction of the top slab with frame and cover, and supporting walls.

- C. Construction of grated inlets, catch basins, manholes, etc. shall be to the elevations and dimensions shown on the plans. Construction shall include any reasonable adjustment and realignment of the grate necessary (if grates are installed by the previous CONTRACTOR), or the installation of inlet grates. Frames shall be secured in mortar and the mortar struck smooth inside and out.

3.09 MANHOLE FRAMES AND COVERS

- A. Manhole frames with covers or grates in paved areas shall be installed/adjusted flush with the final paved surface. Frames and covers shall be milled to prevent rocking of the cover when passed over by a motor vehicle. Frames shall be secured in mortar or concrete and surfaces struck smooth inside and out. Gate valve boxes and other similarly exposed utilities shall be raised or lowered as required to insure a flush, even surface with the adjacent paved area.

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Payment shall be made on a unit price basis in accordance with the construction contract.
- B. Units of payment stated in the contract cover the following:
 - 1. Concrete Curbs, Gutters, Walks, Medians and Valley Crossing: Payment for concrete curb-and-gutters, vertical curbs, and valley gutters shall be on the basis of actual lineal feet in place. Payment for valley crossings shall be on a per unit basis. Concrete medians shall be paid on the basis of actual square feet in place. Concrete walks shall be paid on the basis of actual linear feet completed unless otherwise noted. Concrete aprons, inlet channels, etc., shall be paid on the basis of actual square feet completed, unless otherwise noted. Unit cost for the construction of the above stated work shall include all equipment, labor and materials; shall include all excavation, trenching, subgrade compaction, backfilling, etc., necessary to perform the work in accordance with the plans, specifications, and good construction practices.
 - 2. Storm Water Inlets: Payment for storm water inlets, as defined herein, shall be on a unit basis. Unit cost of construction shall include all labor, equipment, materials, excavation, backfilling, structural adjustments, etc., necessary to perform the work in accordance with the plans, specifications and good construction practice. Payment for the installation or adjustment of manhole frames and covers or grates shall be included in the cost of storm water inlets. Unit costs shall include all materials, equipment, labor backfilling, etc., necessary to perform the work in accordance with the plans, specifications, and good construction practice. Costs for adjustment of gate-valve boxes and other similar utilities in paved areas shall be considered as incidental.

END OF SECTION 02814

**SECTION 02817
CLEARING AND GRUBBING**

PART 1 GENERAL

1.01 SCOPE

- A. Work specified in this section consists of clearing and grubbing within areas specified in the Contract Documents or as directed by the OWNER's representative. Work under this section includes removal and disposal of all trees, brush, stumps, grass, roots, and other such protruding objects. Also included is the removal and disposal of buildings, structures, existing pavement, other existing facilities, and debris not required to remain or to be salvaged that is necessary to prepare the area for the proposed construction. CONTRACTOR shall notify all utility companies or utility owners (both public or private) of their intent to perform such work and shall coordinate field location of utility lines prior to commencement of construction.
- B. Other miscellaneous work considered necessary for the complete preparation of the overall project site is also included under this section. Work includes, but is not limited to, the following:
 - 1. Plugging of wells encountered within the project limits which are to be abandoned.
 - 2. Leveling and restoration of terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations.
 - 3. Trimming of certain trees and shrubs within project limits for utilization in subsequent landscaping of the project.
 - 4. Plugging or sealing of culvert pipes or other structures to prevent erosion or collapse of adjacent soils.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc. are referenced, such references shall be latest edition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLEARING AND GRUBBING

- A. Clearing and Grubbing shall consist of complete removal and disposal of all items stated in Article 1.01 which are not specified for removal under other items of the contract. The CONTRACTOR shall obtain all permits/approvals necessary for

disposal at their own expense. The CONTRACTOR shall obtain tree removal permits.

B. Unless otherwise shown in the plans or Contract Documents, Standard Clearing and Grubbing shall be done within the following areas:

1. All areas where any type of excavation is to be done.
2. All areas where any type of embankment will be constructed.
3. All areas where any type of structure, including pipe culverts or pipe lines, will be installed or constructed.
4. All areas where any type of pavement will be constructed.
5. Other areas designated in the plans or by the specifications.

C. Depths of Removal

1. In areas listed below, all roots and other debris shall be removed to a depth of at least one foot below ground surface. The surface shall then be plowed to a depth of at least six inches and all roots exposed shall be removed to a depth of at least one foot. All stumps including subsurface roots shall be completely removed to the satisfaction of the ENGINEER. Trees shall be removed so roots are pulled out rather than broken or sawed off. Areas requiring the removal methods stated in this paragraph are as follows:
 - a. Excavation areas where the excavated material is to be used in embankment construction under permanent structures such as but not limited to pavement and buildings.
 - b. Embankment areas under permanent structures such as but not limited to pavement, buildings, sewage treatment facilities, bridges, etc.
 - c. Excavation areas where roots or similar vegetation in the top one foot would interfere with disking, harrowing, or finish grading operations prior to seeding or landscaping.
 - d. Lots and building areas.
2. In all other excavation areas not listed above where clearing and grubbing is to be done, all roots, stumps, and debris protruding through or appearing on the surface of the completed excavation shall be removed or cut off below the excavated surface.
3. In all other embankment areas not listed above where clearing and grubbing is to be done, all roots, stumps, and debris protruding through or appearing on the surface shall be removed to a depth of at least one foot below the surface but no plowing or harrowing will be required in these areas.

- D. Trees to Remain: As an exception to the above provisions, where so directed by the OWNER's representative, desirable trees within the clearing limits shall be protected, left standing, and trimmed to prevent damage to limbs during construction. No equipment shall stand, stop, or travel across or inside the drip line of any trees or vegetation designated to be saved or protected.
- E. Boulders: Any boulders laying on the top of the existing surface or otherwise encountered during the clearing and grubbing shall be removed and disposed of by the CONTRACTOR in areas provided by the CONTRACTOR. As an alternate to off-site disposal and at the CONTRACTOR's expense, he may elect to utilize these boulders in embankments provided the conditions of Article 3.04 in Section 02820 are satisfied. Any breaking or splitting of boulders that may be necessary to comply with size requirements for embankment shall be incidental to the cost of clearing and grubbing. No boulders or rock shall be left or placed in building pads, lots, or building embankment areas.

3.02 SELECTIVE CLEARING AND GRUBBING

- A. Selective clearing and grubbing shall consist of removing and disposing of all vegetation, obstructions, etc, as provided above except that in non-structural areas where the CONTRACTOR so elects, roots may be cut off flush with the ground surface. Stumps shall be completely removed. Undergrowth shall be completely removed except in areas designated by the OWNER's representative for aesthetic purposes.
- B. Desirable trees, that are designated by the OWNER's representative to remain, shall be protected and trimmed in such a way to avoid damage to limbs during construction.

3.03 SPECIAL CLEARING AND GRUBBING

- A. In certain areas that are inaccessible by machines or are considered environmentally sensitive, ENGINEER may specify Special Clearing and Grubbing. Where listed as a separate pay item, Special Clearing and Grubbing shall consist of removal and disposal of all trees, brush stumps, roots, debris or other objects protruding through the surface by cutting off flush with the ground surface. The use of any machinery that would disturb the original ground surface condition will not be permitted.

3.04 ERADICATION OF EXOTIC VEGETATION

- A. Where listed as a separate pay item, Eradication of Exotic Vegetation shall consist of removal and disposal of Australian Pine, Melaleuca, Brazilian Pepper, and other species specifically stated on the plans or specified herein. Also included shall be the removal of the subsurface root system for each exotics.
- B. In areas where removal is modified to permit cutting off flush with in the ground surface, stump and root system shall be treated with an agency approved chemical herbicide that will ensure the eradication of the root system.

- C. Within the limits established for the Eradication of Exotic Vegetation, all other trees, brush, etc. not classified as exotic shall be removed, unless designated in the field by the OWNER's representative to remain. The removal and disposal of non-exotic vegetation shall conform to the provisions of Article 3.01.

3.05 REMOVAL OF EXISTING PAVEMENT

- A. Work specified in this article consists of the removing and disposing of existing pavement surfaces such as, but not limited to, pavement, sidewalk, curb, and gutter where shown in the plans, or required to be removed during construction operations, or as required by the ENGINEER.

3.06 REMOVAL OF EXISTING STRUCTURES

- A. Work specified in this article shall include removal and disposal of existing buildings, bridges, pipes, and structures of whatever type as specifically shown in the plans to be removed or as otherwise specified for removal in the Contract Documents. Also included are structures of whatever type or portions thereof which are encountered during construction operations. Where partial removal of a structure is approved by the ENGINEER, the portion of the existing structure shall be backfilled, plugged, or filled in such a way that will prevent the settlement, movement, erosion or collapse of the adjacent soils.

3.07 BURNING ON-SITE

- A. Unless otherwise stated in the Contract Documents, burning may be permitted within the project limits provided the burning operation complies with all applicable laws, ordinances, and other regulatory agencies. All permits required shall be obtained by the CONTRACTOR prior to the start of burning and all permit regulations shall be strictly adhered to. All burning shall be done at locations where trees and shrubs adjacent to the cleared area will not be harmed.

3.08 DISPOSAL OF MATERIALS

- A. Timber, stumps, roots, brush, boulders, rubbish, and other objectionable material resulting from work specified in this section shall be disposed of off-site in locations provided by the CONTRACTOR.

3.09 OWNERSHIP OF MATERIALS

- A. Except as may be otherwise stated in the Contract Documents, all buildings, structures, appurtenances and other materials removed by the CONTRACTOR shall become the property of the CONTRACTOR, to be disposed of in areas provided by him.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. General: For the various items of work specified in this section when listed as a separate pay item, payment shall be made by the unit price or the lump sum amount as established in the Contract Documents. Where no separate pay item is

established, the cost of all such work shall be included in the various scheduled items of work specified in the Contract Documents, except as provided below.

- B. Clearing and Grubbing: Measurement of Clearing and Grubbing shall include only the areas specified in the Contract Documents that are required to be cleared to permit the construction of the various items of work. Areas that are cleared for convenience, access, or other purposes that are not a requirement of construction will not be measured for payment.
- C. Selective Clearing and Grubbing: Measurement of Selective Clearing and Grubbing shall include all areas shown in the plans or designated in the field by the OWNER's representative. This measurement shall include the total area within the limits of Selective Clearing and Grubbing and no deduction shall be made for areas in which desirable trees and brush are designated to remain. Where the limits of Selective Clearing and Grubbing are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing".
- D. Special Clearing and Grubbing: Measurement of Special Clearing and Grubbing shall include all areas shown in the plans or designated in the field by the OWNER's representative. This measurement shall include only actual areas cleared by the hand method and shall not include areas cleared by other methods or areas that remain in their original condition. Where the limits of Special Clearing and Grubbing are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing".
- E. Eradication of Exotic Vegetation: Measurement of Eradication of Exotic Vegetation shall include areas shown on the plans or designated in the field by the OWNER's representative. This measurement shall include the total area within the limits established for Eradication of Exotic Vegetation and include the areas within these limits where non-exotic vegetation is removed. Where the OWNER's representative has designated desirable vegetation to remain within these limits, no deduction of area shall be made for the "saved" areas.

Where limits of Eradication of Exotic Vegetation are shown on the plans or otherwise established in the Contract Documents but no separate pay item established, the measurement of such work shall be included in the quantity or lump sum amount of "Clearing and Grubbing."

- F. Removal of Existing Pavement: When a separate pay item is established for the Removal of Existing Pavement, the quantity to be paid shall be by the square yard for the actual quantity removed and disposed of off-site. For curb and gutter, slope pavement, and other irregular areas, the measurement shall be generally taken as an approximate horizontal surface. Where lump sum payment is provided, such payment shall be compensation for the removal of areas shown on the plans or otherwise specified in the Contract Documents.

Where a separate pay item is established for curb, gutter, or curb and gutter removal, the measurement shall be measured by the lineal foot at the flow line of the gutter or at the top of curb where there is no gutter. Where separate pay has

not been provided for curb or curb and gutter removal, the measurement shall be included in the area for pavement removal as stated above.

When no separate payment is provided for the Removal of Existing Pavement and no applicable item of excavation or embankment covering such work is listed, the costs of this work shall be included in the contract price for the item of Clearing and Grubbing or for the pipe or other structure of which the pavement removal is required.

- G. Removal of Existing Structures: When separate payment for Removal of Existing Structures or Removal of Existing Buildings is provided, the work shall be paid for at the contract lump sum price. When direct payment is not provided, the cost of such removal and disposal shall be included in the contract price for Clearing and Grubbing or if no clearing and grubbing is included, in the compensation for the other items covering the new structure to be constructed.
- H. Burning: Unless otherwise specified in the Contract Documents, and where permitted, burning shall be considered as being part of the process of disposing of materials and the cost of such work shall be included in the item which requires the disposal of materials.

4.02 BASIS FOR PAYMENT

- A. General: Prices and payments for the various work items included in this section shall constitute full compensation for all work described herein and shall include all removal, disposal, protecting, trimming, breaking, plugging, eradication, or any other items specified in this section.
- B. Pay Items: For all work specified in this section, payment shall be made in accordance with the list of pay items established or as otherwise defined in the Contract Documents. The description of a pay item in the proposal section may vary from the descriptions stated in this section.

END OF SECTION 02817

**SECTION 02820
EXCAVATION AND EMBANKMENT**

PART 1 GENERAL

1.01 SCOPE

- A. Work specified in this section consists of excavation and embankment required for roadways, lakes, ditches, swales, berms, canals, parking areas, site fill, building pads, retention areas, structure excavation, and other similar work described herein or shown on the plans. This section includes preparation of subgrades, construction of embankments, utilization or disposal of materials excavated, and compaction and finish grading of excavated areas and embankments. All work shall conform to the proposed alignment, elevations, slopes, and cross-sections shown on the plans.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc. are referenced, such references shall be latest edition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLASSIFICATION OF EXCAVATION

- A. General: Included in the excavation under this section are materials of whatever nature encountered within the required limits of excavation (except material removed during clearing and grubbing). Determination of sub-surface conditions and its effect on construction costs are the sole responsibility of the CONTRACTOR. Sub-surface conditions between soil borings that may be provided can vary greatly from those conditions found at the location where the sample was extracted.

Locating existing underground utilities shall be the responsibility of the CONTRACTOR. In the event of any utility conflict, the CONTRACTOR shall immediately inform the utility company, OWNER and the ENGINEER of the conflict. CONTRACTOR shall be responsible for the immediate repair of any utility lines damaged during construction. CONTRACTOR shall notify all utility companies or utility owners, both public or private of their intent to perform such work and coordinate field location of utility lines prior to commencement of construction.

Where separate classification is provided in the proposal, excavation specified under this section may be listed as any of the following classes: (1) Regular Excavation, (2) Swale Excavation, (3) Subsoil Excavation, (4) Rock Excavation, (5) Lake Excavation (unclassified).

For any of the above classifications not specifically listed as a separate pay item in the proposal or included as part of another pay item, all excavation of such type shall be included under the item of Regular Excavation. If the item of Regular Excavation is not

listed in the proposal, all costs included in the excavation of roadway, swales, subsoil, rock, lakes, structures (including utilization or disposal of materials) shall be incidental to the general cost of the project and no additional compensation will be allowed.

- B. Regular Excavation: Regular Excavation shall consist of excavation of materials necessary for construction of roadways, ditches, sidewalks, building pads, retention ponds, and other surfaces as shown in the plans. Excavated material suitable for embankment shall be utilized in areas requiring fill with all excess material spread or stockpiled on site where shown on the plans or as directed by the OWNER's representative.
- C. Swale Excavation: Swale Excavation shall consist of excavation of swales and ditches as indicated on the plans and shall include the utilization of suitable excavated materials in areas requiring fill with all excess material spread or stockpiled on site where shown on the plans or as directed by the OWNER's representative.
- D. Subsoil Excavation: Subsoil Excavation shall consist of the excavation and off-site disposal of muck, clay, roots, or any other material that is determined to be unsuitable by the OWNER's Geotechnical Engineer in its original position and that is excavated below the finished grading template. If provided in the plans or Contract Documents unsuitable material shall be stockpiled in areas on site designated by the OWNER.
- E. Rock Excavation: Rock Excavation shall consist of excavation of rock and boulders necessary for construction of roadways, ditches, lakes, and other cut sections shown on the plans. It shall also include the utilization and disposal of excavated rock and boulders according to Articles 3.02, 3.03, and 3.04 in this section.

For the purpose of classifying rock excavation as a pay item, the rock strata encountered shall be of such thickness and hardness as to preclude removal by using a modern 3/4 yard hydraulic backhoe maintained in excellent operating condition, Caterpillar 235 or equal.

- F. Rock Blasting: All blasting is strictly prohibited.
- G. Lake Excavation (Unclassified): Lake Excavation (Unclassified) shall consist of excavation of all material necessary for construction of lakes according to the depths, dimensions, side slopes, and in the locations shown in the plans. It shall also include the utilization of excavated materials and the disposal of unsuitable materials in accordance with Articles 3.02 and 3.03 in this section. All materials excavated shall be considered as "unclassified". CONTRACTOR shall be responsible for any investigation of sub-surface conditions and subsequent determination of the amount of rock, roots, and other materials to be incorporated into his price.

CONTRACTOR shall construct the lake banks in strict accordance with the ordinances or laws governing the excavation. All slopes must be equal to the specified slopes. The bottom of the lake shall not be excavated below the specified depth without prior written approval of the OWNER and the governing agency.

- H. Structure Excavation: Work specified in this sub-article consists of excavating for bridge foundations, box culverts, pipe culverts, sewers, pipe lines, retaining walls, pump stations, manholes, inlets, catch basins, sewage and water treatment plants and other similar type facilities shown on the plans. It shall also include (1) the construction and removal of cofferdams, sheeting, bracing, etc.; (2) dewatering; (3) disposal of structures (of whatever type) encountered during excavation; (4) disposal of unsuitable materials; (5) bedding materials; (6) backfilling and the compacting thereof; (7) utilization of excess suitable materials according to article 3.02 this section.

Material excavated (of whatever nature) shall be classified for utilization or disposal according to Articles 3.02 and 3.03. The excavation shall be of such size and depth as to facilitate the construction and/or installation of each structure according to the location and elevations shown in the plans. Rock blasting, rock excavation, demolition of structures or foundations, or any unusual or undefined work that may be necessary to complete the excavation for a structure shall be considered as work included in Structure Excavation.

If the excavation requires the use of cofferdams, dewatering, sheeting, or bracing, all such work will be done in strict compliance with all permit requirements and any laws or ordinances that may apply to the work being performed. It shall be the responsibility of the CONTRACTOR to familiarize himself with any regulations applicable and to satisfy said regulations at his own expense.

The structure shall be constructed or laid in dry dewatered excavation unless otherwise approved by the ENGINEER. In such cases where the excavation is unstable or has water in sufficient quantities that make uniform bedding impossible, the bottom of the excavation shall be stabilized as required. If washed shell is used, it shall be a graded according to the sieve analysis listed below:

100 percent passing 1½" screen
0 percent passing 5/8" screen

After the structure is complete, backfilling shall be performed in a careful manner so as not to disturb or damage the completed structure. The backfill material shall conform to the requirements of Sub-article 3.04.C., except that the size of rock shall not exceed 3 1/2 inches in diameter. The backfill material shall be compacted to the same or greater density as the adjacent existing earth.

3.02 UTILIZATION OF EXCAVATION MATERIALS

- A. General: All excavated materials suitable for embankment shall be utilized in the embankment areas shown in the plans or as otherwise specified in the Contract Documents. After the requirements for embankment have been satisfied, the surplus suitable excavated material shall be deposited in areas on-site as directed by the OWNER's representative, unless otherwise specified in the Contract Documents.

On projects where excavation does not provide enough material to satisfy embankment requirements, excavated materials shall first be utilized in the roadway or other permanent structure embankment, then into other embankment areas shown in the plans.

- B. Classification of Materials: Material shall be classified as "suitable" if it meets all the requirements of Sub-article 3.04.C. of this Section. A rock strata that can be excavated and split or screened to meet the requirements of Sub-article 3.04.C. shall be considered as "suitable" for embankment.

Material such as muck, or any other material containing excessive amounts of organic, silt, clay, or other deleterious materials shall be classified as "unsuitable" for embankment unless otherwise specified or classified by the ENGINEER.

The term "unclassified" simply refers to material that has not been defined as suitable or unsuitable.

If a dispute arises over the classification of materials, the final determination shall be made by the ENGINEER.

- C. Rock and Boulders: Rock and boulders shall be utilized on site as embankment unless otherwise specified. In all cases, the alteration or replacement of excavated material shall be at the CONTRACTOR's expense unless otherwise provided in the plans or Contract Documents.
- D. Muck: Although muck or other material high in organic content will not generally be permitted in embankment areas, certain conditions may require or permit its utilization. Muck will not be permitted in embankment unless specifically stated on the plans or specified herein. When so specified the placement of muck or other similar material will only be permitted outside of an imaginary downward 2:1 slope starting from the outward edge of roadway structure or other permanent structure.
- E. Top Soil: Where top of the existing surface is high in organic content, it may be necessary to strip the topsoil and reuse it or dispose of it. Topsoil shall be stripped and stockpiled on-site for later use as a layer under sod, grassing, or in landscaped areas. When an item of topsoil is not listed as a separate pay item in the Contract Documents, the placement of the stockpiled topsoil shall be included in the item of Clearing and Grubbing or Excavation. When topsoil is listed as a pay item, it shall be placed in locations shown in the plans to a specified thickness and to a finished elevation that will allow for the placement of sod, ground cover or other landscape related surface.

The material utilized as topsoil shall be suitable for plant growth and free from appreciable quantities of hard clods, stiff clay, hardpan, gravel, brush, large roots, refuse, or other deleterious materials. The organic content shall be at least 1.5 percent. The characteristics of the material shall be such that it can be adjusted to have a pH value between 5.0 and 8.0, or as approved by the ENGINEER.

3.03 DISPOSAL OF EXCAVATED MATERIALS

- A. Disposal of Surplus Materials: Ownership of all suitable excavated materials shall be retained by the OWNER unless otherwise stated in the plans or Contract Documents to be surplus material. When so specified the surplus material shall become the property of the CONTRACTOR to be disposed of outside the project limits. The cost of the disposal and furnishing the disposal area shall be included in the item requiring excavation and no additional compensation will be given.

- B. Disposal of Unsuitable Materials: Unsuitable excavated material as defined in Sub-article 3.02.B. shall become the property of the CONTRACTOR to be disposed of outside the project limits. The cost of the disposal and furnishing the disposal area shall be included in the item requiring excavation and no additional compensation will be given.

3.04 EMBANKMENT

- A. General: Embankments shall be constructed true to lines and grades shown in the plans or ordered by the ENGINEER. Material used in embankments shall be obtained from on-site excavation and/or from off-site borrow sources secured by the CONTRACTOR.
- B. Site Preparation: Subsequent to clearing and prior to placement of embankment material, the existing earth surface shall be compacted six feet beyond the building and pavement structure limits and in other areas shown in the plans or stated in the Supplementary Conditions. The existing surface shall be compacted at a moisture content such that the specific density requirement can be attained. Soil one foot below the compacted surface shall attain a density of 95 percent of the maximum theoretical density as determined by the Modified Proctor Density (ASTM-D-1557). Field density tests shall be conducted in accordance with ASTM D-1556, D-2167, D-2922, or D-2937 (latest revisions) by a certified laboratory or soils engineer approved by the OWNER. The location and number of the tests shall be verified by the ENGINEER.
- C. Requirements for Embankment Materials: Embankments shall be constructed of material containing no muck, stumps, roots, brush, vegetable matter, rubbish, or other material that will not compact into a suitable and enduring roadbed or similar foundation. Material designated as unsuitable in the soil borings or as classified as unsuitable by the ENGINEER shall be removed from the embankment and disposed of off-site. Utilization of material in embankment construction shall be in accordance with plan details or as directed by the ENGINEER.

The maximum size of rock which will be permitted in the completed embankment are as follows:

In top 12 inches -----	3 1/2 inches
12 inches to 2 feet -----	6 inches
In the 2 feet depth below ---	Not to exceed the compacted thickness of the layer being placed

When and where approved by the ENGINEER, the CONTRACTOR may place larger rocks outside the 2-to-1 slope of any structure embankment. Where such rock is utilized in any embankment, enough fine material shall be deposited and compacted between individual rocks so as to completely fill any voids that may occur during the placement of such material. No rock shall be utilized in any building pad embankment areas.

- D. Borrow Material: The use of borrow material shall be resorted to only when sufficient quantities of suitable material are not available from the various types of excavation required on the drawings. When borrow is required the material shall conform to the requirements of article 3.04.C. and shall be approved by the ENGINEER prior to

placement. Borrow material shall be obtained from areas furnished by the CONTRACTOR at his expense. Borrow sources shall comply with all local requirements applicable for the excavation and sale of fill material.

- E. Construction Requirements: Embankment material shall be placed in horizontal layers not to exceed 12 inches thickness measured loose. Each layer shall be leveled and compacted in accordance with Sub-article 3.04.F. No fill material shall be placed where area is wet. Dewatering may be required prior to filling operation, either by pumping or well pointing. Water shall not be allowed to stand on or adjacent to fill areas that could saturate the material.

When embankments are constructed on a hill or slope, slope shall be "stepped" so as to permit the embankment to be placed in horizontal layers and compacted as stated above. Upon completion of the embankment steps on a slope, steps shall be dressed to conform to the specified slope.

For any embankments not covered above, construction methods shall be approved by the ENGINEER prior to placement.

- F. Compaction Requirements: Materials shall be compacted at a moisture content such that the specific density can be attained. If necessary, water shall be added to the material, or the moisture content shall be lowered by manipulating the material or allowing it to dry, as is appropriate. Each layer of material shall be compacted by the use of a smooth drum vibratory roller or other method approved by the engineer. The top 12" of natural ground shall be compacted in accordance with the requirements listed below.

Field density tests shall be conducted in accordance with ASTM D-1556, D-2167, D-2922, or D-2937 (latest revisions) by a certified laboratory or soils engineer approved by the OWNER according to the Compaction Requirements stated below:

Embankment Area	Density ¹ Below 3'	Density ¹ 0' to 3'	Testing Frequency/Lift
Building Pads ²	95%	98%	1 Ea/2000 SF, Minimum 2 Ea/Structure
Pavement Areas ³	95%	98%	1 Ea/500 SY
Retention Areas ⁴	95%	95%	1 Ea/500 SY
Other Areas	N/A	N/A	N/A

¹ The percentage listed shall be the minimum acceptable amount of the maximum theoretical density as determined by the Modified Proctor Density (ASTM-D-1557).

² Includes future building pads and lots.

³ Includes any permanent pavement structure such as curb and gutter, sidewalk, roadway, shoulder, driveway, or any other similar surface.

⁴ Includes earth berms, water retention slopes, dikes, and other similar areas.

CONTRACTOR shall be responsible for scheduling of all soil testing. These soil testing costs shall be borne by the CONTRACTOR unless stated otherwise in the plans or specifications. Where the testing costs are borne by the OWNER, in the event of a test failure all subsequent tests required to pass density shall be at the expense of

the CONTRACTOR. The OWNER may deduct this expense from the CONTRACTOR's payment or request payment directly from CONTRACTOR.

3.05 FINISH GRADING

- A. General: As a final grading operation the surface of the earthwork shall be shaped to conform to the lines, grades, and contours shown on the plans. Hand dressing will be required in confined areas where equipment operation is restricted or where the equipment finished surface is unsatisfactory in the judgment of the ENGINEER.

CONTRACTOR shall take necessary precautions to prevent erosion of slopes before and after finish grading. Any erosion of whatever consequence shall be repaired at the expense of the CONTRACTOR until final acceptance of the project.

- B. Tolerances: In final shaping of the surface of earthwork a tolerance of 0.1 foot above or below the plan elevations and contours will be allowed with the following exceptions:
1. In areas where sod, ground cover or other finish landscape surface will be used, an allowance shall be made for the thickness of sod, etc. that will result in the finish landscape elevation to be within the above tolerance.
 2. Earthwork shall be shaped to match adjacent pavement, curb, sidewalk, structures, etc. with applicable allowance for sod, etc.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. General:
1. VOLUMETRIC - When payment is made on a volumetric basis, calculations shall be based on the method of average end areas or the grid cell method, unless the ENGINEER determines that another method will provide a more accurate result. The existing elevations shown on the plans or field survey taken by the ENGINEER shall be incorporated into the volume calculations. Should any of these existing elevations appear to be in error, the CONTRACTOR shall notify the ENGINEER in writing and resolve the dispute prior to disturbing the existing surface in question. Once the existing surface is disturbed by clearing, excavating, or any other construction, the CONTRACTOR's right to dispute the existing elevations shown by the ENGINEER will be nullified. After the excavation or embankment is completed, the finished surface shall be measured in place by field survey paid for by the CONTRACTOR and these cross-sections shall be incorporated into the volume calculations.
 2. LOOSE VOLUME - In special cases as shown in the Contract Documents, payment shall be made on a loose volume basis as measured in trucks or other hauling equipment. The volume capacity of each truck shall be measured and recorded by the OWNER's representative. Before unloading on-site, the OWNER's representative shall compare the loaded truck to its recorded

capacity and record the actual volume on the load ticket. Only load tickets that have been so recorded and collected by the OWNER's representative at the point of dumping shall be included in the quantity for payment.

3. LUMP SUM - The proposal may contain items of work that are to be paid for on a lump sum basis. Additionally, the Contract Documents may provide for a lump sum payment for the entire project. The lump sum payment for individual items or for the entire project shall constitute full compensation for the completion of all work specified in the plans and specifications.
 4. PLAN QUANTITY - When cross sectioning finished surfaces is not feasible, the ENGINEER may specify the final pay quantity of any item to be the original plan quantity. When so specified in the Contract Documents, such quantity will be revised only in the event that it is determined to differ by more than 10 percent of the original plan quantity. Such revisions will be determined by calculation of quantities from the plan sheets as applicable. Field measurement will not be considered except to verify that the work was accomplished in substantial compliance with the plan dimensions.
- B. Regular Excavation: Measurement of regular excavation shall include only the net volume of material excavated between the original ground surface and the surface of the completed earthwork. The pay quantity shall be the plan quantity in accordance with article 4.01.A., unless otherwise stated in the Contract Documents.
 - C. Swale Excavation: Measurement of swale excavation shall include only materials excavated within the line and grades indicated in the plans or as directed by the ENGINEER. Measurement may be by volume or lineal feet as called for in the Contract Documents.
 - D. Subsoil Excavation: Measurement of subsoil excavation shall include only material excavated within the lines and grades indicated on the plans or as directed by the ENGINEER. Where the limits of subsoil excavation are not shown or vary from the limits shown on the plans, the pay quantity shall be determined by cross-sectioning measurements in accordance with the volumetric method described in Article 4.01.A. When the final pay quantity is more or less than the original plan quantity, an appropriate adjustment shall be made to the applicable pay quantity for imported fill so that the loss or increase is compensated provided that the unsuitable material is to be disposed off-site. A lower than plan volume will require less fill replacement and a higher than plan volume will require more fill replacement than originally calculated. However, if the subsoil excavation is displaced by on-site excavation, a quantity adjustment will not be made. Where no separate pay item is included in the contract, all such work involving the excavation and disposal of unsuitable material shall be considered incidental to the cost of the applicable excavation item.
 - E. Rock Excavation: When rock excavation is listed as a separate pay item in the Contract Documents, measurement of rock excavation shall be by cross-sectioning method prior to and after the rock layer is excavated. CONTRACTOR shall allow enough time between operations to facilitate this field survey work.

If Rock Excavation is not listed as a separate pay item in the Contract Document, the cost of all such work shall be included in the unit price for Regular Excavation, Swale Excavation, Subsoil Excavation, Lake Excavation (Unclassified), or other items which may require the excavation of rock or boulders.

- F. Lake Excavation (Unclassified): Measurement of Lake Excavation (Unclassified) shall include only the net volume of material excavated between the ground surface and bottom of the lake using the VOLUMETRIC method as described in the first paragraph of Article 4.01.A. Any unauthorized overdigging or excavation below the plan bottom elevation will not be included in the measurement for payment.

If the sections indicate that the depths or bank slopes do not conform to the permitted design slopes or indicate that they are steeper, the CONTRACTOR shall correct the deficiency. Further, the CONTRACTOR shall pay for the expense of re-sectioning the lakes to document that said correction has been accomplished.

OWNER shall have the option of deducting the re-sectioning costs from the CONTRACTOR's payment, or the OWNER may request separate payment directly from the CONTRACTOR.

- G. Structure Excavation: Unless otherwise specified, there shall be no measurement for structure excavation. The cost of structure excavation shall be incidental to the cost of the applicable structure and no separate pay item will be established.
- H. Pavement Removal: Measurement for pavement removal shall be by the square yard as measured in place prior to removal unless otherwise specified in the Contract Documents. When no separate pay item is included, the cost of such work shall be incidental to the item of clearing and grubbing or excavation as applicable.
- I. Topsoil: Measurement for topsoil shall be by the square yard as measured in place in locations shown in the plans or as directed by the ENGINEER. Placement of topsoil shall be to the thickness specified in the plans or Contract Documents, and it shall include the cost of furnishing the material as specified in Article 3.02.E. If enough excavated material is not available to satisfy the topsoil requirements, suitable topsoil shall be imported and the cost of furnishing and hauling this imported material shall be included in the unit price of the topsoil item.
- J. Embankment: When there is not enough suitable excavated material to satisfy the requirements of embankment, a separate item called Embankment or Borrow may be established in the Contract Documents to facilitate completion. Payment will be made only for material required to complete the embankment to the plan dimensions and elevations. Material placed beyond the limits shown on the plans will not be measured for payment.

For Embankment, the pay quantity shall be the plan quantity unless otherwise stated in the plans or Contract Documents. The measurement for embankment shall be the in place volume of material placed above the original surface elevation within the dimensions and elevations indicated on the plans less the net volume of excavation. No allowance will be made for subsidence or shrinkage.

For Borrow, the pay quantity shall be made on a loose volume basis unless otherwise specified in the plans or Contract Documents. The method of measurement shall be in accordance with the second paragraph of Article 4.01.A., LOOSE VOLUME.

- K. **Berm Construction:** Measurement for Berm Construction shall include only materials excavated within the lines and grades indicated in the plans or as directed by the ENGINEER. Measurement may be by volume or lineal feet as defined in the Contract Documents.
- L. **Finish Grading:** Measurement for Finish Grading shall only include areas that require a change in elevation to meet the new design grade. Placement of sod to an existing elevation would require finish grading to facilitate placement of sod. If there is no pay item for finish grading, the cost of all such work shall be incidental to the applicable item of excavation or embankment.

4.02 BASIS OF PAYMENT

- A. **General:** Prices and payments for the various work items included in this section shall constitute full compensation for all work described herein and shall include excavation, hauling, placing, compacting, and dressing of the finish surface. Said payments shall also include the following items when no separate pay item is included in the contract:
 - 1. Removal and disposal of existing pavement
 - 2. Clearing and grubbing
 - 3. Providing disposal areas
 - 4. Furnishing of borrow areas
 - 5. Permits and waiver costs
- B. **Excavation and Embankment:** Cost of utilizing suitable excavated materials and disposing of unsuitable excavated materials shall be included in the cost of the applicable excavation item, unless otherwise stated in the plans or Contract Documents.

When separate classifications of Excavation and/or Embankment are listed as pay items in the contract, the quantities determined as provided above shall be paid at the contract unit price per cubic yard, square yard, lineal foot or lump sum as applicable. Such payment shall constitute full compensation for all items as described in this section or as stated in the plans or Contract Documents.

- C. **PAY ITEMS:** For all work specified in this section, payment shall be made in accordance with the list of pay items established or as otherwise defined in the Contract Documents. The description of a pay item in the proposal section may vary from the descriptions stated in this section.

END OF SECTION 02820

**SECTION 02822
RIPRAP**

PART 1 GENERAL

1.01 SCOPE

- A. The work specified in this section consists of the construction or riprap, composed of sand and cement or rubble as specified in the Contract Documents. The riprap shall be placed against the embankment or other work to be protected, in accordance with these specifications and in conformity with the lines, grades, dimensions and notes shown in the plans.

1.02 SPECIFICATIONS AND STANDARDS REFERENCE

- A. Any reference to a supplementary specification or standard such as ASTM, AWWA, AASHTO, is intended to be a reference to the latest edition of that specification or standard.
- B. All references to "FDOTSPEC" shall mean the latest edition of the "Florida Department of Transportation Standard Specifications for Road and Bridge Construction."

PART 2 MATERIALS

2.01 SAND-CEMENT

- A. Portland Cement used shall be Type I from an approved domestic manufacturer.
- B. Fine Aggregate shall meet the requirements of FDOTSPEC Subsection 902-3.3.
- C. Sacks shall be made of burlap unless otherwise approved by the ENGINEER and shall hold the sand-cement mixture without significant leakage when handled. The sack material shall be permeable and absorptive enough to permit passage of sufficient water to provide for hydration of the cement.

The sacks shall be uniform in size and strong enough to stand handling without ripping and splitting. Only one type and size of sack shall be used at any one location.

- D. Grout used shall be mixed from portland cement and fine aggregate as specified above in this section.

2.02 RUBBLE

- A. Rubble shall consist of broken rock or stone locally available. The material shall of sufficient hardness so as not to break or crumble while loading or placing, similar to the cap rock stratum found in southwest Florida.
- B. The pieces shall be roughly angular and shall be reasonably free from thin, flat, or elongated pieces. The rubble shall be a graded mixture of individual pieces ranging

in size from three inches to 12 inches with at least 50 percent composed of pieces that measure six inches across the shortest dimension, unless otherwise specified.

- C. Bedding material shall be a crushed stone in accordance with ASTM C-33, gradation 67.

PART 3 CONSTRUCTION METHODS

3.01 SAND-CEMENT RIPRAP

- A. **Mixing Materials:** The sand and cement shall be proportioned in the ratio of five cubic feet of sand (loose volume) to 94 pounds (one bag) of cement. If the materials are proportioned by weight, sand shall be assumed to have a unit weight of 85 pounds per cubic foot (loose volume). Sand may be batched at the moisture content occurring in the stockpile.

The sand and cement shall be mixed until the mixture is of uniform color.

- B. **Filling Sacks:** The mixed material shall be accurately measured into each sack, with care being taken to place the same amount of material in each sack, and at least the top six inches of the sacks shall remain unfilled to allow for proper tying for folding and to insure against breaking of the sack during placing.
- C. **Placing:** The filled sacks shall be placed with their tied or folded ends all in the same direction unless otherwise shown in the plans. The sacks shall be laid with broken joints, in a regular pattern. The sacks shall be rammed or packed against each other so as to form a close and molded contact after the sand and cement mixture has set up. Sacks ripped or torn in placing shall be removed and replaced with sound, unbroken sacks. All sacks shall then be thoroughly saturated with water.
- D. **Grouting:** Immediately after watering, all openings between sacks shall be filled with dry grout composed of one part portland cement and five parts sand.
- E. **Toe Walls:** Toe walls of riprap for fill slopes may be constructed of poured-in-place concrete in lieu of sand-cement in sacks. If sand-cement in sacks is used for the toe walls, the entire trench excavated for the toe walls shall be filled with sand-cement in sacks.

3.02 RUBBLE RIPRAP (Rock RipRap)

- A. Rubble shall be dumped in place and arranged to form a compact layer conforming to the neat lines called for and to the specified thickness, plus or minus three inches. It shall be placed in such manner that the small pieces are not segregated but are evenly distributed and placed so that they fill the voids between the larger pieces.
- B. Bedding material will only be required if shown on the plan detail.

- C. Filter fabric shall be placed on the prepared surface prior to placement of rubble. The fabric shall be Mirafi 700X or as approved by the OWNER's representative and it shall be overlapped three feet at any seam or break in the fabric.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. The quantities of Sand-Cement Riprap to be paid for under this section shall be the volume in cubic yards of sand-cement bags satisfactorily placed according to the details in the plans, unless otherwise specified.
- B. Rubble Riprap shall be measured in square yards and satisfactorily placed according to the details in the plans.

When payment is by the ton, a certificate of scale weight shall be provided by a facility approved by the OWNER's representative. Only the rubble actually used shall be included in the quantity to be paid.

When payment is by the square yard, the area to be included for payment shall be the actual area satisfactorily completed according to the details in the plans or as otherwise authorized by the OWNER's representative. The dimensions used for payment purposes shall be measured parallel to the completed surface of riprap.

4.02 BASIS OF PAYMENT

- A. The quantities as determined according to the above shall be paid for at the contract unit price as established in the Contract Documents for RIPRAP (SAND-CEMENT) or RIPRAP (RUBBLE). This price and payment shall be full compensation for all the work specified in this section and shall include all materials, equipment, labor, and other incidental costs required to satisfactorily complete the work according to the details in the plans. The cost of excavation for the placement of riprap and backfilling and finish grading after placement shall also be included in the contract unit price for riprap.

END OF SECTION 02822

**SECTION 02828
CHAIN LINK FENCE AND GATE**

PART 1 GENERAL

1.01 SCOPE

- A. Work specified in this section covers materials and work necessary for the chain link fence and gate, complete, as shown on the plans.

1.02 MANUFACTURER

- A. Like items of materials provided hereunder shall be the end products of one manufacturer in order to achieve standardization for appearance, maintenance, and replacement.

1.03 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc., are referenced, such references shall be latest edition.

PART 2 PRODUCTS

2.01 FENCE MATERIALS

- A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing standard of quality and general configuration. Products of other manufacturers will be considered in accordance with the General Conditions.
- B. Materials shall be new and products of recognized, reputable manufacturers. Used, rerolled, or re-galvanized materials are not acceptable.
- C. All materials shall be hot-dip galvanized after fabrication. Fabric, posts and other appurtenances shall have a minimum zinc coating of 1.2 ounces per square foot of surface, and fused and bonded with black vinyl meeting the requirements of ASTM F668-11, Class 1.
- D. Fabric: Chain link fence fabric (height per plan), woven of No. 9-gauge wire in two-inch diamond-mesh pattern, selvages knuckled (bottom) and twisted (top).
- E. Posts: Federal Specification RR-F-191, fence, posts, gates, and accessories, except as hereinafter modified. Standard lengths for setting in ground or in concrete as required for conditions shown.
- F. Line Posts: Use galvanized 2 ½ inch outside diameter, meeting the requirements of ASTM A 120, Schedule 40 steel pipe, weight per linear foot per ASTM F 1043.
- G. End, Corner, Angle and Pull Posts: For end, corner, angle, and pull posts, use 2.875 inch outside diameter standard weight steel pipe, weight per linear foot per ASTM F 1043.
- H. Gate Posts: Follow manufacturer's recommendations.

- I. Post Tops: Post tops shall be pressed steel, or malleable iron, designed as a weather-tight closure cap for tubular posts. Provide one cap for each post, unless equal protection is afforded by combination post top cap and barbed wire supporting arm where barbed wire is required. Where top rail is used, provide tops to permit passage of top rail.
- J. Tension Wire: Tension wire shall be zinc or aluminum-coated coil spring steel wire not less than No. 7 gauge (0.177 inch in diameter). Provide tie clips of manufacturer's standard as approved for attaching the wire to the fabric, at intervals not exceeding 24 inches.
- K. Stretcher Bars: Stretcher bars shall be one-piece lengths equal to full height of fabric with a minimum cross-section of 3/16 inch by three-fourths inch. Provide one stretcher bar for each gate and end post and two for each corner and pull post.
- L. Stretcher Bar Bands: Bar bands shall be heavy-pressed steel, spaced not over 15 inches on center to secure stretcher bars to tubular end, corner, pull, and gate posts.
- M. Top Rail: Not less than 18 foot long tubular steel, 1-5/8 inch outside diameter, weight 2.27 pounds per linear foot. Couplings to be outside-sleeve type and at least six inches long. Provide springs at one coupling in five to permit expansion in rail as recommended by the manufacturer. Top rail to extend through line post tops to form continuous brace from end-to-end of each fence.
- N. Brace pipe shall be of the same material as the top rail and shall be installed midway between the top rail and extend from the terminal post to the first adjacent line post. Braces shall be securely fastened to the posts by heavy-pressed steel and malleable fittings, then securely trussed from line post to base of terminal post with a three-eighths inch truss rod and tightener.
- O. Fittings: Malleable steel, cast iron, or pressed steel, galvanized to meet the requirements of ASTM A 153. Fittings to include stretcher bars and clamps, clips, tension rods, brace rods, hardware, fabric bands and fastenings, and all accessories.

2.02 GATE MATERIALS

- A. Gate shall be swing or sliding as indicated, complete with latches, stops, keepers, hinges, or rollers and roller tracks.
- B. Gate frames shall be constructed of tubular members welded at all corners or assembled with fittings. On steel, welds shall be painted with zinc-based paint. Where corner fittings are used, gates shall have truss rods of 5/16-inch minimum nominal diameter to prevent sag or twist. Gate leaves shall have vertical intermediate bracing as required, spaced so that no members are more than eight feet apart. Gate leaves 10 feet or larger shall have a horizontal brace or one 5/16-inch minimum diagonal truss rod.
- C. Fabricate frames of standard weight pipe 1.90 inch outside diameter, weight 2.72 pounds per linear foot.

- D. Gate fabric shall be the same type as used in the fence construction. Fabric shall be attached securely to the gate frame at intervals not exceeding 15 inches.
- E. Gate hinges shall be of adequate strength for gate and with large bearing surfaces for clamping in position. Hinges shall not twist or turn under the action of the gate. Gates shall be capable of being opened and closed easily by one person.
- F. Gate latches, stops, and keepers shall be provided for all gates. Latches shall have a plunger-bar arranged to engage the center stop, except that for single gates of openings less than 10 feet wide a forked latch may be provided. Latches shall be arranged for locking with padlocks. Center stops shall consist of device arranged to be set in concrete and to engage a plunger-bar on the latch of double gates. No stop is required for single gates. Keepers shall consist of a mechanical device for securing the free end of the gate when in the full open position.
- G. Double Gate: Size and configuration shall be as indicated. Provide gate stops for all double gates, consisting of mushroom type or flush plate with anchors. Set in concrete to engage the center drop rod or plunger bar. Provide locking device and padlock eyes as an integral part of the latch, requiring one padlock for locking both gate leaves.

2.03 CHAIN AND LOCK MATERIALS

- A. Immediately upon installation of chain link fence and gates, case hardened chain of adequate length to secure gate and a locked padlock shall be installed to keep the site clear except when CONTRACTOR is working on-site. Key and/or combination to be provided to Owner.

2.04 CONCRETE

- A. All concrete and concrete work shall conform to the following specifications unless otherwise noted on the plans. All concrete specified in this section shall attain a minimum compressive strength of 3,000 psi in 28 days.
- B. Concrete Mix Materials: Coarse aggregate shall be hard, clean, washed gravel or crushed stone. The maximum aggregate size shall not be larger than one inch nor smaller than one-half inch equivalent diameter. Fine aggregate shall be clean, sharp sand. Water shall be clean, fresh, free from injurious amounts of materials, organic substances, acids or alkalis. Cement shall be Type I, Domestic Portland Cement, conforming to ASTM C150-latest revision.
- C. Concrete Admixtures: Air-entrainment admixtures in concrete are permitted in accordance with manufacturer's specifications provided the specified strength and quality are maintained and unless the admixtures appear to be causing abnormal field results, and provided that the total entrained air content does not exceed 5.0 percent. No other admixture of any type will be permitted without the written approval of the ENGINEER.
- D. Transit or Ready-Mixed Concrete: Transit or ready-mixed concrete may be used provided it meets the requirements of ASTM C94, Ready Mixed Concrete, specifications herein stated and provided the central plant producing the concrete,

the batching, mixing and transportation equipment, in the opinion of the ENGINEER, is suitable for the production and transportation of the specified concrete.

PART 3 EXECUTION

3.01 INSTALLATION OF CHAIN LINK FENCE AND GATE

- A. Installation of fencing shall meet the requirements of ASTM F 567.
- B. Fencing shall be installed in straight lines between angle points. Fencing installation shall be in accordance with the manufacturer's recommendations and with these Specifications. Post holes shall be to the minimum depths noted below finished grade. Holes for line posts shall be 12 inches in diameter. Post space shall not exceed 10 feet on centers and in true lines. Posts shall be plumb and to the depths noted. Top rail of the fence shall be at the top of the fabric. Remainder of hole shall have concrete around the posts to a point one inch above finished grade. Top surface shall have a crown watershed finish. Concrete shall cure prior to installing accessories. Chain link fabric shall be fastened to end posts with stretcher bars and clamps and to line posts and top rail with wire or bands at approximately 14-inch centers and 24-inch center, respectively. Gate posts shall be braced diagonally to adjacent line posts to ensure stability. Gates shall be hung and adjusted so gates operate from open or closed position in accordance with the manufacturer's recommendations.
- C. Cleanup: CONTRACTOR shall clean up and finish grade all areas disturbed by his construction.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. Quantities to be paid for under this section shall be in lineal feet and include all gates, posts, fixtures, etc., complete in place.

4.02 BASIS OF PAYMENT

- A. Payment shall be made on a unit price basis in accordance with the accepted proposal. OWNER reserves the right to add to or deduct from the scope of the work, and such additions or deductions will be made at the unit price established in the proposal.

END OF SECTION 02828

**SECTION 02911
ASPHALTIC CONCRETE**

PART 1 GENERAL

1.01 SCOPE

- A. The work consists of the application of hot bituminous mixtures of the type and thickness specified on the construction plans which shall be composed of a mixture of:
 - 1. Aggregate.
 - 2. Mineral filler, if necessary to produce the desired stability hereinafter described; and
 - 3. Asphalt cement.
- B. The application of hot bituminous mixtures shall be properly placed upon a prepared base of the type called for on the construction plans in accordance with lines, grades, thickness, and typical section(s) shown including the conditioning of existing surface or base.

PART 2 PRODUCTS

2.01 ASPHALT MIXES

- A. Except for friction courses and base courses, the hot bituminous mixture shall be of the type called for on the construction plans and shall conform to hot mix design criteria as outlined in the latest edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

2.02 FRICTION COURSE

- A. The asphaltic concrete friction course shall be in accordance with Section 337, Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, latest edition.

PART 3 EXECUTION

3.01 APPLICATION OF ASPHALT MIXES

- A. Limitation of Operations
 - 1. The mixture shall be spread only when the air temperature (in the shade) is above 40° Fahrenheit and rising.
 - 2. The temperature of the mixture at the time of spreading shall be within 25° Fahrenheit of the temperature set by the ENGINEER for this stage of the operation. The temperatures thus set by the ENGINEER shall be between 250° Fahrenheit and 340° Fahrenheit.

3. Any mixture caught in transit by a sudden rain may be laid only at the CONTRACTOR's risk. Should such mixture prove unsatisfactory, it shall be removed and replaced with satisfactory mixture at the CONTRACTOR's expense. In no case shall the mixture be laid while rain is falling or when there is water on the surface to be covered.

B. Joints

1. Transverse joints: Placing of the mixture shall be as continuous as possible and the roller shall not pass over the unprotected end of the freshly laid mixture except when the laying operation is to be discontinued long enough to permit the mixture to become chilled. When the laying operation is thus interrupted, or laying operation is to commence from a cold joint, a transverse joint shall be construction by cutting back on the previous run to expose the full depth of the mat.
2. Longitudinal joints: Where only a portion of the width of pavements is to be laid, the exposed edge shall be vertical. If traffic has rolled over the edge the ENGINEER may require the rolled edge trimmed back to a vertical face prior to construction the adjacent strip.
3. General: When the fresh mixture is laid against the exposed edges of joints (trimmed or formed) it shall be placed on close contact with the exposed edge so that an even, well compacted joint will be produced after rolling without having an open joint or unlevel surface condition.
4. Layered placement of hot bituminous mixture shall be accomplished to cause longitudinal joints to be offset 6 to 12 inches laterally between successive layers.

C. Finished Surface Requirements

1. For the purpose of testing the finished surface, the CONTRACTOR shall provide a 15-foot straight edge and a standard template cut to the true cross-section of the road. These shall be available at all times during construction so that the ENGINEER may check the finished surface. The CONTRACTOR shall provide and designate some employee whose duty it is to use the straight edge and template in checking all rolled surface under the direction of the ENGINEER. Vertical measurements from a string line between curbs to determine crown may be accepted as an alternate. The finished surface shall be such that it will not vary more than one-fourth inch from the 15-foot straight edge. Any irregularity of the surface exceeding the above limits shall be corrected.
2. The CONTRACTOR shall be responsible for obtaining a smooth surface on all pavement courses placed. The finished surface shall be of uniform thickness texture and compaction. The surface shall have no pulled, torn, loosened portions and shall be free of segregation, sand streaks, sand spots, ripples or roller marks, depressions that show up after initial rolling, and roller depressions. Any area of the surface which does not meet the

foregoing requirements shall be corrected at the CONTRACTOR's expense.

3. Correction of unacceptable pavement or portion thereof shall be determined in one of the following methods, only if approved by the ENGINEER:

- a. Remove and replace - if correction is made by removing and replacing the pavement, the removal must be for the full depth of the course and extend at least 50 feet on either side of the defective area, for the full width of the paving lane.
- b. Overlaying - if correction is made by overlaying, the overlay shall cover the length of the defective area and taper uniformly to a feather edge thickness at a minimum distance of 50 feet on either side of the defective area and for the entire width of roadway.

D. Compaction

1. The complete pavement will be accepted with respect to in-place density when the following criteria has been met:
 - a. Ninety-five percent of laboratory density (FM 1-T166) has been achieved.
 - b. Laboratory density (FM-T166) will be determined from a sample of the hot mix obtained in the field.
 - c. In-place density will be determined from field cores obtained during thickness evaluation.

E. Tests (Allowable Deficiencies - Thickness)

1. The average thickness of the compaction in-place mixture shall be determined as shown on the construction plans typical cross-section(s) for that particular roadway(s) to be constructed. The pavement shall not be approved or accepted unless the following criteria has been met:
 - a. The compacted in-place pavement has not exceeded a deficiency of $\frac{1}{4}$ inch in thickness as determined by the measured depths of two-inch diameter cores taken at random at a rate of one every 500 SY.
 - b. Not more than 20 percent of the total cores taken for than roadway (thickness and type) shall be deficient with no individual core exceeding the $\frac{1}{4}$ -inch tolerance. Roadway pavement indicating an average thickness of $1\frac{1}{4}$ inch shall not have an individual core of less than one-inch in-place thickness.
 - c. Core lengths shall not exceed the average pavement thickness by more than three-eighths inch and shall be calculated as the next lower thickness.

- d. All testing required such as mixture, density, cores, etc. shall be the responsibility of the CONTRACTOR with the testing performed by an independent testing laboratory, testing results submitted to and approved by the ENGINEER.

F. Care to be Exercised

1. The CONTRACTOR shall use extreme care when applying prime coats, tack coats or laying the asphaltic concrete to insure the materials being applied do not come in contact with surface of adjacent structures such as but not limited to curb, inlets, etc., other than those surfaces designed for contact. Any material allowed to come in contact with surfaces other than those scheduled shall be cleaned by any method acceptable to the ENGINEER that does not destroy the function or aesthetic value of the structure. Any surface after cleaning that remains objectionable to the ENGINEER may result in removing and replacing the objectionable section. All removal, replacement or attempts to clean surfaces shall be at the CONTRACTOR's expense.
2. The CONTRACTOR shall use extreme care in using equipment adjacent to structures such as, but not limited to curbs, inlets, etc. to prevent damage to those structures such as roller scars, grader scars, etc. The ENGINEER may direct removal and replacement of those objectionable surfaces that have in his opinion destroyed the functional or aesthetic value of the structure. Cost of removal and replacement shall be at the CONTRACTOR's expense.

PART 4 MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. The quantity to be paid for under this section shall be the number of square yards of asphaltic surface and/or friction course actually completed and accepted, for the various types required by the approved plans.
- B. In determining the quantity of asphaltic concrete surface and/or friction course, the length to be used in the calculation shall be the actual length measured along the surface of the pavement and the width as specified by the approved plans.

4.02 BASIS OF PAYMENT

- A. The quantity of asphaltic concrete surface and/or friction course shall be paid for at the contract unit price per square yard for the various types required by the approved plans.
- B. The above price and payment shall be full compensation for all the work specified in this section and shall include all materials, equipment, tools, labor, testing laboratory, and incidentals necessary to complete the work.

END OF SECTION 02911

SECTION 02912
BASE COURSE, PRIME AND TACK COAT, AND STABILIZED SUBGRADE

PART 1 GENERAL

1.01 SCOPE

- A. The soil-cement base course work specified in this section consists of construction of a base course composed of soil and Portland cement uniformly mixed, moistened, compacted, finished and cured in accordance with these specifications, and shall conform to the lines, grades, thicknesses and typical cross-sections shown on the plans. The base shall be designed to have a seven-day in-situ compressive strength of 250 psi minimum. Seven-day laboratory design compressive strength shall be a minimum of 300 psi.
- B. The shell base course work specified in this section consists of construction of a base course composed of shell. It shall be constructed on the prepared subbase in accordance with these specifications and in conformity with the lines, grades, notes and typical cross-sections shown on the plans. Where so shown on the plans, the base shall be constructed in two courses. Where the plans do not specify double-course base, the base may be constructed in either one or two courses.
- C. The prime and tack coat work consists of applying bituminous materials on a previously prepared base in accordance with these specifications and in conformity with the lines, grades, dimensions and notes shown on the plans.
- D. The stabilized subgrade work shall consist of bringing the bottom of excavations and top of embankments of the roadway between the outer limits of the paving or base course to a surface conforming to the grades, lines and cross-sections shown on the plans, and to a uniform density.
- E. The base material must meet the requirements of the local transportation entity or it will not be considered.
- F. The base material specified on the drawings shall be the basis for the bid.

PART 2 PRODUCTS

2.01 SOIL CEMENT BASE

- G. Portland cement shall comply with the latest specifications for Portland cement, AASHTO M-85, AASHTO M-134 or ASTM C-150 for the type specified. A one-cubic-foot sack of Portland cement shall be considered to weight 94 pounds. The amount of cement used shall be sufficient to obtain the required compressive strength, however, under no circumstances shall the amount be more than 9 percent by weight. No minimum cement content is required.
- H. Water for use with cement shall be clean and free of substances deleterious to the hardening of the soil-cement.

- I. The soil to be used for the base course shall consist of bank-run shell, limeroack, crushed portland cement concrete, approved borrow material or a combination of these materials proportioned as approved by the laboratory. The soil shall be free of organic debris, trash, roots or any other substance considered deleterious to the hardening of the soil-cement. Proposed recycled materials will be considered on a case-by-case basis.

1. Specific requirements for soil

Limerock Bearing RatioMinimum 100 (per FM S-515)

Plastic IndexMaximum 10 percent (per FM 1-T090)

Liquid IndexMaximum 25 percent (per FM 1-T089)

Gradation:	Sieve Size	Minimum % Passing
	2 - inch	100 percent
	#4	55 percent
	10	37 percent

- J. Soil cement for base construction shall have a LBR value of not less than 100. One LBR test shall be required from the source of the soil cement base material.

- K. The CONTRACTOR shall submit for approval a design mix for the soil proposed for use in soil-cement construction prepared by an independent testing laboratory approved by the ENGINEER. The design mix submittal shall include the results of tests run to verify that the soil meets the material requirements. Results of test used to establish the cement content, and a final design laboratory sample shall also be submitted. Laboratory testing for design mix evaluation shall be accomplished using water from the source proposed for use during construction. The design mix shall be submitted to the Engineer for approval a minimum of 15 calendar days prior to beginning of soil-cement construction. The minimum cement content shall be determined by Florida Test Method FM 5-520-Laboratory Design of Soil-Cement Mixtures. The soil material, used in producing a soil-cement mixture, shall be obtained from a commercial source where soil properties are consistently uniform, and the mixture shall be processed in a central mix plant that automatically weighs components and automatically records the weight of each component on a printed ticket or tape. Mixed in place soil cement will not be authorized.

2.02 SHELL BASE

The materials shall not contain excessive amounts of sand and fine particles to prevent proper bonding.

At least 97 percent of the material shall pass a 3½-inch sieve. Not less than ten percent nor more than 20 percent of the material shall pass the Number 200 sieve by washing.

The portion of the material passing the Number 40 sieve shall be non-plastic.

Shell for base construction shall have an LBR value of not less than 100. One LBR test shall be taken per each 1,500 SY area. Each source of shell base materials must be specifically approved for usage.

Each deposit proposed for use shall be inspected by the ENGINEER prior to use. Acceptance or rejection will be made on production of a uniform material consistently meeting this specification. The ENGINEER may require a certified copy of current Florida Department of Transportation (FDOT) quality assurance for each source.

2.03 CRUSHED CONCRETE BASE

Crushed concrete conforming to the gradation and other requirements of Section 204-2 of the most recent FDOT Standard Specifications for Road and Bridge Construction.

2.04 PRIME AND TACK COAT

For the prime and tack coat, any one of the following types or grades of prime and tack materials may be used at the option of the CONTRACTOR unless a particular type and grade are called for on the plans.

1. Prime Coat
 - a. Cutback Asphalt, Grade RC-70 or RC-250.
 - b. Emulsified Asphalt, Grade RS-2, SS-1, SS-1H or Special MS.
2. Tack Coat
 - a. Emulsified Asphalt, Grade S, RS-2, AE-90, SS-1, SS-1H or Special MS.

PART 3 EXECUTION

3.01 CONSTRUCTION OF SOIL CEMENT BASE

A. Equipment

3. For performing the work specified in this section, the CONTRACTOR may use any machine, combination of machines or equipment that will produce the completed soil-cement base course meeting the requirements for soil pulverization, cement application, mixing, water application, incorporation of materials, compaction, finishing and curing as controlled by these specifications. Special attention is directed to the necessity for utilizing compaction equipment which will produce the required density in a particular soil-cement blend.

B. Preparation

1. Before other construction operations are begun, the areas to be paved shall be graded and shaped as required to construct the soil-cement base in conformance with the grades, lines, thicknesses and typical cross-sections shown on the plans. Any additional soil needed shall be placed as directed by the ENGINEER. The subgrade shall be firm and able to support without displacement the construction equipment and compaction hereinafter specified. Any unsuitable soil or materials, including material retained on a three-inch sieve, shall be removed and replaced with acceptable material. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

2. The subgrade in both cuts and fills shall be compacted to density of 98 percent of the maximum density as determined by AASHTO T-180 (modified). The subgrade shall be shaped prior to making the density tests. Subgrade LBR shall be as shown on the construction plans. Test results of subgrade density and LBR shall be provided to the ENGINEER for review prior to the construction of the base material.

C. Plant Mix

1. A plant mixture of soil-cement material shall be utilized. The plant should demonstrate the ability to properly proportion the cement to obtain a uniform mix, meeting all specifications.

D. Compaction

1. Prior to the beginning of compaction the mixture shall be in a loose condition for its full depth and shall be within approximately two percent of the optimum moisture. The loose mixture shall be uniformly compacted to the specified density within three hours. During compaction operations, shaping may be required to obtain uniform compaction and required grade and cross-section. No soil cement shall be applied when the soil or subgrade is frozen. The air temperature shall be at least 40° Fahrenheit in the shade and rising, or over 50° Fahrenheit.

E. Finishing

1. After the mixture has been compacted, the surface of the soil-cement shall be shaped, if necessary, to the required lines, grades and cross-section. During shaping operations, the surface shall be lightly scarified to loosen any imprints left by the compacting or shaping equipment. The resulting surface shall then be compacted to the specified density with steel-wheel or pneumatic tire rollers, or both. Rolling shall be supplemented by broom-dragging as required. Surface compaction and finishing shall be done in such a manner as to produce, in not longer than three hours, a smooth, dense surface, free of surface compaction planes, cracks, ridges or loose materials.

F. Uniformity

1. Any portion of the soil-cement that has a density less than 95 percent of the maximum density, determined as specified, shall be corrected by additional rolling. If the time limits set forth herein have been exceeded, the base shall be left undisturbed and shall be tested (after seven days of curing) to determine its suitability. If it is found unsuitable, it shall be removed and replaced by the CONTRACTOR without additional compensation. The CONTRACTOR may, at his option, remove and replace the deficient base rather than wait for the results of the seven-day test.

G. Construction Joints

1. At the end of each day's construction, a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face. The construction joint thus formed shall be located so as to exclude all of that part of the base at the end of the run from being considered a part of the finished base if it

does not have full depth, is not thoroughly compacted, is not properly proportioned, or is not properly mixed.

H. Curing

1. After the soil-cement base has been finished as specified herein, it shall be protected against drying for seven days, as specified herein. The finished soil-cement base shall be maintained in a moist condition by application of water until the curing material is applied. The curing material shall not be applied until the finished soil-cement base has been inspected by the ENGINEER and such inspection has determined that the base material is hardening in a uniform and satisfactory manner. The bituminous material and construction shall be in accordance with the specifications for Prime and Tack Coat for base courses. The actual rate of application shall be sufficient to provide complete coverage without excessive runoff. At the time the bituminous material is applied, the soil-cement surface shall be dense, free of all loose and extraneous material and shall contain sufficient moisture to permit penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids of the soil-cement immediately before the bituminous curing material is applied.

I. Opening to Traffic

1. After the seven-day curing period, the completed portion may be open to all traffic, provided the soil-cement is either protected or has hardened sufficiently to prevent marring or distorting of the surface by the equipment or traffic, and provided the curing as specified is not impaired.
 - a. The curing material shall be adequately maintained during the seven-day protection period so that all of the soil-cement will be covered effectively during this period.
 - b. Finished portions of soil-cement that are used by equipment during the construction of an adjoining section shall be protected in such a manner as to prevent the equipment from marring or damaging the completed work.
 - c. When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for seven days after its construction and until it has hardened. Other curing materials such as moist earth, straw or hay may be used upon approval.

J. Maintenance

1. The CONTRACTOR shall maintain the base to a true and satisfactory surface until the wearing surface is constructed. Should any repairs of patching be necessary, they shall extend to the full depth of the base and shall be made in a manner that will assure restoration of a uniform base course conforming to the requirements of these specifications. In no case shall repairs be made by adding a thin layer of soil-cement to the completed work. The CONTRACTOR may, at his option, make full-depth repairs with concrete to small or minor areas such as manholes, inlets or the like.

K. Testing

1. Tests are a necessary part of soil-cement base construction. The following tests will be made by the laboratory:
 - a. Determinations of Cement Applied
 - b. Field Density - Tests shall be taken per each 500 SY maximum area or per each 500 feet per lane, whichever is less.
 - c. Moisture-Density Test
 - d. Bag Samples - Bag samples shall be taken at least once daily at intervals not to exceed 5,000 SY and molded in the laboratory at field moisture content based on standard proctor density test (AASHTO T-99). Each specimen shall be four inches in diameter and six inches in height. The specimens shall be cured for seven days and tested for compressive strength. The bag samples shall have a minimum strength of 250 psi.
 - e. Six-Inch Diameter Cores - For each day's placement of base material, field cores of six inch diameter shall be taken after seven days curing time at intervals of one every 500 SY or at intervals closer if necessary to isolate areas showing below minimum requirements. The cores shall be used to determine thickness of base and compression tested to determine strength of base material. The cores shall have an average compressive strength of 250 psi. The minimum compressive strength core break shall be 200 psi. Cores with less than 200 psi shall require the CONTRACTOR to isolate the area of base with additional cores and compressive tests for determining limits of the unacceptable base. That portion determined unacceptable shall be removed and replaced with new material, retested after seven days as outlined above. Where the base is more than one-half inch deficient in thickness, the area covered by this deficient base shall be replaced. The one-half inch deficiency may be accepted only if found in minor isolated areas. Additional cores will be required to determine size of deficient area.
 - f. Test Results - After receipt of the test reports from the laboratory stating that there is a satisfactory soil-cement base, the ENGINEER may allow the wearing surface to be placed.
 - g. All tests shall be performed by a testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience. All tests shall be performed at the CONTRACTOR's expense.

L. Grade Stakes

1. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.02 CONSTRUCTION OF SHELL BASE

A. Equipment

1. This work may be performed with any machine, combination of machine or equipment that will produce the specified results.

B. Transporting Shell

1. The shell shall be transported (over material previously spread) to the point where it is to be used. It shall then be dumped on the end of the preceding spread. In no case shall material be dumped directly on the subbase.

C. Spreading Shell

1. The shell shall be spread uniformly. All segregated areas of fine or coarse material shall be removed and replaced with well graded shell. For double-course base, the material shall be spread in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subbase.

D. Compacting and Finishing Base

1. For double-course base, the first course shall be bladed if necessary to secure a uniform surface and shall be compacted to the density specified below immediately prior to spreading the second course. No other finishing of this course is required.
 - a. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross-section after compaction. For double-course bases, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.
 - b. As soon as proper conditions of moisture are attained, the material shall be compacted to a density of 98 percent of the maximum density obtainable under AASHTO Method T-180 (modified). Where the base is being constructed in one course and the specified thickness is more than six inches, the density specified above shall be obtained in both the bottom half and the top half of the base. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross-section, the compacting operations for such areas shall be completed prior to making the density determinations on the finished base.
 - c. The surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the tin-glazed or cemented surface, leaving a granular or porous condition that will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

- d. If, at any time, the subbase material should become mixed with the base course material, the CONTRACTOR shall excavate and remove the mixture. He shall reshape and compact the subgrade, and replace the materials removed with clean base material. The clean base material shall then be shaped and compacted as specified above.

E. Testing Surface

1. The finished surface of the base course shall be checked with a templet cut to the required cross-section and with a 15 foot straight edge laid parallel to the centerline of the road or other approved testing devices. All irregularities greater than $\pm 1/4$ inch shall be corrected by scarifying and removing or adding rock, as may be required, after which the entire areas shall be recompactd as specified herein. On every project at least one of each of the following density tests shall be made by the laboratory at intervals not exceeding 500 SY unless otherwise specified.
 - a. Modified Proctor Maximum Density Determination Tests. Tests shall be taken per each 500 SY maximum area.
 - b. Field In-Place Density Tests.

F. Thickness

1. After the base is completed, test holes shall be dug or cores taken at intervals of not more than 500 SY, or at closer intervals if necessary. Where the base is deficient in thickness, the area covered by this deficient base shall be reworked by scarifying to a depth of at least three inches and adding more base material, so that after proper compacting the thickness will conform to the plans.

All tests shall be performed by an independent testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience.

G. Grade Stakes

4. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.03 CONSTRUCTION OF CRUSHED CONCRETE BASE

A. Equipment

1. This work may be performed with any machine, combination of machine or equipment that will produce the specified results.

B. Transporting Crushed Concrete

1. The crushed concrete shall be transported (over material previously spread) to the point where it is to be used. It shall then be dumped on the end of the preceding spread. In no case shall material be dumped directly on the subbase.

C. Spreading Crushed Concrete

1. The crushed concrete shall be spread uniformly. All segregated areas of fine or coarse material shall be removed and replaced with well graded material. For double-course base, the material shall be spread in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subbase.

D. Compacting and Finishing Base

1. For double-course base, the first course shall be bladed if necessary to secure a uniform surface and shall be compacted to the density specified below immediately prior to spreading the second course. No other finishing of this course is required.
 - a. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross-section after compaction. For double-course bases, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.
 - b. As soon as proper conditions of moisture are attained, the material shall be compacted to a density of 98 percent of the maximum density obtainable under AASHTO Method T-180 (modified). Where the base is being constructed in one course and the specified thickness is more than six inches, the density specified above shall be obtained in both the bottom half and the top half of the base. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross-section, the compacting operations for such areas shall be completed prior to making the density determinations on the finished base.
 - c. The surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the tin-glazed or cemented surface, leaving a granular or porous condition that will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.
 - d. If, at any time, the subbase material should become mixed with the base course material, the CONTRACTOR shall excavate and remove the mixture. He shall reshape and compact the subgrade, and replace the materials removed with clean base material. The clean base material shall then be shaped and compacted as specified above.

E. Testing Surface

1. The finished surface of the base course shall be checked with a templet cut to the required cross-section and with a 15 foot straight edge laid parallel to the centerline of the road or other approved testing devices. All irregularities greater than $\pm 1/4$ inch shall be corrected by scarifying and removing or adding rock, as may be required, after which the entire areas shall be recompactd as specified herein. On every project at least one of each of the following density tests shall be made by the laboratory at intervals not exceeding 500 SY unless otherwise specified.

- a. Modified Proctor Maximum Density Determination Tests. Tests shall be taken per each 500 SY maximum area.
- b. Field In-Place Density Tests.

F. Thickness

- 1. After the base is completed, test holes shall be dug or cores taken at intervals of not more than 500 SY, or at closer intervals if necessary. Where the base is deficient in thickness, the area covered by this deficient base shall be reworked by scarifying to a depth of at least three inches and adding more base material, so that after proper compacting the thickness will conform to the plans.

All tests shall be performed by an independent testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience.

G. Grade Stakes

- 1. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.04 APPLICATION OF PRIME AND TACK COAT

A. Equipment

- 1. This work may be performed with any machines, combination of machines, or equipment that will produce the specified results.

B. Cleaning the Base

- 1. Before any bituminous material is applied, all loose material, dust, caked clay and foreign materials which might prevent proper bond with existing surface shall be moved to the shoulders. Particular care shall be taken to clean the outer edges of the strip to be treated in order to insure that the tack coat will adhere. Where the prime or tack coat is applied adjacent to the curb and gutter or valley gutter, such concrete surfaces are to be protected and kept free of bituminous material.

C. Weather Limitations

- 1. No bituminous material shall be applied when the temperature of the air is less than 40° Fahrenheit in the shade, or when the weather conditions or the condition of the existing surface is unsuitable.

D. Application of Prime Coat

- 1. The surface to be primed shall be clean and contain optimum moisture. The temperature of the prime material shall be between 100° and 150° Fahrenheit. The exact temperature shall be such as will insure uniform distribution. The material shall be applied by means of a pressure distributor.

The amount of bituminous material applied shall be at the rate of approximately 0.10 to 0.25 gallons per square yard, dependent upon the type of base materials. The rate of application shall be sufficient so as to coat the surface thoroughly and uniformly without having any excess to form pools or to flow off the base. A light, uniform application of clean sand shall be applied prior to opening the primed base to traffic. To cure the prime coat in such cases, the sand shall be rolled with a traffic roller in conjunction with traffic. If warranted by traffic conditions, the application shall be made only on one-half of the width of the base at one time, care being taken to secure the correct amount of bituminous material at the joint. The base shall be sufficiently moist in order to obtain maximum penetration of the asphalt.

E. Application of Tack Coat

1. Where a bituminous surface is to be laid and a tack coat is required, both shall be applied as herein specified. On newly constructed base courses, the application of the tack coat (when one is required) shall follow the application of the prime coat, immediately before the wearing surface is applied. In general, a tack coat will not be required on primed bases, except in areas which have become excessively dirty and cannot be cleaned, or in areas where the prime has cured and lost bonding effect. The tack coat shall be applied with a pressure distributor. The bituminous material shall be heated to a suitable consistency as designated. The bituminous material shall be applied only in the amount necessary to bond the wearing surface to the base. The rate of application shall be between 0.02 and 0.08 gallons per square yard. The exact rate shall be designated by the ENGINEER. The tack coat shall be applied sufficiently in advance of the wearing surface to permit drying. However, it shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material. The tack coat shall be kept free from traffic until the wearing surface is laid.

3.05 PREPARATION OF STABILIZED SUBGRADE

A. Subbase

1. The work shall consist of bringing the bottom of excavations and the top of embankments of the roadway to a surface conforming to the grades, lines and cross sections shown on the plans.

All soft and yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the whole subbase brought to line and grade, allowing for subsequent compaction.

- a. All submerged stumps, roots or other organic matter encountered in the preparation of the subbase shall be removed.
- b. The subbase shall be stabilized to the minimum Bearing Ratio and depth shown on the plans. LBR tests shall be taken per each 1,500 SY area or per each 1,500 feet of roadway, whichever is less. If the natural in-place soils do not meet the required stability, sufficient borrow material for stabilization shall be uniformly mixed with in-place soils to produce the load Bearing Ratio. Material used for stabilization must be specifically approved for usage. Borrow material shall be included in the cost of subbase bid item.

- c. The stabilized subbase in both cuts and fills shall be compacted to a density as determined by AASHTO T-180 (modified). The subbase shall be shaped prior to making the density tests.
- d. The subbase shall be firm and able to support the construction equipment without displacement. The minimum density acceptable at any location will be 98 percent of the maximum density as determined by AASHTO T-180 (modified). Load Bearing Ratio determinations shall be made by the Limerock Bearing Ratio Method, Test Method D of AASHTO T-180 as modified by the Florida Department of Transportation's Research Bulletin 22-B, revised April, 1972. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.
- e. Density tests shall be made before work proceeds.
- f. The required density shall be maintained until the base of pavement has been laid or until the aggregate materials for the base of pavement course have been spread in place.
- g. After the subbase has been prepared, and immediately before any base material is placed, the subbase shall be tested for substantial compliance as to crown and elevation. Material shall be removed or added, as the condition necessitates, and again stabilized and compacted to bring all portions of the subbase to the specified elevation, stability and density.

PART 4 MEASUREMENT AND PAYMENT

4.01 SOIL-CEMENT BASE

A. Method of Measurement

- 1. The quantity to be paid for under this section shall be the number of square yards of soil-cement base course actually completed and accepted. In determining the quantity of soil-cement base course, the length to be used in the calculations shall be the actual length measures along the surface of the base and the width shall be the width of the base actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

- 1. This work shall be paid for at the contract unit price per square yard of completed and accepted soil-cement base course. The contract unit price shall be full payment for furnishing all materials, equipment tools, labor, testing and incidentals necessary to complete the work and for carrying out the maintenance provisions in this specification.
- 2. Any additional earth required for the base course in accordance with Paragraph 3.01,B.1 herein, will be paid for at the contract unit price per cubic yard for excavation.
- 3. No allowance shall be made for any materials used or work done outside the lines established by the ENGINEER.

4.02 SHELL BASE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of base acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed base, and the width of the base actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for base, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

4.03 CRUSHED CONCRETE BASE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of base acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed base, and the width of the base actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for base, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

4.04 PRIME AND TACK COAT

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of prime or tack coat actually completed and accepted.
2. In determining the quantity of prime or tack coat, the length to be used in the calculation shall be the actual length measured along the surface of the pavement and the width shall be the width of pavement actually constructed, both within the neat lines shown on the plans.

B. Basis for Payment

1. The quantity of prime or tack coat determined, as provided in Paragraph A above, shall be paid for at the contract unit price per square yard for this item.

2. When no separate bid item for prime is provided in the proposal, the prime coat shall not be paid for directly, and the cost shall be included in the contract unit price for the base course on which it is applied.
3. When no separate bid item for tack coat is provided in the proposal, the tack coat shall not be paid for directly, and the cost shall be included in the contract unit price for the pavement to be laid over the tack coat.
4. The prices and payments provided for herein shall be full compensation for all materials (including sand covering where required) for heating, hauling and applying, and for all equipment, tools, labor and incidentals necessary to complete the work covered by this section.

4.05 STABILIZED SUBGRADE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of subgrade acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed subgrade, and the width of the subgrade actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for subgrade, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

END OF SECTION 02912

**SECTION 02924
PAVEMENT MARKING, STRIPING, AND SIGNS**

PART 1 GENERAL

1.01 SCOPE

- A. This section specifies pavement traffic painting, marking, striping, and signing shown on the plans or called for in the specifications. In general, all pavement traffic painting, marking, striping, and signing shall comply with the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, hereafter referenced "FDOTSPEC" and the Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, hereafter referenced as "MUTCD" and the Florida Department of Transportation Roadway and Traffic Design Standards, hereafter referenced by index number.

1.02 SPECIFICATION AND STANDARDS REFERENCE

- A. Where supplementary specifications or standards such as ASTM, AWWA, AASHTO, etc., are referenced, such references shall be the latest edition.

PART 2 PRODUCTS

2.01 SIGN PANELS AND POSTS

- A. Sign panels shall be aluminum. All signposts shall be steel flanged channel installed in accordance with FDOT index number 11865.

2.02 SIGN BLANKS AND FACES

- A. Regulatory and Warning signs as defined in the MUTCD shall be "High Intensity" reflectorized grade.
- B. Street name and guide signs as defined in the MUTCD shall be "Standard reflectorized grade."
- C. CONTRACTOR shall submit documentation from the sign suppliers which identifies the reflector grade of each sign. All materials shall meet the requirements of FDOTSPEC.

2.03 SIGN HARDWARE

- A. Signs shall be attached to posts in accordance with FDOT index number 11865.

2.04 PAVEMENT STRIPING AND PAINTING

- A. Thermoplastic Striping and Marking - Thermoplastic pavement striping shall be reflective and meet the requirements of FDOTSPEC, Section 711.

- B. Painted Striping and Marking - Painted striping shall be reflectorized and meet the requirements of FDOTSPEC, Section 710.

2.05 REFLECTIVE PAVEMENT MARKERS

- A. Reflective pavement markers and their installation shall meet the requirements of FDOTSPEC, Section 706.

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.01 BASIS OF PAYMENT

- A. Payment for pavement marking, striping, and signing shall be on a lump sum basis in accordance with the accepted proposal. Such payment shall constitute full compensation for furnishing all labor, materials, and equipment necessary to complete the construction on accordance with the plans and specifications.

END OF SECTION 02924

**PART III – TECHNICAL SPECIFICATIONS
(SITE LIGHTING)**

SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Basic electrical requirements specifically applicable to Division 26 Electrical.

1.2 SECTION INCLUDES

- A. Basic Electrical Requirements specifically applicable to Division 26 Sections, in addition to Division 01 General Requirements.

1.3 INTENT

- A. It is the intention of these specifications and drawings to call for finished work, tested, and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."
- B. Minor details not usually shown or specified, but necessary for the proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.4 SURVEYS AND MEASUREMENTS

- A. Base all measurements, both horizontal and vertical from established bench marks. All work shall agree with these established lines and levels. Verify all measurements at site and check the correctness of same as related to the work. All material take-offs for the site shall be field measured prior to bids.

1.5 DRAWINGS

- A. Drawings are diagrammatic and indicate the general arrangement of systems and work included in the contract. Drawings are not to be scaled. The architectural drawings and details shall be examined for exact location of fixtures and equipment. Where they are not definitely located, this information shall be obtained from the Architect.
- B. If directed by the Architect or Engineer, the Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work.
- C. At the time of each shop drawing submission, the Contractor shall call the Engineer's attention (in writing) to, and plainly mark on shop drawings, any deviations from the Contract Documents.

- D. Samples, drawings, specifications, catalogs, submitted for approval, shall be properly labeled indicating specific service for which material or equipment is to be used, location, section and article number of specifications governing, Contractor's name, and name of job. All equipment shall be labeled to match labeling on contract documents.
- E. Catalogs, pamphlets, or other documents submitted to describe items on which approval is being requested, shall be specific and identification in catalog, pamphlet, etc. of item submitted shall be clearly made in ink. Data of a general nature will not be accepted.
- F. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the Contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.
- G. All shop drawings shall be submitted to the A/E by Contractor no later than 30 days from the day of contract award.
- H. Failure of the Contractor to submit shop drawings in ample time for checking shall not entitle him to an extension of contract time, and no claim for extension by reason of such default will be allowed.
- I. Submit all Division 16 submittals at one (1) time in one (1) integral group. Piece-by-piece submission of individual items will not be acceptable. Engineer may check contents of each submittal set upon initial delivery; if not complete as set forth herein, submittal sets may be returned to Contractor without review and approval and will not be accepted until made complete.
- J. At the close of the job, prior to final review, five (5) bound copies of the following shall be submitted by transmittal letter to the Engineer for review and acceptance.
 - 1. Equipment warranties
 - 2. Contractor's warranty
 - 3. Parts list and manuals for all equipment
 - 4. Operating Instructions (in writing)
 - 5. Written instructions on maintenance and care of the system

1.6 REFERENCES

- A. ANSI/NFPA 70—National Electrical Code.
- B. NFPA 101—Life Safety Code.

1.7 SUBMITTALS

- A. Submit under provisions of Division 1.

- B. Proposed Products List: Include Products specified in the following Sections, but not limited to:
1. Section 26 05 19Low-Voltage Electrical Power Conductors and Cables.
 2. Section 26 05 26Grounding and Bonding for Electrical Systems.
 3. Section 26 05 29Hangers and Supports for Electrical Systems.
 4. Section 26 05 33Raceway and Boxes for Electrical Systems.
 5. Section 26 05 53Identification for Electrical Systems.
 6. Section 26 24 16Panelboards.
 7. Section 26 43 13Surge Protective Devices
 8. Section 26 56 00Exterior Lighting.
- C. It shall be understood that review of shop drawings by the Engineer does not supersede the requirement to provide a complete and functioning system in compliance with the Contract Documents.

1.8 SUBSTITUTIONS

- A. Materials and equipment are specified herein by a single or by multiple Manufacturers to indicate quality and performance required. The drawings are based upon equipment scheduled on drawings and specified. If another Manufacturer is considered for substitution during the bidding process, the Electrical Contractor shall be responsible for coordinating all electrical, mechanical, structural, or architectural changes. Comparable equipment Manufacturers which are listed as equals shall be considered as substitutes. Manufacturers other than the basis of design shall submit a catalog information and 1/4" scale plan and section drawings showing proper fit and all clearances for maintenance items.
- B. Substitutions of other Manufacturer's will be considered for use if, in the Engineers opinion, the item requested for substitution is equal to that specified. The Contractor shall provide to the Engineer a typed comparative list of the basis of design and the proposed substitute.
- Request for approval of substitutions or equals prior to bid must be made in writing. The approval of any substitutions or equals prior to bid shall not be construed as a shop drawing approval. The substitute or equal must be submitted as described in the specifications and meet all the requirements of the specifications and drawings.
- C. All requests for substitutions shall be submitted as described in paragraph 1.07, B., and specifically indicate any and all differences or omissions between the product specified as basis of design and the product proposed for substitution.
- D. Where the Contractor proposes to use an item of equipment other than that specified or detailed on the drawing, which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the mechanical or electrical, all such redesign, and all new drawings and detailing required therefore, shall be prepared by the Subcontractor at his own expense and submitted to the Architect/Engineer for approval.

- E. Where such approved deviation requires quantity and arrangement of equipment from that specified or indicated on the drawings, any other additional equipment required by the system, at no additional cost to the Owner.

1.9 COOPERATION WITH OTHER TRADES

- A. Give full cooperation to other trades and furnish in writing to the General Contractor, with copies to the Architect, any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay.
- B. When work installed under this Division will be in close proximity to, or will interfere with work of other trades, assist in working out space conditions to make a satisfactory adjustment. If so directed by the Engineer/Architect, prepare composite working drawings and sections at a suitable scale not less than 1/4" = 1'0", clearly showing how work is to be installed in relation to the work of other trades. If the work is installed before coordinating with other trades, or so as to cause any interference with work of other trades, make all the necessary changes in work to correct the condition without extra charge.
- C. Furnish to other trades, as required, all necessary templates, patterns, setting plans, and shop details for the proper installation of work and for the purpose of coordinating adjacent work.

1.10 PROTECTION

- A. Protect all work and material provided under this Division from damage. All damaged equipment work or material provided under this Division shall be replaced with new. Rebuilds are not acceptable.
- B. Protect all work and equipment until inspected, tested, and accepted. Protect work against theft, injury, or damage; and carefully store material and equipment received on site which are not immediately installed. Close open ends of work with temporary covers or plugs during storage and construction to prevent entry of obstructing material.

1.11 SCAFFOLDING, RIGGING, AND HOISTING

- A. Provide all scaffolding, rigging, hoisting, and services necessary for erection and delivery into the premises of any equipment and apparatus furnished. Remove same from premises when no longer required.

1.12 REMOVAL OF RUBBISH

- A. This Contractor shall at all times keep premises free from accumulations of waste materials or rubbish caused by his employees or work. At completion of work he shall remove all his tools, scaffolding, materials, and rubbish from the building and site. He shall leave the premises and his work in a clean, orderly, and acceptable condition.

1.13 SAFETY

- A. This Contractor shall comply with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.333), Title 29—Labor, Chapter XIII, Bureau of Standards, Department of Labor, Part 1518—Safety and Health Regulations for Construction; and that his housekeeping and equipment be maintained in such a manner that they comply with the Florida Industrial Commission Safety Code and Regulations of the Federal Williams—Steiger Occupational Safety and Health Act of 1970 (OSHA), wherein it states that the Contractor shall not require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety.

1.14 SUPERVISION

- A. This Contractor shall provide a competent, experienced, full time superintendent who is acceptable to the Architect/Engineer and Owner, and who is authorized to make decisions on behalf of the Contractor.

1.15 MATERIAL AND WORKMANSHIP

- A. All materials and apparatus required for the work, except as specifically specified otherwise, shall be new, of first-class quality, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be so selected and arranged as to fit properly into the building spaces. Where no specific kind or quality of material is given, a first-class standard article as approved by the Engineer shall be furnished. Refer to substitutions in this Section.
- B. Unless otherwise specifically indicated on the plans or specifications, all equipment and materials shall be installed with the approval of the Architect and Engineer in accordance with the recommendations of the Manufacturer. This includes the performance of such tests as the Manufacturer recommends.

1.16 QUIET OPERATION AND VIBRATION

- A. All work shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Engineer and the Owner. In case of moving machinery, sound, or vibration noticeable outside of room in which it is installed, or annoyingly noticeable inside its own room, will be considered objectionable. Sound or vibration conditions considered objectionable by the Engineer and the Owner shall be corrected in an approved manner at no additional expense to the Owner.

1.17 FOUNDATIONS, SUPPORTS, PIERS, ATTACHMENTS

- A. This Contractor shall furnish and install all necessary foundations, supports, pads, bases and piers required for all equipment furnished under this Division, and shall submit drawings to the Architect and Engineer for approval before purchase, fabrication or construction of same.
- B. For all floor mounted equipment, provide concrete pads which extend six inches (6") beyond equipment base in all directions with top edge chamfered. Inset six inches (6") steel dowel rods into floors to anchor pads. Shop drawings of all foundations and pads shall be submitted to the Architect and Engineer for approval before same are constructed.

- C. Construction of foundations, supports, pads, bases, and piers where mounted on the floor, shall be the same materials and same quality of finish as the adjacent and surrounding flooring material.
- D. All equipment, unless shown otherwise, shall be securely attached to the building structure in an approved manner. Attachments shall be of a strong and durable nature and any attachments that are, in the opinion of the Architect and the Engineer, not strong enough shall be replaced as directed.

1.18 ACCESS DOORS FOR WALLS AND CEILINGS

- A. Provide flush panel access doors with a 16 gauge steel frame and a 14 gauge steel door panel.
- B. Finish is to be primed painted steel.
- C. Provide concealed hinges which allow the door to open 175 degrees and have a removable pin.
- D. Provide access doors with a locked flush mounted vandal proof spanner head operated steel cams.
- E. Provide 1-1/2 hour "B" label door for rated chase walls.
- F. Furnish masonry anchors for installation in masonry walls and metal lath wings with casing bead for plaster installation.
- G. Provide a minimum 2'-0" by 2'-0" access doors unless shown or noted otherwise on the drawings.
- H. Access doors for chase walls shall be mounted 16" off the finish floor.
- I. Access doors for electrical equipment shall be a minimum of 12" larger than equipment all around.

1.19 REGULATORY REQUIREMENTS

- A. Conform to applicable Codes and Standards as follows:
 - 1. Standard:
 - a. Certain standard materials and installation requirements are described by reference to standard specifications. These standards are as follows:

NEMA..... National Electrical Manufacturers Association.

UL Underwriters Laboratories.

ANSI..... American National Standards Institute.

For additional standards and requirements see other sections of the specifications.

Whenever a reference is made to a standard, installation and materials shall comply with the latest published edition at the time project is bid unless otherwise specified herein.

2. Codes and Rules:

- a. All material furnished and all work installed shall comply with the following codes as they apply to this project:

⇒ NFPA 70 and NFPA 101.

⇒ Regulations of the Florida Industrial Commission Concerning Safety.

⇒ Applicable County, State, and Local Building Codes.

⇒ Local and State Fire Marshal Rules and Regulations.

⇒ Chapter 4A-47, Florida Administrative Code - Uniform Fire Safety Standards for Elevators.

⇒ Occupational Safety and Health Agency Standards (OSHA).

⇒ Florida State Board of Health Rules and Regulations.

⇒ Florida Building Code.

⇒ Manatee County Land Development Code

Applicable codes shall be those adopted by the authority having jurisdiction at the time project is bid.

3. Permits, Fees and Inspections

- a. The Contractor shall give all necessary notices, obtain all permits and pay all government fees, sales taxes and other costs, including utility connections or extensions, in connection with this work; file all necessary approvals of all governmental departments having jurisdiction.
- b. Obtain all required certificates of inspection for his work and deliver to the Owner/Engineer the same certificates before request for acceptance and final payment for the work.
- c. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus and drawings required to comply with all applicable laws, ordinances, rules and regulations.
- d. The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.

1.20 PROJECT/SITE CONDITIONS

- A. Install Work in locations shown on Drawings, unless prevented by Project conditions.
- B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Architect/Engineer before proceeding.
- C. The Contractor shall inform the Engineer of any work or materials which conflict with any of the applicable codes, standards, laws and regulations before submitting his bid.
- D. The scope of the work included under this Division of the Specifications shall include complete electrical systems as shown on the plans and as specified herein. The General Conditions and Special Conditions of these specifications shall form a part and be included under this Section of the Specifications. Provide all supervision, labor, material, equipment, machinery, factory trained personnel, and any and all other items necessary to complete the electrical systems. All items of equipment are specified in the singular; however, provide and install the number of items of equipment as indicated on the drawings, and as required for complete systems.

1.21 SEQUENCING AND SCHEDULING

- A. Construct Work in sequence under provisions of Division 1.

1.22 LICENSE

- A. The Subcontracting Firm for the electrical and systems installation shall be licensed by the State of Florida and the local authorities, regularly engaged in the installation of electrical systems and other related equipment. The Subcontracting Firm shall be familiar with all local conditions including interpretations, codes and shall have at least 5 years of successful installation experience on similar projects of the same magnitude and scope.

The Subcontracting Firm shall list at least three projects it has successfully completed over the last five years for proof of experience of this caliber. This list shall be included with submittals for review by Architect/Engineer. The Subcontracting Firm shall hold a Florida State Certified Electrical Contractor license for this project. The Subcontracting firm for the fire alarm system shall be a certified "EF" installer.

1.23 AS-BUILT DRAWINGS

- A. This Contractor shall provide AutoCad as-built drawings and copies of each AutoCad file on CD before final payment will be issued.

*** END OF SECTION 26 05 00 ***

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Building wires and cables rated 600 V and less.
 - 2. Connectors, splices, and terminations rated 600 V and less.
 - 3. Sleeves and sleeve seals for cables.
 - 4. Conductor sizes are based on copper.
- B. Related Sections include the following:
 - 1. Section 26 05 33Raceway And Boxes For Electrical Systems.
 - 2. Section 26 05 53Identification For Electrical Systems.

1.3 REFERENCES

- A. ANSI/NFPA 70—National Electrical Code.
- B. NEMA WC5—Thermoplastic Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

1.4 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency.
- C. Field quality-control test reports.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - 1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70 where wire and cable is not shown.

1.7 COORDINATION

- A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- B. Determine required separation between cable and other work.

PART 2 PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Alcan Products Corporation; Alcan Cable Division.
 - 2. American Insulated Wire Corp.; a Leviton Company.
 - 3. General Cable Corporation.
 - 4. Senator Wire & Cable Company.
 - 5. Southwire Company.
- C. Copper Conductors: Comply with NEMA WC 70.
- D. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN and XHHW.
- E. Multiconductor Cable: Comply with NEMA WC 70 for Type SO with ground wire.

2.2 CONNECTORS AND SPLICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. AFC Cable Systems, Inc.
 - 2. Hubbell Power Systems, Inc.
 - 3. O-Z/Gedney; EGS Electrical Group LLC.
 - 4. 3M; Electrical Products Division.
 - 5. Tyco Electronics Corp.
- C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.4 SLEEVE SEALS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advance Products & Systems, Inc.
 - 2. Calpico, Inc.
 - 3. Metraflex Co.
 - 4. Pipeline Seal and Insulator, Inc.
- C. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
 - 1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 2. Pressure Plates: Carbon steel. Include two for each sealing element.

3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

- A. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

- A. Service Entrance: Type THHN-THWN-XHHW, single conductors in raceway.
- B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
- C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspace: Type THHN-THWN, single conductors in raceway.
- D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- E. Exposed Branch Circuits, Including in Crawlspace: Type THHN-THWN, single conductors in raceway.
- F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway.
- G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
- H. Class 1 Control Circuits: Type THHN-THWN, in raceway.
- I. Class 2 Control Circuits: Type THHN-THWN-TFFN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

- A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
- B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
- C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
- D. Concealed Dry Interior Locations: Use only building wire and cable (all types) in raceway.

- E. Exposed Dry Interior Locations: For feeders, branch circuits, and class 1 remote control circuits, use only building wire in raceway. For class 2 or 3 control cable and power limited fire protective signaling cables run in raceway.
- F. Above Accessible Ceilings: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cables run exposed. For power limited fire protective signaling cables run in raceway.
- G. Wet or Damp Interior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire in raceway. For class 2 or 3 remote control cable and power limited fire protective signaling cables run in raceway.
- H. Exterior Locations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and fire protective signaling cables run in raceway.
- I. Underground Installations: For feeders, branch circuits and class 1 remote control cables use only building wire run in raceway. For class 2 or 3 remote control cables and for power limited fire protective signaling cables run in raceway.
- J. Use wiring methods indicated on Drawings.
- K. Each computer/clean power receptacle and lighting circuits shall have a dedicated neutral conductor.
- L. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
- M. All conductors size #6 and smaller shall be color coded insulation. Equipment grounding conductors #6 and smaller to have green or bare exterior finish per NEC 250-119(A). Grounded conductors (neutral) #6 and smaller to have a white or grey exterior finish per NEC 200-6. Conductors size #4 and larger shall be color code by use of colored plastic tape applied within 6" of each conductor end. All color coding shall be with the same color being used with its respective phase or bus through the entire job as follows:

240/120 VOLTS
Phase A.....Black
Neutral.....White
GroundGreen

- N. Grounding conductors shall be identified with a continuous outer finish that is either green, or green with one or more yellow stripe.
- O. Protect exposed cable from damage.
- P. Support cables above accessible ceiling, using spring metal clips or plastic cable ties to support cables from structure. Do not rest cable on ceiling panels.
- Q. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- R. Clean conductor surfaces before installing lugs and connectors.
- S. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

- T. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- U. Use solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
- V. Terminate spare conductors with electrical tape.
- W. Use insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- X. Splice only in accessible junction boxes.
- Y. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both wall surfaces.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Seal space outside of sleeves with grout for penetrations of concrete and masonry.
- H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."
- I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."
- J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.
- K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground exterior-wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Perform tests and inspections and prepare test reports.
- C. Tests and Inspections:
 - 1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding the following critical equipment and services for compliance with requirements.
 - a. Subpanels.
 - b. Mechanical equipment with service of 200 amps and greater.
 - 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
 - 3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan on equipment and connections identified by the Engineer. Remove box and equipment covers so splices are accessible to portable scanner.
 - a. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.
- D. Test Reports: Prepare a written report to record the following:
 - 1. Test procedures used.
 - 2. Test results that comply with requirements.
 - 3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

- E. Remove and replace malfunctioning units and retest as specified above.

*** END OF SECTION 26 05 19 ***

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes methods and materials for grounding systems and equipment.
 - 1. Underground distribution grounding.

1.3 SYSTEM DESCRIPTION

- A. Bond together system neutrals, service equipment enclosures, exposed non-current carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.

PART 2 PRODUCTS

2.1 CONDUCTORS

- A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- B. Bare Copper Conductors:
 - 1. Solid Conductors: ASTM B 3.
 - 2. Stranded Conductors: ASTM B 8.
 - 3. Tinned Conductors: ASTM B 33.
 - 4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
 - 5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
 - 6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
 - 7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
- C. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 4 inches in cross section, unless otherwise indicated; with insulators, length as required for number of terminations plus 25 percent future capacity.

2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
 - 1. Pipe Connectors: Clamp type, sized for pipe.
- C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

- A. Ground Rods: Copper-clad; sectional type, 3/4 inch by 10 feet in diameter, two (2) rods coupled together for overall length of 20 feet.

PART 3 EXECUTION

3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 10 AWG and smaller, and stranded conductors for No. 8 AWG and larger, unless otherwise indicated.
- B. Conductor Terminations and Connections:
 - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
 - 2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
 - 3. Connections to Ground Rods at Test Wells: Bolted connectors.
 - 4. Connections to Structural Steel: Clamp connectors.

3.2 EQUIPMENT GROUNDING

- A. Install insulated equipment grounding conductors with all feeders and branch circuits.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
 - 1. Feeders and branch circuits.
 - 2. Lighting circuits.
 - 3. Flexible raceway runs.
 - 4. Armored and metal-clad cable runs.

- C. Metal and Concrete Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors. Provide ground rod at each location.

3.3 INSTALLATION

- A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
- B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.
 - 1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
- C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.
 - 1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
- D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
 - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
 - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
 - 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
- E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect/Engineer promptly and include recommendations to reduce ground resistance.
- F. Supplement by adding additional ground rods to achieve 10 ohms.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:
- B. Perform the following tests and inspections and prepare test reports:
 - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
 - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
 - b. Perform tests by fall-of-potential method according to IEEE 81.
 3. Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
- C. Report measured ground resistances that exceed the following values:
1. Main service equipment and distribution gear.
 2. Separately derived system (i.e., transformers, uninterruptible power supply, engine generators).
 3. Grounding system resistance shall not exceed 10 ohms.
- D. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect/Engineer promptly and include recommendations to reduce ground resistance.
- E. Supplement by adding additional ground rods to achieve 10 ohms.

*** END OF SECTION 26 05 26 ***

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.
 - 3. Supports/safety wire and chains for light fixtures and equipment.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.
 - 2. Nonmetallic slotted support systems.
- B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.

- 3. Nonmetallic slotted channel systems. Include Product Data for components.
- 4. Equipment supports.
- C. Welding certificates.

1.6 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

1.7 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

PART 2 PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.
 - c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
 - 2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 - 3. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.

4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
5. Channel Dimensions: Selected for applicable load criteria.
- B. Located In or Around Cooling Tower Yards: Pipe hangers, equipment supports, miscellaneous structure components, hardware, bolts, washers, nuts, screws, etc., shall be non-metallic polyester resin, vinyl ester resin, fiberglass, glass reinforced polyurethane, or 316 stainless steel.
- C. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- D. Conduit and Cable Support Devices: Malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- E. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
- F. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- G. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
 1. Powder-Actuated Fasteners: Shall not be used.
 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened Portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.

5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment. After fabrication shall be coated with hot-dipped galvanized with a minimum of 1.50 oz/ft on all sides.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.
- C. Field cuts shall be zinc coated.

PART 3 EXECUTION

3.1 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 1. Secure raceways and cables to these supports with conduit clamps.

3.2 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 1. To Wood: Fasten with lag screws or through bolts.
 2. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

3. To Existing Concrete: Expansion anchor fasteners.
 4. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 5. To Light Steel: Sheet metal screws.
 6. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate[by means that meet seismic-restraint strength and anchorage requirements].
 7. Do not drill structural steel members.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 - 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.
- B. Touchup: Comply with requirements in Division 09 Painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

*** END OF SECTION 26 05 29 ***

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- B. Related Sections include the following:
 - 1. Section 26 05 26Grounding and Bonding for Electrical Systems.
 - 2. Section 26 05 29Hangers and Supports for Electrical Systems.
 - 3. Section 26 05 53Identification for Electrical Systems.

1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. ENT: Electrical nonmetallic tubing.
- C. EPDM: Ethylene-propylene-diene terpolymer rubber.
- D. FMC: Flexible metal conduit.
- E. IMC: Intermediate metal conduit.
- F. LFMC: Liquidtight flexible metal conduit.
- G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

- A. Product Data: All raceway types, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Shop Drawings: For the following raceway components. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Custom enclosures and cabinets.

2. For handholes and boxes for underground wiring, including the following:
 - a. Duct entry provisions, including locations and duct sizes.
 - b. Frame and cover design.
 - c. Grounding details.
 - d. Dimensioned locations of cable rack inserts, and pulling-in and lifting irons.
 - e. Joint details.
- C. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
 1. Structural members in the paths of conduit groups with common supports.
 2. HVAC and plumbing items and architectural features in the paths of conduit groups with common supports.

1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

PART 2 PRODUCTS

2.1 METAL CONDUIT AND TUBING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. AFC Cable Systems, Inc.
 2. Alfex Inc.
 3. Allied Tube & Conduit; a Tyco International Ltd. Co.
 4. Anamet Electrical, Inc.; Anaconda Metal Hose.
 5. Electri-Flex Co.
 6. Manhattan/CDT/Cole-Flex.
 7. Maverick Tube Corporation.
 8. O-Z Gedney; a unit of General Signal.

9. Wheatland Tube Company.
- B. Rigid Steel Conduit: ANSI C80.1. Zinc coated ¾" minimum.
- C. Aluminum Rigid Conduit: ANSI C80.5.
- D. IMC: ANSI C80.6.
- E. EMT: ANSI C80.3. ¾" minimum.
- F. LFMC: Flexible steel conduit with PVC jacket.
- G. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
 1. Steel set screw or steel compression. One inch (1") and smaller shall be insulated throughout.
 2. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
 3. Fittings for EMT: Steel, set-screw or compression type.
 4. Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.
- H. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.

2.2 NONMETALLIC CONDUIT AND TUBING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 1. AFC Cable Systems, Inc.
 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
 3. Arnco Corporation.
 4. CANTEX Inc.
 5. CertainTeed Corp.; Pipe & Plastics Group.
 6. Condux International, Inc.
 7. ElecSYS, Inc.
 8. Electri-Flex Co.
 9. Lamson & Sessions; Carlon Electrical Products.
 10. Manhattan/CDT/Cole-Flex.

11. RACO; a Hubbell Company.
 12. Thomas & Betts Corporation.
- B. ENT: NEMA TC 13.
- C. RNC: NEMA TC 2, Type EPC-40-PVC and EPC-80-PVC. $\frac{3}{4}$ " minimum.
- D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

2.3 METAL WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Cooper B-Line, Inc.
 2. Hoffman.
 3. Square D; Schneider Electric.
- B. Description: Sheet metal sized and shaped as indicated, NEMA 250, Type 1, unless otherwise indicated.
- C. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.
- D. Wireway Covers: Hinged type or screw-cover type, as indicated.
- E. Finish: Manufacturer's standard enamel finish.

2.4 NONMETALLIC WIREWAYS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Hoffman.
 2. Lamson & Sessions; Carlon Electrical Products.
- B. Description: Fiberglass polyester, extruded and fabricated to size and shape indicated, with no holes or knockouts. Cover is gasketed with oil-resistant gasket material and fastened with captive screws treated for corrosion resistance. Connections are flanged, with stainless-steel screws and oil-resistant gaskets.
- C. Description: PVC plastic, extruded and fabricated to size and shape indicated, with snap-on cover and mechanically coupled connections with plastic fasteners.
- D. Fittings and Accessories: Include couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.5 SURFACE RACEWAYS

- A. Surface Metal Raceways: Galvanized steel with snap-on covers. Manufacturer's standard enamel finish in color selected by Architect/Engineer.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Thomas & Betts Corporation.
 - b. Walker Systems, Inc.; Wiremold Company (The).
 - c. Wiremold Company (The); Electrical Sales Division.
- B. Surface Nonmetallic Raceways: Two-piece construction, manufactured of rigid PVC with texture and color selected by Architect from manufacturer's standard colors.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Butler Manufacturing Company; Walker Division.
 - b. Enduro Systems, Inc.; Composite Products Division.
 - c. Hubbell Incorporated; Wiring Device-Kellems Division.
 - d. Lamson & Sessions; Carlon Electrical Products.
 - e. Panduit Corp.
 - f. Walker Systems, Inc.; Wiremold Company (The).
 - g. Wiremold Company (The); Electrical Sales Division.

2.6 BOXES, ENCLOSURES, AND CABINETS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
 - 2. EGS/Appleton Electric.
 - 3. Erickson Electrical Equipment Company.
 - 4. Hoffman.
 - 5. Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
 - 6. O-Z/Gedney; a unit of General Signal.
 - 7. RACO; a Hubbell Company.

8. Robroy Industries, Inc.; Enclosure Division.
 9. Scott Fetzer Co.; Adalet Division.
 10. Spring City Electrical Manufacturing Company.
 11. Thomas & Betts Corporation.
 12. Walker Systems, Inc.; Wiremold Company (The).
 13. Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Metal Floor Boxes: Cast metal, fully adjustable, rectangular. Hubbell B-4236 Series, Walker 880CS Series.
- E. Floor Box Covers: Polished solid brass.
- F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, cast iron with gasketed cover.
- H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.
1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
- I. Cabinets:
1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
 2. Hinged door in front cover with flush latch and concealed hinge.
 3. Key latch to match panelboards.
 4. Metal barriers to separate wiring of different systems and voltage.
 5. Accessory feet where required for freestanding equipment.
 6. Plywood backboard, marine-grade, $\frac{3}{4}$ " thick.
 7. Copper Ground Bar with #6 Copper Grounding: Electrode conductor to building steel.
 8. Terminal Blocks: ANSI/NEMA ICS 4: UL listed. Channel mounted tubular pressure screw connectors, rated 300 volts.

2.7 HANDHOLES AND BOXES FOR EXTERIOR UNDERGROUND WIRING

- A. Description: Comply with SCTE 77.
 - 1. Color of Frame and Cover: Gray.
 - 2. Configuration: Units shall be designed for flush burial and have closed bottom, unless otherwise indicated.
 - 3. Cover: Weatherproof, secured by tamper-resistant locking devices and having structural load rating consistent with enclosure.
 - 4. Cover Finish: Nonskid finish shall have a minimum coefficient of friction of 0.50.
 - 5. Cover Legend: Molded lettering, "ELECTRIC" or "COMMUNICATION."
 - 6. Conduit Entrance Provisions: Conduit-terminating fittings shall mate with entering ducts for secure, fixed installation in enclosure wall.
 - 7. Handholes 12 inches wide by 24 inches long and larger shall have inserts for cable racks and pulling-in irons installed before concrete is poured.
 - 8. All in-ground boxes shall be traffic bearing type.
- B. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 2. Basis-of-Design Product: Subject to compliance with requirements, provide Quazite PG Series or a comparable product by one of the following:
 - a. Armorcast Products Company.
 - b. Carson Industries LLC.
 - c. CDR Systems Corporation.
 - d. NewBasis.

2.8 SLEEVES FOR RACEWAYS

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
- C. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

- D. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.9 SLEEVE SEALS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Advance Products & Systems, Inc.
 - 2. Calpico, Inc.
 - 3. Metraflex Co.
 - 4. Pipeline Seal and Insulator, Inc.
- B. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.
 - 1. Sealing Elements: EPDM interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
 - 2. Pressure Plates: Carbon steel. Include two for each sealing element.
 - 3. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 EXECUTION

3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
 - 1. Exposed Conduit: Rigid steel conduit.
 - 2. Concealed Conduit, Aboveground: Rigid steel conduit or EMT.
 - 3. Underground Conduit: RNC, Type EPC-40 PVC, direct buried.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
 - 5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.
 - 6. Application of Handholes and Boxes for Underground Wiring:
 - a. Handholes and Pull Boxes in Driveway, Parking Lot, and Off-Roadway Locations, Subject to Occasional, Nondeliberate Loading by Heavy Vehicles: Polymer concrete. SCTE 77, Tier 15 structural load rating.

- b. Handholes and Pull Boxes in Sidewalk and Similar Applications with a Safety Factor for Nondeliberate Loading by Vehicles: Polymer-concrete units, SCTE 77, Tier 8 structural load rating.
 - c. Handholes and Pull Boxes Subject to Light-Duty Pedestrian Traffic Only: Fiberglass-reinforced polyester resin, structurally tested according to SCTE 77 with 3000-lbf vertical loading.
- B. Comply with the following indoor applications, unless otherwise indicated:
 - 1. Exposed, Not Subject to Physical Damage: EMT.
 - 2. Exposed and Subject to Severe Physical Damage: Rigid steel conduit. Includes raceways in the following locations:
 - a. Loading dock.
 - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
 - c. Mechanical rooms.
 - 3. Concealed in Ceilings and Interior Walls and Partitions: EMT.
 - 4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
 - 5. Damp or Wet Locations: Rigid steel conduit.
 - 6. Raceways for Optical Fiber or Communications Cable in Spaces Used for Environmental Air: Plenum-type, optical fiber/communications cable in raceway or EMT.
 - 7. Raceways for Optical Fiber or Communications Cable Risers in Vertical Shafts: EMT.
 - 8. Raceways for Concealed General Purpose Distribution of Optical Fiber or Communications Cable: General-use, optical fiber/communications cable in raceway; Riser-type, optical fiber/communications cable in raceway. Outside Plant, Plenum-type, optical fiber/communications cable in RGC or IMC.
 - 9. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.
- C. Minimum Raceway Size: 3/4-inch trade size.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
 - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
 - 2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

- E. Install nonferrous conduit or tubing for circuits operating above 60 Hz. Where aluminum raceways are installed for such circuits and pass through concrete, install in nonmetallic sleeve.
- F. Do not install aluminum conduits in contact with concrete.

3.2 INSTALLATION

- A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of four 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.
- H. Raceways Embedded in Slabs: Metallic raceways shall be coated with Bitumastic.
 - 1. Run conduit parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
 - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
 - 3. Change from Type EPC-40-PVC to rigid steel conduit or IMC before rising above the floor.
- I. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- J. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- K. Install pull wires in empty raceways. Use #12 insulated conductor or polypropylene line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.
- L. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:
 - 1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
 - 2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.

3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.
- M. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
 2. Where otherwise required by NFPA 70.
- N. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.
1. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
 2. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.
- O. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures, equipment subject to vibration, noise transmission, or movement; and for transformers and motors.
1. Use LFMC in damp or wet locations subject to severe physical damage.
- P. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.
- Q. Set metal floor boxes level and flush with finished floor surface.
- R. Install insulated bushing on all conduits. Install grounded metal bushing with lug on all mains, sub-feeders, switchboards, panelboards, transformers, chillers, disconnects, starters, and equipment rated at 100 amps and above.
- S. Do not install flush mounting boxes back to back in walls. Provide minimum 12 inch separation. Provide 24 inch minimum separation in acoustic rated walls.
- T. Install boxes to preserve fire resistance rating of partitions and other elements using materials and methods that are UL listed and tested.
- U. Use stamped steel bridges to fasten flush mounted outlet box between studs.
- V. Existing Walls, Public Areas, Classrooms, Offices, Restrooms, Hallways, etc.: Conduit and boxes shall be concealed. Saw cut walls and floor slab. Make arrangements with General Contractor to patch all areas.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 31 Section "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
 - a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
 - b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.
6. Transition from PVC (EPC-40 and EPC-80) to rigid galvanized conduit 5'-0" out from building foundation walls.

3.4 INSTALLATION OF UNDERGROUND HANDHOLES AND BOXES

- A. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting conduits to minimize bends and deflections required for proper entrances.
- B. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
- C. Elevation: In paved areas, set so cover surface will be flush with finished grade. Set covers of other enclosures 1 inch above finished grade.
- D. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.

- E. Field-cut openings for conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

3.5 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway penetrations. Install sleeves and seal with firestop materials. Comply with Division 07 Section "Penetration Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways with flexible, boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between raceway and sleeve for installing mechanical sleeve seals.

3.6 SLEEVE-SEAL INSTALLATION

- A. Install to seal underground, exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway material and size. Position raceway in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.7 FIRESTOPPING

- A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

3.8 PROTECTION

- A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
 - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

*** END OF SECTION 26 05 33 ***

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Identification for raceways.
 - 2. Identification of power and control cables.
 - 3. Identification for conductors.
 - 4. Underground-line warning tape.
 - 5. Warning labels and signs.
 - 6. Instruction signs.
 - 7. Equipment identification labels.
 - 8. Miscellaneous identification products.

1.3 SUBMITTALS

- A. Product Data: For each electrical identification product indicated.
- B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.
- B. Colors for Raceways, Junction Boxes, and Pullboxes Carrying Circuits at 600 V or Less:
 - 1. 240 Volt, Single and Three Phase System: Black.
 - 2. Motor and Other Control Systems: Purple.
- C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- D. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

2.2 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Metal Tags: Brass or aluminum, 2 by 2 by 0.05 inch, with stamped legend, punched for use with self-locking cable tie fastener.

2.3 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.4 UNDERGROUND-LINE WARNING TAPE

- A. Tape:
 - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
 - 2. Printing on tape shall be permanent and shall not be damaged by burial operations.
 - 3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.
- B. Color and Printing:
 - 1. Comply with ANSI Z535.1 through ANSI Z535.5.
 - 2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.

2.5 WARNING LABELS AND SIGNS

- A. Comply with NFPA 70 and 29 CFR 1910.145.
- B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
- C. Baked-Enamel Warning Signs:
 - 1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
 - 2. 1/4-inch grommets in corners for mounting.
 - 3. Nominal size, 7 by 10 inches.
- D. Warning label and sign shall include, but are not limited to, the following legends:
 - 1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
 - 2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.6 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
 - 1. Engraved legend with black letters on white face.
 - 2. Punched or drilled for mechanical fasteners.
 - 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.
- B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

2.7 EQUIPMENT IDENTIFICATION LABELS

- A. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- B. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.8 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
 - 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
 - 1. Minimum Width: 3/16 inch.
 - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
 - 3. Temperature Range: Minus 40 to plus 185 deg F.
 - 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
 - 1. Minimum Width: 3/16 inch.

2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
3. UL 94 Flame Rating: 94V-0.
4. Temperature Range: Minus 50 to plus 284 deg F.
5. Color: Black.

2.9 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 10-foot maximum intervals in straight runs, and at 5-foot maximum intervals in congested areas.
- G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
- H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
 1. Outdoors: UV-stabilized nylon.
 2. In Spaces Handling Environmental Air: Plenum rated.
- I. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.

- J. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

- A. Accessible Raceways, 600 V or Less, for Service, Feeder, and Branch Circuits: Identify with self-adhesive vinyl label, self-adhesive vinyl tape applied in bands, or painted bands. Install labels at 10-foot maximum intervals.
- B. Power-Circuit Conductor Identification, 600 V or Less: For all conductors.
 - 1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded service, feeder, and branch-circuit conductors.
 - a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
 - b. Colors for 240/120-V Circuits:
 - 1) Phase A: Black.
 - c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- C. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- D. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.
- E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
 - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
 - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
 - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
 - 1. Install underground-line warning tape for both direct-buried cables and cables in raceway.

- G. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

- a. Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.
- b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
- c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
- d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

- a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be engraved, laminated acrylic or melamine label.
- b. Enclosures and electrical cabinets.
- c. Contactors.
- d. Monitoring and control equipment.

*** END OF SECTION 26 05 53 ***

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SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Lighting and appliance branch-circuit panelboards.

1.3 DEFINITIONS

- A. SVR: Suppressed voltage rating.
- B. TVSS: Transient voltage surge suppressor.

1.4 SUBMITTALS

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, transient voltage suppression device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Panelboard Schedules: For installation in panelboards. Submit final versions after load Balancing.

1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with NEMA PB 1.
- E. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of electric service.
 - 2. Do not proceed with interruption of electric service without Owner's written permission.
 - 3. Comply with NFPA 70E.

1.7 COORDINATION

- A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.
- B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

1.9 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Circuit Breakers Including GFCI and Ground Fault Equipment Protection (GFEP) Types: Two spares for each panelboard.
 - 2. Fuses for Fused Switches: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.
 - 3. Fuses for Fused Power-Circuit Devices: Equal to 10 percent of quantity installed for each size and type, but no fewer than three of each size and type.

PART 2 PRODUCTS

2.1 EXISTING BRANCH CIRCUIT PANELBOARDS

- A. Distribution, Lighting, and Appliance Branch Circuit Panelboards: NEMA PB1; bolted circuit breaker type or plug-in circuit breaker type to match existing.
- B. Minimum Integrated Short Circuit Rating: Match existing rms symmetrical amperes in existing panels.
- C. Molded Case Circuit Breakers: FS W-C-375; bolt-on or plug-in type thermal magnetic trip circuit breakers, with common trip handle for all poles. Provide circuit breakers UL listed as Type SWD for lighting circuits. Provide UL Class A ground fault interrupter circuit breakers where scheduled on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.
- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install overcurrent protective devices and controllers not already factory installed.
 - 1. Set field-adjustable, circuit-breaker trip ranges.
- B. Arrange conductors in gutters into groups and bundle and wrap with wire ties after completing load balancing.
- C. Comply with NECA 1.
- D. Provide filler plates for unused spaces in panelboards.
- E. Provide typed circuit directory for each branch circuit panelboard, new or existing. Revise directory to reflect circuiting changes required to balance phase loads. Trace out all circuits in existing panelboards to indicate an accurate directory per new space changes and room numbers.

3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."

- B. Create a directory to indicate installed circuit loads after balancing panelboard loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.4 ADJUSTING

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as indicated.
- C. Load Balancing: After Substantial Completion, but not more than 60 days after Final Acceptance, measure load balancing and make circuit changes.
 - 1. Measure as directed during period of normal system loading.
 - 2. Perform load-balancing circuit changes outside normal occupancy/working schedule of the facility and at time directed. Avoid disrupting critical 24-hour services such as fax machines and on-line data processing, computing, transmitting, and receiving equipment.
 - 3. After circuit changes, recheck loads during normal load period. Record all load readings before and after changes and submit test records.
 - 4. Tolerance: Difference exceeding 20 percent between phase loads, within a panelboard, is not acceptable. Rebalance and recheck as necessary to meet this minimum requirement.

3.5 PROTECTION

- A. Temporary Heating: Apply temporary heat to maintain temperature according to manufacturer's written instructions.

*** END OF SECTION 26 24 16 ***

SECTION 26 43 13

SURGE PROTECTIVE DEVICES (SPDs)

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes field-mounted SPD for low-voltage (120 to 600 V) power distribution and control equipment.
- B. Related Sections:
 - 1. Division 26 Section "Panelboards" for factory-installed TVSS.

1.3 DEFINITIONS

- A. ATS: Acceptance Testing Specifications.
- B. VPR: Voltage protection rating.
- C. SPD: Surge protective device(s), both singular and plural.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating weights, electrical characteristics, furnished specialties, and accessories.
- B. Qualification Data: For qualified testing agency.
- C. Product Certificates: For TVSS devices, from manufacturer.
- D. Field quality-control reports.
- E. Operation and Maintenance Data: For TVSS devices to include in emergency, operation, and maintenance manuals.
- F. Warranties: Sample of special warranties.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Currently certified by NETA to supervise on-site testing.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a testing agency, and marked for intended location and application.
- C. Comply with IEEE C62.41.2 and test devices according to IEEE C62.45.
- D. Comply with NEMA LS 1.
- E. Comply with UL 1449, latest edition.
- F. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
 - 1. Notify Owner no fewer than seven (7) days in advance of proposed electrical service interruptions.
 - 2. Do not proceed with interruption of electrical service without Owner's written permission.
- B. Service Conditions: Rate SPD devices for continuous operation under the following conditions unless otherwise indicated:
 - 1. Maximum Continuous Operating Voltage: Not less than 125 percent of nominal system operating voltage.
 - 2. Operating Temperature: 30 to 120 deg F.
 - 3. Humidity: 0 to 85 percent, noncondensing.
 - 4. Altitude: Less than 1,000 feet above sea level.

1.7 COORDINATION

- A. Coordinate location of field-mounted TVSS devices to allow adequate clearances for maintenance.
- B. Coordinate TVSS devices with Division 26 Section "Electrical Power Monitoring and Control."
- C. Coordinate the overcurrent protection amperage requirements before the circuit breakers are ordered for correct sizing.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of surge suppressors that fail in materials or workmanship within specified warranty period.

Warranty Period: Ten (10) years from date of Substantial Completion.

- B. Special Warranty for Cord-Connected, Plug-in Surge Suppressors: Manufacturer's standard form in which manufacturer agrees to repair or replace electronic equipment connected to circuits protected by surge suppressors.

PART 2 PRODUCTS

2.1 SERVICE ENTRANCE SUPPRESSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Advanced Protection Technologies Inc. (APT).
 - 2. PQ Protection.
 - 3. Liebert Corporation; a division of Emerson Network Power.
 - 4. Square D; a brand of Schneider Electric.
 - 5. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 - 6. Siemens Energy & Automation, Inc.
 - 7. Eaton (Cutler Hammer)
- B. Surge Protection Devices:
 - 1. Modular.
 - 2. LED indicator lights for power and protection status.
 - 3. Audible alarm to indicate when protection has failed.
 - 4. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
 - 5. Surge Counter
- C. Peak Single-Impulse Surge Current Rating: 300 kA per phase/150 kA per mode(unless otherwise noted on plans).
- D. Fault Current Rating 200 kAIC.
- E. Protection modes and UL 1449 VPR for hi-leg delta circuits with 240D/120 V, 3-phase, 4-wire circuits shall not exceed the following:
 - 1. Line to Neutral: 600 V for 240D/120 V.
 - 2. Line to Ground: 600 V for 240D/120 V.
 - 3. Neutral to Ground: 600 V for 240D/120 V.

4. Line to Line: 1000 V for 240D/120 V.

2.2 PANELBOARD SUPPRESSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Advanced Protection Technologies Inc. (APT).
 2. PQ Protection.
 3. Liebert Corporation; a division of Emerson Network Power.
 4. Square D; a brand of Schneider Electric.
 5. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
 6. Siemens Energy & Automation, Inc.
 7. Eaton (Cutler Hammer)
- B. Surge Protection Devices:
 1. Non-modular.
 2. LED indicator lights for power and protection status.
 3. Audible alarm to indicate when protection has failed.
 4. Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
- C. Peak Single-Impulse Surge Current Rating: 100 kA per phase/50 kA per mode (unless otherwise noted on plans).
- D. Fault Current Rating 100 kAIC.
- E. Protection modes and UL 1449 VPR for hi-leg delta circuits with 240D/120 V, 3-phase, 4-wire circuits shall not exceed the following:
 1. Line to Neutral: 600 V for 240D/120 V.
 2. Line to Ground: 600 V for 240D/120 V.
 3. Neutral to Ground: 600 V for 240D/120 V.
 4. Line to Line: 1000 V for 240D/120 V.

2.3 ENCLOSURES

- A. Indoor Enclosures: NEMA 250 Type 1.

- B. Outdoor Enclosures: NEMA 250 Type 3R.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install TVSS devices at service entrance on load side, with ground lead bonded to service entrance ground.
- B. Install TVSS devices for panelboards and auxiliary panels with conductors or buses between suppressor and points of attachment as short and straight as possible. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.
 - 1. Provide multiple, 30 or 60-A circuit breakers as scheduled on panel directory as a dedicated disconnecting means for TVSS unless otherwise indicated.
- C. Review all installation information in owners manual. Verify all voltage before connections to avoid injury and damage to equipment. The specified unit shall be installed external to switchboard, distribution and panelboard as stand alone. Internal products will not be accepted.

3.2 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
 - 1. Verify that electrical wiring installation complies with manufacturer's written installation requirements.
- B. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- C. Tests and Inspections:
 - 1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS, "Surge Arresters, Low-Voltage Surge Protection Devices" Section. Certify compliance with test parameters.
 - 2. After installing TVSS devices but before electrical circuitry has been energized, test for compliance with requirements.
 - 3. Complete startup checks according to manufacturer's written instructions.
- D. TVSS device will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.3 STARTUP SERVICE

- A. Do not energize or connect service entrance equipment, panelboards, control terminals, or data terminals to their sources until TVSS devices are installed and connected.
- B. Do not perform insulation resistance tests of the distribution wiring equipment with the TVSS installed. Disconnect before conducting insulation resistance tests, and reconnect immediately after the testing is over.

3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel to maintain TVSS devices.

*** END OF SECTION 26 43 13 ***

SECTION 26 56 00
EXTERIOR LIGHTING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Exterior luminaires with lamps and ballasts.
 - 2. Luminaire-mounted photoelectric relays.
 - 3. Poles and accessories.
 - 4. Luminaire lowering devices.

1.3 DEFINITIONS

- A. CRI: Color-rendering index.
- B. HID: High-intensity discharge.
- C. Luminaire: Complete lighting fixture, including ballast housing if provided.
- D. Pole: Luminaire support structure, including tower used for large area illumination.
- E. Standard: Same definition as "Pole" above.

1.4 STRUCTURAL ANALYSIS CRITERIA FOR POLE SELECTION

- A. Dead Load: Weight of luminaire and its horizontal and vertical supports, lowering devices, and supporting structure, applied as stated in AASHTO LTS-4.
- B. Live Load: Single load of 500 lbf, distributed as stated in AASHTO LTS-4.
- C. Wind Load: Pressure of wind on pole and luminaire, calculated and applied as stated in AASHTO LTS-4.
 - 1. Wind speed for calculating wind load for poles exceeding 50 feet in height is 130 mph AASHTO LTS-4.
 - 2. Wind speed for calculating wind load for poles 50 feet or less in height is 130 mph AASHTO LTS-4 for this Project.

1.5 SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
 - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
 - 2. Details of attaching luminaires and accessories.
 - 3. Details of installation and construction.
 - 4. Luminaire materials.
 - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
 - a. For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
 - b. Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - 6. Photoelectric relays.
 - 7. Ballasts, including energy-efficiency data.
 - 8. Lamps, including life, output, and energy-efficiency data.
 - 9. Materials, dimensions, and finishes of poles.
 - 10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
 - 11. Anchor bolts for poles.
 - 12. Manufactured pole foundations.
- B. Shop Drawings:
 - 1. Anchor-bolt templates keyed to specific poles and certified by manufacturer.
 - 2. Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.
 - 3. Wiring Diagrams: Power and control wiring.
- C. Samples for Verification: For products designated for sample submission in Exterior Lighting Device Schedule. Each sample shall include lamps and ballasts.
- D. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in AASHTO LTS-4 and that load imposed by luminaire has been included in design.

- E. Qualification Data: For agencies providing photometric data for lighting fixtures.
- F. Field quality-control test reports.
- G. Operation and Maintenance Data: For luminaires and poles to include in emergency, operation, and maintenance manuals.
- H. Warranty: Special warranty specified in this Section.

1.6 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- D. Comply with IEEE C2, "National Electrical Safety Code."
- E. Comply with NFPA 70.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Package aluminum poles for shipping according to ASTM B 660.
- B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.
- C. Handle wood poles so they will not be damaged. Do not use pointed tools that can indent pole surface more than 1/4 inch deep. Do not apply tools to section of pole to be installed below ground line.
- D. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.
- E. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
 - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.

2. Warranty Period for Metal Corrosion: Five years from date of Substantial Completion.
3. Warranty Period for Color Retention: Five years from date of Substantial Completion.
4. Warranty Period for Lamps: Replace lamps and fuses that fail within 12 months from date of Substantial Completion; furnish replacement lamps and fuses that fail within the second 12 months from date of Substantial Completion.
5. Warranty Period for Poles: Repair or replace lighting poles and standards that fail in finish, materials, and workmanship within manufacturer's standard warranty period, but not less than three years from date of Substantial Completion.

1.9 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Lamps: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 2. Glass and Plastic Lenses, Covers, and Other Optical Parts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 3. Ballasts: 10 for every 100 of each type and rating installed. Furnish at least one of each type.
 4. Globes and Guards: 10 for every 20 of each type and rating installed. Furnish at least one of each type.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Furnish products as specified on the drawings.
- B. Substitutions: Submit a written substitution request, prior to bid, to the Architect/Engineer in accordance with specifications. Accepted substitutes will be notified via Addendum.

2.2 LUMINAIRES, GENERAL REQUIREMENTS

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
- B. Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.
- D. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.

- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
 - 1. White Surfaces: 85 percent.
 - 2. Specular Surfaces: 83 percent.
 - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
 - 2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
 - a. Color: As selected from manufacturer's standard catalog of colors.
- N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.

2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
 - a. Color: Light bronze, Medium bronze, Dark bronze, or Black.

2.3 POLES AND SUPPORT COMPONENTS, GENERAL REQUIREMENTS

- A. Structural Characteristics: Comply with AASHTO LTS-4.
 1. Wind-Load Strength of Poles: Adequate at indicated heights above grade without failure, permanent deflection, or whipping in steady winds of speed indicated in Part 1 "Structural Analysis Criteria for Pole Selection" Article, with a gust factor of 1.3.
 2. Strength Analysis: For each pole, multiply the actual equivalent projected area of luminaires and brackets by a factor of 1.1 to obtain the equivalent projected area to be used in pole selection strength analysis.
- B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts, unless otherwise indicated.
- C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
 1. Materials: Shall not cause galvanic action at contact points.
 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication, unless stainless-steel items are indicated.
 3. Anchor-Bolt Template: Plywood or steel.
- D. Concrete Pole Foundations: Cast in place, with anchor bolts to match pole-base flange. Concrete, reinforcement, and formwork are specified in Division 03 Section "Cast-in-Place Concrete."
- E. Power-Installed Screw Foundations: Factory fabricated by pole manufacturer, with structural steel complying with ASTM A 36/A 36M and hot-dip galvanized according to ASTM A 123/A 123M; and with top-plate and mounting bolts to match pole base flange and strength required to support pole, luminaire, and accessories.
- F. Breakaway Supports: Frangible breakaway supports, tested by an independent testing agency acceptable to authorities having jurisdiction, according to AASHTO LTS-4.

2.4 ALUMINUM POLES

- A. Poles: Seamless, extruded structural tube complying with ASTM B 429, Alloy 6063-T6 with access handhole in pole wall.
- B. Poles: ASTM B 209, 5052-H34 marine sheet alloy with access handhole in pole wall.
 - 1. Shape: Square, straight.
 - 2. Mounting Provisions: Butt flange for bolted mounting on foundation or breakaway support.
- C. Pole-Top Tenons: Fabricated to support luminaire or luminaires and brackets indicated, and securely fastened to pole top.
- D. Grounding and Bonding Lugs: Welded 1/2-inch threaded lug, complying with requirements in Division 26 Section "Grounding and Bonding for Electrical Systems," listed for attaching grounding and bonding conductors of type and size listed in that Section, and accessible through handhole.
- E. Brackets for Luminaires: Detachable, with pole and adapter fittings of cast aluminum. Adapter fitting welded to pole and bracket, then bolted together with stainless-steel bolts.
 - 1. Tapered oval cross section, with straight tubular end section to accommodate luminaire.
 - 2. Finish: Same as pole luminaire.
- F. Prime-Coat Finish: Manufacturer's standard prime-coat finish ready for field painting.
- G. Aluminum Finish: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - 2. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
 - a. Color: As selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.1 LUMINAIRE INSTALLATION

- A. Install lamps in each luminaire.
- B. Fasten luminaire to indicated structural supports.
 - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

- C. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.

3.2 POLE INSTALLATION

- A. Align pole foundations and poles for optimum directional alignment of luminaires and their mounting provisions on the pole.
- B. Clearances: Maintain the following minimum horizontal distances of poles from surface and underground features, unless otherwise indicated on Drawings:
 - 1. Fire Hydrants and Storm Drainage Piping: 60 inches.
 - 2. Water, Gas, Electric, Communication, and Sewer Lines: 10 feet.
 - 3. Trees: 15 feet.
- C. Concrete Pole Foundations: Set anchor bolts according to anchor-bolt templates furnished by pole manufacturer. Concrete materials, installation, and finishing requirements are specified in Division 03 Section "Cast-in-Place Concrete."
- D. Poles and Pole Foundations Set in Concrete Paved Areas: Install poles with minimum of 6-inch-wide, unpaved gap between the pole or pole foundation and the edge of adjacent concrete slab. Fill unpaved ring with pea gravel to a level 1 inch below top of concrete slab.
- E. Raise and set poles using web fabric slings (not chain or cable).

3.3 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.
- B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.4 GROUNDING

- A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole, unless otherwise indicated.
 - 2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.
- B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."
 - 1. Install grounding electrode for each pole.
 - 2. Install grounding conductor and conductor protector.

3. Ground metallic components of pole accessories and foundations.

3.5 FIELD QUALITY CONTROL

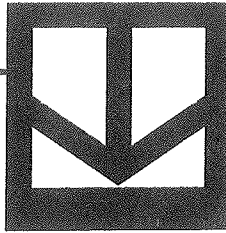
- A. Inspect each installed fixture for damage. Replace damaged fixtures and components.
- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
 1. Verify operation of photoelectric controls.
- C. Illumination Tests:
 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
 - a. IESNA LM-5, "Photometric Measurements of Area and Sports Lighting."
 - b. IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."
 - c. IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."
 - d. IESNA LM-64, "Photometric Measurements of Parking Areas."
 - e. IESNA LM-72, "Directional Positioning of Photometric Data."
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain luminaire lowering devices. Refer to Division 01 Section "Demonstration and Training."

*** END OF SECTION 26 56 00 ***

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ENGINEERING SCIENCES

GEOTECHNICAL EXPLORATION

**PROPOSED HIDDEN HARBOR
FORT HAMER ROAD
PARRISH, MANATEE COUNTY, FLORIDA**

**PROJECT NO. 1130.1000064
REPORT NO. 9351**

Prepared For:

WilsonMiller – Stantec
6900 Professional Parkway East
Sarasota, FL 34240

Prepared By:

Universal Engineering Sciences, Inc.
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(941) 358-7410

October 18, 2010

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October 18, 2010

WilsonMiller – Stantec
6900 Professional Parkway East
Sarasota, FL 34240

Attention: Mr. Don Bond, P. E.

Reference: **GEOTECHNICAL EXPLORATION**
PROPOSED HIDDEN HARBOR PARK
Fort Hamer Road
Parrish, Manatee County, Florida
Project No. 1130.1000064
Report No. 9351

Dear Mr. Bond:

Universal Engineering Sciences, Inc. has completed the subsurface exploration for the above referenced project. This report contains the results of our explorations, an engineering interpretation of these with respect to the project characteristics described to us, and recommendations for groundwater control, foundation design and pavement design.

We appreciate the opportunity to provide our geotechnical engineering services on this project and look forward to a continued association. If additional exploration, analysis, and / or recommendations are desired or whether you have questions concerning this report, please let us know. Furthermore, we can provide quality assurance testing and inspection during construction.

Respectfully submitted,

UNIVERSAL ENGINEERING SCIENCES, INC.

Certificate of Authorization Number No. 549

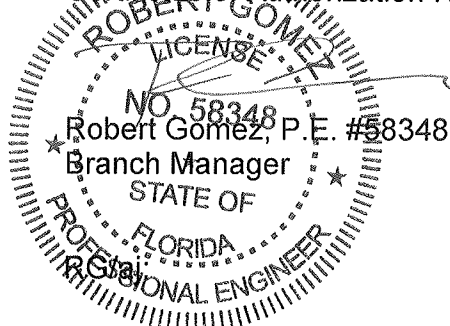


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IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL
ENGINEERING REPORT
CONSTRAINTS AND RESTRICTIONS

1.0 INTRODUCTION

1.1 GENERAL

In this report, we present the results of the subsurface exploration of the proposed Hidden Harbor Park located on Fort Hamer Road in Parrish, Manatee County, Florida. A general location plan of the project area appears in Appendix A: Site Location Plan. We divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we encountered
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- SUMMARY - Reviews the material in this report
- APPENDICES - Presents support materials referenced in this report.

2.0 SCOPE OF SERVICES

2.1 PROJECT DESCRIPTION

Based on the site plan provided to us, the project consists of a restroom/pavilion building, a storage building, associated pavement area and stormwater management ponds. The buildings will be constructed of concrete block walls and stem wall with fill slab and spread foundations. For the purpose of our evaluation, we have assumed maximum wall and column loads on the order of 2 kips per lineal foot and 50 kips, respectively.

Our recommendations are based upon the above considerations. If any of this information is incorrect or if you anticipate any changes, inform Universal Engineering Sciences so that we may review our recommendations.

2.2 PURPOSE

The purposes of this exploration were:

- to explore the general subsurface conditions at the site;
- to interpret and review the subsurface conditions with respect to the proposed construction; and
- to provide geotechnical engineering recommendations for foundation and pavement design and site preparation.

Recommendations concerning other soil related considerations were beyond the scope of our exploration. This report presents an evaluation of site conditions on the basis of traditional geotechnical procedures for site characterization. The recovered samples were not examined, either visually or analytically, for chemical composition or environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you so desire.

2.3 FIELD EXPLORATION

The subsurface conditions within the building area were explored with three (3) test borings advanced to a depth of 15 feet below existing grade while performing the Standard Penetration Test (SPT).

We performed the Standard Penetration Test in each of the borings according to the procedures of ASTM D-1586, with continuous sampling performed above a depth of 10 feet, to detect slight variations in the soil profile at shallow depths. The basic procedure for the Standard Penetration Test is as follows: A standard split-barrel sampler is driven into the soil by a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1-foot, after seating 6 inches, is designated the penetration resistance, or N-value; this value is an index to soil strength and consistency.

We also performed five (5) auger soil borings within the pond and pavement areas. These borings were performed according to the procedures of ASTM D 1452 by manually advancing a bucket auger into the soil to the required depth. We evaluated the soil type by visually inspecting the cutting recovered from the bucket auger as it periodically removed and emptied of soil.

The soil borings were located by WilsonMiller – Stantec. The test boring locations are shown on the attached Boring Location Plan in Appendix B.

2.4 LABORATORY TESTING

The soil samples recovered from the soil test borings were returned to our laboratory, where a member of our geotechnical staff visually examined and reviewed the field descriptions.

3.0 FINDINGS

3.1 SURFACE CONDITIONS

A Universal Engineering Sciences representative performed a visual site inspection of the subject property to gain a "hands-on" familiarity with the project area. The site is bordered to the south by Manatee River and east by Fort Hamer Road. The proposed development location range in existing elevation of +6 to +9 feet NGVD, based on the topographic information provided to us. The site consists of some wetland areas, trees, sandy and grassed surfaces.

3.2 SOIL SURVEY

Based on the Manatee County Soil Survey as prepared by the US Department of Agriculture Soil Conservation Service, the predominant soil type at the site is identified as EauGallie (#20).

A summary of characteristics of this soil series as obtained from the Soil Survey is included in Table 1 below. It should be noted that UES performed a site specific evaluation of the seasonal high groundwater level.

TABLE 1 Summary of Soil Survey Information						
Soil Type	Constituents	Internal Drainage	Soil Permeability (In/Hr)	Seasonal Height Water Under Natural Conditions	Corrosion Potential	
					Steel	Concrete
EauGallie (#20)	Fine Sand	Poorly Drained	0-28" – 6.0-20 28-42" – 0.6-6.0 42-50" – 0.6-6.0 50-65" – 2.0-6.0	0 – 1.0 Foot	High	Moderate

3.3 SUBSURFACE CONDITIONS

The boring locations and detailed subsurface conditions are illustrated in Appendix B: Boring Location Plan and Boring Logs. The classifications and descriptions shown on the logs are generally based upon visual characterizations of the recovered soil samples. Also, see Appendix B: Soils Classification Chart, for further explanation of the symbols and placement of data on the Boring Logs.

TABLE 2 General Soil Profile		
Typical depth (ft)		Soil Descriptions
From	To	
0	5	Loose dense gray and brown fine sand and fine sand with trace silt (SP)
5	8	Medium dense brown and clayey and silty sand (SC, SM)
8	15*	Very stiff and stiff gray clay (CL)
* Termination Depth of Deepest Boring		
() Bracketed Text Indicates: Unified Soil Classification		

Variations in the depth, thickness, and consistency of the aforementioned soil strata occurred at the individual test boring locations. The groundwater level was recorded at a depth of 3 to 4 feet below existing grade at the time of our exploration. The apparent water table can be expected to fluctuate with seasonal rainfall.

4.0 RECOMMENDATIONS

4.1 GENERAL

The following recommendations are made based upon a review of the attached soil test data, our understanding of the proposed construction, and experience with similar projects and subsurface conditions. If the structural loadings, building locations, building sizes, or grading plans change or are different from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes.

Additionally, if subsurface conditions are encountered during construction which was not encountered in the borings, report those conditions immediately to us for observation and recommendations.

In this section of the report, we present our detailed recommendations for groundwater control, building foundations, pavements and site preparation,

4.2 GROUNDWATER CONSIDERATIONS

The groundwater table will fluctuate seasonally depending upon local rainfall. The normal seasonal high groundwater level typically occurs in the August-September period at the end of the rainy season. The seasonal high groundwater level is affected by a number of factors, such as drainage characteristics of the soils; land surface elevation, relief points (i.e. drainage ditches, lakes, rivers, swampy areas) and distance to relief points.

Several other factors influence the determination of the seasonal high water table (SHWT). When soils are subjected to alternating cycles of saturation and drying, discoloration or staining that is not part of the dominant soil color occurs. This is called mottling, and manifests itself in various shades of gray, brown, red or yellow. There are numerous processes that lead to this discoloration, including mineral accretions, oxidation, and bacteria growth within the soil. The presence of this discoloration indicates that groundwater has, at some point in time, reached that elevation and remained there long enough to cause any or all of these processes to occur. The SHWL elevation is assumed to be the highest point at which mottling is observed regardless of whether water is present at the time of observation. This estimate is independent of the actual location of the groundwater table.

Based upon our visual inspection of the recovered soil samples, review of information obtained from the USDA soil survey of Manatee County, existing site conditions and our knowledge of local and regional hydrology, our best estimate is that the seasonal high groundwater level could be on the order of 2 to 2.91 feet below the existing grade at the testing boring locations, on average. A table with the SHWL is included in Appendix B of this report. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall.

It should be noted that the estimated seasonal high water levels do not provide any assurance that groundwater levels will not exceed these estimated levels during any given year in the future. Should the impediments to surface water drainage be present, or should rainfall intensity and duration, or total rainfall quantities, exceed the normally anticipated rainfall quantities, groundwater levels may exceed our seasonal high estimates. We recommend positive drainage

be established and maintained on the site during construction. We further recommend permanent measures be constructed to maintain positive drainage from the site throughout the life of the project.

We recommend sufficient quantities of fill will be placed in the building and pavement areas to mitigate the effect of groundwater on shallow excavations, such as foundations. Further, we recommend the bottom of the base course used in pavement construction be maintained at least 12 inches above the seasonal high water levels.

Temporary dewatering may be required during site preparation, especially if construction proceeds during the wet season or periods of heavy rainfall. Temporary dewatering may also be required for deeper excavations, such as utility trenches, the backfilling of the drainfield area and other excavations. We recommend that the groundwater table be maintained at least 24 inches below all earthwork and compaction surfaces.

4.3 BUILDING FOUNDATIONS

We believe the proposed structure be can supported on conventional shallow foundation provided the site is properly prepared and the foundation loading conditions do not exceed the presumed values outlined earlier in this report. The following parameters may be used for foundation design.

4.3.1 Bearing Pressure

The maximum allowable net soil bearing pressure for shallow foundations should not exceed 2,000 pounds per square foot (psf). Net bearing pressure is defined as the soil bearing pressure at the base of the foundation in excess of the natural overburden pressure. The foundations should be designed based upon the maximum load that could be imposed by all loading conditions.

4.3.2 Foundation Size

The minimum widths recommended for any isolated column footing and continuous wall footing is 24 inches and 18 inches, respectively. Even though the maximum allowable soil bearing pressure may not be achieved, this width recommendation should control the size of the foundations.

4.3.3 Bearing Depth

The exterior foundations should bear at a depth of at least 18 inches below the exterior final grades. We recommend stormwater and surface water be diverted away from the building exteriors, both during and after construction to reduce the possibility of erosion beneath the exterior footings.

4.3.4 Bearing Material

The foundations may bear on either the compacted suitable natural soils or compacted structural fill. The bearing level soils, after compaction should have compaction to at least 95 percent of the maximum dry density of the bearing soils as determined by ASTM D-1557 (Modified Proctor), to the depth described subsequently in the Site Preparation section of the report. In addition to compaction the bearing soils must exhibit stability and be free of "pumping" conditions.

4.3.5 Settlement Estimates

Post-construction settlement of the structure will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics of the bearing soils to a depth of approximately twice the width of the footing; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundation; (3) site preparation and earthwork construction techniques used by the contractor, and (4) external factors, including but not limited to vibration from offsite sources and groundwater fluctuations beyond those normally anticipated for the naturally-occurring site and soil conditions which are present.

Our settlement estimates for the structure are based upon the use of successful adherence to the site preparation recommendations presented later in this report and the maximum loading conditions previously discussed. Any deviation from these recommendations could result in an increase in the estimated post-construction settlement of the structure.

Due to the sandy nature of the surficial soils following the compaction operations, we expect a significant portion of settlement to be elastic in nature and occur relatively quickly, on application of the loads, during and immediately following construction. Using the recommended maximum bearing pressure, the assumed maximum structural loads, and the field and laboratory test data which we have correlated into the strength and compressibility characteristics of the subsurface soils, we estimate the total settlements of the structure to be 1 inch or less.

Differential settlements result from differences in applied bearing pressures and the variations in the compressibility characteristics of the subsurface soils. For the foundations prepared as recommended, we anticipate post construction differential settlements of ½-inch or less.

4.3.6 Floor Slabs

The floor slabs will be supported on compacted fill and be either structurally isolated from the other foundation elements or monolithic floor slabs adequately reinforced to prevent distress due to differential movements. For building design, we recommend using a subgrade reaction modulus of 150 pounds per cubic inch (pci) which can be achieved by compacting the subgrade soils as recommended in the site preparation procedure. We recommend the use of a sheet vapor barrier such as visqueen beneath the building slab on grade to help control moisture migration through the slab.

4.4 PAVEMENTS

4.4.1 General

We anticipate that either rigid or flexible pavement section or a combination there of may be used on this project. Flexible pavement combines the strength and durability of several layer components to produce an appropriate and cost-effective combination of available construction materials. Concrete pavement has the advantage of the ability to "bridge" over isolated soft areas, it requires less lighting, and it typically has a longer service life than asphalt pavement. Disadvantages of rigid pavement include an initial higher cost and more difficult patching of distressed areas than occurs with flexible pavement.

4.4.2 Asphalt (Flexible) Pavements

We have recommended a flexible pavement section with a 20-year design life for use on this project. Because traffic loadings are commonly unavailable, we have generalized our pavement design into two groups. The group descriptions and the recommended component thicknesses are presented in Table 3: Pavement Component Recommendations. The structural numbers in Table 3 are based on a structural number analysis with the stated estimated daily traffic volume for a 20-year replacement design life.

TABLE 3 Summary of Pavement Component Recommendations				
Traffic Group	Structural Number	Component Thickness (inches)		
		Stabilized Subgrade	Base Course	Surface Course
Parking lots and driveways – standard duty	2.38	8	6	1.5
Parking lots and driveways – heavy duty	3.28	12	8	2.0

The Design Traffic Groups are defined below:

Automobile Parking
lots and driveways -

Standard Duty:

1,000 cars and light panel and pickup trucks per day, (average gross weight of 4,000 pounds)

Parking lots and driveways -

Heavy Duty:

Standard duty loading plus; twenty 18-wheel tractor-trailer trucks per day (H-20 loading)

4.4.2.1 Stabilized Subgrade

We recommend that subgrade materials be compacted in place according to the requirements in the "Site Preparation" section of this report. Further, beneath the base course, stabilize the subgrade materials to a minimum Limerock Bearing Ratio (LBR) of 40, as specified by Florida Department of Transportation (FDOT) requirements for Type B Stabilized Subgrade. The subgrade material should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557, AASHTO T-180) value.

The stabilized subgrade can be a blend of existing soil or imported material and a stabilizing agent such as limerock or shell. The subgrade should be "free draining" and therefore, clay, marl or other impermeable stabilizing materials should not be used for mixing with the in-place or imported materials. If a blend is proposed, we recommend that the contractor perform a mix design to find the optimum mix proportions.

The primary function of stabilized subgrade beneath the base course is to provide a stable and firm subgrade so that the base can be properly and uniformly placed and compacted. Depending upon the soil type, the subgrade material may have sufficient stability to provide the needed support without additional stabilizing material. Generally, sands with rock or shell should have sufficient stability and may not require additional stabilizing material. Conversely, relatively "clean" sand will not typically provide sufficient stability to adequately construct the limerock base course. Universal Engineering Sciences should observe the soils exposed on the finish grades to evaluate whether or not additional stabilization will be required beneath the base course.

4.4.2.2 Base Course

We recommend the base course consist of bank run shell or approved crushed concrete. The base course material should have a minimum Limerock Bearing Ratio (LBR) of 100 and should be compacted to 98 percent of the Modified Proctor maximum dry density (ASTM D 1557, AASHTO T-180) value. The base material may also be of cement treated shell base with a 28 day compressive strength of 200 to 300 psi.

4.4.2.3 Wearing Surface

The wearing surface should consist of Florida Department of Transportation (FDOT) Type S asphaltic concrete having a minimum Marshall Stability of 1,500 lbs. Specific requirements for Type S asphaltic concrete wearing surface are outlined in the Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, 2000 Edition.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and to perform laboratory densities. Cores should be obtained at frequencies of at least one core per 10,000 square feet of placed pavement or a minimum of two cores per day's production.

4.4.2.4 Effects of Groundwater

One of the most critical factors influencing pavement performance in Florida is the relationship between the pavement subgrade and the seasonal high groundwater level.

Many roadways and parking areas have been destroyed as a result of deterioration of the base conditions and/or the base/surface course bond. We recommend a minimum separation of 12 inches should be maintained between the bottom of the pavement base material and the seasonal high groundwater level. If this separation cannot be established and maintained by grading and surface drainage improvements, it will be necessary to consider the use of underdrains in the pavement areas.

4.4.2.5 Curbing

We recommend that curbing around the landscaped sections adjacent to the parking areas and driveways be constructed with full-depth curb sections. Using extruded curb sections which lie directly on top of the final asphalt level, or eliminating the curbing entirely, can allow migration of irrigation water from the landscape areas to the interface between the asphalt and the base. This migration often causes separation of the wearing surface from the base and subsequent rippling and pavement deterioration. Topsoil placed behind curbing in landscaped areas should be limited to 6 inches vertical thickness within five feet of flexible pavement.

4.4.3 Concrete (Rigid) Pavements

Concrete pavement is a rigid pavement that transfers much lighter wheel loads to the subgrade soils than a flexible asphalt pavement. For a concrete pavement subgrade, we recommend using the existing surficial sands or recommend clean fine sand fill (SP), densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization, with the following stipulations:

1. Subgrade soils should be densified to at least 98 percent of Modified Proctor test maximum dry density (ASTM D 1557) to a depth of at least two feet prior to placement of concrete.
2. The surface of the subgrade soils should be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.
3. The subgrade soils should be moistened prior to placement of concrete.
4. Concrete pavement thickness should be uniform throughout, with exception to thickened edges (curb or footing).
5. The bottom of the pavement should be separated from the estimated typical wet season groundwater level by at least 18 inches.

Our recommendations for slab thickness for standard duty and heavy duty concrete pavements are based on a) subgrade soils densified to 98 percent of the Modified Proctor maximum dry density (ASTM D 1557) b) modulus of subgrade reaction (k) equal to 200 pounds per cubic inch, c) a 20 year design life, and d) previously stated traffic conditions in Section 4.4.2. We recommend using the design shown in the follow Table 4 for standard duty concrete pavements.

TABLE 4 STANDARD DUTY (UNREINFORCED) CONCRETE PAVEMENT		
Minimum Pavement Thickness	Maximum Control Joint Spacing	Minimum Sawcut Depth
5 Inches	10 Feet X 10 Feet	1¼ Inches

Our recommended design for heavy duty concrete pavement is shown in Table 5 below.

TABLE 5 HEAVY DUTY (UNREINFORCED) CONCRETE PAVEMENT		
Minimum Pavement Thickness	Maximum Control Joint Spacing	Minimum Sawcut Depth
7 Inches	12 Feet X 12 Feet	1½ Inches

We recommend using concrete with a minimum 28-day flexural strength (modulus of rupture) of at least 650 pounds per square inch, based on 3rd point loading of concrete beam test samples. Layout of the sawcut control joints should form square panels, and the depth of sawcut joint should be at least ¼ of the concrete slab thickness. The joints should be sawed within six hours of concrete placement or as soon as the concrete has developed sufficient strength to support workers and equipment. We recommend allowing Universal to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing on Non-Reinforced Concrete Pavements" published by the Florida Concrete and Products Associates, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

4.4.4 Construction Traffic

Light duty roadways and incomplete pavement sections will not perform satisfactorily under construction traffic loadings. We recommend that construction traffic (construction equipment, concrete trucks, sod trucks, garbage trucks, dump trucks, etc.) be re-routed away from these roadways or that the pavement section be designed for these loadings.

4.5 SITE PREPARATION

We recommend only good practice, site preparation procedures in conjunction with the densification of the upper 1 foot of existing subgrade soils. These procedures include: stripping the site of all existing improvements, vegetation, roots and topsoil, proof-rolling and compacting the subgrade to a depth of 1 foot, and filling to grade with engineered fill.

A more detailed synopsis of this work is as follows:

1. If required, perform remedial dewatering prior to any earthwork operations.

2. Strip the proposed construction limits of all existing improvements, vegetation, grass, roots, topsoil, and other deleterious materials within and 10 feet beyond the perimeter of the proposed building and in all paved areas. Moreover, any existing and/or former below grade elements, such as foundations and utilities should be removed from the limits of the planned building and pavement areas. Furthermore, any organic or other loose material should be removed from the bottoms of the onsite ditches or under existing structures. Any resulting excavations should be replaced with compacted fill according to the recommendations provided later in this section of our report. You should anticipate clearing and grubbing to an average depth of around 6 inches.
3. Proof-roll the subgrade with a heavily loaded, rubber-tired vehicle under the observation of a Universal Engineering Sciences geotechnical engineer or his representative. Proof-rolling will help locate any zones of especially loose or soft soils not encountered in the soil test borings. Then undercut, or otherwise treat these zones as recommended by the engineer.
4. Compact the subgrade from the surface using a vibratory roller until you obtain a minimum density of 95 percent of the Modified Proctor maximum dry density (ASTM D-1557), to a depth of 1 foot below existing grade in the building and pavement areas.
5. Test the subgrade for compaction at a frequency of not less than one test per 2,500 square feet per foot of depth improvement in the building area. In paved areas, perform compliance tests at a frequency of one test per 5,000 square feet, per foot depth of improvement.
6. Place fill and backfill material, as required. The fill should consist of "clean," fine sand with less than 5 percent soil fines. You may use fill materials with soil fines between 5 and 10 percent, but strict moisture control may be required. Place fill in uniform 10- to 12-inch loose lifts and compact each lift to a minimum density of 95 percent of the Modified Proctor maximum dry density.
7. Perform compliance tests within the fill at a frequency of not less than one test per 2,500 square feet per lift in the building areas. In paved areas, perform compliance tests at a frequency of not less than one test per 5,000 square feet per lift.
8. Compact all footing cuts to a depth of 1 foot. Additionally, we recommend that you test one out of every four column footings, and one test per every 50 lineal feet of wall footing to verify the required compaction is obtained.

Using vibratory compaction equipment at this site may disturb adjacent and other nearby structures and roadways. We recommend that you monitor adjacent and nearby structures before and during proof-compaction. If disturbance is noted, halt vibratory compaction and inform Universal Engineering Sciences immediately. We will review the compaction procedures and evaluate if the compactive effort results in a satisfactory subgrade, complying with our original design assumptions.

4.6 CONSTRUCTION RELATED SERVICES

We recommend the owner retain Universal Engineering Sciences to perform construction materials tests and observations on this project. Field tests and observations include verification of foundation and pavement subgrades by monitoring proof-rolling operations and performing quality assurance tests on the placement of compacted structural fill and pavement courses.

The geotechnical engineering design does not end with the advertisement of the construction documents. The design is an on-going process throughout construction. Because of our familiarity with the site conditions and the intent of the engineering design, we are most qualified to address problems that might arise during construction in a timely and cost-effective manner.

5.0 LIMITATIONS

During the early stages of most construction projects, geotechnical issues not addressed in this report may arise. Because of the natural limitations inherent in working with the subsurface, it is not possible for a geotechnical engineer to predict and address all possible problems. An Association of Engineering Firms Practicing in the Geosciences (ASFE) publication, "Important Information About Your Geotechnical Engineering Report" appears in Appendix C, and will help explain the nature of geotechnical issues.

Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

6.0 SUMMARY

In summary, we understand that you proposed to construct two buildings, pavement and ponds for a park development. We have performed field and laboratory exploration to provide geotechnical engineering recommendations for groundwater consideration, foundation design, pavement design and site preparation.

The soils encountered generally consist of loose fine sand and fine sand with trace silt from existing grade to a depth of 5 feet. Below and extending to 8 feet, medium dense clayey and silty sands were encountered. Below and extending to the maximum explored depth of 15 feet, very stiff and stiff clays were encountered. We encountered groundwater at a depth of 3 to 4 feet below existing grade at the time of our exploration.

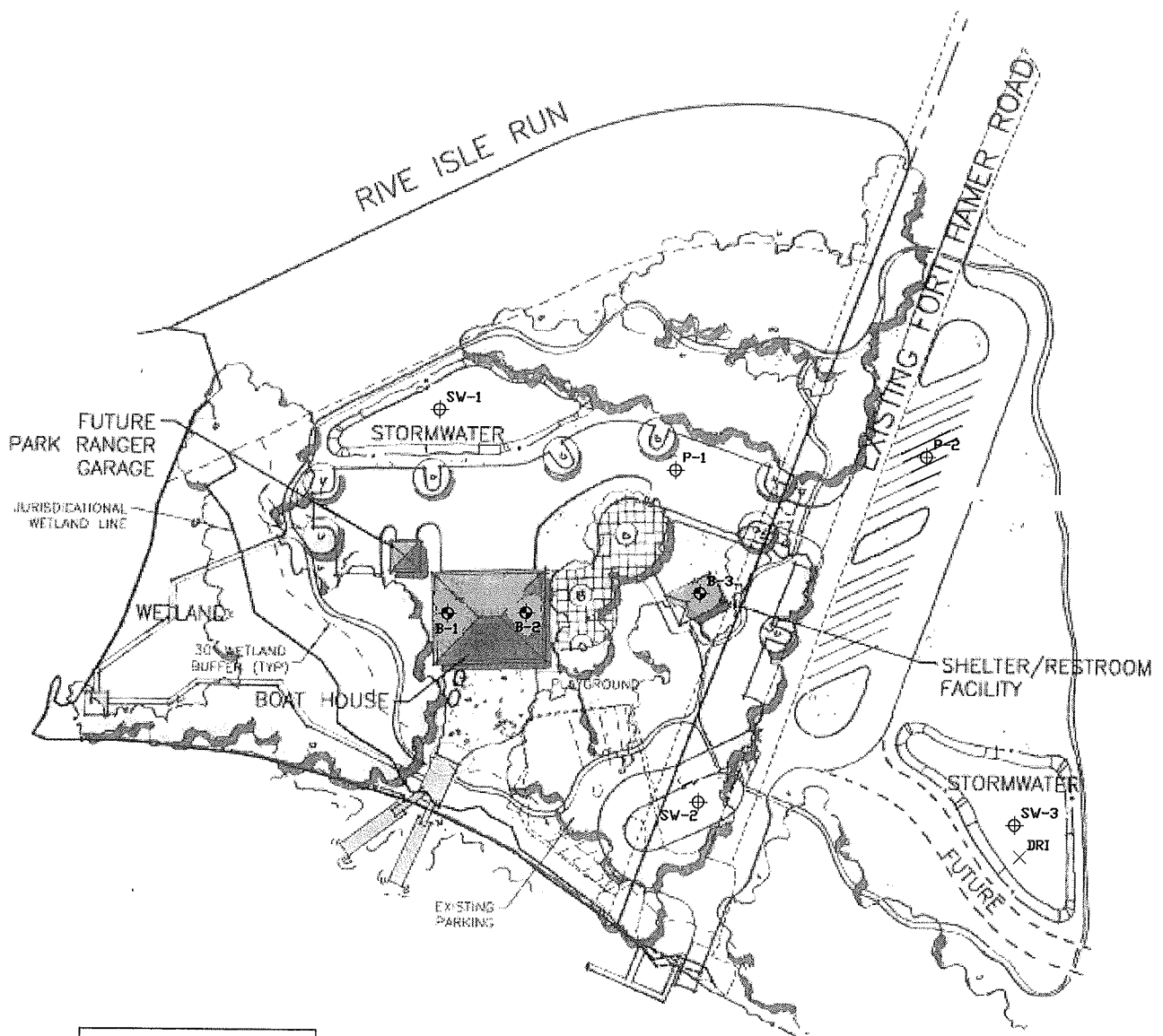
Our best estimate is the seasonal high groundwater table would be 2 to 2.91 feet below the average existing site grades. Water could be temporarily ponded in the ditches and other low lying areas of the overall site especially during periods of heavy rainfall.

We believe the proposed structure can be supported on conventional shallow foundations bearing on either the compacted suitable natural soils or engineered fill with an allowable soil bearing pressure of 2,000 psf provided the site is properly prepared and the foundation loading conditions do not exceed the presumed values outlined earlier in this report.

Pavements should be designed as a function of the anticipated traffic loadings. All pavement designs should incorporate the effects of groundwater, irrigated landscape areas, and construction traffic.

We recommend good practice site preparation procedures in conjunction with the densification of the upper 1 foot of existing soils to prepare the subgrade to support the structure and pavements.

We hope this report meets your needs and discusses the problems associated with the proposed development. We would be pleased to meet with you and discuss any geotechnical engineering aspects of the project.



LEGEND	
	SPT BORING
	HAND AUGER BORING
	DRI TEST

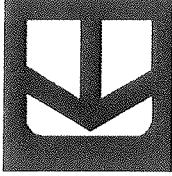


UNIVERSAL
ENGINEERING SCIENCES

HIDDEN HARBOR PARK
FORT HAMER ROAD
PARRISH, FLORIDA

BORING LOCATION PLAN

DRAWN BY: S.C	DATE: OCT. 2010	CHECKED BY: R.G	DATE: OCT. 2010
SCALE: NOT TO SCALE	PROJECT NO: 1130.1000064.0000	REPORT NO: 9351	APPENDIX:

**UNIVERSAL ENGINEERING SCIENCES**

Consultants In: Geotechnical Engineering-Environmental Engineering
Construction Materials Testing-Threshold Inspection

1748 Independence Boulevard, Suite B-1 - Sarasota, FL 34234 - Ph: 941-358-7410, Fx: 941-358-7353

Estimated Seasonal High Groundwater Level

Hidden Harbor Park

Ft. Hamer Road

Parrish, Manatee County, Florida

October 14, 2010

Boring No.	Groundwater Depth Measured (feet)	Existing Grade Elevation (feet-NGVD)	Estimated Seasonal High Groundwater Level (SHGWL) (feet)	SHGWL Elevation (feet-NGVD)
SW-1	4.8	6.59	2.91	3.68
SW-2	3	7.0	2.67	4.33
SW-3	3	8.31	2	6.31

Notes:

1. Existing ground elevations provided by surveyor on field boring staking
2. SHGWL based on site specific soils encountered-soil indicators



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 1

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

BORING DESIGNATION: **B-1**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Wilson Miller, Inc. - Stantec

G.S. ELEVATION (ft):

DATE STARTED: 10/12/10

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4

DATE FINISHED: 10/12/10

REMARKS:

DATE OF READING: 10-12-10

DRILLED BY: M.W.H.

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose gray fine sand (SP)						
		4-4-4	8			Loose brown fine sand (SP)						
		3-5-4	9	▼								
5		4-3-4	7			Medium dense grayish brown silty sand and clayey sand (SM,SC)						
		7-8-9	17			Medium dense grayish brown silty sand and clayey sand with trace gravel (SM,SC)						
		9-10-10	20			Very stiff gray clay (CL)						
10		10-11-10	21									
15		9-10-9	19			Boring Terminated at 15 Feet.						
20												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 2

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

BORING DESIGNATION: **B-2**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Wilson Miller, Inc. - Stantec

G.S. ELEVATION (ft): DATE STARTED: 10/12/10

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4 DATE FINISHED: 10/12/10

REMARKS:

DATE OF READING: 10-12-10 DRILLED BY: M.W.H.

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose brown fine sand and fine sand with of silt (SP,SP-SM)						
		4-3-3	6			Loose brown fine sand (SP)						
		3-4-4	8			Loose brown fine sand with trace of silt and silty sand (SP-SM,SM)						
5		5-4-6	10			Stiff gray clay (CL)						
		8-7-7	14									
		10-11-11	22									
10		10-9-10	19									
15		10-11-9	20			Boring Terminated at 15 Feet.						
20												

BORING LOG (9346)FORT HAMMER ROAD.GPJ UNIENGSC.GDT 10/13/10



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 3

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

BORING DESIGNATION: **B-3**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Wilson Miller, Inc. - Stantec

G.S. ELEVATION (ft):

DATE STARTED: 10/12/10

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4

DATE FINISHED: 10/12/10

REMARKS:

DATE OF READING: 10-12-10

DRILLED BY: M.W.H.

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM 1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Loose dark brown fine sand with trace of silt (SP-SM)						
		4-5-5	10			Loose brown fine sand (SP)						
		5-4-6	10	▼		Loose light brown fine sand (SP)						
5		6-5-5	10			Medium dense brown silty sand with trace clay (SM,CL)						
		7-9-10	19									
		9-9-9	18			Very stiff gray clay (CL)						
10		12-10-11	21									
15		11-14-11	20			Boring Terminated at 15 Feet.						
20												

BORING LOG (9346) FORT HAMMER ROAD.GPJ UNIENGSC.GDT 10/13/10



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 2

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

BORING DESIGNATION: **SW-2**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Wilson Miller , Inc. - Stantec

G.S. ELEVATION (ft): 7.00 DATE STARTED: 10/14/10

LOCATION: See Boring Location Plan

WATER TABLE (ft): 3 DATE FINISHED: 10/14/10

REMARKS:

DATE OF READING: 10-12-10 DRILLED BY: B.G

EST. W.S.W.T. (ft): 2.67 TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Dark gray fine sand with trace of silt (SP-SM)						
						Gray fine sand with silty sand and rusting (SP-SM)						
						Dark brown fine sand with trace silt (SP-SM)						
						Brown fine sand with rusting(SP)						
						Light brown fine sand with rusting (SP)						
						Light brownish gray fine sand with trace clayey sand (SP-SC)						
5												
10												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 1

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

CLIENT: Wilson Miller, Inc. - Stantec

LOCATION: See Boring Location Plan

REMARKS:

BORING DESIGNATION: **SW-3**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

G.S. ELEVATION (ft): 8.31

DATE STARTED: 10/14/10

WATER TABLE (ft): 3

DATE FINISHED: 10/14/10

DATE OF READING: 10-12-10

DRILLED BY: B.G

EST. W.S.W.T. (ft): 2

TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand (SP)						
						Black fine sand with trace of silt (SP-SM)						
						Dark brown fine sand with trace of silt (SP-SM)						
				▽		Brown fine sand (SP)						
				▼		Light brown fine sand (SP)						
5												
10												



UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 1130.100064.000

REPORT NO.: 9351

PAGE: 5

PROJECT: Hidden Harbor Park
Fort Hamer Road
Manatee County, Florida

BORING DESIGNATION: **P-2**
SECTION: TOWNSHIP:

SHEET: **1 of 1**
RANGE:

CLIENT: Wilson Miller, Inc. - Stantec

G.S. ELEVATION (ft):

DATE STARTED: 10/12/10

LOCATION: See Boring Location Plan

WATER TABLE (ft): 4

DATE FINISHED: 10/12/10

REMARKS:

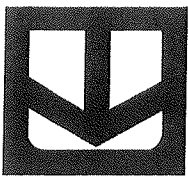
DATE OF READING: 10-12-10

DRILLED BY: M.W.H.

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM 1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORG. CONT. (%)
									LL	PI		
0						Gray fine sand (SP)						
						Dark brown fine sand with trace of silt (SP-SM)						
						Yellowish brown fine sand with trace of silt (SP-SM)						
5												
10												



UNIVERSAL ENGINEERING SCIENCES

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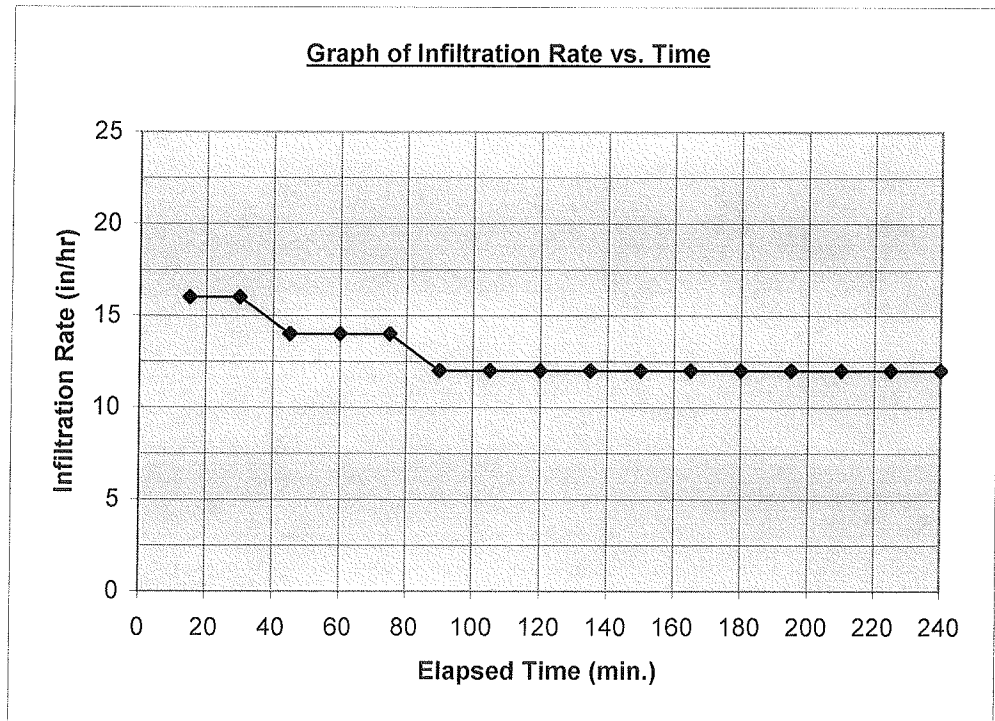
RESULTS OF DOUBLE-RING INFILTROMETER TEST

Project: Hidden Harbor Park
Client: Willson Miller
Location: Fort Hamer Road
Test No.: #1

Project No.: 1130.1000021.000
Report No.: 9351
Date: 10/12/2010

TEST DATA

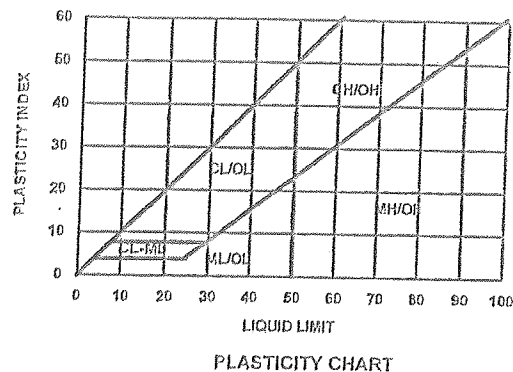
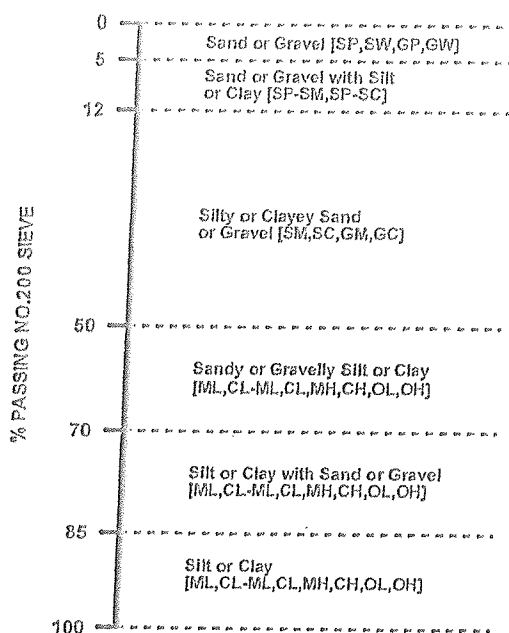
Elapsed Time (min.)	Infiltration Rate (in/hr)
15	16
30	16
45	14
60	14
75	14
90	12
105	12
120	12
135	12
150	12
165	12
180	12
195	12
210	12
225	12
240	12



UNIVERSAL ENGINEERING SCIENCES

KEY TO BORING LOGS

SOIL CLASSIFICATION CHART*



GROUP NAME AND SYMBOL

COARSE GRAINED SOILS

	WELL-GRADED SANDS [SW]		WELL-GRADED GRAVELS [GW]
	POORLY-GRADED SANDS [SP]		POORLY-GRADED GRAVELS [GP]
	POORLY-GRADED SANDS WITH SILT [SP-SM]		POORLY-GRADED GRAVELS WITH SILT [GP-GM]
	POORLY-GRADED SANDS WITH CLAY [SP-SC]		POORLY-GRADED GRAVELS WITH CLAY [GP-GC]
	SILTY SANDS [SM]		SILTY GRAVELS [GM]
	CLAYEY SANDS [SC]		CLAYEY GRAVELS [GC]
	SILTY CLAYEY SANDS [SC-SM]		

FINE GRAINED SOILS

	INORGANIC SILTS SLIGHT PLASTICITY [ML]
	INORGANIC SILTY CLAY LOW PLASTICITY [CL-ML]
	INORGANIC CLAYS LOW TO MEDIUM PLASTICITY [CL]
	INORGANIC SILTS HIGH PLASTICITY [MH]
	INORGANIC CLAYS HIGH PLASTICITY [CH]

HIGHLY ORGANIC SOILS

	ORGANIC SILTS/CLAYS LOW PLASTICITY [OL]**
	ORGANIC SILTS/CLAYS MEDIUM TO HIGH PLASTICITY [OH]**
	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS [PT]**

RELATIVE DENSITY (SAND AND GRAVEL)

VERY LOOSE - 0 to 4 Blows/ft.
LOOSE - 6 to 10 Blows/ft.
MEDIUM DENSE - 11 to 30 Blows/ft.
DENSE - 31 to 60 Blows/ft.
VERY DENSE - more than 60 Blows/ft.

CONSISTENCY (SILT AND CLAY)

VERY SOFT - 0 to 2 Blows/ft.
SOFT - 3 to 4 Blows/ft.
FIRM - 5 to 8 Blows/ft.
STIFF - 9 to 16 Blows/ft.
VERY STIFF - 17 to 30 Blows/ft.
HARD - more than 30 Blows/ft.

* IN ACCORDANCE WITH ASTM D 2487 - UNIFIED SOIL CLASSIFICATION SYSTEM.

** LOCALLY MAY BE KNOWN AS MUCK.

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/The Best People on Earth exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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CONSTRAINTS AND RESTRICTIONS

WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data related only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations. Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of drilling resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water level may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

TIME

This report reflects the soil conditions at the time of investigation. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional review may be required.



Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899

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(941) 377-3722 or
1-800-320-3503 (FL only)

Tampa Service Office
7601 Highway 301 North
Tampa, Florida 33637-6759
(813) 985-7481 or
1-800-836-0797 (FL only)

October 12, 2012

Manatee County Board of County Commissioners
Attn: Charlie Bishop
1112 Manatee Avenue West, Suite 803
Bradenton, FL 34205

Subject: **Consolidated Notice of Final Agency Action for Approval
ERP General Construction and Sovereignty Lands
Letter of Consent**

B.O.T. File No: N/A
SOV Record No: 40070.0
Project Name: Manatee County - Ft. Hamer Park, Phase II
App ID/Permit No: 669460 / 44041034.000
County: MANATEE
Sec/Twp/Rge: S17/T34S/R19E

Dear Permittee(s):

This letter constitutes notice of Final Agency Action for **approval** of the permit referenced above. Final approval is contingent upon no objection to the District's action being received by the District within the time frames described in the enclosed Notice of Rights.

Approved construction plans are part of the permit, and construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at www.WaterMatters.org/permits.

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of agency action, as well as a noticing form that can be used is available from the District's website at www.WaterMatters.org/permits/noticing.

If you publish notice of agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the Regulation Division at the District Service Office that services this permit.

If you have questions, please contact Daryl Flatt, at the Tampa Service Office, extension 6508. For assistance with environmental concerns, please contact Tasha Bowers, extension 6538.

Sincerely,

Michelle K. Hopkins, P.E.
Bureau Chief
Environmental Resource Permit Bureau
Regulation Division

Enclosures: Approved Permit w/Conditions Attached
 [Statement of Completion](#)
 Notice of Authorization to Commence Construction
 Notice of Rights
cc: U. S. Army Corps of Engineers
 Manatee County Public Works Department
 Daniel J. Bond, P.E., WilsonMiller Stantec

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
CONSOLIDATED ENVIRONMENTAL RESOURCE PERMIT (ERP) AND
SOVEREIGN SUBMERGED LAND AUTHORIZATION (SL)
GENERAL CONSTRUCTION
PERMIT NO. 44041034.000
AND
SOVEREIGNTY LANDS LETTER OF CONSENT**

EXPIRATION DATE: October 12, 2017
SL EXPIRATION DATE:

PERMIT ISSUE DATE: October 12, 2012

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40D-40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

Authorization is granted to use sovereign submerged lands as outlined herein and shown by the application, approved drawings, plans, and other documents attached hereto and kept on file at the District under the provisions of Chapters 253 and 258, F.S., and Chapters 18-20 and 18-21, F.A.C., as well as the policies of the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees). This approval does not disclaim any title interests that the Board of Trustees may have in the project site. Any subsequent authorizations by the Board of Trustees or its designated agents may contain conditions necessary to satisfy the fiduciary responsibilities of the Board of Trustees as well as other applicable statutory or rule requirements implemented by the Department of Environmental Protection's Division of State Lands or other governmental agencies authorized by Florida Statutes.

PROJECT NAME: Manatee County - Ft. Hamer Park, Phase II

GRANTED TO: Manatee County Board of County Commissioners
Attn: Charlie Bishop
1112 Manatee Avenue West, Suite 803
Bradenton, FL 34205

OTHER PERMITTEES: N/A

ABSTRACT: This permit authorizes the construction of a surface water management system serving 8.26-acre park improvement project. The project is located on the north side of the Manatee River adjacent to Fort Hamer Road. The Manatee River is Sovereign Submerged Lands (SSL) in this location. A Letter of Consent will be required for the activities waterward of the mean high water level (MHWL), consisting of the floating dock expansion and associated gangway totaling 2,272 square feet. The surface water management system has been designed to provide water quality treatment for the project development. No attenuation is provided as the engineer of record has demonstrated no adverse impacts as a result of additional discharge into the Manatee River. The methods of water quality treatment are wet detention and detention with effluent filtration. The receiving waterbody (WBID 1848B, Manatee River below Dam) is impaired for mercury (in fish tissue); therefore water quality certification has been waived. Information regarding the surface water management system, 100-year floodplain, wetlands and/or surface waters is stated below and on the permitted construction drawings for the project.

OP. & MAIN. ENTITY: Manatee County Parks and Recreation Department

OTHER OP. & MAIN. ENTITY: N/A

COUNTY: MANATEE

WATERBODY NAME:	MANATEE RIVER
AQUATIC PRESERVE:	Non Applicable
SEC/TWP/RGE:	S17/T34S/R19E
TOTAL ACRES OWNED OR UNDER CONTROL:	206.26
PROJECT SIZE:	8.26 Acres
LAND USE:	Government
DATE APPLICATION FILED:	August 03, 2012
AMENDED DATE:	N/A

I. Water Quantity/Quality

POND No.	Area Acres @ Top of Bank	Treatment Type
Pond No.1	0.27	EFFLUENT FILTRATION
Pond No.2	0.30	MAN-MADE WET DETENTION
Pond No. 3	0.17	MAN-MADE WET DETENTION
	Total: 0.74	

Comments: Construction includes docking facilities, parking, improvements to Fort Hamer Road, park amenities and the surface water management system.

A mixing zone is not required.

A variance is not required.

II. 100-Year Floodplain

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
2.63	5.51	Equivalent Excavation	N/A

*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

III. Environmental Considerations

Wetland/Other Surface Water Information

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
Upland Cut Ponds (W7/8)	0.02	0.00	0.02	0.00	0.00	0.00
Manatee River (Proper)	0.07	0.07	0.00	0.00	0.00	0.00
Total:	0.09	0.07	0.02	0.00	0.00	0.00

* For impacts that do not require mitigation, their functional loss is not included.

Wetland/Other Surface Water Comments:

There are 218 square feet of wetlands (FLUCCS 652) located within the project area for this ERP. Permanent shading impacts to 218 square feet of the Manatee River Shoreline (W3)(FLUCCS 652) will occur for the expansion of an existing floating dock and gangway. There are 0.09 acre of other surface waters features, consisting of 0.02 acre of upland excavated ponds (W7/8)(FLUCCS 534) and 0.07 acre of the Manatee River (Proper)(FLUCCS 510), located within the project area. Permanent filling impacts to 0.02 acre of the project surface waters will occur for construction of a parking area for a public park. Permanent impacts to the wetlands/surface water features were evaluated using the Uniform Mitigation Assessment Method (UMAM) as required pursuant to Chapter 62-345, F.A.C. The results of the UMAM analysis indicate a net functional loss of less than 0.00 units due to the wetland impacts proposed and were, thus, deemed de minimis pursuant to Section 3.2.2 of the Basis of Review.

Mitigation Information

Mitigation Comments:

Wetland mitigation will not be required for permanent shading impacts to 218 square feet of wetlands (FLUCCS 652) and permanent filling impacts to 0.02 acre of upland cut ponds (FLUCCS 534) pursuant to Sections 3.2.2. and 3.2.2.2, respectively, of the Basis of Review. Under these Sections, wetland mitigation is not required for impacts that have been determined to be de minimis to fish, wildlife and listed species or for impacts to wholly owned ponds that were constructed in uplands, which are less than one acres in area and do not provide significant habitat for threatened or endangered species.

IV. Sovereign Submerged Lands

Activity	Preempted Area	Dredged	Shoreline Length (Lin. Ft.)
Letter of Consent	2272		1025
Totals:	2272		1025

Total Slips:

Comments: The Manatee River is Sovereign Submerged Lands (SSL) in this location. A Letter of Consent will be required for the activities waterward of the mean high water level (MHWL), consisting of the floating dock expansion and associated gangway totaling 2,272 square feet.

Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. Unless specified otherwise herein, two copies of all information and reports required by this permit shall be submitted to the Regulation Department at the District Service Office that services this permit. The permit number, title of report or information and event (for recurring report or information submittal) shall be identified on all information and reports submitted.
3. The Permittee shall retain the design engineer, or other professional engineer registered in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the professional engineer so employed. This information shall be submitted prior to construction.
4. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Regulation Department at the District Service Office that services this permit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.
5. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.
6. Wetland buffers shall remain in an undisturbed condition except for approved drainage facility construction/maintenance.
7. The following boundaries, as shown on the approved construction drawings, shall be clearly delineated on the site prior to initial clearing or grading activities:

wetland and surface water areas

wetland buffers

limits of approved wetland and surface water impacts

The delineation shall endure throughout the construction period and be readily discernible to construction and District personnel.
8. All wetland and surface water boundaries shown on the approved construction drawings shall be binding upon the Permittee and the District.
9. The removal of littoral shelf vegetation (including cattails) from wet detention ponds is prohibited unless

otherwise approved by the District. Removal includes dredging, the application of herbicide, cutting, and the introduction of grass carp. Any questions regarding authorized activities within the wet detention ponds shall be addressed to the District's Surface Water Regulation Manager, at the District Service Office that services this permit.

10. The operation and maintenance entity shall submit inspection reports in the form required by the District, in accordance with the following schedule.

For systems utilizing effluent filtration or exfiltration **or** systems utilizing effluent filtration or exfiltration **and** retention or wet detention, the inspections shall be performed 18 months after operation is authorized and every 18 months thereafter.

11. Prior to installation of the filter media, the Permittee's contractor shall submit a certified test of the media to the Permittee's Professional Engineer and the District. The test shall address the following parameters: uniformity coefficient, effective grain size, sieve analysis, percent silts, clays and organic matter, and permeability testing (constant head). If testing indicates the actual permeability rate is less than the value specified in the permitted design, a permit modification will be required to lengthen the effluent filtration system. The Permittee shall also notify the District Service Office that services this permit, at least 48 hours prior to commencement of construction of the effluent filtration system, so that District staff may observe this construction activity.
12. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.
13. If limestone bedrock is encountered during construction of the surface water management system, the District must be notified and construction in the affected area shall cease.
14. The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.
15. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.
16. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system.
17. The Permitted Plan Set for this project includes: the set received by the District on September 21, 2012 with the exception of Sheets 5A, 12 and 13 which were received on August 3, 2012.

GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

PROPRIETARY GENERAL CONDITIONS

1. The general conditions attached hereto as Exhibit "B" are hereby incorporated by reference and the Permittee shall comply with them.

Michelle K. Hopkins, P.E.

Authorized Signature

EXHIBIT A

GENERAL CONDITIONS:

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.
2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
3. For general permits authorizing incidental site activities, the following limiting general conditions shall also apply:
 - a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.
 - b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.
4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume dis-charged from the property or into surface waters of the state.
6. District staff must be notified in advance of any proposed construction dewatering . If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters , a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.

7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.
8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
 - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
 - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
 - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.
11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property .
12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.
13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.
15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the

District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.
18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.
19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.
20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.
21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.
23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.
24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.
25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

EXHIBIT B

PROPRIETARY GENERAL CONDITIONS

1. Authorizations are valid only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use shall constitute a violation. Violation of the authorization shall result in suspension or revocation of the grantee's use of the sovereignty submerged land unless cured to the satisfaction of the Board.
2. Authorizations convey no title to sovereignty submerged land or water column, nor do they constitute recognition or acknowledgment of any other person's title to such land or water.
3. Authorizations may be modified, suspended or revoked in accordance with their terms or the remedies provided in Sections 253.04 and 258.46, F.S., or Chapter 18-14, FAC.
4. Structures or activities shall be constructed and used to avoid or minimize adverse impacts to sovereignty submerged lands and resources.
5. Construction, use, or operation of the structure or activity shall not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, FAC.
6. Structures or activities shall not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity shall be modified in accordance with the court's decision.
7. Structures or activities shall not create a navigational hazard.
8. Structures shall be maintained in a functional condition and shall be repaired or removed if they become dilapidated to such an extent that they are no longer functional. This shall not be construed to prohibit the repair or replacement subject to the provisions of Rule 18-21.005, FAC., within one year, of a structure damaged in a discrete event such as a storm, flood, accident, or fire.
9. Structures or activities shall be constructed, operated, and maintained solely for water dependent purposes, or for non-water dependent activities authorized under paragraph 18-21.004 (1)(f), F.A.C., or any other applicable law.

SOUTHWEST FLORIDA
WATER MANAGEMENT DISTRICT

**NOTICE OF
AUTHORIZATION
TO COMMENCE CONSTRUCTION**

Manatee County - Ft. Hamer Park, Phase II

PROJECT NAME

Government

PROJECT TYPE

MANATEE

COUNTY

S17/T34S/R19E

SEC(S)/TWP(S)/RGE(S)

Manatee County Board of County Commissioners

PERMITTEE

APPLICATION ID/PERMIT NO: 669460 / 44041034.000

DATE ISSUED: October 12, 2012



Michelle K. Hopkins, P.E.

Issuing Authority

**THIS NOTICE SHOULD BE CONSPICUOUSLY
DISPLAYED AT THE SITE OF THE WORK**

Notice of Rights

ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District's action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at www.flrules.org or at the District's website at www.WaterMatters.org/permits/rules.
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 US Hwy. 301, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at www.WaterMatters.org/about.

JUDICIAL REVIEW

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by final District action may seek judicial review of the District's final action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
10117 PRINCESS PALM AVENUE, SUITE 120
TAMPA, FLORIDA 33610

January 9, 2013

REPLY TO
ATTENTION OF

Regulatory Division
Tampa Section
SAJ-2010-03518(LP-MEP)

Manatee County Board of County Commissioners
C/o Charlie Bishop, Director
Manatee County Property Management Department
1112 Manatee Avenue, Suite 803
Bradenton, Florida 34205

Dear Mr. Bishop:

This is in reference to your request for a Department of the Army (DA) permit to perform work in or affecting waters of the United States. If you determine that the permit provided is acceptable in its entirety and you have chosen to proceed with the authorized activity, then upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403), you are authorized under a Letter of Permission to construct a dock for launching and retrieving competition racing sculls. The permanent structure will include a fixed wooden deck (1,949 sq. ft.), a hinged aluminum gangway (300 sq. ft.), and a floating dock (2,153 sq. ft.) consisting of interlocked, closed plastic cells. The total area of structure over wetlands will be 224 sq. ft. and total area of structure over open waters of the United States will be 2,952 sq. ft. Public motorboat access will be prohibited.

The project is located on the north shore of the Manatee River Federal Channel at Fort Hamer Park, at the south terminus of Fort Hamer Road, in Section 17, Township 34 South, Range 19 East, Parrish, Manatee County, Florida. The outermost extension of the structure is verified to be set back approximately 163.5-ft from the center line of Cut-21 of the Manatee River Federal Channel.

Geographic Position: 27.5249° North Latitude / 82.4307° West Longitude

The project must be completed in accordance with the four enclosed construction drawings, and the general and special conditions which are incorporated in, and made a part of, the permit.

Special Conditions:

- 1. Reporting Address:** All reports, documentation and correspondence required by the conditions of this permit shall be submitted to the following address: U.S. Army Corps of Engineers, Regulatory Division, Enforcement Section, 10117 Princess Palm Avenue, Suite 120, Tampa, Florida. The Permittee shall reference this permit number, SAJ-2010-03518-(LP-MEP), on all submittals.
- 2. Commencement Notification:** Within 10 days from the date of initiating the authorized work, the Permittee shall provide to the Corps a written notification of the date of commencement of work authorized by this permit.

3. Manatee Conditions: The Permittee shall comply with the “Standard Manatee Conditions for In-Water Work – 2009” provided as an attachment of this permit.

4. Sea Turtle and Smalltooth Sawfish Conditions: The Permittee shall comply with National Marine Fisheries Service's “Sea Turtle and Smalltooth Sawfish Construction Conditions” dated March 23, 2006 and provided as an attachment of this permit.

5. Dock Construction Guidelines: The Permittee shall comply with the “Dock Construction Guidelines in Florida for Docks or Other Minor Structures Constructed in or over Submerged Aquatic Vegetation, Marsh or Mangrove Habitat – U.S. Army Corps of Engineers/National Marine Fisheries Service – August 2001” provided as an attachment of this permit.

6. Turbidity Barriers: Prior to the initiation of any of the work authorized by this permit the Permittee shall install floating turbidity barriers with weighted skirts that extend to within one foot of the bottom around all work areas that are in, or adjacent to, surface waters. The turbidity barriers shall remain in place and be maintained until the authorized work has been completed and all erodible materials have been stabilized.

7. As-Built with X-Y Coordinates: Within 60 days of completion of the authorized work or at the expiration of the construction window of this permit, whichever occurs first, the Permittee shall submit as-built drawings of the authorized work and a completed As-Built Certification Form (attached) to the Corps. The drawings shall be signed and sealed by a Florida registered professional engineer or a professional land surveyor registered in the state of Florida and include the following:

a. A plan view drawing of the location of the authorized work footprint (as shown on the permit drawings) with an overlay of the work as constructed in the same scale as the attached permit drawings (8½-inch by 11-inch). The drawings shall include the X & Y State Plane coordination points of the most waterward point of the structure and a point at the mean high water line (MHWL) or the face of the bulkhead/seawall, if present. The drawings shall include: (1) The dimensions of the structure, (2) depth of water (at mean low water) at the waterward end of the structure, and (3) the distance from the waterward end of the structure to the near bottom edge of the channel.

b. List any deviations between the work authorized by this permit and the work as constructed. In the event that the completed work deviates, in any manner, from the authorized work, describe on the As-Built Certification Form the deviations between the work authorized by this permit and the work as constructed. Clearly indicate on the as-built drawings any deviations that have been listed. Please note that the depiction and/or description of any deviations on the drawings and/or As-Built Certification Form does not constitute approval of any deviations by the U.S. Army Corps of Engineers.

c. The Department of the Army Permit number.

d. Include pre- and post-construction aerial photographs of the project site, if available.

8. Assurance of Navigation and Maintenance: The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

9. Regulatory Agency Changes: Should any other regulatory agency require changes to the work authorized or obligated by this permit, the Permittee is advised that a modification to this permit instrument is required prior to initiation of those changes. It is the Permittee's responsibility to request a modification of this permit from the Tampa Regulatory Office.

If the work authorized is not completed on or before **January 9, 2018**, authorization, if not previously revoked or specifically extended, shall cease and be null and void.

This letter contains a proffered permit for your proposed project. If you object to this determination/decision, you may request an administrative appeal under Corps' regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination/decision, you must submit a completed RFA form to the South Atlantic Division Office at the following address:

Mr. Jason Steele
South Atlantic Division
U.S. Army Corps of Engineers
CESAD-CM-CO-R, Room 9M15
60 Forsyth St., SW.
Atlanta, Georgia 30303-8801.

Mr. Steele can be reached by telephone number at 404-562-5137, or by facsimile at 404-562-5138.

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division office within 60 days of the date of the RFA. Should you decide to submit an RFA form, it must be received at the above address by March 10, 2013. It is not necessary to submit an RFA form to the Division office, if you do not object to the determination/decision in this letter.

Should you have any questions regarding this letter, please contact the project manager Mark E. Peterson in writing at the letterhead address, by telephone at 813-769-7065, or by email at: Mark.E.Peterson@usace.army.mil.

The Corps Jacksonville District Regulatory Division is committed to improving service to our customers. We strive to perform our duty in a friendly and timely manner while working to

preserve our environment. We invite you to take a few minutes to visit <http://per2.nwp.usace.army.mil/survey.html> and complete our automated Customer Service Survey. Your input is appreciated – favorable or otherwise. Please be aware this web address is case sensitive and should be entered as it appears above.

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

Alan M. Dodd,
Colonel, U.S. Army
District Commander

Enclosures:

Request for Permit Transfer
General Conditions
Notification of Appeal Process fact sheet and Request for Appeal (RFA) form
Permit Drawings
Standard Manatee Conditions for In-Water Work – 2009
Sea Turtle and Smalltooth Sawfish Construction Conditions
Dock Construction Guidelines
As-Built Certification Form

Copies Furnished:

Michael W. Jones, Senior Ecologist, Stantec (Mike.Jones2@stantec.com)
Daniel J. Bond, P.E., Senior Project Manager, Stantec (Dan.Bond@stantec.com)
Tom Yarger, Manatee County (tom.yarger@mymanatee.org)

CESAJ-RD-PE (w/ enclosures)

REQUEST PERMIT TRANSFER: PERMIT NUMBER: SAJ-2010-03518(LP-MEP)

When the structures or work verified by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, the present permittee and the transferee should sign and date below. This document must then be provided to the U.S. Army Corps of Engineers, Regulatory Division, Post Office Box 4970, Jacksonville, Florida 32232-0019.

(TRANSFeree SIGNATURE)

(DATE)

(Name - Printed)

Lot/Block of site

(Street Address)

(City, State, and Zip Code)

Flood Plain Information:

This Department of the Army permit does not give absolute authority to perform the work as specified on your application. The proposed work may be subject to local building restrictions. You should contact the local office in your area that issues building permits to determine if your site is located in a flood-prone or floodway area, and if you must comply with the local building requirements mandated by the National Flood Insurance Program. If your local office cannot provide you the necessary information, you may request a flood hazard evaluation of the site by providing this office with a letter and a small scale map showing the location of the site. The request should be addressed to the **Chief, Flood Control and Floodplain Management Branch, Jacksonville District, U.S. Army Corps of Engineers, P.O. Box 4970, Jacksonville, Florida 32232-0019.** Phone inquiries may be made at 904-232-2515.

GENERAL CONDITIONS
33 CFR PART 320-330
PUBLISHED FR DATED 13 NOVEMBER 1986

1. The time limit for completing the work authorized ends on **January 9, 2018**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.
4. If you sell the property associated with this permit you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.
5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.
6. You must allow a representative from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

**NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND
REQUEST FOR APPEAL**

Applicant: Manatee County Board of County Commissioners		File Number: SAJ-2010-03518(LP-MEP)	Date: January 9, 2013
Attached is:		See Section below	
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
X	PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
	PERMIT DENIAL	C	
	APPROVED JURISDICTIONAL DETERMINATION	D	
	PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Mark E. Peterson
813-769-7065

If you only have questions regarding the appeal process you may also contact:

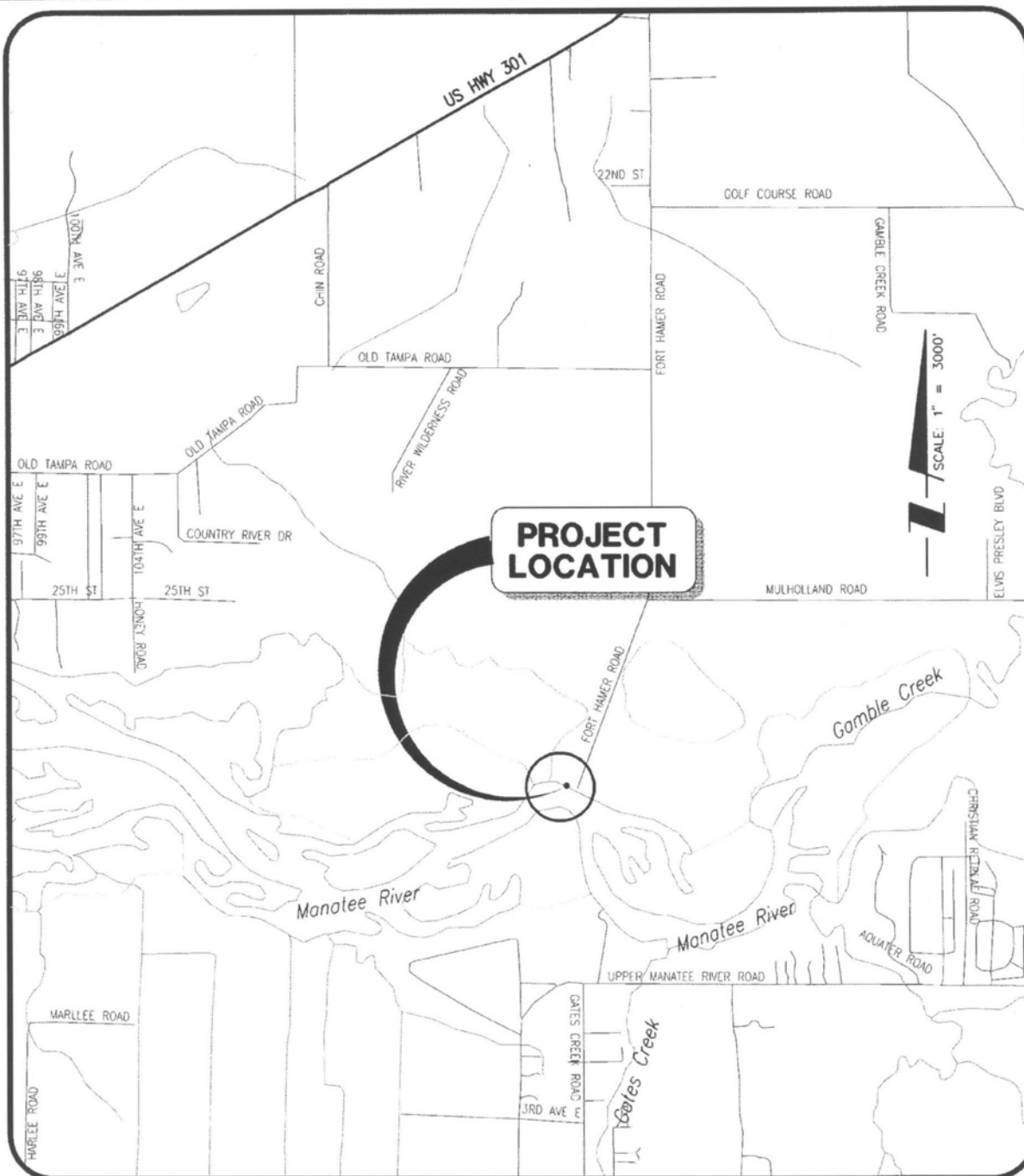
Jason Steele
404-562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:



LOCATION MAP

SAJ-2010-03518(LP-MEP)
09-JAN-2013

PROJECT: FT. HAMER PARK FLOATING DOCK IMPROVEMENTS
CLIENT: MANATEE BOARD OF COUNTY COMMISSIONERS

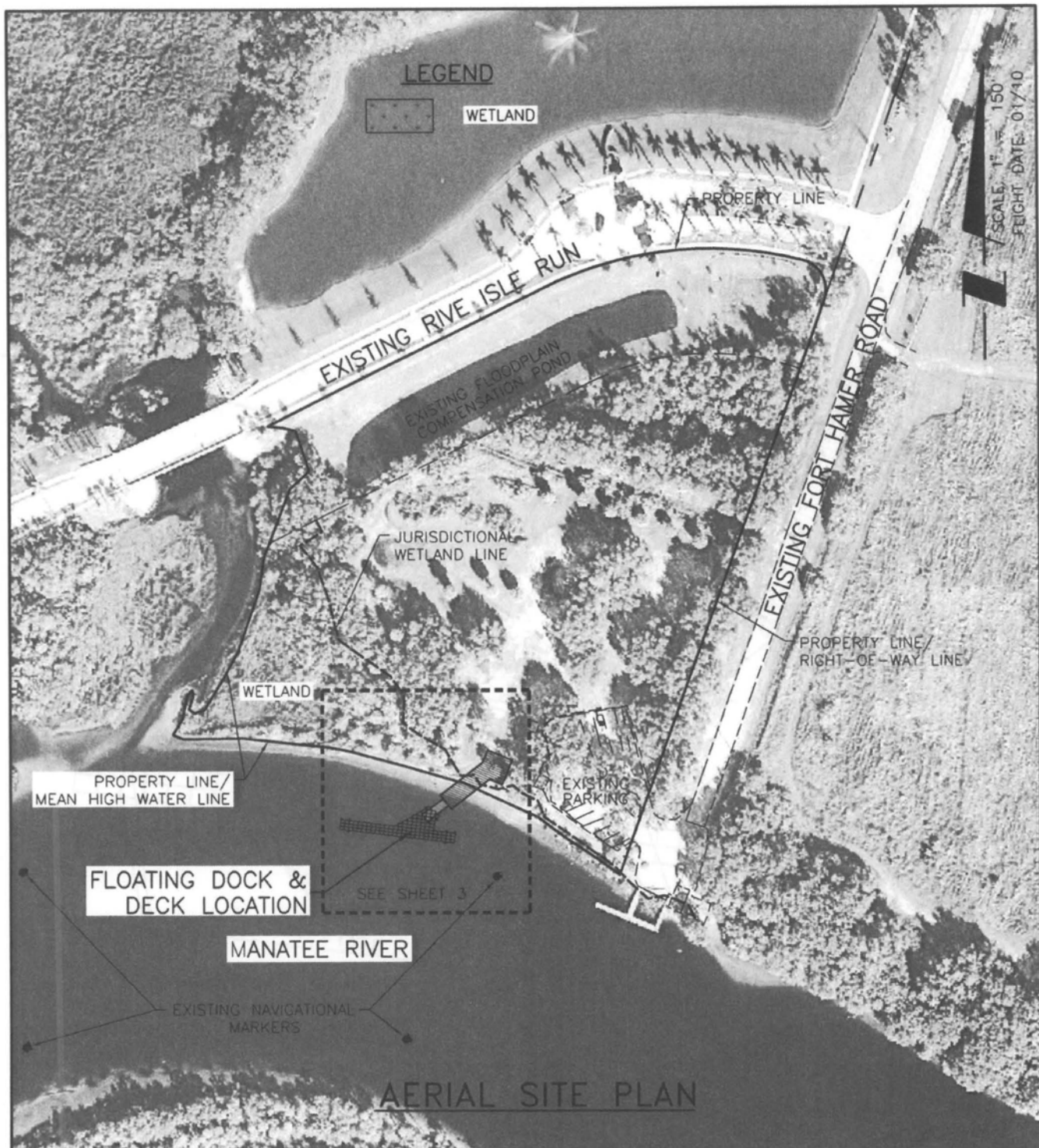
WilsonMiller  **Stantec**

6900 Professional Pkwy East, Sarasota, FL 34240
800.643.4336 • 941.907.6900 • F 941.907.6910

Certificate of Authorization #43 • FL Lic. # LC-C000170 • stantec.com

WilsonMiller, Inc. became a wholly-owned subsidiary of Stantec Consulting Services Inc. on July 23, 2010

SCALE: 1" = 3,000'	DATE: SEPT. 2011
SEC. 17 TWP. 34S RGE. 19E	REV. NO.
PROJECT NO. 215610582	INDEX NO. A-215610582-201
DRWN BY/EMP NO. ATO/89520	SHEET NO. 1 OF 4



PROJECT: FT. HAMER PARK FLOATING DOCK IMPROVEMENTS

CLIENT: MANATEE BOARD OF COUNTY COMMISSIONERS

SAJ-2010-03518(LP-MEP)
09-JAN-2013

WilsonMiller Stantec

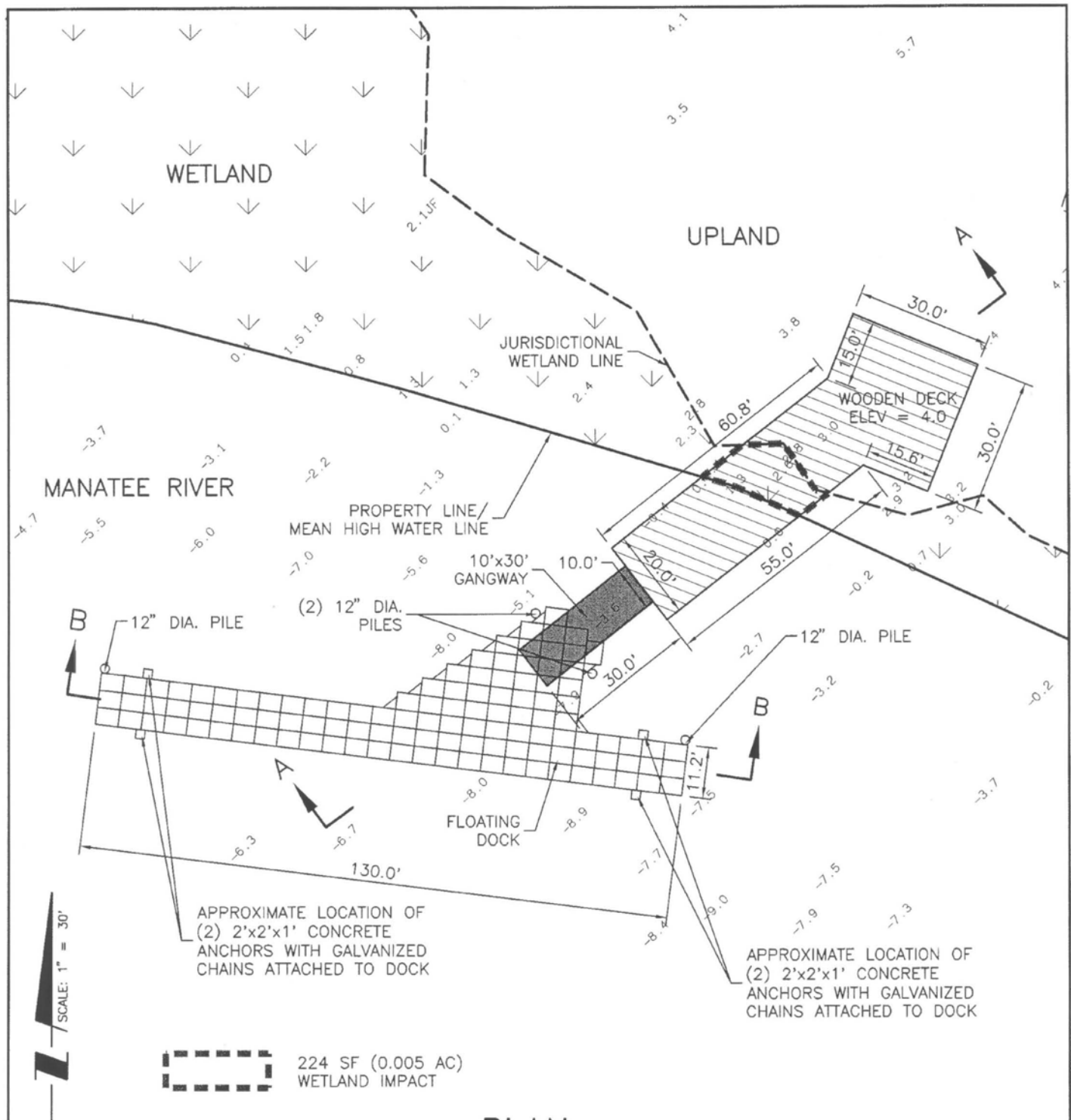
6900 Professional Pkwy East, Sarasota, FL 34240
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SCALE:	1" = 150'	DATE:	SEPT. 2011
SEC:	17	TWP:	34S
		RGE:	19E
PROJECT NO:	215610582	INDEX NO:	A-215610582-202
DRWN BY/EMP NO:	ATO/2270	SHEET NO:	2 OF 4

Sep 16, 2011 - 15:17:17 TOLIMPIYUK\2156\active\215610582\civil\drawing\002_usace\DD-10582-002002.dwg



PLAN

PROJECT: FT. HAMER PARK FLOATING DOCK IMPROVEMENTS

CLIENT: MANATEE BOARD OF COUNTY COMMISSIONERS

SAJ-2010-03518(LP-MEP)
09-JAN-2013

WilsonMiller **Stantec**

6900 Professional Pkwy East, Sarasota, FL 34240

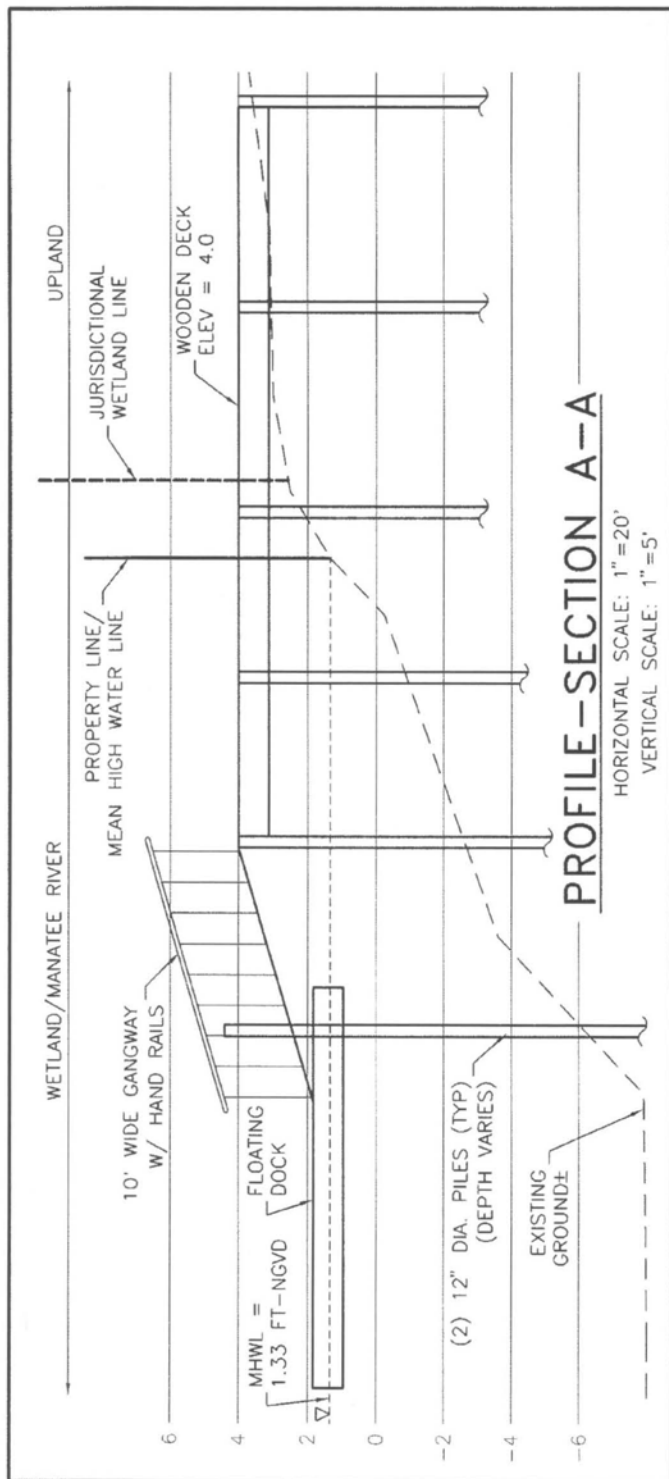
800.643.4336 • 941.907.6900 • F 941.907.6910

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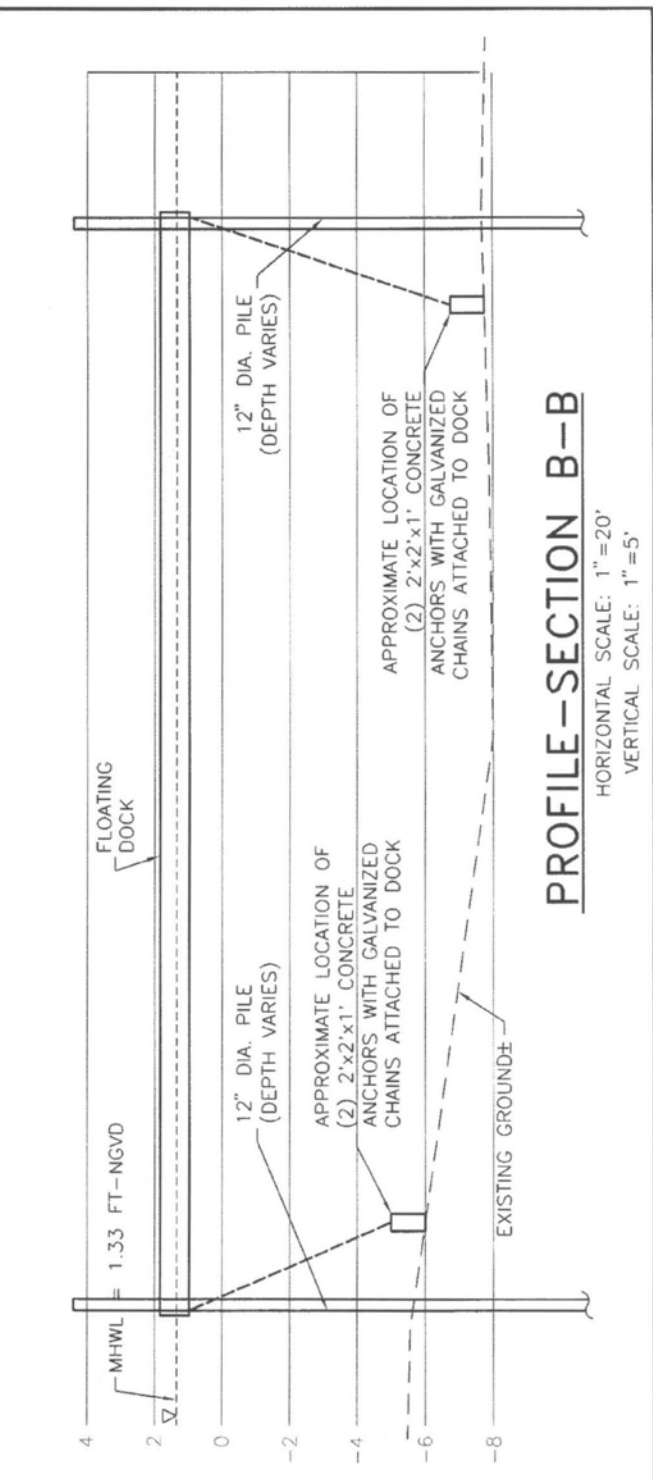
SCALE:	1" = 30'	DATE:	SEPT. 2011
SEC:	17	TWP:	34S
		RGE:	19E
PROJECT NO.	215610582	INDEX NO.	A-215610582-203
DRWN BY/EMP NO.	ATO/89520	SHEET NO.	3 OF 4

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PROFILE-SECTION A-A

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=5'



PROFILE-SECTION B-B

HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: 1"=5'

PROJECT: FT. HAMER PARK FLOATING DOCK IMPROVEMENTS

CLIENT: MANATEE BOARD OF COUNTY COMMISSIONERS

SAJ-2010-03518(LP-MEP)
09-JAN-2013



6900 Professional Pkwy East, Sarasota, FL 34240
800.643.4336 • 941.907.6900 • F941.907.6910

Certificate of Authorization #43 • FL Lic. # LC-C000170 • stantec.com

WilsonMiller, Inc. became a wholly-owned subsidiary of Stantec Consulting Services Inc. on July 23, 2010

SCALE:	AS SHOWN	DATE:	SEPT. 2011
SEC:	17 TWP. 34S RGE 19E	REV NO:	
PROJECT NO:	215610582	INDEX NO:	A-215610582-204
DRWN BY/EXP NO:	ATO/89520	SHEET NO:	4 OF 4

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com
- f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

CAUTION: MANATEE HABITAT

All project vessels

IDLE SPEED / NO WAKE

When a manatee is within 50 feet of work
all in-water activities must

SHUT DOWN

Report any collision with or injury to a manatee:



Wildlife Alert:

1-888-404-FWCC(3922)

cell *FWC or #FWC



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

- a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
- b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
- c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
- d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
- e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
- f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.
- g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006



**Dock Construction Guidelines in Florida for Docks or Other Minor Structures
Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat
U.S. Army Corps of Engineers/National Marine Fisheries Service
August 2001**

Submerged Aquatic Vegetation:

1. Avoidance. The pier shall be aligned so as to minimize the size of the footprint over SAV beds.
2. The height of pier shall be a minimum of 5 feet above MHW/OHW as measured from the top surface of the decking.
3. The width of the pier is limited to a maximum of 4 feet. A turnaround area is allowed for piers greater than 200 feet in length. The turnaround is limited to a section of the pier no more than 10 feet in length and no more than 6 feet in width. The turnaround shall be located at the midpoint of the pier.
4. Over-SAV bed portions of the pier shall be oriented in a north-south orientation to the maximum extent that is practicable.
5. a. If possible, terminal platforms shall be placed in deep water, waterward of SAV beds or in an area devoid of SAV beds.

b. If a terminal platform is placed over SAV areas and constructed of grated decking, the total size of the platform shall be limited to 160 square feet. The grated deck material shall conform to the specifications stipulated below. The configuration of the platform shall be a maximum of 8 feet by 20 feet. A minimum of 5 feet by 20 feet shall conform to the 5-foot height requirement; a 3 feet by 20 feet section may be placed 3 feet above MHW to facilitate boat access. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable.

c. If the terminal platform is placed over SAV areas and constructed of planks, the total size of the platform shall be limited to 120 square feet. The configuration of the platform shall be a maximum of 6 feet by 20 feet of which a minimum 4-foot wide by 20-foot long section shall conform to the 5-foot height requirement. A section may be placed 3 feet above MHW to facilitate boat access. The 3 feet above MHW section shall be cantilevered. The long axis of the platform should be aligned in a north-south direction to the maximum extent that is practicable. If the 3 feet above MHW section is constructed with grating material, it may be 3 feet wide.
6. One uncovered boat lift area is allowed. A narrow catwalk (2 feet wide if planks are used, 3 feet wide if grating is used) may be added to facilitate boat maintenance along the outboard side of the boat lift and a 4-foot wide walkway may be added along the stern end of the boat lift, provided all such walkways are elevated 5 feet above MHW. The catwalk shall be cantilevered from the outboard mooring pilings (spaced no closer than 10 feet apart).
7. Pilings shall be installed in a manner which will not result in the formation of sedimentary deposits("donuts" or "halos") around the newly installed pilings. Pile driving is the preferred method of installation, but jetting with a low pressure pump may be used.
8. The spacing of pilings through SAV beds shall be a minimum of 10 feet on center.
9. The gaps between deckboards shall be a minimum of ½ inch.

Marsh:

1. The structure shall be aligned so as to have the smallest over-marsh footprint as practicable.
2. The over-marsh portion of the dock shall be elevated to at least 4 feet above the marsh floor.
3. The width of the dock is limited to a maximum of 4 feet. Any exceptions to the width must be accompanied by an equal increase in height requirement.

Mangroves.

1. The width of the dock is limited to a maximum of 4 feet.
2. Mangrove clearing is restricted to the width of the pier.
3. The location and alignment of the pier should be through the narrowest area of the mangrove fringe.

Grid Specifications and Suppliers

The following information does not constitute a U.S. Army Corps of Engineers endorsement or advertisement for any particular provider and is provided only as an example for those interested in obtaining these materials for dock construction. A type of fiberglass grate panel is manufactured by SeaSafe (Lafayette, LA; phone: 1-800-326-8842) and FiberGrate (1-800-527-4043). Plastic grate panels are also available from Southern Pine Lumber Company (Stuart, FL; phone: 772-692-2300). Panels are available in a variety of sizes and thicknesses. For safety, the grate should contain an anti-slip texture which is integrally molded into the top surface. The manufacturer or local distributor should be consulted to ensure that the load-bearing capacity of the selected product is sufficient to support the intended purpose. Contact the manufacturer(s) for product specifications and a list of regional distributors.

AS-BUILT CERTIFICATION BY PROFESSIONAL ENGINEER

Submit this form and one set of as-built engineering drawings to the U.S. Army Corps of Engineers, Special Projects and Enforcement Branch, 10117 Princess Palm Avenue, Suite 120, Tampa, Florida 33610. If you have questions regarding this requirement, please contact the Special Projects and Enforcement Branch at 904-232-3131.

1. Department of the Army Permit Number: SAJ-2010-03518(LP-MEP)

2. Permittee Information:

Name _____

Address _____

3. Project Site Identification:

Physical location/address _____

4. As-Built Certification:

I hereby certify that the authorized work, including any mitigation required by Special Conditions to the permit, has been accomplished in accordance with the Department of the Army permit with any deviations noted below. This determination is based upon on-site observation, scheduled and conducted by me or by a project representative under my direct supervision. I have enclosed one set of as-built engineering drawings.

Signature of Engineer

Name (Please type)

(FL, PR or VI) Reg. Number

Company Name

Address

City State ZIP

(Affix Seal)

Date

Telephone Number

[illegible]



MANATEE COUNTY FLORIDA

January 22, 2013

WilsonMiller/Stantec
6900 Professional Parkway East
Sarasota, FL 34240

Attention: Mr. Daniel J. Bond, P.E. (dan.bond@stantec.com)

RE: FT HAMMER PARK – PHASE II
(FSP-12-33) - (DTS #20120331) – (PW #)
Construction Drawing Approval

Dear Mr. Bond:

We have reviewed the above referenced construction plans for Drainage, Transportation, Utility and Environmental concerns, which are hereby approved by this Department for construction. We are returning two (2) sets of plans marked "Approved" for your use, **AT THE TIME OF COMPLETED FSP SIGN-OFF BY ALL SIGNEES.**

These plans consist of the following sheets:

SHEET	DATED	LATEST REVISION
Cover Sheet	01/11/2013
Sheet #02 of #13	11/2011	10/18/2012
Sheet #03 of #13	11/2011	10/18/2012
Sheet #04 of #13	11/2011	10/18/2012
Sheet #05 of #13	11/2011	10/18/2012
Sheet #05A of #13	06/2012	09/19/2012
Sheet #06 of #13	11/2011	10/18/2012
Sheet #07 of #13	11/2011	10/18/2012
Sheet #08 of #13	11/2011	01/08/2013
Sheet #09 of #13	11/2011
Sheet #10 of #13	11/2011
Sheet #11 of #13	11/2011
Sheet #12 of #13	11/2011	10/18/2012
Sheet #13 of #13	11/2011
Sheet #LP-101	02/03/2012	01/09/2013
Sheet #LP-401	02/03/2012	01/06/2013
Sheet #LP-601	02/03/2012	01/09/2013

Mailing Address: P. O. Box 1000, Bradenton, FL 34206-1000
Street Address: 1022 26th Ave. E., Bradenton, FL 34208
* PHONE: 941.708-7480 * FAX: 941.708-7500

Public Works Department/Administration * www.myanatee.org

Sheet #LS-401

02/03/2012

01/09/2013

Sheet #LI-101

02/03/2012

01/09/2013

Sheet #LI-501

02/03/2012

02/03/2012

Sheet #LI-502

02/03/2012

02/03/2012

CONSTRUCTION IS NOT AUTHORIZED WITH THIS APPROVAL. Two separate inspections SHALL BE required after your receipt of this Approval Letter, and as appropriate, the FSP Sign-Off Letter AND your receipt of the STAMPED Construction Drawings and Signed FSP's. The first inspection shall occur BEFORE the start of ANY land clearing or construction activities EXCEPT AS FOLLOWS:

- 1. You are authorized to stake erosion and sediment control (SEC) device locations. After staking ESC measures, EPD staff SHALL be contacted to inspect the staked locations. If staking locations are approved, EPD shall authorize the placement of the ESC devices and any land clearing required relative to their placement.**
- 2. After the installation of the ESC devices has been completed, a second EPD inspection SHALL be required to ensure the adequacy of the devices. If adequate EPD will authorize land clearing and project construction to begin.**
- 3. Please notify the Environmental Planning Division (EPD) at 749-3070 to schedule the above described ESC staking and installation inspections.**

One copy of this approval letter and "Approved Construction Drawings" shall be located in a conspicuous place on the property as required by Section 722.3.3.1 of the Land Development Code.

Any offsite improvements within the Manatee County Right-Of-Way (ROW), **if required, and as depicted on the approved Construction Plans and Final Site Plan, as applicable**, shall require a "Temporary Traffic Control Plan" (TTCP) based on the minimum requirements provided in the Manual Of Uniform Traffic Control Devices (MUTCD) and/or Manatee County Transportation Standard Detail 406.0 (Road/Lane Closure Procedures). The TTCP shall be submitted to Mr. Andy Fischer, Infrastructure Inspections Division Manager prior to the start of said construction. Contact Mr. Fischer at (941) 708-7450, Ext 7347 for specific requirements.

In accordance with **Resolution 11-066**, establishing fees for **Land Development and Construction permit fees, effective May 1, 2011** the Construction Drawing Review Fee (CD) sum of **\$618.75** and **Resolution 11-066**, establishing fees for **Utility Infrastructure Inspection, effective May 1, 2011**, and a Private Zoning Inspection Fee (PZI) sum of **\$460.00** have been requested and received:

- The "Construction Drawing Review Fee" (CD) was paid in full. **\$618.75** (09/12/2012).
- The "Private Zoning Inspection Fee" (PZI) was paid in full. **\$460.00** (09/12/2012).

Mailing Address: P. O. Box 1000, Bradenton, FL 34206-1000
Street Address: 1022 26th Ave. E., Bradenton, FL 34208
* PHONE: 941.708-7480 * FAX: 941.708-7500

Public Works Department/Administration * www.mymanatee.org

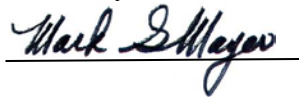
POST CONSTRUCTION REQUIREMENTS:

B. DRAINAGE, PAVING AND GRADING: (OFF-SITE IMPROVEMENTS):

Please note that all Manatee County DP&G Record Information Requirements as to form, Monumentation, certifications, and submittal data shall be as found in Section 800.0 of the BOCC approved (June 07) Manatee County Public Works Departments "Highway and Drainage Standards Manual", Latest Edition (6/6/08) and available for nominal purchase price, in either CADD, DOC or PDF formats from the Public Works Department. Please contact Ms. Janice Haas at (941) 708-7450, Ext. #7462.

If we can be of further assistance, please contact me at (941) 708-7450, Ext #7217.

Sincerely,



Mark G. Mayer

Growth Management Engineering

Cc: Planning Records – Admin Bldg (GM File - 1 set of plans)
Andy Fischer, MCPWD - 26th Ave. E. (1 set of plans)
Sia Molanazar, P.E., MCPWD - 26th Ave. E. (1 set of plans)
Thomas Gerstenberger, P.E., MCPWD – 26th Ave. E.

Mailing Address: P. O. Box 1000, Bradenton, FL 34206-1000
Street Address: 1022 26th Ave. E., Bradenton, FL 34208
* PHONE: 941.708-7480 * FAX: 941.708-7500

*Public Works Department/Administration * www.myanatee.org*



MANATEE COUNTY FLORIDA

January 24, 2013

Mr. Dan Bond, P.E.
Stantec
6900 Professional Parkway East
Sarasota Florida 34240-8414

Case Number: FSP-12-33
DTS Number: 20120331
Case Name: Ft. Hamer Park, Phase II
Type of Approval: Final Site Plan/ porous concrete deck area,
parking expansion and, drive aisle/circulation
revision
PIN: 542701008, 542701503, and a portion of 505410309
and 505410259
Sec./Twp./Rge.: 17/34/19
Zoning: PDR
FLUC: R-OS, UF-3, AG-R
Acres: 10.2 ± acres
Flood zone: X and AE, Panel: 120153 0220 C
Location: 1605 Ft. Hamer Road

Dear Mr. Bond:

This Final Site Plan for the Ft. Hamer Park, Phase II has been reviewed by the appropriate reviewing agencies and is found to be in compliance with the Manatee County Land Development Code and Comprehensive Plan.

This approval shall expire January 24, 2016. This plan is approved by the Planning Director under the provisions of Section 508.8.1.3 of the Land Development Code.

Applicant is advised that all building permits for this project must be issued prior to the expiration of the Certificate of Level of Service (CLOS). Construction may continue after the CLOS expiration if the building permit(s) remain valid and do not expire. Otherwise, each site plan will be subject to a full concurrency review.

Approval is based on the following conditions and requirements stipulated by the respective departments:

Building & Development Services Department
Mailing Address: P. O. Box 1000 Street Address: 1112 Manatee Avenue West, Bradenton, FL 34206-1000
WEB: www.myanatee.org * PHONE: 941.748-4501 * FAX: 941.749-3071

A. Building & Development Services/Planning Conditions:

1. The Site Plan submitted with this application shall be part of the approval.

If there are any questions pertaining to the planning conditions, please contact Bernard Salmon, Planner, at (941) 748-4501, extension 6902.

B. Concurrency/Transportation Conditions:

Applications for Certificate of Level of Service Compliance for potable water, sanitary sewer, solid waste, transit, drainage, fire flow and traffic have been reviewed and will be approved upon project approval.

Applicant is advised that all building permits for this project must be issued prior to the expiration of the Certificate of Level of Service (CLOS). Construction may continue after the CLOS expiration if the building permit(s) remain valid and do not expire. Otherwise, each site plan will be subject to a full concurrency review.

If there are any questions pertaining to concurrency, please contact Susan Barfield at (941) 748-4501, extension 6876.

C. HRS/Manatee County Health Department Conditions:

The Health Department has reviewed the revised plans for the project referenced above. We have no additional comments and no further objection to this project moving forward to signoff.

1. The project will be served by a proposed public water and sewer.

If there are any questions pertaining to the Health Department, please contact Terri Stripling, Environmental Specialist II, at (941) 748-0747, extension 1415.

D. Fire District Conditions:

The above referenced plans have been reviewed under the Florida Fire Prevention Code 2007 Edition, the Manatee County Land Development Code and Ordinance 07-03 Fire Prevention Code of the Parrish Fire Department and all fire protection and building code referenced therein.

Fire department review for code compliance shall not be construed as authority to violate, cancel alter or set aside any provisions of the adopted codes; nor shall such review prevent the Fire Marshal from thereafter requiring a correction of errors in plans, or in construction, or of violation of the codes.

The proposed project is located within the jurisdiction of the Parrish Fire Department and the contact person is, Leticia Teague, Fire Chief Aide/Fire Inspector. Telephone: (941) 721-2093.

E. Impact Fee Division Conditions:

Please be advised that Impact Fees are reviewed at issuance of a building permit.

Contact Person: Sharla Fouquet, Impact Fee Coordinator
Telephone: (941) 748-4501, extension 3966.

F. Environmental Planning Division Comments and Conditions:

It is Planning staff's understanding that the trees on-site are a valuable asset to the facility and that tree preservation is paramount to the ambiance of this park. In previous comments and meetings, we attempted to offer solutions to minimize impacts to onsite trees. Unfortunately the current plans do not reflect those recommendations. We believe the proposed paving system and required compaction will severely impair the root systems' ability to function. In our opinion, the large specimen live oaks will steadily decline if this system is installed.

Nevertheless, Property Management staff has indicated that there is a desire to proceed as designed. Therefore, we are signing-off on this plan with some minor redlines.

The Environmental Planning Division has no objection to the Final Site Plan going forward to sign-off with the stipulations below:

Stipulations :

1. Two separate inspections by EPD staff are required prior to authorization of construction and/or land clearing activities:
 - a. You are authorized to stake erosion and sediment control (ESC) device locations. After staking ESC measures, EPD staff must be contacted to inspect the staked locations.
 - b. After the installation of ESC devices has been completed, a second inspection is required to ensure adequacy.
2. Nuisance, exotic plant species removal shall be completed in accordance with Section 715.4.E of the LDC and inspected by Environmental Planning Division staff prior to Certificate of Occupancy or Certificate of Completion issuance.

When ready for inspections, please contact Dorothy Rainey, Environmental Planner with Environmental Planning Division at 748-4501, ext. 6851.

If there are any questions pertaining to the Environmental Planning conditions, please contact Dorothy Rainey, Environmental Planner, at (941) 748-4501, ext. 6851 or Doug Means at ext: 6207.

G. Stormwater Management Conditions (Public Works Dept.):

Please be advised that we have reviewed the Revised Final Site Plan/Construction Plan and have no further objections. Please note our no objection refers to stormwater related information.

If there are any questions pertaining to the approval and stipulations, please contact Thomas Gerstenberger, Project Engineering Supervisor, at (941) 708-7450, extension 7228.

H. Floodplain Management Conditions (Building & Development Services):

Project site lies in Zone AE with a Base Flood Elevation of 10' per FIRM Panel 120153 0220C, revised 7/15/92, with a LOMR revising the regulatory floodway of Manatee River effective date March 13, 2008.

Encroachment within the regulatory floodway will require a No-Rise Certification. The Park Ranger garage will be required to have flood vents when constructed and built of flood resistant materials. A Floodplain Management Permit will be required.

If there are any questions pertaining to the Floodplain Management Division conditions, please contact Sandy Tudor, CFM, Floodplain Investigator, at (941) 746-3090, extension 3843.

Utilities/Access/Drainage Conditions: *may need additional information prior to approval*

- The "Construction Drawing Review Fee" (CD) was paid in full. **\$618.75** (09/12/2012).
- The "Private Zoning Inspection Fee" (PZI) was paid in full. **\$460.00** (09/12/2012).
- Any offsite improvements within the Manatee County Right-Of-Way (ROW) as depicted on the approved Construction Plans and Final Site Plan, as applicable, shall require a "Temporary Traffic Control Plan" (TTCP) based on the minimum requirements provided in the Manual Of Uniform Traffic Control Devices (MUTCD) and/or Manatee County Transportation Standard Detail 406.0 (Road/Lane Closure Procedures). The TTCP shall be submitted to Mr. Andy Fischer, Infrastructure Inspections Division Manager prior to the start of said construction. Contact Mr. Fischer at (941) 708-7450, Ext 7347 for specific requirements.

Stipulations:

1. Prior to any form of C.O. it must be demonstrated that all improvements including roadway, drive isles and stormwater installations or improvements have been installed and accepted by all entities. This includes final infrastructure inspection approval for the roadway improvement and stormwater facilities. Contact Mr. Andy Fischer at 748-7450, Ext. #7346, Infrastructure Inspection Division of the Public Works Department to discuss all infrastructure inspection criteria.
2. Certification(signed and sealed) or a letter requesting final zoning inspection approval (aka) Certificate of Completion approval from the property owner shall be submitted to Andy Fischer with the Public Works Department once the project is 100% complete and meets substantial compliance with the approved plans. A Final Zoning Inspection will be completed within 48 hours. (two working days) If inadequate, a Deficiency Notice will be forwarded to the Engineer of record and or the owner noting same. Certifications or letters of inspection request listing outstanding construction or substantial deviations are considered STATUS/PROGRESS reports.

Certification(signed and sealed) or a letter requesting final zoning inspection approval (aka) Certificate of Completion approval from the property owner shall be submitted to Ken LaBarr with the Public Works Department once the project is 100% complete and meets substantial compliance with the approved plans. A Final Zoning Inspection will be completed within 48 hours. (two working days) If inadequate, a Deficiency Notice will be forwarded to the Engineer of record and or the owner noting same. Certifications or letters of inspection request listing outstanding construction or substantial deviations are considered STATUS/PROGRESS reports.

If you have any questions regarding the above subject, please contact:

Mark G. Mayer
Senior Development Review Specialist
941-708-7450, Ext. #7217
941-807-0846 Cell
941-708-7406 Fax

NOTE: Any changes to existing approved plans must be re-submitted through the review process for acceptance.

The application for a building permit constitutes an agreement on the part of the owner to abide by all of the foregoing conditions and stipulations. Furthermore, it will be necessary for the engineer and. or architect of record to certify that all site improvements, as approved, have been completed prior to the final acceptance. All improvements and structures must be installed per the approved plan. Any deviations to the approved plan must be submitted as a Revised Plan in accordance with Section 508.5.3.(3) of the LDC.

Please be aware that structures existing on the site that are to remain should be indicated as such on the plan. Existing structures not shown on the plan or indicated on

the plan to be removed shall be removed prior to issuing a C.O. unless otherwise provided for in the approval.

The issuance of a C.O. is dependent on reaching the minimum improvements indicated on the Final Site Plan. Stipulations that condition to the C.O. must be approved in writing by the respective department, prior to the C.O. being issued. A Temporary C.O. may be issued by the Building Official once all safety considerations and minimum improvements have been met. There shall be NO extensions of any T.C.O. issued, except by application and express approval of the appropriate departments, prior to issuance by the Building Official.

The issuance of a Final Acceptance is dependent on reaching the minimum improvements indicated on the plan. Stipulations that condition the Final Acceptance must be approved in writing by respective department, prior to the Final Acceptance being issued.

Manatee County shall not extend this approval nor, after this approval's expiration, renew any expired or invalidated permit. Failure to meet deadlines for progressive development, inspections, completion, and occupancy certification after this approval's expiration may result in the loss of development rights.

A copy of this letter, signed by the property owner/developer/agent, must be presented when applying for a building permit along with the approved plan.

Sincerely,



Bernard Salmon, Planner
Building and Development Services

I have read and understand this letter and agree to the conditions and regulations herein. I will provide a copy of this letter and approved Site Plan to the General Contractor prior to commencement of construction for this Project.

1/25/2013

Date



Property Owner, Developer, Agent
(responsible for overseeing site development)