

## **Solicitation 263-11777**

### **Mills Pond Park Athletic Fields**

#### **Bid Designation: Public**



## **City of Fort Lauderdale**

## Bid 263-11777

### Mills Pond Park Athletic Fields

Bid Number **263-11777**  
 Bid Title **Mills Pond Park Athletic Fields**

Bid Start Date **Jun 29, 2016 4:26:12 PM EDT**  
 Bid End Date **Aug 19, 2016 2:00:00 PM EDT**  
 Question & Answer End Date **Jul 28, 2016 5:00:00 PM EDT**

Bid Contact **Jim Hemphill**  
**Sr. Procurement Specialist**  
**Procurement Department**  
**954-828-5143**  
**jhemphill@fortlauderdale.gov**

Contract Duration **One Time Purchase**  
 Contract Renewal **Not Applicable**  
 Prices Good for **120 days**  
 Pre-Bid Conference **Jul 13, 2016 9:00:00 AM EDT**  
**Attendance is optional**  
**Location: Mills Pond Park**  
**2201 NW 9th Ave. - Assembly Hall / Rec. Center**  
**Fort Lauderdale, FL 33311**

#### Bid Comments

#### INVITATION TO BID

Sealed bids will be received electronically until 2:00 P.M., local time, on **MONDAY, AUGUST 1, 2016**, and opened immediately thereafter in the 5th Floor Conference Room, City Hall, City of Fort Lauderdale, Florida, 100 North Andrews Avenue, for **BID NO., 263-11777, PROJECT No., 12060, MILLS POND PARK ATHLETIC FIELDS.**

This project consists of Drawing File No., 4-138-52, one hundred (100) sheets.

The work includes, but is not limited to, the construction of three (3) athletic fields to be used for either soccer or lacrosse at Mills Pond Park. This project will include installing at least two (2) synthetic (artificial) turf fields and a third natural grass or synthetic turf field. All three (3) fields will include sports lighting. Bidders shall direct their attention to Section 01025 for instructions on the bid alternate item pricing being requested in this Invitation To Bid.

**NOTE: Payment on this contract will be made by Visa or MasterCard.**

Possession of a Florida General Contractor's License is required for this project.

A pre-bid meeting will be held on **WEDNESDAY, JULY 13, 2016, at 9:00 a.m.**, local, time at Mills Pond Park, 2201 Northwest 9th Avenue, Fort Lauderdale, FL 33311. Assembly Hall / Rec. Center

It will be the sole responsibility of the bidder to attend the pre-bid meeting and site visit to inspect the City's location(s) prior to submitting a bid. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a proposal will be considered evidence that the proposer has familiarized himself with the nature and extent of the work, equipment, materials, and labor required.

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check made payable to the City of Fort Lauderdale are accepted.

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Information on bid results and projects currently out to bid can be obtained on the City's website – <http://www.fortlauderdale.gov/purchasing> . For general inquiries, please call (954) 828-5143.

Added on Jul 11, 2016:

Change of Bid Opening date and pre-bid meeting location; addition to specifications made.

Added on Jul 12, 2016:

Due to the fact that some of the plan sheets in PDF format have had some errors in printing, especially with text and symbols, the plan sheets have been recreated with all new PDFs. Therefore, for better print clarity, all PDF plan sheets (100 sheets total) have been recreated and reissued in four sets of PDF plans. No revisions to the plans have been made.

Added on Jul 20, 2016:

Pre-bid sign in sheet has been added to the Documents Page

Added on Jul 20, 2016:

Pre-Bid Meeting minutes have ben added to the Documents Page

Added on Jul 20, 2016:

The Contractor's Request for Substitution form (as referenced in General Conditions GC-3) has been added to the Documents Page

Added on Jul 20, 2016:

An AutoCAD file (Mills Pond Lighting Plan) of the base plans for the three fields has been provided for use by Sports Lighting Manufacturers to prepare their Pre-bid Submittal packages for review as a possible equal lighting system to the Musco Lighting system, which is the basis of the design for the project. Any additional questions on the Pre-bid Submittal requirements for the Sports Lighting should be submitted through Bid Sync.

Added on Jul 25, 2016:

The following items have been added to the Documents Page:

Sheets C-06 and C-08, PAVING AND DRAINAGE PLAN, showing highlighted areas. Associated with Question/Response 20 & 21.

New cut-sheet detail for the precast concrete wheel stops. Associated with Question/Response 16.

Enlarged Bike Rack Detail. Associated with Question/Response 12.

Chain Link Fence Detail. Associated with Question/Response 12.

Added on Jul 26, 2016:

Addendum #3 has been added to the Documents Page

Added on Jul 27, 2016:

Corrected Sheet E18 has been uploaded to the Documents Page (it corrects the font errors)

Added on Jul 29, 2016:

C05 Drainage Plan - Option 1 and C07 Drainage Plan - Option 3 have been added to the Documents Page

Added on Aug 2, 2016:

Please note - the addition of C05 Drainage Plan - Option 1 and C07 Drainage Plan - Option 3 to the Documents Page is in response to question 64 "clarify where the 18" & 12" curb starts and stops, plans are unclear"

Added on Aug 5, 2016:

Addendum 4 has been added to the Documents Page - it extends the bid due date

Added on Aug 9, 2016:

Addendum 5 has been added to the Documents Page

#### Addendum # 1

New Documents	P12060 Addendum 1.pdf		
Previous End Date	Aug 1, 2016 2:00:00 PM EDT	New End Date	Aug 9, 2016 2:00:00 PM EDT
Previous Q & A End Date	Jul 22, 2016 5:00:00 PM EDT	New Q & A End Date	Jul 28, 2016 5:00:00 PM EDT

#### Addendum # 2

New Documents	P12060.Drawings.Civil.ADDENDUM2.SET 1 of 4.pdf P12060.Drawings.Cvr, Key, Electric Bid.ADDENDUM2.SET 2 of 4.pdf P12060.Drawings.Irr, Site.ADDENDUM2.SET 3 of 4.pdf P12060.Drawings.Surv, Struct, Ls.ADDENDUM2.SET 4 of 4.pdf P12060 Addendum 2.doc		
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#### Addendum # 3

New Documents	Addendum 3 with attachements_07-22-2016.pdf		
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#### Addendum # 4

New Documents	263-11777 Addendum 5.pdf		
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Previous End Date	Aug 15, 2016 2:00:00 PM EDT	New End Date	Aug 19, 2016 2:00:00 PM EDT
Previous Contract Renewal	Not Applicable	New Contract Renewal	Not Applicable

### Item Response Form

Item **263-11777--01-01 - Base Bid: Three new synthetic turf fields without parking**  
 Lot Description **Base Bid**  
 Quantity **1 lump sum**  
 Unit Price   
 Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
 Qty 1

#### Description

Construct all of the Work contained in Contract Documents for Option # 1 and #3. The bidder shall furnish all labor, tools, material, equipment, and supplies, and to sustain all of the expense incurred in doing the work, including installation of all materials, equipment, and supplies furnished, as well as all other labor, warranties, taxes, insurance, general administration and other miscellaneous costs, overhead and profit, etc., and to do the same strictly in accordance with the Contract Documents. This shall include mobilization, demobilization and any maintenance of traffic costs, as well. The cost for mobilization shall not exceed five percent (5%) of the lump sum price for the Base Bid. Maintenance of Traffic plans and traffic control shall be limited to the circulation roadway within the park only. Price for all Synthetic Turf Fields shall include Sand/S.B.R. (Crumb Rubber) mix for the In-Fill Material. This bid item is referred to as Base Bid #1 throughout the bid documents.

Item **263-11777--02-01 - Alternate Base Bid: Two new synthetic turf fields and one new grass field without parking**  
 Lot Description **Alternate Base Bid**  
 Quantity **1 lump sum**  
 Unit Price   
 Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
 Qty 1

#### Description

Construct all of the work contained in the Contract Documents for Options #1 and #5. The bidder shall furnish all labor, tools, material, equipment, and supplies, and to sustain all of the expense incurred in doing the work, including installation of all materials, equipment, and supplies furnished, as well as all other labor, warranties, taxes, insurance, general administration and other miscellaneous costs, overhead and profit, etc., and to do the same strictly in accordance with the Contract Documents. This shall include mobilization, demobilization and any maintenance of traffic costs, as well. The cost for mobilization shall not exceed five percent (5%) of the lump sum price for the Base Bid. Maintenance of Traffic plans and traffic control shall be limited to the circulation roadway within the park only. Price for all Synthetic Turf Fields shall include Sand/S.B.R. (Crumb Rubber) mix for the In-Fill Material. This bid item is referred to as Alternate Base Bid #2 throughout the bid documents.

Item **263-11777--03-01 - Option A: 55 additional permeable paver parking spaces at the North fields**  
 Lot Description **Option A**  
 Quantity **1 lump sum**  
 Unit Price   
 Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)

See ITB Specifications  
Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Construct all of the work contained in the Contract Documents for Option #2. Note: the Add item is the cost to construct the 55 permeable paver parking spaces and all associated necessary work as shown in the Contract Documents for Option #2, excluding the work for constructing the two synthetic turf fields which is already included in Base Bid #1.

Item **263-11777--04-01 - Option B: 106 additional permeable paver parking spaces at the South field (with that fiel**  
Lot Description **Option B**  
Quantity **1 lump sum**  
Unit Price   
Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)  
See ITB Specifications  
Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Construct all of the work contained in the Contract Documents for Option #4. Note: the Add item is the cost to construct the 106 permeable paver parking spaces and all associated necessary work as shown in the Contract Documents for Option #4, excluding the work for constructing the one synthetic turf field which is already included in Base Bid #1.

Item **263-11777--05-01 - Option C: 106 additional permeable paver parking spaces at the South field (with that fiel**  
Lot Description **Option C**  
Quantity **1 lump sum**  
Unit Price   
Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)  
See ITB Specifications  
Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Construct all of the work contained in the Contract Documents for Option #6. Note: the Add item is the cost to construct the 106 permeable paver parking spaces and all associated necessary work as shown in the Contract Documents for Option #6, excluding the work for constructing the one natural grass field which is already included in Alternate Base Bid #2.

Item **263-11777--06-01 - Option D: Optional Upgrade to LED Sports Lighting - North fields only**  
Lot Description **Option D**  
Quantity **1 lump sum**  
Unit Price   
Delivery Location **City of Fort Lauderdale**  
[See ITB Specifications](#)  
See ITB Specifications  
Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Construct all of the work contained in the contract Documents for the upgrade to LED Sports Lighting for the North Fields A & B only. Note: the Add item is the cost difference between the HID /Metal Halide lighting plans and the LED lighting plans.

Item **263-11777--07-01 - Option E: Optional Upgrade for Installing Totally Organic In-fill System - North fields o**  
Lot Description **Option E**

Quantity **1 lump sum**

Unit Price

Delivery Location **City of Fort Lauderdale**  
See ITB Specifications  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Furnish and install a totally organic In-Fill System for North Fields A& B (as per plans for Options #1 and #2). Note: the Add item is the cost difference between the Sand/SBR In-Fill and the Organic In-Fill.

Item **263-11777--08-01 - Option F: Optional Upgrade for Installing Totally Organic In-fill System - South field on**

Lot Description **Option F**

Quantity **1 lump sum**

Unit Price

Delivery Location **City of Fort Lauderdale**  
See ITB Specifications  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Furnish and install a totally organic In-Fill System for South Field C (as per plans for Options #3 and #4). Note: the Add item is the cost difference between the Sand/SBR In-Fill and the Organic In-Fill.

Item **263-11777--09-01 - Option G: Optional Upgrade for Installing Heat Reducing Organic Composite In-fill System**

Lot Description **Option G**

Quantity **1 lump sum**

Unit Price

Delivery Location **City of Fort Lauderdale**  
See ITB Specifications  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Furnish and install a Heat Reducing Organic Composite In-Fill System for North Fields A and B (as per plans for Options #1 and #2). Note: the Add item is the cost difference between the Sand/SBR In-Fill and the Heat Reducing Organic Composite In-Fill.

Item **263-11777--10-01 - Option H: Optional Upgrade for Installing Heat Reducing Organic Composite In-fill System**

Lot Description **Option H**

Quantity **1 lump sum**

Unit Price

Delivery Location **City of Fort Lauderdale**  
See ITB Specifications  
 See ITB Specifications  
 Fort Lauderdale FL 33301  
**Qty 1**

**Description**

Furnish and install a Heat Reducing Organic Composite In-Fill System for South Field C (as per plans for Options #3 and #4). Note: the Add item is the cost difference between the Sand/SBR In-Fill and the Heat Reducing Organic Composite In-Fill.

**CITY OF FORT LAUDERDALE  
CONTRACT AND SPECIFICATIONS PACKAGE**

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**BID NO. 263-11777**

**PROJECT NO. 12060**

**MILLS POND PARK ATHLETIC  
FIELDS**



**Issued on Behalf of: The Public Works Department  
100 North Andrews Avenue  
Fort Lauderdale, Florida 33301**

**LUISA FERNANDA ARBELÁEZ, PE, PMP  
PROJECT MANAGER II**

**JAMES HEMPHILL  
SENIOR PROCUREMENT SPECIALIST  
Telephone: (954) 828-5143 E-mail: [jhemphill@fortlauderdale.gov](mailto:jhemphill@fortlauderdale.gov)**

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**Note: The following documents are available electronically for completion.**

- Attachment 1 - CITB Construction Bid Certification (formerly CITB Signature Page)
- Attachment 2 - CITB Questionnaire Sheets (formerly P-4 to P-5)
- Attachment 3 - CITB Trench Safety (formerly P-6)
- Attachment 4 - CITB Prime Contractor ID Form (MBE-1 & 2)
- Attachment 5 - CITB Non-Collusion Statement (NCS-1)
- Attachment 6 - CITB Contract Payment Method
- Attachment 7 - References for Athletic Fields
- Attachment 8 - References for Synthetic Turf Supplier
- Attachment 09 - Contractor's Suppliers List
- Attachment 10 - Contractor's Sub-Contractor List

These documents **must** be returned with your bid along with your bid security, proof of insurance, and proof of required licenses/certifications (including sample for the proposed eight-year insurance policy or an eight-year Warranty Bond from the manufacturer of the synthetic turf grass system that bidder is proposing to install for this project at the time of bid).

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## INVITATION TO BID (continued)

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Jeffrey A. Modarelli  
City Clerk

## **INSTRUCTIONS TO BIDDERS**

The following instructions are given for the purpose of guiding bidders in properly preparing their bids or proposals. These directions have equal force and weight with the specifications and strict compliance is required with all of these provisions.

**QUALIFICATIONS OF BIDDERS** – No proposal will be accepted from, nor will any contract be awarded to, any person who is in arrears to the CITY OF FORT LAUDERDALE, upon any debt or contract, or who has defaulted, as surety or otherwise, upon any obligation to the City, or who is deemed irresponsible or unreliable by the City Commission of Fort Lauderdale.

**PERSONAL INVESTIGATION** - Bidders shall satisfy themselves by personal investigation, and by such other means as they may think necessary or desirable, as to the conditions affecting the proposed work and the cost. No information derived from maps, plans, specifications, or from the Engineer, City Manager, or their assistants shall relieve the Contractor from any risk or from fulfilling all terms of the contract.

**INCONSISTENCIES** – Any seeming inconsistency between different provisions of the plans, specifications, proposal or contract, or any point requiring explanation must be inquired into by the bidder, in writing, at least ten (10) days prior to the time set for opening proposals. After proposals are opened, the bidders shall abide by the decision of the Engineer as to such interpretation.

**ADDENDA AND INTERPRETATIONS** - No interpretations of the meaning of the plans, specifications or other contract documents will be made orally to any bidder. Prospective bidders must request such interpretation in writing as instructed in the bid package. To be considered, such request must be received by the Questions and Answers deadline as indicated in BIDSYNC.COM. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. **It is the bidder's responsibility to verify if addendums have been issued in BIDSYNC.COM.** Failure of any bidder to receive any such addenda or interpretation shall not relieve any bidder from any obligation under his bid as submitted. All addenda so issued shall become a part of the contract document. **Bidder** shall verify **in BIDSYNC.COM** that he has all addenda before submitting a bid.

**LEGAL CONDITIONS** - Bidders are notified to familiarize themselves with the provisions of the laws of the State of Florida relating to hours of labor on municipal work, and with the provisions of the laws of the State of Florida and the Charter and the ordinances of the City of Fort Lauderdale.

**PUBLIC ENTITY CRIMES** - A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a Contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, Florida Statutes, for CATEGORY TWO for a period of thirty-six (36) months from the date of being placed on the convicted vendor list.

**FORMS OF PROPOSALS** - Each proposal and its accompanying statements must be made on the blanks provided. **THE FORMS MUST BE SUBMITTED ELECTRONICALLY, IN GOOD ORDER WITH ALL BLANKS COMPLETED,** and must show the name of the bidder and a statement as to its contents.

## INSTRUCTIONS TO BIDDERS (continued)

**FORMS OF PROPOSALS (CONTINUED)** - The proposal must be signed by one duly authorized to do so, and in case signed by a deputy or subordinate, the principal's properly written authority to such deputy or subordinate must accompany the proposal. No proposal will be accepted, for any reason whatsoever, which is not submitted to the City as stated above, within the specified time.

**INSURANCE** - Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida.

**BID BOND** - A certified check, cashier's check or bank officer's check, for the sum set forth in the advertisement, made payable to the City of Fort Lauderdale, Florida, or bid bond in such amount, shall accompany each proposal as evidence of the good faith and responsibility of the bidder. The check or bond shall be retained by the City as liquidated damages should the bidder refuse to or fail to enter into a contract for the execution of the work embraced in this proposal, in the event the proposal of the bidder is accepted. Retention of such amount shall not be construed as a penalty or forfeiture.

The above bond or check shall be a guarantee that the bidder will, if necessary, promptly execute a satisfactory contract and furnish good and sufficient bonds. As soon as a satisfactory contract has been executed and the bonds furnished and accepted, the check or bond accompanying the proposal of the successful bidder will be returned to him. The certified or other checks or bid bonds of the unsuccessful bidders will be returned to them upon the acceptance of the bid of the successful bidder. If the successful bidder shall not enter into, execute, and deliver such a contract and furnish the required bonds within ten (10) days after receiving notice to do so, the certified or other check or bid bond shall immediately become the property of the City of Fort Lauderdale as liquidated damages. Retention of such amount shall not be construed as a penalty or forfeiture.

**FILLING IN BIDS** - All prices must be electronically submitted in the proposal pages, and all proposals must fully cover all items for which proposals are asked and no other. Bidders are required to state the names and places of residence of all persons interested, and if no other person is interested, the bidder shall distinctly state such fact and shall state that the proposal is, in all respects, fair and without collusion or fraud. Where more than one person is interested, it is required that all persons interested or their legal representative make all verification and subscribe to the proposal.

**PRICES QUOTED:** Deduct any discount offered and quote firm net unit prices. In the case of a discrepancy in computing the amount of the bid, the unit price quoted will govern. All prices quoted shall be F.O.B. destination, freight prepaid (Bidder pays and bears freight charges, Bidder owns goods in transit and files any claims), unless otherwise stated in Special Conditions. Each item must be bid separately. No attempt shall be made to tie any item or items contained in the ITB with any other business with the City.

**BIDS FIRM FOR ACCEPTANCE:** Bidder warrants, by virtue of bidding, that his bid and the prices quoted in his bid will be firm for acceptance by the City for a period of one hundred and twenty (120) days from the date of bid opening unless otherwise stated in the ITB. The City shall award contract within this time period or shall request to the recommended awarded vendor an extension to hold pricing, until products/services have been awarded.

**ADDITIONAL ITEMS OR SERVICES:** The City may require additional items or services of a similar nature, but not specifically listed in the contract. The Contractor agrees to provide such items or

## INSTRUCTIONS TO BIDDERS (continued)

services, and shall provide the City prices on such additional items or services based upon a formula or method, which is the same or similar to that used in establishing the prices in his proposal. If the price(s) offered are not acceptable to the City, and the situation cannot be resolved to the satisfaction of the City, the City reserves the right to procure those items or services from other vendors, or to cancel the contract upon giving the Contractor thirty (30) days written notice.

DELETION OR MODIFICATION OF SERVICES: The City reserves the right to delete any portion of the Contract at any time without cause, and if such right is exercised by the City, the total fee shall be reduced in the same ratio as the estimated cost of the work deleted bears to the estimated cost of the work originally planned. If work has already been accomplished on the portion of the Contract to be deleted, the Contractor shall be paid for the deleted portion on the basis of the estimated percentage of completion of such portion.

If the Contractor and the City agree on modifications or revisions to the task elements, after the City has approved work to begin on a particular task or project, and a budget has been established for that task or project, the Contractor will submit a revised budget to the City for approval prior to proceeding with the work.

CAUSES FOR REJECTION - No proposal will be canvassed, considered or accepted which, in the opinion of the City Commission, is informal or unbalanced, or contains inadequate or unreasonable prices for any items; each item must carry its own proportion of the cost as nearly as is practicable. Any alteration, erasure, interlineation, or failure to specify bids for all items called for in the schedule shall render the proposal informal.

REJECTION OF BIDS - The City reserves the right to reject any bid if the evidence submitted by the bidder, or if the investigation of such bidder, fails to satisfy the City that such bidder is properly qualified to carry out the obligations and to complete the work contemplated. Any or all proposals will be rejected, if there is reason to believe that collusion exists among bidders. A proposal will be considered irregular and may be rejected, if it shows serious omissions, alterations in form, additions not called for, conditions or unauthorized alternates, or irregularities of any kind. The City reserves the right to reject any or all proposals and to waive such technical errors as may be deemed best for the interests of the City.

BID PROTEST PROCEDURE: Any proposer or bidder who is not recommended for award of a contract and who alleges a failure by the City to follow the City's procurement ordinance or any applicable law may protest to the Procurement Division – Deputy Director of Finance, by delivering a letter of protest within five (5) days after a Notice of Intent to award is posted on the City's website at the following link: [http://www.fortlauderdale.gov/purchasing/notices\\_of\\_intent.htm](http://www.fortlauderdale.gov/purchasing/notices_of_intent.htm). The complete protest ordinance may be found on the City's website at the following link: <http://www.fortlauderdale.gov/purchasing/protestordinance.pdf>

WITHDRAWALS - Any bidder may, without prejudice to himself, withdraw his proposal at any time prior to the expiration of the time during which proposals may be submitted. Such request for withdrawal must be in writing and signed in the same manner and by the same person who signed the proposal. After expiration of the period for receiving proposals, no proposal can be withdrawn, modified, or explained.

CONTRACT - The bidder to whom award is made shall execute a written contract to do the work and maintain the same in good repair until final acceptance by the proper authorities, and shall furnish

## INSTRUCTIONS TO BIDDERS (continued)

good and sufficient bonds as specified within ten (10) days after receiving such contract for execution. If the bidder to whom the first award is made fails to enter into a contract as provided, the award may be annulled and the contract let to the next lowest bidder who is reliable, responsible, and responsive in the opinion of the City Commission, and that bidder shall fulfill every stipulation and obligation as if such bidder were the original party to whom award was made.

The contract shall provide that the Contractor agrees to correct any defective or faulty work or material, which may appear within one (1) year after completion of the work and receipt of final payment.

ENFORCEMENT OF SPECIFICATIONS - Copies of the specifications will be placed in the hands of all the assistants to the Engineer and Inspectors employed on the work, who shall enforce each and every requirement of the contract. Such assistants shall have no authority to vary from such requirements.

COPIES OF DRAWING PLANS - Copies of the drawing plans are on file in the Public Works Department, City Hall, 4<sup>th</sup> Floor, 100 N. Andrews Avenue, Fort Lauderdale, Florida 33301.

SURETY BOND – The Contractor shall execute and record in the public records of Broward County, Florida, a payment and performance bond in an amount at least equal to the Contract Price with a surety insurer authorized to do business in the State of Florida as surety, ("Bond"), in accordance with Section 255.05, Florida Statutes (2014), as may be amended or revised, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents.

The successful bidder shall furnish a performance and payment bond in compliance with Section 255.05, Florida Statutes, written by a Corporate Surety company, holding a Certificate of Authority from the Secretary of the Treasury of the United States as acceptable sureties on federal bonds, in an amount equal to the total amount payable by the terms of the contract, executed and issued by a Resident Agent licensed by and having an office in the State of Florida, representing such Corporate Surety, conditioned for the due and faithful performance of the work, and providing in addition to all other conditions, that if the Contractor, or his or its subcontractors, fail to duly pay for any labor, materials, or other supplies used or consumed by such Contractor, or his or its subcontractor or subcontractors, in performance of the work contracted to be done, the Surety will pay the same in the amount not exceeding the sum provided in such bonds, together with interest at the rate of fifteen percent (15%) per annum, and that they shall indemnify and save harmless the City of Fort Lauderdale to the extent of any and all payments in connection with carrying out of the contract, which the City may be required to make under the law.

The Contractor is required at all times to have a valid surety bond in force covering the work being performed. A failure to have such bond in force at any time shall constitute a default on the part of the Contractor. A bond written by a surety, which becomes disqualified to do business in the State of Florida, shall automatically constitute a failure on the part of the Contractor to meet the above requirements.

Such bond shall continue in effect for one (1) year after completion and acceptance of the work with liability equal to at least twenty-five percent (25%) of contract price, or an additional bond shall be conditioned that the Contractor will correct any defective or faulty work or material which appear within one (1) year after completion of the contract, upon notification by the City, except in contracts which are concerned solely with demolition work, in which cases twenty-five percent (25%) liability will not be applicable.

## INSTRUCTIONS TO BIDDERS (continued)

AUDIT OF CONTRACTOR'S RECORDS - Upon execution of the Contract, the City reserves the right to conduct any necessary audit of the Contractor's records. Such an audit, or audits, may be conducted by the City or its representatives at any time prior to final payment, or thereafter, for a period up to three (3) years. The City may also require submittal of the records from either the Contractor, the Subcontractor, or both. For the purpose of this Section, records shall include all books of account, supporting documents and papers deemed necessary by the City to assure compliance with the contract provisions.

Failure of the Contractor or Subcontractor to comply with these requirements may result in disqualification or suspension from bidding for future contracts or disapproval as a Subcontractor at the option of the City.

The Contractor shall assure that each of its Subcontractors will provide access to its records pertaining to the project upon request by the City.

PERIODIC ESTIMATE FOR PARTIAL PAYMENT - After the Contractor has submitted a periodic estimate for partial payment, approved and certified by the Public Works Department, the City shall make payment in the manner provided in the Contract Documents and in accordance with Florida's Prompt Payment Act, Section 218, Florida Statutes.

RESERVATION FOR AWARD AND REJECTION OF BIDS - The City reserves the right to accept or reject any or all bids, part of bids, and to waive minor irregularities or variations to specifications contained in bids, and minor irregularities in the bidding process. The City also reserves the right to award the contract on a split order basis, lump sum basis, individual item basis, or such combination as shall best serve the interest of the City. The City reserves the right to make an award to the responsive and responsible bidder whose product or service meets the terms, conditions, and specifications of the ITB and whose bid is considered to best serve the City's interest. In determining the responsiveness of the offer and the responsibility of the Bidder, the following shall be considered when applicable: the ability, capacity and skill of the Bidder to perform as required; whether the Bidder can perform promptly, or within the time specified, without delay or interference; the character, integrity, reputation, judgment, experience and efficiency of the Bidder; the quality of past performance by the Bidder; the previous and existing compliance by the Bidder with related laws and ordinances; the sufficiency of the Bidder's financial resources; the availability, quality and adaptability of the Bidder's supplies or services to the required use; the ability of the Bidder to provide future maintenance, service or parts; the number and scope of conditions attached to the bid.

MINORITY AND WOMEN BUSINESS ENTERPRISE PARTICIPATION AND BUSINESS - It is the desire of the City of Fort Lauderdale to increase the participation of minority (MBE) and women-owned (WBE) businesses in its contracting and procurement programs. While the City does not have any preference or set aside programs in place, it is committed **to a policy of equitable participation for these firms**. The City of Fort Lauderdale wants to increase the participation of Minority Business Enterprises (MBE), Women Business Enterprises (WBE), and Small Business Enterprises (SBE) in its procurement activities. If your firm qualifies in accordance with the below definitions please indicate in the space provided in this ITB.

Minority Business Enterprise (MBE) "A Minority Business" is a business enterprise that is owned or controlled by one or more socially or economically disadvantaged persons. Such disadvantage may arise from cultural, racial, chronic economic circumstances or background or other similar cause. Such persons include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

**INSTRUCTIONS TO BIDDERS (continued)**

The term "Minority Business Enterprise" means a business at least fifty-one percent (51%) of which is owned by minority group members or, in the case of a publicly owned business, at least fifty-one percent (51%) of the stock of which is owned by minority group members. For the purpose of the preceding sentence, minority group members are citizens of the United States who include, but are not limited to: Blacks, Hispanics, Asian Americans, and Native Americans.

Women Business Enterprise (WBE) a "Women Owned or Controlled Business" is a business enterprise at least fifty-one percent (51%) of which is owned by females or, in the case of a publicly owned business, at least fifty-one percent (51%) of the stock of which is owned by females.

Small Business Enterprise (SBE) "Small Business" means a corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit, which is independently owned and operated, has either fewer than 100 employees or less than \$1,000,000 in annual gross receipts.

BLACK includes persons having origins in any of the Black racial groups of Africa.

WHITE includes persons whose origins are Anglo-Saxon and Europeans and persons of Indo-European decent including Pakistani and East Indian.

HISPANIC includes persons of Mexican, Puerto Rican, Cuban, Central and South American, or other Spanish culture or origin, regardless of race.

NATIVE AMERICAN includes persons whose origins are American Indians, Eskimos, Aleuts, or Native Hawaiians.

ASIAN AMERICAN includes persons having origin in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.

DEBARRED OR SUSPENDED BIDDERS OR PROPOSERS - The bidder or proposer certifies, by submission of a response to this solicitation, that neither it nor its principals and subcontractors are presently debarred or suspended by any Federal department or agency.

## PROJECT 12060

**SPECIAL CONDITIONS****01. PURPOSE**

The City of Fort Lauderdale, Florida (City) is seeking bids from qualified bidders, hereinafter referred to as the Contractor, to provide construction services for the City's Public Works Department, in accordance with the terms, conditions, and specifications contained in this Invitation To Bid (ITB).

**02. TRANSACTION FEES**

The City of Fort Lauderdale uses BidSync ([www.bidsync.com](http://www.bidsync.com)) to distribute and receive bids and proposals. There is no charge to vendors/contractors to register and participate in the solicitation process, nor will any fees be charged to the awarded contractor.

**03. SUBMISSION OF BIDS**

It is the sole responsibility of the Contractor to ensure that their bid is submitted electronically through BidSync at [www.bidsync.com](http://www.bidsync.com) and that any bid security not submitted via BidSync reaches the City of Fort Lauderdale City Hall, Procurement Services Division, 6<sup>th</sup> floor, Room 619, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301 in a sealed envelope marked on the outside with the ITB solicitation number and Contractor's name, no later than the time and date specified in this solicitation. **PAPER BID SUBMITALS WILL NOT BE ACCEPTED. PLEASE SUBMIT YOUR BID RESPONSE ELECTRONICALLY.**

**04. INFORMATION OR CLARIFICATION**

For information concerning procedures for responding to this solicitation, contact **James Hemphill, Senior Procurement Specialist**, at (954) 828-5143 or email at [jhemphill@fortlauderdale.gov](mailto:jhemphill@fortlauderdale.gov). Such contact shall be for clarification purposes only.

For information concerning technical specifications please utilize the question/answer feature provided by BidSync at [www.bidsync.com](http://www.bidsync.com). Questions of a material nature must be received prior to the cut-off date specified in the solicitation. Material changes, if any, to the scope of services or bidding procedures will only be transmitted by written addendum. (See addendum section of BidSync Site). **Contractors please note:** No part of your bid can be submitted via FAX. No variation in price or conditions shall be permitted based upon a claim of ignorance. Submission of a bid will be considered evidence that the Contractor has familiarized himself with the nature and extent of the work, and the equipment, materials, and labor required. The entire bid response must be



## SPECIAL CONDITIONS (continued)

PROJECT12060

submitted in accordance with all specifications contained in this solicitation. The questions and answers submitted in BidSync shall become part of any contract that is created from this ITB.

**05. CONTRACT PERIOD**

- 5.1 The Contractor recognizes that TIME IS OF THE ESSENCE. The Work shall commence within **14** calendar days of the date of the Notice to Proceed.
- 5.2 The Work shall be Substantially Completed within **240** calendar days after the date when the Contract Time commences to run as provided in the Notice to Proceed.
- 5.3 The Work shall be finally completed on the Final Completion Date and ready for final payment in accordance with this Agreement within **300** calendar days after the date when the Contract Time commences to run as provided in the Notice to Proceed.

The City of Fort Lauderdale reserves the right to waive any informality in any bid and to reject any or all bids. The City of Fort Lauderdale reserves the right to reduce or delete any of the bid items.

**At time of award of contract, the City reserves the right to set a maximum dollar limit that may be expended on this project. Contract quantities of any or all items may be increased, reduced, or eliminated to adjust the contract amount to coincide with the amount of work necessary or to bring the contract value to within the established limit. All quantities are estimated and the City reserves the right to increase, reduce, or eliminate the contract quantities in any amount.**

**The undersigned bidder affirms that he has or will obtain all equipment necessary to complete the work described, that he has or will obtain all required permits and licenses from the appropriate agencies, and that his firm is authorized to do business in the State of Florida.**

**06. BID SECURITY**

A certified check, cashier's check, bank officer's check or bid bond for **FIVE** percent (**5%**) of the bid amount, made payable to the City of Fort Lauderdale, Florida, shall accompany each proposal.

**07. REQUIRED LICENSES/CERTIFICATIONS**

Contractor must possess the following licenses/certifications to be considered for award.

**State of Florida General Contractor License**

***Note: Contractor must have proper licensing prior to submitting bid and must submit evidence of same with bid***

## SPECIAL CONDITIONS (continued)

PROJECT12060

**08. SPECIFIC EXPERIENCE REQUIRED**

The following expertise is required to be considered for this contract. Specific references attesting to this expertise must be submitted with bid.

Bidders shall be General Contractors licensed to do business in the State of Florida. Bidders shall have been in continuous operation for a minimum of the five (5) years immediately preceding the date that this Bid is issued. The Bidder, or one of their listed Sub-contractors/Sports Field Builder, shall have a minimum of five (5) years of experience in the installation of both natural grass and artificial turf surfaces on athletic fields in the State of Florida of a similar scope as those services desired by the City. The Bidder, or one of their Sub-contractors/Sports Field Builder, shall provide references of at least five (5) projects with natural grass fields and five (5) projects with synthetic turf fields in the State of Florida within the last five (5) years as evidence of their experience in providing services to complete the installation of natural grass fields and artificial turf surfaces and associated base, sub-base, drainage systems and sports lighting for athletic fields. The Bidder's, or their listed Sub-contractor's/Sports Field Builder's supplier of the synthetic turf product and infill materials shall have completed at least five (5) synthetic turf athletic field projects in the State of Florida of 40,000 square feet or more within the last five (5) years that have been in service for a minimum of two (2) years with the same products being proposed for these fields.

***By signing this bid solicitation, contractor is affirming that this expertise will be provided for this contract at no additional charge.***

**09. BID ALLOWANCE**

**Allowance for permits:** Payments will be made to the contractor based on the actual cost of permits upon submission of paid permit receipts. The City shall not pay for other costs related to obtaining or securing permits.

The amount indicated is intended to be sufficient to cover the entire project. If the City Permit fees exceed the allowance indicated, the City will reimburse the contractor the actual amount of City Permit Fees required for project completion.

<b>Allowances for Base Bid #1 and Alternate Base Bid #2</b>	
Permit fee allowance	\$40,000
Relocation of Comcast Cable line	\$10,000

***Note: The City will add this allowance to your Base Bid #1 and Alternate Base Bid #2***

***If the City elects to award the Option E (North Fields) and/or Option F (South Field) for upgrading to a totally organic infill system, then the City will add the following allowances to your Option Items E and F:***

## SPECIAL CONDITIONS (continued)

PROJECT12060

Allowances for Option Items E and F	
Installation of an automatic, irrigation system to wet the two synthetic turf fields (Option E for upgrading to a totally organic infill system for the North Fields)	\$150,000
Installation of an automatic, irrigation system to wet the one synthetic turf field (Option F for upgrading to a totally organic infill system for the South Field)	\$75,000

**Note: The City will add this allowance to your Option Items E and F**

**10. INSURANCE REQUIREMENTS** (See Article 10, Bonds and Insurance, of the Contract for details)

Insurance

10.1 Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below, as well as Professional Liability insurance in the amount of \$1,000,000 for any Architectural and/or Engineering requirements associated with the fulfillment of the contract if required. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida. **A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.**

- A. The City is required to be named as additional insured on the Commercial General Liability insurance policy. BINDERS ARE UNACCEPTABLE. The insurance coverage required shall include those classifications, as listed in standard liability insurance manuals, which most nearly reflect the operations of the Contractor. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for the work contemplated in this Agreement shall be deemed unacceptable, and shall be considered a breach of contract.
- B. The Contractor shall provide the City an original Certificate of Insurance for policies required by Article 10. All certificates shall state that the City shall be given ten (10) days' notice prior to expiration or cancellation of the policy. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to accommodate, it shall be the responsibility of the Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested and addressed to the Finance Department. Such policies shall: (1) name the insurance company or companies

## SPECIAL CONDITIONS (continued)

PROJECT12060

affording coverage acceptable to the City, (2) state the effective and expiration dates of the policies, (3) include special endorsements where necessary. Such policies provided under Article 10 shall not be affected by any other policy of insurance, which the City may carry in its own name.

- C. Contractor shall as a condition precedent of this Agreement, furnish to the City of Fort Lauderdale, c/o Project Manager, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301, Certificate(s) of Insurance upon execution of this Agreement, which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

10.2 Property Insurance (Builder's Risk): The Contractor shall purchase and maintain property insurance upon the Work at or off the site of 100% of the contract completed value. These policies shall insure the interest of the owner, contractor and subcontractors in the Work, and shall insure against "all risks" of physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage. All such insurance required by this paragraph shall remain in effect until the Work is completed and accepted by the City.

10.3 Commercial General Liability

- A. Limits of Liability:
- |   |             |
|---|-------------|
| Bodily Injury and Property Damage - Combined Single Limit |             |
| Each Occurrence   | \$1,000,000 |
| Project Aggregate   | \$1,000,000 |
| General Aggregate   | \$2,000,000 |
| Personal Injury   | \$1,000,000 |
| Products/Completed Operations                             | \$1,000,000 |
- B. Endorsements Required:
- City of Fort Lauderdale included as an Additional Insured
  - Broad Form Contractual Liability
  - Waiver of Subrogation
  - Premises/Operations
  - Products/Completed Operations
  - Independent Contractors
  - Owners and Contractors Protective Liability
  - Contractor's Pollution Liability – **N/A**

10.4 Business Automobile Liability

- A. Limits of Liability:
- |   |             |
|---|-------------|
| Bodily Injury and Property Damage - Combined Single Limit |             |
| All Autos used in completing the contract                 |             |
| Including Hired, Borrowed or Non-Owned Autos              |             |
| Any One Accident  | \$1,000,000 |
- B. Endorsements Required:
- Waiver of Subrogation

## SPECIAL CONDITIONS (continued)

PROJECT12060

10.5 Workers' Compensation and Employer's Liability Insurance

Limits: Workers' Compensation – Per Florida Statute 440  
Employers' Liability - \$500,000

Any firm performing work on behalf of the City of Fort Lauderdale must provide Workers' Compensation insurance. Exceptions and exemptions can only be made if they are in accordance with Florida Law.

Contractor must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act.

10.6 Umbrella/Excess Liability: The Contractor shall provide umbrella/excess coverage with limits of no less than \$2,000,000 excess of Commercial General Liability, Automobile Liability and Employer's Liability.

## 10.7 All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The Contractor's insurance must be provided by an A.M. Best's "A-" rated or better insurance company authorized to issue insurance policies in the State of Florida, subject to approval by the City's Risk Manager. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for work contemplated in this project shall be deemed unacceptable, and shall be considered breach of contract.

NOTE: CITY PROJECT NUMBER MUST APPEAR ON EACH CERTIFICATE.

**A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.**

Compliance with the foregoing requirements shall not relieve the Contractor of their liability and obligation under this section or under any other section of this Agreement.

The Contractor shall be responsible for assuring that the insurance certificates required in conjunction with this Section remain in force for the duration of the Project. If insurance certificates are scheduled to expire during the contractual period, the Contractor shall be responsible for submitting new or renewed insurance certificates to the City at a minimum of thirty (30) calendar days in advance of such expiration. In the event that expired certificates are not replaced with new or renewed certificates that cover the contractual period, the City shall:

## SPECIAL CONDITIONS (continued)

PROJECT12060

- A. Suspend the Agreement until such time as the new or renewed certificates are received by the City.
- B. The City may, at its sole discretion, terminate the Agreement for cause and seek damages from the Contractor in conjunction with the violation of the terms and conditions of the Agreement.

11. **PERFORMANCE AND PAYMENT BOND:** 100%

**Number of awards anticipated:** 1

12. **CITY PROJECT MANAGER**

The Project Manager is hereby designated by the City as **Luisa Fernanda Arbeláez, PE, PMP** whose address is 100 North Andrews, 4<sup>th</sup> Floor, Fort Lauderdale, FL 33301, telephone number: **(954) 828-5651**, and email address is [larbelaez@fortlauderdale.gov](mailto:larbelaez@fortlauderdale.gov). The Project Manager will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the Contract Documents in connection with completion of the Work in accordance with this Agreement.

13. **LIQUIDATED DAMAGES** *(See Article 16, Liquidated Damages, of the Contract for details)*

Upon failure of the Contractor to complete the Work within the time specified for completion, the Contractor shall pay to the City the sum of **Five Hundred Dollars (\$500.00)** for each and every calendar day that the completion of the Work is delayed beyond the time specified in this Agreement for completion, as fixed and agreed liquidated damages and not as a penalty, so long as the delay is caused by the Contractor. (See Article 16, Liquidated Damages Clause, of the Contract)

14. **PAYMENT** *(See Article 7, Payment, of the Contract for other details)*

The City has implemented a Purchasing Card (P-Card) Program utilizing both VISA and MASTERCARD networks. Purchases from this contract will be made utilizing the City's Purchasing Card. Contractor will receive payment from the purchasing card in the same manner as other credit card purchases. Accordingly, bidders must presently have the ability to accept these credit cards or take whatever steps necessary to implement the ability before the start of the contract term, or contract award by the City. The City reserves the right to revise this program as necessary.

15. **WORK SCHEDULE (including overtime hours):** 8:00 a.m. to 5:00 p.m.

City Inspector hours are 8:00 a.m. to 4:30 p.m. Any inspection requested by the contractor outside those hours will be considered overtime to be paid by the Contractor.

16. **INSPECTION OVERTIME COST:** \$146/hr.

SPECIAL CONDITIONS (continued)

PROJECT12060

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SC-8

CITY OF FORT LAUDERDALE  
CONSTRUCTION AGREEMENT

THIS AGREEMENT made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by and between the City of Fort Lauderdale, a Florida municipal corporation (City) and \_\_\_\_\_, (Contractor), (parties);

WHEREAS, the City desires to retain a contractor for the Project as expressed in its Invitation to Bid No., \_\_\_\_\_, Project Number, \_\_\_\_\_, which was opened on \_\_\_\_\_; and,

WHEREAS, the Contractor has expressed its willingness and capability to perform the necessary work to accomplish the Project.

NOW, THEREFORE, the City and the Contractor, in consideration of the mutual covenants and conditions contained herein and for other good and valuable consideration, the receipt and sufficiency is hereby acknowledged, agree as follows:

**ARTICLE 1 – DEFINITIONS**

Whenever used in this Agreement or in other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural forms:

- 1.1 Agreement – This written Agreement between the City and the Contractor covering the work to be performed including other Contract Documents that are attached to or incorporated in the Agreement.
- 1.2 Application for Payment – The form accepted by the City which is to be used by the Contractor in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents
- 1.3 Approve – The word approve is defined to mean review of the material, equipment or methods for general compliance with design concepts and with the design concepts and with the information given in the Contract Documents. It does not imply a responsibility on the part of the City to verify in every detail conformance with plans and specifications.
- 1.4 Bid – The offer or Bid of the Contractor submitted on the prescribed form setting forth the total prices for the Work to be performed.
- 1.5 Bid Documents – This Agreement, advertisement for Invitation to Bids, the Instructions to Bidders, the Bid Form (with supplemental affidavits and agreements), the Contract Forms, General Conditions, the Supplementary Conditions, the Specifications, and the Plans, which documents all become an integral part of the Contract Documents.
- 1.6 Certificate of Substantial Completion - Certificate provided by the City certifying that all Work, excluding the punch list items, has been completed, inspected, and accepted by the City.



- 1.7 Change Order - A change order is defined as a written order to a contractor approved by the City, authorizing a revision of an underlying agreement between the City and a contractor that is directly related to the original scope of work or an adjustment in the original contract price or the contract time directly related to the original scope of work, issued on or after the effective date of the contract.
- 1.8 City - The City of Fort Lauderdale, Florida, including but not limited to its employees, agents, officials, representatives, contractors, subcontractors, volunteers, successors and assigns, with whom the Contractor has entered into the Agreement and for whom the Work is to be provided.
- 1.9 Contract Documents - The Contract Documents shall consist of this Agreement, Exhibits to this Agreement, Public Construction Bond, Performance Bond, Payment Bond and Certificates of Insurance, Notice of Award and Notice to Proceed, General Conditions as amended by the Special Conditions, Technical Specifications, Plans/Drawings, Addenda, Bid Form and supplement Affidavits and Agreements, all applicable provisions of State and Federal Law and any modification, including Change Orders or written amendments duly delivered after execution of Agreement, Invitation to Bid, Instructions to Bidders and Bid Bond, Contractor's response to the City's Invitation to Bid, Schedule of Completion, Schedule of Values, all amendments, modifications and supplements, change orders and work directive changes issued on or after the Effective Date of the Agreement, as well as any additional documents that are required to be submitted under the Agreement.
- Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Agreement. A copy of all permits shall be given to the City for inclusion in the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.
- 1.10 Contract Price - The monies payable to the Contractor by the City under the Contract Documents and in accordance with the line item unit prices listed in the Bid.
- 1.11 Contract Time - The number of calendar days stated in the Agreement for the completion of the Work. The dates on which the work shall be started and shall be completed as stated in the Notice to Proceed.
- 1.12 Contractor - The person, firm, company, or corporation with whom the City has entered into the Agreement, including but not limited to its employees, agents, representatives, contractors, subcontractors, their subcontractors and their other successors and assigns.
- 1.13 Day - A calendar day of twenty-four (24) hours ending at midnight.
- 1.14 Defective - An adjective which when modifying the word "Work" refers to work that is unsatisfactory, faulty, or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, test or approval referred to in the Contract Documents, or has been damaged prior to the Project Manager's recommendation of final payment.

- 1.15 Effective Date of the Agreement – The effective date of the agreement shall be the date the City Commission approves the work. The contractor shall provide all required payment and performance bonds and insurances to the City within ten (10) Calendar days following the City Commission approval. Upon verification of all bonds and insurances, the City will issue a notice to proceed (NTP) to the Contractor. Contract time will commence on the date when the Notice to Proceed is issued. The Contractor shall commence the work immediately upon receipt of the Notice to Proceed. Failure of the contractor to proceed with the work will constitute nonperformance of the Contractor and would be ground for termination of the contract per ARTICLE 17 of the agreement.
- 1.16 Final Completion Date – The date the Work is completed, including completion of the final punch list, and delivered along with those items specified in the Contract Documents and is accepted by the City.
- 1.17 Hazardous Materials (HAZMAT) - Any solid, liquid, or gaseous material that is toxic, flammable, radioactive, corrosive, chemically reactive, or unstable upon prolonged storage in quantities that could pose a threat to life, property, or the environment defined in Section 101(14) of Comprehensive Environmental Response, Compensation and Liability Act of 1980 and in 40 CFR 300.6. Also defined by 49 CFR 171.8 as a substance or material designated by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.
- 1.18 Hazardous Substance - As defined by Section 101(14) of the Comprehensive Environmental Response, Compensation and Liability Act; any substance designated pursuant to Section 311(b) (2) (A) of the Clean Water Act; any element, compound, mixture, solution or substance designated pursuant to Section 102 identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act {but not including any waste listed under Section 307[a] of the Clean Water Act}; any hazardous air pollutant listed under Section 112 of the Clean Air Act; and any imminently hazardous chemical substance or mixture pursuant to Section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance in the first sentence of this paragraph, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).
- 1.19 Hazardous Waste - Those solid wastes designated by OSHA in accordance with 40 CFR 261 due to the properties of ignitability, corrosivity, reactivity, or toxicity. Any material that is subject to the Hazardous Waste Manifest requirements of the EPA specified in 40 CFR Part 262.
- 1.20 Holidays - Those designated non-work days as established by the City Commission of the City of Fort Lauderdale.
- 1.21 Inspection – The term “inspection” and the act of inspecting as used in this Agreement is defined to mean the examination of construction to ensure that it conforms to the design concept expressed in the plans and specifications. This term shall not be construed to mean supervision, superintending and/or overseeing.

- 1.22 Notice of Award - The written notice by City to the Contractor stating that upon compliance by the Contractor with the conditions precedent enumerated therein, within the time specified that the City will sign and deliver this Agreement.
- 1.23 Notice to Proceed – A written notice given by the City to the Contractor fixing the date on which the Contract Time will commence to run and on which the Contract Time will end.
- 1.24 Plans - The drawings which show the character and scope of the work to be performed and which have been prepared or approved by the City and are referred to in the Contract Documents.
- 1.25 Premises (otherwise known as Site or Work Site) – means the land, buildings, facilities, etc. upon which the Work is to be performed.
- 1.26 Project – The total construction of the Work to be provided as defined in the Contract Documents.
- 1.27 Project Manager - The employee of the City, or other designated individual who is herein referred to as the Project Manager, will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the contract Documents in connection with completion of the Work in accordance with this Agreement. The Project Manager, or designee, shall be the authorized agent for the City unless otherwise specified.
- 1.28 Punch List - The City's list of Work yet to be done or be corrected by the Contractor, before the Final Completion date can be determined by the City.
- 1.29 Record Documents - A complete set of all specifications, drawings, addenda, modifications, shop drawings, submittals and samples annotated to show all changes made during the construction process.
- 1.30 Record Drawings or "As-Builts" - A set of drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor. These documents will be signed and sealed by the Engineer of Record or a Professional Land Surveyor licensed in the State of Florida.
- 1.31 Substantially Completed Date – A date when the Contractor has requested in writing, stating that the Work is substantially completed and is ready for an inspection and issuance of a final punch list for the Project.
- 1.32 Work – The entire completed delivered product 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 material and equipment into the product, all as required by the Contract Documents.

## ARTICLE 2 – SCOPE OF WORK

- 2.1 The Contractor shall complete all work as specified or indicated in the Contract Documents. The Project for which the Work under the Contract Documents may be the whole or only part is generally described as follows:

MILLS POND PARK ATHLETIC FIELDS  
ITB 263-11777 PROJECT 12060

- 2.2 All Work for the Project shall be constructed in accordance with the Drawings and Specifications. The Work generally involves:

### PROJECT DESCRIPTION

This project is located at 2201 NW 9th Avenue, in the City of Fort Lauderdale. The work to be accomplished under this contract includes, but is not limited to, the construction of three (3) athletic fields to be used for either soccer or lacrosse at Mills Pond Park. This project will include installing at least two (2) synthetic (artificial) turf fields and a third natural grass or synthetic turf field. All three (3) fields will include sports lighting.

- 2.3 Within ten (10) days of the execution of this Agreement, the Contractor shall submit a Construction Schedule, Schedule of Values and a listing of those subcontractors that will be utilized by the Contractor. The general sequence of the work shall be submitted by the Contractor and approved by the City before any work commences. The City reserves the right to issue construction directives necessary to facilitate the Work or to minimize any conflict with operations.

## ARTICLE 3 – PROJECT MANAGER

- 3.1 The Project Manager is hereby designated by the City as **Luisa Fernanda Arbeláez, PE, PMP** whose address is 100 N. Andrews Avenue, 4<sup>th</sup> Floor, Fort Lauderdale, FL 33301. The Project Manager will assume all duties and responsibilities and will have the rights and authorities assigned to the Project Manager in the Contract Documents in connection with completion of the Work in accordance with this Agreement.

## ARTICLE 4 – CONTRACT DOCUMENTS

The Contract Documents which comprise the entire Agreement between the City and Contractor are attached to this Agreement, are made a part hereof and consist of the following:

- 4.1 This Agreement.
- 4.2 The Contract Documents may only be altered, amended, or repealed in accordance with the specific provisions of the terms of this Agreement.
- 4.3 Exhibits to this Agreement: (Plans sheets [ ] to [ ] inclusive).
- 4.4 Public Construction Bond, Performance Bond, Payment Bond and Certificates of Insurance.

- 4.5 Notice of Award and Notice to Proceed.
- 4.6 General Conditions as amended by the Special Conditions.
- 4.7 Technical Specifications.
- 4.8 Plans/Drawings.
- 4.9 Addenda number \_\_\_\_\_ through \_\_\_\_\_, inclusive.
- 4.10 Bid Form and supplement Affidavits and Agreements.
- 4.11 All applicable provisions of State and Federal Law.
- 4.12 Invitation to Bid No., \_\_\_\_\_, Instructions to Bidders, and Bid Bond.
- 4.13 Contractor's response to the City's Invitation to Bid No., \_\_\_\_\_, dated \_\_\_\_\_.
- 4.14 Schedule of Completion and Schedule of Values.
- 4.15 All amendments, modifications and supplements, change orders and work directive changes issued on or after the Effective Date of the Agreement.
- 4.16 Any additional documents that are required to be submitted under the Agreement.
- 4.17 Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Agreement. A copy of all permits shall be given to the City for inclusion in the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

In the event of any conflict between the documents or any ambiguity or missing specification or instruction, the following priority is established:

- a. Specific direction from the City Manager (or designee).
- b. Approved change orders, addenda or amendments.
- c. Specifications (quality) and Drawings (location and quantity).
- d. Supplemental conditions or special terms.
- e. General Terms and Conditions.
- f. This Agreement dated \_\_\_\_\_ and any attachments.
- g. Invitation to Bid No., \_\_\_\_\_, and the specifications prepared by the City.

- h. Contractor's response to the City's Invitation to Bid No., \_\_\_\_\_, dated \_\_\_\_\_.
- i. Schedule of Values.
- j. Schedule of Completion.

If during the performance of the Work, Contractor finds a conflict, error or discrepancy in the Contract Documents, Contractor shall so report to the Project Manager, in writing, at once and before proceeding with the Work affected shall obtain a written interpretation or clarification from the City.

It is the intent of the specifications and plans to describe a complete Project to be constructed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the specifications or plans as being required to produce the intended result shall be supplied whether or not it is specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials, or equipment, such works shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or associations, or to the code of any governmental authority whether such reference be specific or implied, shall mean the latest standard specification, manual or code in effect as of the Effective Date of this Agreement, 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 change the duties and responsibilities of the City, the Contractor, or any of their agents or employees from those set forth in the Contract Documents.

#### **ARTICLE 5 – CONTRACT TIME**

- 5.1 The Contractor recognizes that **TIME IS OF THE ESSENCE**. The Work shall commence within 14 calendar days of the date of the Notice to Proceed.
- 5.2 The Work shall be Substantially Completed within 240 calendar days after the date when the Contract Time commences to run as provided in the Notice to Proceed.
- 5.3 The Work shall be finally completed on the Final Completion Date and ready for final payment in accordance with this Agreement within 300 calendar days after the date when the Contract Time commences to run as provided in the Notice to Proceed.

#### **ARTICLE 6 – CONTRACT PRICE**

- 6.1 City shall pay Contractor for performance of the Work in accordance with Article 7, subject to additions and deletions by Change Order, as provided for in this Agreement.
- 6.2 The parties expressly agree that the Contract Price, which shall not exceed the amount of \$\_\_\_\_\_, constitutes the total maximum compensation payable to Contractor for performing the Work, plus any Work done pursuant to a Change Order. The Contract Price is in accordance with the line item unit prices listed in the Bid. Line items are based on a unit price cost multiplied by a defined quantity. Any

additional duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change to the Contract Price.

- 6.3 The Contract Price constitutes the compensation payable to Contractor for performing the Work plus any Work done pursuant to a Change Order. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract price.

## ARTICLE 7 – PAYMENT

- 7.1 Contractor shall submit Applications for Payment in accordance with the Contract Documents. Applications for Payment will be processed by City as provided in the General Conditions.
- 7.2 Progress Payments. City shall make progress payments on account of the Contract Price on the basis of Contractor's monthly Applications for Payment, which shall be submitted by the Contractor between the first (1<sup>st</sup>) and the tenth (10<sup>th</sup>) day after the end of each calendar month for which payment is requested. All progress payments will be made on the basis of the progress of the Work completed.
- 7.3 Prior to Final Completion, progress payments will be made in an amount equal to ninety percent (90%) of the value of Work completed less in each case the aggregate of payments previously made.
- 7.4 Final Payment. Upon final completion of the Work in accordance with the General Conditions, as may be supplemented, the City shall pay Contractor an amount sufficient to increase total payments to one-hundred percent (100%) of the Contract Price. However, not less than ten percent (10%) of the Contract Price shall be retained until Record Drawings (as-builts), specifications, addenda, modifications and shop drawings, including all manufacturers' instructional and parts manuals are delivered to and accepted by the City.
- 7.5 City may withhold, in whole or in part, payment to such extent as may be necessary to protect itself from loss on account of:
- 7.5.1 Defective work not remedied.
  - 7.5.2 Claims filed or reasonable evidence indicating probable filing of claims by other parties against Contractor or City because of Contractor's performance.
  - 7.5.3 Failure of Contractor to make payments properly to Subcontractors or for material or labor.
  - 7.5.4 Damage to another contractor not remedied.
  - 7.5.5 Liquidated damages and costs incurred by Consultant for extended construction administration, if applicable.
  - 7.5.6 Failure of Contractor to provide any and all documents required by the Contract Documents.

When the above grounds are removed or resolved satisfactory to the Project Manager, payment shall be made in whole or in part.

- 7.6 The City shall make payment to the Contractor in accordance with the Florida Prompt Payment Act, Section 218.70, Florida Statutes.
- 7.7 The City shall make payment to the Contractor through utilization of the City's P-Card Program.

## **ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

In order to induce the City to enter into this Agreement, Contractor makes the following representations upon which the City has relied:

- 8.1 Contractor is qualified in the field of public construction and in particular to perform the Work and services set forth in this Agreement.
- 8.2 Contractor has visited the Work Site, has conducted extensive tests, examinations and investigations and represents and warrants a thorough familiarization with the nature and extent of the Contract Documents, the Work, locality, soil conditions, moisture conditions and all year-round local weather and climate conditions (past and present), and, in reliance on such tests, examination and investigations conducted by Contractor and the Contractor's experts, has determined that no conditions exist that would in any manner affect the Proposed Price and that the project can be completed for the Proposed Price submitted within the Contract Time as defined in this Agreement. Furthermore, Contractor warrants and confirms that he is totally familiar with, understands and obligates Contractor to comply with all federal, state and local laws, ordinances, rules, regulations and all market conditions that affect or may affect the cost and price of materials and labor needed to fulfill all provisions of this Agreement or that in any manner may affect cost, progress or performance of the Work.
- 8.3 The Contractor has satisfied itself as to the nature and location of the Work under the Contract Documents, the general and local conditions of the Project, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, and roads, the conformation and conditions at the ground based on City provided reports, the type of equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under the Contract Documents.
- 8.4 The Contractor has also studied carefully all reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress or performance of the Works, and finds and has further determined that no conditions exist that would in any manner affect the Proposed Price and that the project can be completed for the Proposed Price submitted.
- 8.5 Contractor has made or caused to be made examinations, investigations, tests and studies of such reports and related data in addition to those referred to in Paragraphs 8.2, 8.3 and 8.4 above as he deems necessary for the performance of the Work at the Contract Prices, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents; and no additional examinations, investigations, tests, reports or similar data are, or will be, required by Contractor for such purposes.



8.6 Contractor has correlated the results of all such observations, examinations, investigations, tests, reports and data with the terms and conditions of the Contract Documents.

8.7 Contractor has given City written notice of all conflicts, errors or discrepancies that he has discovered in the Contract Documents and the written resolution by City is acceptable to the Contractor.

8.8 Labor

8.8.1 The Contractor shall provide competent, suitable qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The Contractor shall at all times maintain good discipline and order at the site.

8.8.2 The Contractor shall, at all times, have a competent superintendent, capable of reading and thoroughly understanding the drawings and specifications, as the Contractor's agent on the Work, who shall, as the Contractor's agent, supervise, direct and otherwise conduct the Work.

8.8.3 The Contractor shall designate the superintendent on the job to the City, in writing, immediately after receipt of the Notice to Proceed. The Contractor understands and agrees that the superintendent's physical presence on the job site is indispensable to the successful completion of the Work. If the superintendent is frequently absent from the job site, the Project Manager may deliver written notice to the Contractor to stop work or terminate the Contract in accordance with Article 17.

8.8.4 The Contractor shall assign personnel to the job site that have successfully completed training programs related to trench safety, confined space and maintenance of traffic. A certified "competent person" shall be assigned to the job site. Personnel certified by the International Municipal Signal Associations with Florida Department of Transportation qualifications are required relative to maintenance of traffic. Failure to pursue the Work with the properly certified supervisory staff may result in notice to stop work or terminate the Contract in accordance with Article 17.

8.9 Materials

8.9.1 The Contractor shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of Work.

8.9.2 All material and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. Suppliers shall be selected and paid by the Contractor; the City reserves the right to approve all suppliers and materials.

8.10 Work Hours: 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 Supplementary Conditions, all work at the site shall be performed during regular working hours between 7 a.m. and 6:00 p.m., Monday through Friday. The Contractor will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday (designated by the City of Fort Lauderdale) without the Project Manager's written consent at least seventy-two (72) hours in advance of starting such work. If the Project Manager permits overtime work, the Contractor shall pay for the additional charges to the City with respect to such overtime work. Such additional charges shall be a subsidiary obligation of the Contractor and no extra payment shall be made to the Contractor for overtime work. It shall be noted that the City's Inspector work hours are from 8:00 a.m. to 4:30 p.m. and any Work requiring inspection oversight being performed outside of this timeframe shall be paid for by the Contractor as Inspector overtime. The cost to the Contractor to reimburse the City for overtime inspection is established at direct-labor and overtime costs for each person or inspector required. Incidental overtime costs for engineering, testing and other related services will also be charged to the Contractor at the actual rate accrued.

- 8.11 Patent Fee and Royalties: The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work, or any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. The Contractor hereby expressly binds himself or itself to indemnify and save harmless the City from all such claims and fees and from any and all suits and action of every name and description that may be brought against City on account of any such claims, fees, royalties, or costs for any such invention or patent, and from any and all suits or actions that may be brought against said City for the infringement of any and all patents or patent rights claimed by any person, firm corporation or other entity.
- 8.12 Permits: The Contractor shall obtain and pay for all permits and licenses. There shall be no allowance for Contractor markup, overhead or profit for permits and licenses. The Contractor shall pay all government charges which are applicable at the time of opening of proposals. It shall be the responsibility of the Contractor to secure and pay for all necessary licenses and permits of a temporary nature necessary for the prosecution of Work.
- 8.13 Law and Regulations: The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the Contractor observes that the specifications or plans are at variance therewith, the Contractor shall give the Project Manager prompt written notice thereof, and any necessary changes shall be adjusted by any appropriate modifications. If the Contractor performs any work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to the Project Manager, the Contractor shall bear all costs arising therefrom; however, it shall not be the Contractor's primary responsibility to make certain that the specifications and plans are in accordance with such laws, ordinances, rules and regulations.
- 8.14 Taxes: The Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the laws of the City of Fort Lauderdale, County of Broward, State of Florida.
- 8.15 Contractor Use of Premises: The Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted

by law, ordinances, permits and/or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.

The Contractor shall not enter upon private property for any purpose without first securing the permission of the property owner in writing and furnishing the Project Manager with a copy of said permission. This requirement will be strictly enforced, particularly with regard to such vacant properties as may be utilized for storage or staging by the Contractor.

The Contractor shall conduct his work in such a manner as to avoid damage to adjacent private or public property. Any damage to existing structures of work of any kind, including permanent reference markers or property corner markers, or the interruption of a utility service, shall be repaired or restored promptly at no expense to the City or property owner.

The Contractor will preserve and protect all existing vegetation such as trees, shrubs and grass on or adjacent to the site which do not reasonably interfere with the construction, as determined by the Project Manager. The Contractor will be responsible for repairing or replacing any trees, shrubs, lawns and landscaping that may be damaged due to careless operation of equipment, stockpiling of materials, tracking of grass by equipment or other construction activity. The Contractor will be liable for, or will be required to replace or restore at no expense to the City all vegetation not protected or preserved as required herein that may be destroyed or damaged.

During the progress of the work, the Contractor shall keep the premises free from accumulations of waste materials, rubbish and debris resulting from the Work. At the completion of the Work, the 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 the City. The Contractor shall restore to their original condition those portions of the site not designated for alteration by the Contract Documents at no cost to the City.

- 8.16 Project Coordination: The Contractor shall provide for the complete coordination of the construction effort. This shall include, but not necessarily be limited to, coordination of the following:

8.16.1 Flow of material and equipment from suppliers.

8.16.2 The interrelated work with affected utility companies.

8.16.3 The interrelated work with the City where tie-ins to existing facilities are required.

8.16.4 The effort of independent testing agencies.

8.16.5 Notice to affected property owners as may be directed by the Project Manager.

- 8.17 Project Record Documents and Final As-Builts (Record Drawings): Contractor shall be responsible for maintaining up-to-date redline as-built drawings, on site, at all times during construction. All as-built information shall be surveyed and verified by a professional land surveyor registered in the State of Florida. Contractor shall provide the City with a minimum of three (3) sets of signed and sealed record drawings (Final

As-Builts) and a CD of the electronic drawings files created in AutoCad 2014 or later. All costs associated with survey work required for construction layout and as-built preparation shall be the responsibility of the Contractor.

8.18 Safety and Protection:

8.18.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- 8.18.1.1 All employees working on the project and other persons who may be affected thereby.
- 8.18.1.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site.
- 8.18.1.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

8.18.2 The Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders 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. The Contractor shall notify owners of adjacent property and utilities when execution of the Work may affect them at least seventy-two (72) hours in advance (unless otherwise required). All damage, injury or loss to any property caused, directly or indirectly, in whole or in part by the Contractor, any subcontractor or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, shall be remedied by the Contractor. The Contractor's duties and responsibilities for safety and protection of the Work shall continue until such time as all the Work is completed and accepted by the City.

8.19 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the City is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give the Project Manager prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby.

8.20 Risk of Loss: The risk of loss, injury or destruction shall be on the Contractor until acceptance of the Work by the City. Title to the Work shall pass to the City upon acceptance of the Work by the City.

8.21 Environmental: The Contractor has fully inspected the Premises and agrees, except as to the presence of any asbestos, to accept the Premises in an "as is" physical condition, without representation or warranty by the City of any kind, including, without limitation, any and all existing environmental claims or obligations that may arise from the presence of any "contamination" on, in or about the Premises. Further, Contractor and all entitles claiming by, through or under the Contractor, releases and discharges

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EXHIBIT 3

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the City, from any claim, demand, or cause of action arising out of or relating to the Contractor's use, handling, storage, release, discharge, treatment, removal, transport, decontamination, cleanup, disposal and/or presence of any hazardous substances including asbestos on, under, from or about the Premises. The Contractor shall have no liability for any pre-existing claims or "contamination" on the Premises.

The Contractor shall not use, handle, store, discharge, treat, remove, transport, or dispose of Hazardous Substances including asbestos at, in, upon, under, to or from the Premises until receipt of instructions from the City. At such time, a City approved Change Order, which shall not include any profit, shall authorize the Contractor to perform such services.

The Contractor shall immediately deliver to the Project Manager complete copies of all notices, demands, or other communications received by the Contractor from any governmental or quasi-governmental authority or any insurance company or board of fire underwriters or like or similar entities regarding in any way alleged violations or potential violations of any Environmental Law or otherwise asserting the existence or potential existence of any condition or activity on the Premises which is or could be dangerous to life, limb, property, or the environment.

For other and additional consideration, the Contractor hereby agrees, at its sole cost and expense, to indemnify and protect, defend, and hold harmless the City and its respective employees, agents, officials, officers, representatives, contractors and subcontractors, successors, and assigns (hereafter the "City") from and against any and all claims, demands, losses, damages, costs, expenses, including but not limited to mitigation, restoration, and natural restoration expenses, liabilities, assessments, fines, penalties charges, administrative and judicial proceedings and orders, judgments, causes of action, in law or in equity, remedial action requirements and/or enforcement actions of any kind (including, without limitation, attorneys' fees and costs) directly or indirectly arising out of or attributable to, in whole or in part, the Contractor's use, handling, storage, release, threatened release, discharge, treatment, removal, transport, decontamination, cleanup, disposal and/or presence of a Hazardous Substance (excluding asbestos) on, under, from, to or about the Premises or any other activity carried on or undertaken on or off the Premises by the Contractor or its employees, agents or subcontractors, in connection with the use, handling, storage, release, threatened release, discharge, treatment, mitigation, natural resource restoration, removal, transport, decontamination, cleanup, disposal and/or presence or any Hazardous Substance including asbestos located, transported, or present on, under, from, to, or about the Premises. This indemnity is intended to be operable under 42 U.S.C. sections 9607, as amended, and any successor section.

The scope of the indemnity obligations includes, but is not limited to: (a) all consequential damages; (b) the cost of any required or necessary repair, cleanup, or detoxification of the applicable real estate and the preparation and implementation of any closure, remedial or other required plan, including without limitation; (i) the costs of removal or remedial action incurred by the United States government or the State of Florida or response costs incurred by any other person, or damages from injury to destruction of, or loss of, natural resources, including the cost of assessing such injury, destruction, or loss, incurred pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, as amended; (ii) the clean-up costs, fines, damages, or penalties incurred pursuant to any applicable provisions of Florida law;

and (iii) the cost and expenses of abatement, correction or cleanup, fines, damages, response costs, or penalties which arise from the provisions of any other statute, law, regulation, code ordinance, or legal requirement state or federal; and (c) liability for personal injury or property damage arising under any statutory or common law tort theory, including damages assessed for the maintenance of a public private nuisance, response costs, or for the carrying on of an abnormally dangerous activity.

8.22 No Extended Damages: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any other reason or allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

8.23 No Liens: If any Subcontractor, supplier, laborer, or materialmen of Contractor or any other person directly or indirectly acting for or through Contractor files or attempts to file a mechanic's or construction lien against the real property on which the work is performed or any part or against any personal property or improvements or claim against any monies due or to become due from the City to Contractor or from Contractor to a Subcontractor, for or on account of any work, labor, services, material, equipment, or other items furnished in connection with the Work or any Change Order, Contractor agrees to satisfy, remove, or discharge such lien or claim at its own expense by bond, payment, or otherwise within twenty (20) days of the filing or from receipt of written notice from the City.

Additionally, until such time as such lien or claim is satisfied, removed or discharged by Contractor, all monies due to Contractor, or that become due to Contractor before the lien or claim is satisfied, removed or otherwise discharged, shall be held by City as security for the satisfaction, removal and discharge of such lien and any expense that may be incurred while obtaining such. If Contractor shall fail to do so, City shall have the right, in addition to all other rights and remedies provided by this Agreement or by law, to satisfy, remove, or discharge such lien or claim by whatever means City chooses at the entire and sole cost and expense of Contractor which costs and expenses shall, without limitation, include attorney's fees, litigation costs, fees and expenses and all court costs and assessments.

8.24 Weather Emergencies: Upon issuance of a Hurricane Watch by the National Weather Service, the Contractor shall submit to the City a plan to secure the work area in the event a Hurricane Warning is issued. The plan shall detail how the Contractor will secure the Premises, equipment and materials in a manner as to prevent damage to the Work and prevent materials and equipment from becoming a hazard to persons and property on and around the Premises. The plan shall include a time schedule required to accomplish the hurricane preparations and a list of emergency contacts that will be available and in the City before, during and immediately after the storm.

Upon issuance of a Hurricane Warning by the National Weather Service, if the Contractor has not already done so, the Contractor shall implement its hurricane preparedness plan. Cost of development and implementation of the hurricane preparedness plan shall be considered as incidental to construction. Cost of any clean up and rework required after the storm will be considered normal construction risk within Florida and shall not entitle the Contractor to any additional compensation. Contractor shall be entitled to request an extension in time for completion of the Work, in accordance with the provisions of Article 15 of this Agreement, equal to the time he is shut down for implementation of the preparedness plan, the duration of the storm and a reasonable period to restore the Premises.

- 8.25 Force Majeure: No Party shall hold the other responsible for damages or for delays in performance caused by force majeure, acts of God, or other acts or circumstances beyond the control of the other party or that could not have been reasonably foreseen and prevented. For this purposes, such acts or circumstances shall include, but not be limited to weather conditions affecting performance, floods, epidemics, war, riots, strikes, lockouts, or other industrial disturbances, or protest demonstrations. Should such acts or circumstances occur, the parties shall use their best efforts to overcome the difficulties arising therefrom and to resume the Work as soon as reasonably possible with the normal pursuit of the Work.

Inclement weather, continuous rain for less than three (3) days or the acts or omissions of subcontractors, third-party contractors, materialmen, suppliers, or their subcontractors, shall not be considered acts of force majeure.

No Party shall be liable for its failure to carry out its obligations under the Agreement during a period when such Party is rendered unable by force majeure to carry out its obligation, but the obligation of the Party or Parties relying on such force majeure shall be suspended only during the continuance of the inability and for no longer period than the unexpected or uncontrollable event.

The Contractor further agrees and stipulates, that its right to excuse its failure to perform by reason of force majeure shall be conditioned upon giving written notice of its assertion that a Force Majeure delay has commenced within 96 hours after such an occurrence. The CONTRACTOR shall use its reasonable efforts to minimize such delays. The CONTRACTOR shall promptly provide an estimate of the anticipated additional time required to complete the Project.

- 8.26 Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assisted Contracts: The recipient shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT-assisted contract or in the administration of its DBE program or the requirements of 49 CFR part 26. The recipient shall take all necessary and reasonable steps under 49 CFR part 26 to ensure nondiscrimination in the award and administration of DOT-assisted contracts. The recipient's DBE program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the recipient of its failure to carry out its approved program, the Department may impose sanctions as provided for under part 26 and may, in appropriate cases, refer the matter for enforcement under 18

U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 *et seq.*).

Additionally, the contractor assures that they, the sub recipient or the subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. (This additional language must be included in each subcontract the prime contractor signs with a subcontractor.)

## ARTICLE 9 – CITY’S RESPONSIBILITIES

- 9.1 The City shall furnish the data required of the City under the Contract Documents promptly and shall make payments to the Contractor promptly after they are due as provided in Article 7.
- 9.2 The City’s duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in the Contract Documents.
- 9.3 Technical Clarifications and Interpretations:
- 9.3.1 The City shall issue, with reasonable promptness, such written clarifications or interpretations of the Contract Documents as it may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. Should the Contractor fail to request interpretation of questionable items in the Contract Documents, the City shall not entertain any excuse for failure to execute the Work in a satisfactory manner.
- 9.3.2 The City shall interpret and decide matters concerning performance under the requirements of the Contract Documents, and shall make decisions on all claims, disputes or other matters in question. Written notice of each claim, dispute or other matter will be delivered by claimant to the other Party but in no event later than five (5) days after the occurrence of event, and written supporting data will be submitted to the other Party within five (5) days after such occurrence. All written decisions of the City on any claim or dispute will be final and binding.
- 9.4 The Contractor shall perform all Work to the reasonable satisfaction of the City in accordance with the Contract Documents. In cases of disagreement or ambiguity, the City shall decide all questions, difficulties, and disputes of whatever nature, which may arise under or by reason of this Agreement or the quality, amount and value of the Work, and the City’s decisions on all claims, questions and determination are final.

## ARTICLE 10 – BONDS AND INSURANCE

- 10.1 Public Construction and Other Bonds: The Contractor shall furnish Public Construction or Performance and Payment Bonds (“Bond”), each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all



the Contractor's obligations under the Contract Documents. These Bonds shall remain in effect until at least one (1) year after the date of final payment, except as otherwise provided by law. All Bonds shall be furnished and provided by the surety and shall be in substantially the same form as prescribed by the Contract Documents and be executed by such sureties as (i) are licensed to conduct business in the State of Florida, and (ii) are named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department and (iii) otherwise meet the requirements set forth herein that apply to sureties. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.

10.1.1 Performance Bond: A Corporate Surety Bond legally issued, meeting the approval of, and running to the City in an amount not less than the Contract Price of such improvements, conditioned that the Contractor shall maintain and make all repairs to the improvements constructed by the Contractor at their own expense and free of charge to the City, for the period of one (1) year after the date of acceptance of the Work within such period by reason of any imperfection of the material used or by reason of any defective workmanship, or any improper, imperfect or defective preparation of the base upon which any such improvement shall be laid.

The Contractor shall execute and record in the public records of Broward County, Florida, a payment and performance bond in an amount at least equal to the Contract Price with a surety insurer authorized to do business in the State of Florida as surety, ("Bond") in accordance with Section 255.05, Florida Statutes (2014), as may be amended or revised, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents.

10.2 Disqualification of Surety: If the Surety on any Bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in the State of Florida or it ceases to meet the requirements of clauses (i) and (ii) of Paragraph 10.1, the Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to the City.

10.3 Insurance

10.3.1 Contractor shall provide and shall require all of its sub-contractors to provide, pay for, and maintain in force at all times during the term of the Agreement, such insurance, including Property Insurance (Builder's Risk), Commercial General Liability Insurance, Business Automobile Liability Insurance, Workers' Compensation Insurance, Employer's Liability Insurance, and Umbrella/Excess Liability, as stated below, as well as Professional Liability insurance in the amount of \$1,000,000 for any Architectural and or Engineering requirements associated with the fulfillment of the contract if required. Such policy or policies shall be issued by companies authorized to do business in the State of Florida and having agents upon whom service of process may be made in the State of Florida. **A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with**

**insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.**

- A. The City is required to be named as additional insured on the Commercial General Liability insurance policy. BINDERS ARE UNACCEPTABLE. The insurance coverage required shall include those classifications, as listed in standard liability insurance manuals, which most nearly reflect the operations of the Contractor. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for the work contemplated in this Agreement shall be deemed unacceptable, and shall be considered a breach of contract.
- B. The Contractor shall provide the City an original Certificate of Insurance for policies required by Article 10. All certificates shall state that the City shall be given ten (10) days' notice prior to expiration or cancellation of the policy. The insurance provided shall be endorsed or amended to comply with this notice requirement. In the event that the insurer is unable to accommodate, it shall be the responsibility of the Contractor to provide the proper notice. Such notification will be in writing by registered mail, return receipt requested and addressed to the Finance Department. Such policies shall: (1) name the insurance company or companies affording coverage acceptable to the City, (2) state the effective and expiration dates of the policies, (3) include special endorsements where necessary. Such policies provided under Article 10 shall not be affected by any other policy of insurance, which the City may carry in its own name.
- C. Contractor shall as a condition precedent of this Agreement, furnish to the City of Fort Lauderdale, c/o Project Manager, 100 N. Andrews Avenue, Fort Lauderdale, FL 33301, Certificate(s) of Insurance upon execution of this Agreement, which indicate that insurance coverage has been obtained which meets the requirements as outlined below:

10.3.2 Property Insurance (Builder's Risk): The Contractor shall purchase and maintain property insurance upon the Work at or off the site of 100% of the contract completed value. These policies shall insure the interest of the owner, contractor and subcontractors in the Work, and shall insure against "all risks" of physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage. All such insurance required by this paragraph shall remain in effect until the Work is completed and accepted by the City.

10.3.3 Commercial General Liability

- A. Limits of Liability:  
 Bodily Injury and Property Damage - Combined Single Limit  
 Each Occurrence \$1,000,000  
 Project Aggregate \$1,000,000  
 General Aggregate \$2,000,000  
 Personal Injury \$1,000,000

Products/Completed Operations \$1,000,000

- B. Endorsements Required:  
 City of Fort Lauderdale included as an Additional Insured  
 Broad Form Contractual Liability  
 Waiver of Subrogation  
 Premises/Operations  
 Products/Completed Operations  
 Independent Contractors  
 Owners and Contractors Protective Liability  
 Contractor's Pollution Liability

#### 10.3.4 Business Automobile Liability

- A. Limits of Liability:  
 Bodily Injury and Property Damage - Combined Single Limit  
 All Autos used in completing the contract including Hired, Borrowed or  
 Non-Owned Autos  
 Any One Accident \$1,000,000
- B. Endorsements Required:  
 Waiver of Subrogation

#### 10.3.5 Workers' Compensation and Employer's Liability Insurance

Limits: Workers' Compensation – Per Florida Statute 440  
 Employers' Liability - \$500,000

Any firm performing work on behalf of the City of Fort Lauderdale must provide Workers' Compensation insurance. Exceptions and exemptions can only be made if they are in accordance with Florida Law.

Contractor must be in compliance with all applicable State and Federal workers' compensation laws, including the U.S. Longshore Harbor Workers' Act or Jones Act.

- 10.3.6 Umbrella/Excess Liability: The Contractor shall provide umbrella/excess coverage with limits of no less than \$2,000,000 excess of Commercial General Liability, Automobile Liability and Employer's Liability.

- 10.3.7 All insurance policies required above shall be issued by companies authorized to do business under the laws of the State of Florida, with the following qualifications:

The Contractor's insurance must be provided by an A.M. Best's "A-" rated or better insurance company authorized to issue insurance policies in the State of Florida, subject to approval by the City's Risk Manager. Any exclusions or provisions in the insurance maintained by the Contractor that precludes coverage for work contemplated in this project shall be deemed unacceptable, and shall be considered breach of contract.

NOTE: CITY PROJECT NUMBER MUST APPEAR ON EACH CERTIFICATE.

**A Sample Insurance Certificate shall be included with the proposal to demonstrate the firm's ability to comply with insurance requirements. Provide a previous certificate or other evidence listing the insurance companies' names for all required coverage, and the dollar amounts of the coverage.**

Compliance with the foregoing requirements shall not relieve the Contractor of their liability and obligation under this section or under any other section of this Agreement.

The Contractor shall be responsible for assuring that the insurance certificates required in conjunction with this Section remain in force for the duration of the Project. If insurance certificates are scheduled to expire during the contractual period, the Contractor shall be responsible for submitting new or renewed insurance certificates to the City at a minimum of thirty (30) calendar days in advance of such expiration. In the event that expired certificates are not replaced with new or renewed certificates that cover the contractual period, the City shall:

- A. Suspend the Agreement until such time as the new or renewed certificates are received by the City.
- B. The City may, at its sole discretion, terminate the Agreement for cause and seek damages from the Contractor in conjunction with the violation of the terms and conditions of the Agreement.

#### **ARTICLE 11- WARRANTY AND GUARANTEE, TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

11.1 Warranty: The Contractor warrants and guarantees to the City that all Work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to the Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in this Article.

11.1.1 Warranty of Title: The Contractor warrants to the City that it possesses good, clear and marketable title to all equipment and materials provided and that there are no pending liens, claims or encumbrances against the equipment and materials.

11.1.2 Warranty of Specifications: The Contractor warrants that all equipment, materials and workmanship furnished, whether furnished by the Contractor, its subcontractors or suppliers, will comply with the specifications, drawings and other descriptions supplied or adopted and that all services will be performed in a workmanlike manner.

11.1.3 Warranty of Merchantability: The Contractor warrants that any and all equipment to be supplied pursuant to this Agreement is merchantable, free from

defects, whether patent or latent in material or workmanship, and fit for the ordinary purposes for which it is intended.

- 11.2 Tests and Inspections: Contractor shall retain the services of an independent, certified, testing lab to perform all testing as required by the specifications, Contract drawings, and any applicable permitting agency. Contractor shall provide evidence of certification to the City before the work and testing is done. Testing results shall be submitted to the Engineer for review and approval at the time the results are provided to the Contractor. The Contractor shall give the Project Manager and City Inspector a minimum of twenty-four (24) hours' advanced notice of readiness of the Work for all required inspections, tests, or approvals and shall notify all applicable permitting agencies in a timely manner based on requirements set forth in the permit documents.

11.2.1 Neither observations by the Project Manager nor inspections, tests or approvals by others shall relieve the Contractor from its obligations to perform the Work in accordance with the Contract Documents.

- 11.3 Uncovering Work: If any work that is to be inspected, tested or approved is covered without approval or consent of the Project Manager, it must, if requested by the Project Manager, be uncovered for observation and/or testing. Such uncovering and replacement shall be at the Contractor's sole expense unless the Contractor has given the Project Manager timely notice of the Contractor's intention to cover such Work and the Project Manager has not acted with reasonable promptness in response to such notice.

11.3.1 If the Project Manager considers it necessary or advisable that Work covered in accordance with Paragraph 11.2.1, 11.2.2 and 11.2.3 be observed by the City or inspected or tested by others, the Contractor at the City's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Project Manager may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, the Contractor shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such work is not found to be defective, the Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection testing and reconstruction if he makes a claim therefore as provided in Articles 14 and 15.

- 11.4 City May Stop the Work: If the Work is defective, or the Contractor fails to supply sufficient skilled supervisory personnel or workmen or suitable materials or equipment or the work area is deemed unsafe, the City may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to stop the Work shall not give rise to any duty on the part of the City to exercise this right for the benefit of the Contractor or any other party. The City will not award any increase in Contract Price or Contract Time if the Work is stopped due to the circumstances described herein.

- 11.5 Correction or Removal of Defective Work Before Final Payment: If required by the Project Manager, the Contractor shall promptly, without cost to the City and as Specified by the Project Manager, either correct any defective Work, whether or not fabricated, installed or completed, or if the Work has been rejected by the City remove it from the site and replace it with non-defective Work.
- 11.6 One Year Correction Period After Final Payment: If within one (1) year after the date of final acceptance, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, any work is found to be defective, the Contractor shall promptly, without cost to the City and in accordance with the City's written instructions, either correct such defective Work, or, if it has been rejected by the City, remove it from the site and replace it with non-defective Work.

If The Contractor does not promptly comply with the terms of such instructions or in an emergency where delay would cause serious risk of loss or damage, the City may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs for such removal and replacement, including compensation for additional professional services, shall be paid by the Contractor.

- 11.7 Acceptance of Defective Work, Deductions: If, instead of requiring correction or removal and replacement of defective Work, the City, at the city's sole option, prefers to accept it, the City may do so. In such a case, if acceptance occurs prior to the Project Manager's recommendation of final payments, a Change Order shall be issued incorporating the necessary revisions in the Contracts Documents, including appropriate reduction in the Contract Price; or if the acceptance occurs after such recommendation, an appropriate amount shall be paid by the Contractor to the City.
- 11.8 City May Correct Defective Work: If the Contractor fails within a reasonable time after written notice of the Project Manager to proceed to correct defective Work or to remove and replace rejected Work as required by the Project Manager in accordance with Paragraph 11.5, or if the Contractor fails to perform the Work in accordance with the Contract Documents, the City may, after seven (7) days written notice to the Contractor, correct and remedy any such deficiency. In exercising its rights under this paragraph, the City shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the City may exclude the Contractor from all or part of the site, take possession of all or part of the Work, suspend the Contractor's services related thereto and take possession of the Contractor's tools, construction equipment and materials stored at the site or elsewhere. The Contractor shall allow the City's representative agents and employees such access to the site as may be necessary to enable the City to exercise its rights under this paragraph. All direct and indirect costs of the City in exercising such rights shall be charged against the Contractor in an amount verified by the Project Manager, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the Contractor's defective Work. The Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by the City of the City's right hereunder.

## ARTICLE 12 – INDEMNIFICATION

- 12.1 Disclaimer of Liability: The City shall not at any time, be liable for injury or damage occurring to any person or property from any cause, whatsoever, arising out of Contractor's construction and fulfillment of this agreement.
- 12.2 Indemnification: For other, additional good valuable consideration, the receipt and sufficiency of which is hereby acknowledged:
- 12.2.1 Contractor shall, at its sole cost and expense, indemnify and hold harmless the City, its representatives, employees and elected and appointed officials from or on account of all claims, damages, losses, liabilities and expenses, direct, indirect or consequential including but not limited to fees and charges of engineers, architects, attorneys, consultants and other professionals and court costs arising out of or in consequence of the performance of this Agreement at all trial and appellate levels. Indemnification shall specifically include but not be limited to claims, damages, losses, liabilities and expenses arising out of or from (a) the negligent or defective design of the project and Work of this Agreement; (b) any act, omission or default of the Contractor, its Subcontractors, agents, servants or employees; (c) any and all bodily injuries, sickness, disease or death; (d) injury to or destruction of tangible property, including any resulting loss of use; (e) other such damages, liabilities, or losses received or sustained by any person or persons during or on account of any operations connected with the construction of this Project including the warranty period; (f) the use of any improper materials; (g) any construction defect including both patent and latent defects; (h) failure to timely complete the work; (i) the violation of any federal, state, county or city laws, ordinances or regulations by Contractor, its subcontractors, agents, servants, independent contractors or employees; (j) the breach or alleged breach by Contractor of any term of the Agreement, including the breach or alleged breach of any warranty or guarantee.
- 12.2.2 Contractor agrees to indemnify, defend, save and hold harmless the City, its officers, agents and employees, from all damages, liabilities, losses, claims, fines and fees, and from any and all suits and actions of every name and description that may be brought against City, its officers, agents and employees, on account of any claims, fees, royalties, or costs for any invention or patent and/or for the infringement of any and all copyrights or patent rights claimed by any person, firm, or corporation.
- 12.2.3 Contractor shall pay all claims, losses, liens, settlements or judgments of any nature in connection with the foregoing indemnifications including, but not limited to, reasonable attorney's fees and costs for trials and appeals.
- 12.2.4 If any Subcontractor, supplier, laborer, or materialmen of Contractor or any other person directly or indirectly acting for or through Contractor files or attempts to file a mechanic's or construction lien against the real property on which the work is performed or any part or against any personal property or improvements thereon or make a claim against any monies due or to become due from the City to Contractor or from Contractor to a Subcontractor, for or on account of any work, labor, services, material, equipment, or other items

furnished in connection with the Work or any change order, Contractor agrees to satisfy, remove, or discharge such lien or claim at its own expense by bond, payment, or otherwise within five (5) days of the filing or from receipt of written notice from the City.

Additionally, until such time as such lien or claim is satisfied, removed or discharged by Contractor, all monies due to Contractor, or that become due to Contractor before the lien or claim is satisfied, removed or otherwise discharged, shall be held by City as security for the satisfaction, removal and discharge of such lien and any expense that may be incurred while obtaining the discharge. If Contractor shall fail to do so, City shall have the right, in addition to all other rights and remedies provided by this Agreement or by law, to satisfy, remove, or discharge such lien or claim by whatever means City chooses at the entire and sole cost and expense of Contractor which costs and expenses shall, without limitation, include attorney's fees, litigation costs, fees and expenses and all court costs and assessments, and which shall be deducted from any amount owing to Contractor. In the event the amount due Contractor is less than the amount required to satisfy Contractor's obligation under this, or any other article, paragraph or section of this Agreement, the Contractor shall be liable for the deficiency due the City.

12.2.5 The Contractor and the City agree that Section 725.06(2), Florida Statutes controls the extent and limits of the indemnification and hold harmless provisions of this Agreement, if any, and that the parties waive any defects in the wording of this Article that runs afoul of said statutory section.

### **ARTICLE 13 – CHANGES IN THE WORK**

- 13.1 Without invalidating this Agreement, the City may, at any time or from time to time order additions, deletions or revisions in the Work through the issuance of Change Orders. Upon receipt of a Change Order, the Contractor shall proceed with the Work involved. All Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 14 or Article 15 on the basis of a claim made by either Party.
- 13.2 The Project Manager may authorize minor changes in the work not involving an adjustment in the Contract Price or the Contract Time, which are consistent with the overall intent of the Contract Documents. Such changes must be in writing and signed by the City and the Contractor.
- 13.3 If notice of any change affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the Surety, it will be the Contractor's responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. The Contractor shall furnish proof of such adjustment to the City.



## ARTICLE 14 – CHANGE OF CONTRACT PRICE

Change of Contract Price, approved by City, shall be computed as follows:

14.1 Cost of the Work: The term “Cost of the Work” means the sum of all direct costs necessarily incurred and paid by Contractor in the proper performance of the Work. Except as otherwise may be agreed to in writing by the City, these costs shall be in amounts no higher than those prevailing in the City and shall include only the following items and shall not include any of the costs itemized in Paragraph 14.3:

14.1.1 Payroll costs for employees in the direct employ of the Contractor in the performance of the Work under schedules of job classifications agreed upon by the City and the Contractor. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus and cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, worker's compensation, health and retirement benefits, bonuses, sick leave, vacation and applicable holiday pay.

14.1.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage, and required suppliers and field services. All cash discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the City, and the Contractor shall make provisions so that they may be obtained.

14.1.3 Supplemental costs including the following:

14.1.3.1 Cost, including transportation and maintenance of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work.

14.1.3.2 Rentals of all construction equipment and machinery and the parts whether rented from the Contractor or others in accordance with rental agreements approved by the City, and the costs of transporting, loading, unloading, installation, dismantling and removal. The rental of any such equipment, machinery or parts shall cease when the use is no longer necessary for the Work.

14.1.3.3 Sales, consumer, use or similar taxes related to the Work and for which the Contractor is liable, imposed by laws and regulations.

14.1.3.4 Royalty payments and fees for permits and licenses.

14.1.3.5 The cost of utilities, fuel and sanitary facilities at the Work site.

14.1.3.6 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

- 14.1.3.7 Cost of premiums for additional bonds and insurance required because of changes in the Work.

14.2 The Contract Price may only be increased by a Change Order when Work is modified in accordance with Article 13 and approved by the City in writing. Any claim for an increase in the Contract Price resulting from a Change Order shall be based on written notice delivered to the Project Manager within ten (10) days of the occurrence of the Change Order giving rise to the claim. Notice of the amount of the claim with supporting data shall be included in the Change Order and delivered within twenty (20) days of such occurrence unless Project Manager allows an additional period of time to ascertain accurate cost data. Any change in the Contract Price resulting from any such claim shall be incorporated in the Change Order. **IT IS EXPRESSLY AND SPECIFICALLY AGREED THAT ANY AND ALL CLAIMS FOR CHANGES TO THE CONTRACT PRICE SHALL BE WAIVED IF NOT SUBMITTED IN STRICT ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.**

14.3 Not Included in the Cost of the Work: The term "cost of the Work" shall not include any of the following:

14.3.1 Payroll costs and other compensation of the Contractor's officers executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditor, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by the Contractor whether at the site or in the Contractor's principal or branch office for general administration of the work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 14.1.1, all of which are to be considered administrative costs covered by the Contractor's fee.

14.3.2 Expenses of the Contractor's principal and branch offices other than the Contractor's office at the site.

14.3.3 Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work and charges against the Contractor for delinquent payments.

14.3.4 Cost of premiums for all bonds and for all insurance whether or not the Contractor is required by the Contract Documents to purchase and maintain the same.

14.3.5 Costs due to the negligence of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

14.3.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 14.1

- 14.4 Basis of Compensation: The Contractor's compensation, allowed to the Contractor for overhead and profit, shall be determined as follows:
- 14.4.1 A mutually acceptable negotiated fee:
- 14.4.1.1 For costs incurred under Paragraphs 14.1.1 and 14.1.2, the Contractor's fee shall not exceed five percent (5%).
- 14.4.1.2 No fee shall be payable on the basis of costs itemized under Paragraphs 14.1.3.1, 14.1.3.2, 14.1.3.3, 14.1.3.4, 14.1.3.5, 14.1.3.6, 14.1.3.7, 14.3.1, 14.3.2, 14.3.3, 14.3.4, 14.3.5 and 14.3.6.
- 14.4.1.3 The amount of credit to be allowed by the Contractor to the City for any such change which results in a net decrease plus a deduction in the Contractor's fee by an amount equal to five percent (5%) for the net decrease.
- 14.4.1.4 When both additions and credits are involved in any one change the combined overhead and profit shall be figured on the basis of net increase if any, however, not to exceed five percent (5%) of the agreed compensation. Profit will not be paid on any Work not performed.
- 14.5 Cost Breakdown Required: Whenever the cost of any Work is to be determined pursuant to this Article, the Contractor will submit in form acceptable to the City an itemized cost breakdown together with supporting documentation. Whenever a change in the Work is to be based upon mutual acceptance of a lump sum, whether the amount is an addition, credit, or no-charge-in-cost, the Contractor shall submit an estimate substantiated by a complete itemized breakdown:
- 14.5.1 The breakdown shall list quantities and unit prices for materials, labor, equipment and other items of cost.
- 14.5.2 Whenever a change involves the Contractor and one (1) or more subcontractors and the change is an increase in the agreed compensation, the overhead and profit percentage for the Contractor and each subcontractor shall be itemized separately.
- 14.6 Time for the City to Approve Extra Work: Any Extra Work in an amount up to and not exceeding a cumulative amount of \$25,000 for a specific project can be approved by the City Manager and shall require a written Change Order proposal to be submitted to the Public Works Director for submittal and approval by the City Manager. Extra Work exceeding the cumulative amount of \$25,000 for a specific project must be approved by the City Commission and a written Change Order proposal must be submitted to the Public Works Director for submittal and approval by the City Manager and City Commission. No financial or time claim for delay to the project resulting from the Change Order approval process outlined above under Section 14.6 will be allowed.

## ARTICLE 15 – CHANGE OF THE CONTRACT TIME

- 15.1 The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to the Project Manager within five (5) days of the occurrence of the event giving rise to the claim. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.
- 15.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the Contractor if a claim is made there for as provided in Paragraph 15.1. Such delays shall include but not be limited to, acts or neglect by the City, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God.
- 15.3 All time limits stated in the Contract Documents are of the essence. The provisions of this Article 15 shall not exclude recovery for damages for delay by the Contractor.
- 15.4 Delays caused by or resulting from entities, contractors or subcontractors who are not affiliated with the CONTRACTOR (non-affiliated Contractors) shall not give rise to a claim by the CONTRACTOR for damages for increases in material and/or labor costs. Such entities, contractors and subcontractors include, but are not limited to, the City's contractors and subcontractors, Florida Power and Light Company, AT&T and Florida East Coast Railway, LLC.
- 15.5 Rights of Various Interests: Whenever work being done by City's forces or by other contractors is contiguous to or within the limits of work covered by this Contract, the respective rights of the various interests involved shall be established by the Project Manager to secure the completion of the various portions of the work in general harmony.

## ARTICLE 16 – LIQUIDATED DAMAGES

- 16.1 Upon failure of the Contractor to complete the Work within the time specified for completion, the Contractor shall pay to the City the sum of **Five Hundred Dollars (\$500.00)** for each and every calendar day that the completion of the Work is delayed beyond the time specified in this Agreement for completion, as fixed and agreed liquidated damages and not as a penalty, so long as the delay is caused by the Contractor. Should an act of God or the acts or omissions of the City, its agents or representatives, in derogation to the terms of this Agreement cause the delay, the Contractor shall not be responsible for the delay nor liquidated damages. Liquidated damages are fixed and agreed upon between the Parties, recognizing the impossibility of precisely ascertaining the amount of damages that will be sustained by the City as a consequence of such delay and both parties desiring to obviate any question of dispute concerning the amount of damages and the cost and effect of the failure of the Contractor to complete the Work on time. Liquidated damages shall apply separately to each portion of the Work for which a time of completion is given. The City shall have the right to deduct from or retain any compensation which may be due or which may become due and payable to the Contractor the amount of liquidated damages, and if the amount retained by the City is insufficient to pay in full such liquidated damages, the Contractor shall pay all

liquidated damages in full. The Contractor shall be responsible for reimbursing the City, in addition to liquidated damages or other damages for delay, for all costs of engineering, architectural fees, and inspection and other costs incurred in administering the construction of the Project beyond the completion date specified or beyond an approved extension of time granted to the Contractor whichever is later. Delays caused by or resulting from entities, contractors or subcontractors who are not affiliated with the Contractor shall not give rise to a claim by Contractor for damages for increase in material and/or labor costs. Such entities, contractors and subcontractors include, but are not limited to, the City's contractors and subcontractors, Florida Power and Light Company, AT&T, and Florida East Coast Railway, LLC.

- 16.2 No Extended Damages: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any reason, allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

## **ARTICLE 17 – SUSPENSION OF WORK AND TERMINATION**

- 17.1 City May Suspend Work: The City may, at any time and without cause, suspend the Work or any portion of the Work for a period of not more than ninety (90) days by notice in writing to the Contractor which shall fix the date on which Work shall be resumed. The Contractor shall resume the Work on the date fixed. The Contractor will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension, if the Contractor makes a claim as provided in Articles 14 and 15.
- 17.2 City's Right to Terminate Contract: The City may terminate this Agreement upon fifteen (15) calendar days' written notice upon the occurrence of any one or more of the following events:
- 17.2.1 If the Contractor commences a voluntary case or a petition is filed against the Contractor, under any chapter of the Bankruptcy Code, or if the Contractor takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency.
- 17.2.2 If the Contractor makes a general assignment for the benefit of creditors.
- 17.2.3 If a trustee, receiver, custodian or agent of the Contractor is appointed under applicable law or under Contract, whose appointment or authority to take charge of property of the Contractor is for the purpose of enforcing a lien

against such property or for the purpose of general administration of such property for the benefit of the Contractor's creditors.

17.2.4 If Contractor fails to begin the Work within fifteen (15) calendar days after the Project Initiation Date, or fails to perform the Work with sufficient workers and equipment or with sufficient materials to ensure the prompt completion of the Work, or shall perform the Work unsuitably, or cause it to be rejected as defective and unsuitable, or shall discontinue the prosecution of the Work pursuant to the accepted schedule or if Contractor shall fail to perform any material term set forth in the Contract Documents, or from any other cause whatsoever shall not carry on the Work in an acceptable manner, Project Manager may give notice in writing to Contractor and its Surety of such delay, neglect or default, specifying the same.

17.2.5 If the Contractor repeatedly fails to make prompt payments to subcontractors or for labor, material or equipment.

17.2.6 If the Contractor repeatedly disregards proper safety procedures.

17.2.7 If the Contractor disregards any local, state or federal laws or regulations.

17.2.8 If the Contractor otherwise violates any provisions of this Agreement.

17.3 If Contractor, within a period of ten (10) calendar days after such notice, shall not proceed in accordance therewith, the City may exclude the Contractor from the Work site and take the prosecution of the Work out of the hands of the Contractor, and take possession of the Work and all of the Contractor's tools, appliances, construction equipment and machinery at the site and use them without liability to the City for trespass or conversion, incorporate in the Work all materials and equipment stored at the site or for which the City has paid the Contractor but which are stored elsewhere, and finish the Work as the City may deem expedient. In this instance, the Contractor shall not be entitled to receive any further compensation until the Work is finished.

17.3.1 If after notice of termination of Contractor's right to proceed, it is determined for any reason that Contractor was not in default, the rights and obligations of City and Contractor shall be the same as if the notice of termination had been issued pursuant to the Termination for Convenience clause as set forth in Section 17.5 below.

17.3.2 Upon receipt of Notice of Termination pursuant to Sections 17.2 or 17.5, Contractor shall promptly discontinue all affected work unless the Notice of Termination directs otherwise and deliver or otherwise make available to City all data, drawings, specifications, reports, estimates, summaries and such other information as may have been required by the Contract Documents whether completed or in process.

17.4 If the Contractor commits a default due to its insolvency or bankruptcy, the following shall apply:

17.4.1 Should this Agreement be entered into and fully executed by the parties, funds released and the Contractor (Debtor) files for bankruptcy, the following shall occur:

17.4.1.1 In the event the Contactor files a voluntary petition under 11 U.S.C. 301 or 302, or an order for relief is entered under 11 U.S.C. 303, the Contractor shall acknowledge the extent, validity, and priority of the lien recorded in favor of the City. The Contractor further agrees that in the event of this default, the City shall, at its option, be entitled to seek relief from the automatic stay pursuant to 11 U.S.C. 362. The City shall be entitled to relief from the automatic stay pursuant to 11 U.S.C. 362(d) (1) or (d) (2), and the Contactor agrees to waive the notice provisions in effect pursuant to 11 U.S.C. 362 and any applicable Local Rules of the United States Bankruptcy Court. The Contactor acknowledges that such waiver is done knowingly and voluntarily.

17.4.1.2 Alternatively, in the event the City does not seek stay relief, or if stay relief is denied, the City shall be entitled to monthly adequate protection payments within the meaning of 11 U.S.C. 361. The monthly adequate protection payments shall each be in an amount determined in accordance with the Note and Mortgage executed by the Contractor in favor of the City.

17.4.1.3 In the event the Contractor files for bankruptcy under Chapter 13 of Title 11, United States Code in addition to the foregoing provisions, the Contractor agrees to cure any amounts in arrears over a period not to exceed twenty-four (24) months from the date of the confirmation order, and such payments shall be made in addition to the regular monthly payments required by the Note and mortgage. Additionally, the Contractor shall agree that the City is over secured and, therefore, entitled to interest and attorney's fees pursuant to 11 U.S.C. 506(b). Such fees shall be allowed and payable as an administrative expense. Further, in the event the Contractor has less than five (5) years of payments remaining on the Note, the Contractor agrees that the treatment afforded to the claim of the City under any confirmed plan of reorganization shall provide that the remaining payments shall be satisfied in accordance with the Note, and that the remaining payments or claim shall not be extended or amortized over a longer period than the time remaining under the Note.

17.4.2 Should this Agreement be entered into and fully executed by the parties, and the funds have not been forwarded to Contractor, the following shall occur:

17.4.2.1 In the event the Contractor files a voluntary petition pursuant to 11 U.S.C. 301 or 302, or an order for relief is entered under 11 U.S.C. 303., the Contractor acknowledges that the commencement of a bankruptcy proceeding constitutes an event of default under the terms of this Agreement. Further, the Contractor acknowledges that this Agreement constitutes an executory contract within the meaning of 11 U.S.C. 365. The Contractor acknowledges that this Agreement is not capable of being assumed pursuant to 11 U.S.C. 365(c)(2), unless the

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EXHIBIT 3

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City expressly consents in writing to the assumption. In the event the City consents to the assumption, the Contractor agrees to file a motion to assume this Agreement within ten (10) days after receipt of written consent from the City, regardless of whether the bankruptcy proceeding is pending under Chapter 7, 11, or 13 of Title 11 of the United States Code. The Contractor further acknowledges that this Agreement is not capable of being assigned pursuant to 11 U.S.C. 365(b)(1).

- 17.5 Termination for Convenience: This Contract may be terminated for convenience in writing by City upon thirty (30) days written notice to Contractor (delivered by certified mail, return receipt requested) of intent to terminate and the date on which such termination becomes effective. In such case, Contractor shall be paid for all work executed and expenses incurred prior to termination in addition to termination settlement costs reasonably incurred by Contractor relating to commitments which had become firm prior to the termination. Payment shall include reasonable profit for work/services satisfactorily performed. No payment shall be made for profit for work/services which have not been performed.
- 17.6 Where the Contractor's service have been so terminated by the City, the termination shall not affect any rights of the City against the Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due the Contractor by the City will not release the Contractor from liability.
- 17.7 The Contractor has no right, authority or ability to terminate the Work except for the wrongful withholding of any payments due the Contractor from the City.

## ARTICLE 18 – DISPUTE RESOLUTION

- 18.1 Resolution of Disputes: Questions, claims, difficulties and disputes of whatever nature which may arise relative to the technical interpretation of the Contract Documents and fulfillment of this Agreement as to the character, quality, amount and value of any work done and materials furnished, or proposed to be done or furnished under or, by reason of, the Contract Documents which cannot be resolved by mutual agreement of Contract Administrator and Contractor shall be submitted to the Consultant for resolution. When either party has determined that a disputed question, claim, difficulty or dispute is at an impasse, that party shall notify the other party in writing and submit the question, claim, difficulty or dispute to the Consultant for resolution. The parties may agree to a proposed resolution at any time without the involvement and determination of the Consultant.
- 18.1.1 Consultant shall notify Contract Administrator and Contractor in writing of Consultant's decision within twenty-one (21) calendar days from the date of the submission of the question, claim, difficulty or dispute, unless Consultant requires time to gather information or allow the parties to provide additional information.
- 18.1.2 In the event the determination of a dispute by the Consultant under this Article is unacceptable to any of the parties hereto, the party objecting to the determination must notify the other party and the City Manager, in writing within ten (10) days after receipt of the determination. The notice must state



the basis of the objection and the proposed resolution. Final resolution of such dispute shall be made by the City Manager. The City Manager's decision shall be final and binding on the parties.

18.1.3 All non-technical administrative disputes (such as billing and payment) shall be determined by Contract Administrator.

18.1.4 During the pendency of any dispute and after a determination thereof, Contractor, Consultant, and Contract Administrator shall act in good faith to mitigate any potential damages including utilization of construction schedule changes and alternate means of construction. During the pendency of any dispute arising under this Agreement, other than termination herein, Contractor shall carry on the Work and adhere to the progress schedule. The Work shall not be delayed or postponed pending resolution of any disputes or disagreements.

18.1.5 For any disputes which remain unsolved, within sixty (60) calendar days after Final Completion of the Work, the parties shall participate in mediation to address all unresolved disputes. A mediator shall be mutually agreed upon by the parties. Should any objection not be resolved in mediation, the parties retain all their legal rights and remedies under applicable law. If a party objecting to a determination, fails to comply in strict accordance with the requirements of this Article, said party specifically waives all of its rights provided hereunder, including its rights and remedies under applicable law.

## ARTICLE 19 – NOTICES

19.1 All notices required by any of the Contract Documents shall be in writing and shall be deemed delivered upon mailing by certified mail, return receipt requested to the following:

To the City:

City Manager  
City of Fort Lauderdale  
100 North Andrews Avenue  
Fort Lauderdale, Florida 33301

with copy to the:

Project Manager and City Attorney  
City of Fort Lauderdale  
100 North Andrews Avenue  
Fort Lauderdale, Florida 33301

To the Contractor:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## ARTICLE 20 – LIMITATION OF LIABILITY

- 20.1 The City desires to enter into this Agreement only if in so doing the City can place a limit on the City's liability for any cause of action arising out of this Agreement, so that the City's liability for any breach never exceeds the sum of \$1,000. For other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Contractor expresses its willingness to enter into this Agreement with the knowledge that the Contractor's recovery from the City to any action or claim arising from the Agreement is limited to a maximum amount of \$1,000, which amount shall be reduced by the amount actually paid by the City to the Contractor pursuant to this Agreement, for any action or claim arising out of this Agreement. Nothing contained in this paragraph or elsewhere in this Agreement is in any way intended either to be a waiver of the limitation placed upon the City's liability as set forth in Section 768.28, Florida Statutes, or to extend the City's liability beyond the limits established in said Section 768.28; and no claim or award against the City shall include attorney's fees, investigative costs, expert fees, suit costs or pre-judgment interest.
- 20.2 No Extended Damages: For other and additional good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, the Contractor covenants and agrees that in the event of any delay of construction or for any reason, allegation or claim, and notwithstanding the reason of the delay, reason, claim or allegation or who caused them or the construction delay or whether they were caused by the City, that there will be no entitlement to Contractor to or for any direct or indirect financial damages or losses for extended corporate overhead impact, extended project overhead impacts, project support services, mobilization or demobilization or by whatever other label or legal concept or theory and types of names or labels or basis such claims may have, or any business damages or losses of whatever type or nature, and Contractor hereby waives any right to make any such claim or claims. This provision will have application and effect when construction delays are anticipated and agreed upon by both the City and the Contractor.

## ARTICLE 21 – GOVERNING LAW

- 21.1 This Agreement shall be governed by the laws of the State of Florida. Both Parties agree that the courts of the State of Florida shall have jurisdiction of any claim arising in connection with this Agreement. Venue for any claim, objection or dispute arising out of this Agreement shall be in Broward County, Florida. **By entering into this Contract, Contractor and City hereby expressly waive any rights either party may have to a trial by jury or any civil litigation related to, or arising out of the Project. Contractor shall specifically bind all subcontractors to the provisions of this Contract.**

## ARTICLE 22 – MISCELLANEOUS

- 22.1 The duties and obligations imposed by this Agreement and the rights and remedies available to the parties and, in particular but without limitation, the warranties, guaranties and obligations imposed upon the Contractor and all of the rights and remedies available to the City, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are

otherwise imposed or available by laws or regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents, and the provisions of this Paragraph will survive final payment and termination or completion of this Agreement.

- 22.2 The Contractor shall not assign or transfer this Agreement or its rights, title or interests. The obligations undertaken by the Contractor pursuant to this Agreement shall not be delegated or assigned to any other person or firm. Violation of the terms of this Paragraph shall constitute a material breach of Agreement by the Contractor and the City any, at its discretion, cancel this Agreement and all rights, title and interest of the Contractor which shall immediately cease and terminate.
- 22.3 The Contractor and its employees, volunteers and agents shall be and remain an independent contractors and not agents or employees of the City with respect to all of the acts and services performed by and under the terms of this Agreement. This Agreement shall not in any way be constructed to create a partnership, association or any other kind of joint undertaking or venture between the Parties.
- 22.4 The City reserves the right to audit the records of the Contractor relating in any way to the Work to be performed pursuant to this Agreement at any time during the performance and term of this Agreement and for a period of three (3) years after completion and acceptance by the City. If required by the City, the Contractor agrees to submit to an audit by an independent certified public accountant selected by the City. The Contractor shall allow the City to inspect, examine and review the records of the Contractor at any and all times during normal business hours during the term of this Agreement.
- 22.5 The remedies expressly provided in this Agreement to the City shall not be deemed to be exclusive but shall be cumulative and in addition to all other remedies in favor of the City now or later existing at law or in equity.
- 22.6 Should any part, term or provisions of this Agreement be decided by the courts to be invalid, illegal or in conflict with any state or federal law, the validity of the remaining portion or provision shall not be affected.
- 22.7 Public Entity Crimes: In accordance with the Public Crimes Act, Section 287.133, Florida Statutes, a person or affiliate who is a contractor, consultant or other provider, who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to the City, may not submit a bid on a contract with the City for the construction or repair of a public building or public work, may not submit bids on leases of real property to the City, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with the City, and may not transact any business with the City in excess of the threshold amount provided in Section 287.017, Florida Statutes, for category two purchases for a period of thirty-six (36) months from the date of being placed on the convicted vendor list. Violation of this section by Contractor shall result in cancellation of the City purchase and may result in Contractor debarment.

Mills Pond Park Athletic Fields  
(Contractor)  
Project 12060

**CITY**

IN WITNESS OF THE FOREGOING, the parties have set their hands and seals the day and year first above written.

CITY OF FORT LAUDERDALE, a municipal  
corporation of the State of Florida

By: \_\_\_\_\_  
LEE R. FELDMAN, City Manager

(CORPORATE SEAL)

ATTEST:

By: \_\_\_\_\_  
JEFFREY A. MODARELLI  
City Clerk

Approved as to Legal Form:

By: \_\_\_\_\_  
RHONDA MONTOYA HASAN  
Assistant City Attorney

**CONTRACTOR**

WITNESSES:

CONTRACTOR.,  
a Florida corporation.

\_\_\_\_\_

By \_\_\_\_\_

\_\_\_\_\_  
Print Name\_\_\_\_\_  
PRINT NAME\_\_\_\_\_  
Title

ATTEST:

\_\_\_\_\_

BY: \_\_\_\_\_

\_\_\_\_\_  
Print Name\_\_\_\_\_  
PRINT NAME\_\_\_\_\_  
Secretary

(CORPORATE SEAL)

STATE OF FLORIDA:  
COUNTY OF BROWARD:

The foregoing instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 2016, by  
 \_\_\_\_\_ (Name), as \_\_\_\_\_ (Title) of \_\_\_\_\_ (CONTRACTOR), a  
 Florida corporation, on behalf of the Corporation.

SEAL

\_\_\_\_\_  
Notary Public, State of Florida\_\_\_\_\_  
Name of Notary Typed, Printed or Stamped☐ Personally Known or ☐ Produced Identification:

Type of Identification Produced: \_\_\_\_\_

## **GENERAL CONDITIONS**

**Unless otherwise modified in the projects special conditions, the following General Conditions shall be part of the Contract:**

**GC - 01 - DEFINITIONS** - The following words and expressions, or pronouns used in their stead, shall wherever they appear in the Contract and the Contract Documents, be construed as follows:

"Addendum" or "Addenda" - shall mean the additional Contract provisions issued in writing, by the Engineer, prior to the receipt of bids.

"Bid" – shall mean the offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

"Bidder" – shall mean any person, firm, company, corporation or entity submitting a Bid for the Work.

"Bonds" –shall mean Bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.

"City" – shall mean the City of Fort Lauderdale, Florida, a Florida municipal corporation. In the event the City exercises its regulatory authority as a government body, the exercise of such regulatory authority and the enforcement of any rules, regulations, codes, laws and ordinances shall be deemed to have occurred pursuant to City's authority as a governmental body and shall not be attributable in any manner to the City as a party to this Contract. For the purpose of this Contract, "City" without modification shall mean the City Commission, and/or City Manager or his/her designee(s) as applicable.

"Construction Manager" - shall mean the Public Works Director or his/her designee.

"Construction Project Manager" - shall mean the Public Works Director or his/her designee.

"Consultant" – shall mean a person, firm, company, corporation or other entity employed by the City to perform the professional services for the project.

"Contract Work" - shall mean everything expressed or implied to be required to be furnished and furnished by the Contractor by any one or more of the parts of the Contract Documents referred to in the Contract hereof except Extra Work as hereinafter defined, it being understood that, in case of any inconsistency in or between any part or parts of this Contract, the Public Works Director shall determine which shall prevail.

"Design Documents" – shall mean the construction plans and specifications included as part of a Bid/Proposal Solicitation prepared either by the City or by the Consultant under a separate Agreement with the City.

"Engineer" - shall mean the Public Works Director or his/her designee.

"Extra Work" - shall mean work other than that required by the Contract.

"Inspector" – shall mean an authorized representative of the City assigned to make necessary inspections of materials furnished by Contractor and of the Work performed by Contractor.

"Notice" - shall mean written notice sent by certified United States Mail, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or via fax or email, or by hand delivery with a request for a written receipt of acknowledgment of delivery and shall be served upon the Contractor either personally or to its place of business listed in the Bid.

"Owner" - shall mean the City of Fort Lauderdale.

"Project Manager" - shall mean the Public Works Director or his/her designee.

"Public Works Director" -shall mean the Public Works Director of the City of Fort Lauderdale, Florida or his/her designee(s).

"Site" - shall mean the area upon or in which the Contractor's operations are carried out and such other areas adjacent thereto as may be designated as such by the Public Works Director.

"Subcontractor" - shall mean any person, firm, company, corporation or other entity, other than employees of the Contractor, who or which contracts with the contractor, to furnish, or actually furnishes labor and materials, or labor and equipment, or labor, materials and equipment at the site.

"Surety" - shall mean any corporation or entity that executes, as Surety, the Contractor's performance and payment bond securing the performance of this Contract.

**GC - 02 - SITE INVESTIGATION AND REPRESENTATION** - The Contractor acknowledges that it has satisfied itself as to the nature and location of the Work under the Contract Documents, the general and local conditions of the Site, particularly those bearing upon availability of transportation, disposal, handling and storage of materials, availability of labor, water, electric power, and roads, the conformation and conditions at the ground based on City provided reports, the type of equipment and facilities needed preliminary to and during the prosecution of the Work and all other matters which can in any way affect the Work or the cost thereof under the Contract Documents.

The Contractor acknowledges that it has conducted extensive tests, examinations and investigations and represents and warrants a thorough familiarization with the nature and extent of the Contract Documents, the Work, locality, soil conditions, moisture conditions and all year-round local weather and climate conditions (past and present), and, in reliance on such tests, examination and investigations conducted by Contractor and the Contractor's experts, has determined that no conditions exist that would in any manner affect the Bid Price and that the project can be completed for the Bid Price submitted.

The Contractor, on its own, has made or caused to be made examinations, investigations, tests and studies of reports and related data in addition to those referred above, as Contractor deemed necessary to perform the Work at the Bid price set by the Contractor, within the contract time and in accordance with the other terms and conditions of the Contract Documents and the Bid made by the Contractor; and no additional examinations, investigations, tests, reports or similar data are, or will be, required by Contractor to assure that the Work can be done at the Bid price set by the Contractor.

The Contractor further acknowledges that it has satisfied itself based on any geotechnical reports the City may provide and inspection of the project Site as to the character, quality, and quantity of surface and subsurface materials to be encountered from inspecting the site and from evaluating information derived from exploratory work that may have been done by the City or included in the

Contract Documents and finds and has further determined that no conditions exist that would in any manner affect the Bid price and that the project can be completed for the Bid price submitted..

Any failure by the Contractor to acquaint itself with all the provided information and information obtained by visiting the project Site will not relieve Contractor from responsibility for properly estimating the difficulty or cost thereof under the Contract Documents. In the event that the actual subsurface conditions vary from the actual City provided reports, the Contractor shall notify the City and the Contract amount may be adjusted depending on the conditions, at the approval of the City.

**GC - 03 - SUBSTITUTIONS** - If the Contractor desires to use materials and/or products of manufacturer's names different from those specified in the Contract Documents, the Bidder requesting the substitution shall make written application as described herein. The burden of proving the equality of the proposed substitution rests on the Bidder making the request. To be acceptable, the proposed substitution shall meet or exceed all expressed requirements of the Contract Documents and shall be submitted upon the Contractor's letterhead, in addition to the "Contractor's Request for Substitution" form provided by the Public Works Director. The following requirements shall be met in order for the substitution to be considered:

1. Requests for substitution shall reach the Public Works Director no less than ten (10) Working Days prior to the date set for opening of Bids; and
2. Requests for substitution shall be accompanied by such technical data, as the party making the request desires to submit. The Public Works Director will consider reports from reputable independent testing laboratories, verified experience records from previous users and other written information valid in the circumstances; and
3. Requests for substitution shall completely and clearly indicate in what respects the materials and/or products differ from those indicated in the Contract Documents; and
4. Requests for substitution shall be accompanied by the manufacturer's printed recommendations clearly describing the installation, use and care, as applicable, of the proposed substitutions; and
5. Requests for substitution shall be accompanied by a complete schedule of changes in the Contract Documents, if any, which must be made to permit the use of the proposed substitution; and
6. Provide the "Contractor's Request for Substitution" form, completely executed. Failure to provide all pertinent data will result in immediate rejection of such a request.

If a proposed substitution is approved by the Public Works Director, an Addendum will be issued to prospective bidders not less than three (3) working days prior to the date set for opening of Bids. Unless substitutions are received and approved as described above, the successful Bidder shall be responsible for furnishing materials and products in strict accordance with the Contract Documents.

**GC - 04 - CONTROL OF THE WORK** - The Public Works Director shall have full control and direction of the Work in all respects. The Public Works Director and/or his authorized designee(s) shall, at all times, have the right to inspect the Work and materials. The Contractor shall furnish all reasonable facilities for obtaining such information, as the Public Works Director may desire respecting the quality of the Work and materials and the manner of conducting the Work. Should the Contractor be directed or permitted to perform night Work, or to vary the period which work is ordinarily carried on in the daytime, he shall give ample notice to the Public Works Director so that



proper and adequate inspection may be provided. Such Work shall be done only under such regulations as are furnished in writing by the Public Works Director, and no extra compensation shall be allowed to the Contractor therefore. In the event of night work, the Contractor shall furnish such light, satisfactory to the Public Works Director, as will insure proper inspection. Nothing herein contained shall relieve the Contractor from compliance with any and all City ordinances relating to noise or Work during prohibited hours.

The Contractor shall keep the Public Works Director informed, a reasonable time in advance, as to his need for grades and lines in order that the same may be furnished and all necessary measurements made for records and for payment with the minimum of inconvenience to the Public Works Director or of delay to the Contractor. The Contractor shall submit to the Public Works Director or Inspector on the job a written request outlining the streets, etc., for which the Contractor desires lines and grades. It is the intention not to delay the Work for the giving of lines and grades, but when necessary, work operations shall be suspended for such reasonable time as the Public Works Director may require for this purpose. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale's Code of Ordinances.

**GC - 05 - SUBCONTRACTOR** - The Contractor shall not sublet, in whole or any part of the Work without the written consent and approval of the Public Works Director. Within ten (10) days after official notification of starting date, the Contractor must submit in writing, to the Public Works Director, a list of all Subcontractors. No Work shall be done by any Subcontractor until such Subcontractor has been officially approved by the Public Works Director. A subcontractor not appearing on the original list will not be approved without written request submitted to the Public Works Director and approved by the Public Works Director. In all cases, the Contractor shall give his personal attention to the Work of the Subcontractors and the Subcontractor is liable to be discharged by the Contractor, at the direction of the Public Works Director, for neglect of duty, incompetence or misconduct.

Acceptance of any Subcontractor, other person, or organization by the Public Works Director shall not constitute a waiver of any right of Public Works Director to reject defective Work or Work not in conformance with the Contract Documents.

Contractor shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between City and any Subcontractor or other person or organization having a direct contract with Contractor, nor shall it create any obligation on the part of City to pay or to see to the payment of any moneys due to any Subcontractor or other person, or organization, except as may otherwise be required by law.

**GC - 06 - QUANTITIES** - It is mutually agreed that the proposal shows the approximate amounts only along with the Plans and the general location. It is also mutually agreed that no change will be made involving any departure from the general scheme of the Work and that no such change involving a material change in cost, either to the City or Contractor, shall be made, except upon written permission of the City. However, the Public Works Director shall have the right to make minor alternations in the line, grade, plan, form or materials of the Work herein contemplated any time before the completion of the same. That if such alterations shall diminish the quantity of the Work to be done, such alterations shall not constitute a claim for damages or anticipated profits. That if such alterations increase the amount of the Work to be done, such increase shall be paid for according to the quantity actually performed and at the unit price or prices stipulated therefore in the Contract.

The City shall, in all cases of dispute, determine the amount or quantity of the several kinds of Work which are to be paid for under this Contract, and shall decide all questions relative to the execution of the same, and such estimates and decisions shall be final and binding.

Any Work not herein specified, which might be fairly implied as included in the Contract, of which the City shall judge, shall be done by the Contractor without extra charge. However, such cost increases shall be authorized either by the City Manager and/or designee, or the City Commission based upon the purchasing threshold amounts provided for in Chapter 2 of the City of Fort Lauderdale's Code of Ordinances.

**GC-07 - NO ORAL CHANGES** - Except to the extent expressly set forth in the Contract, no change in or modification, termination or discharge of the Contract in any form whatsoever, shall be valid or enforceable unless it is in writing and signed by the parties charged, therewith or their duly authorized representative.

**GC - 08 - PERMITS AND PROTECTION OF PUBLIC** – Permits on file with the City and or those permits to be obtained shall be considered directive in nature and will be considered a part of this Contract. A copy of all permits shall be given to the City and become part of the Contract Documents. Terms of permits shall be met prior to acceptance of the Work and release of the final payment.

The Contractor shall be required to observe all the ordinances in relation to obtaining permits for occupying, excavating, or in any way obstructing the streets and alleys. He shall erect and maintain barricades and sufficient safeguards around all excavations, embankments or obstructions; he shall place sufficient warning lights at or near the Work; keep the same burning from sunset to sunrise, employ watchmen, and strictly obey all laws and ordinances controlling or limiting those engaged in similar work.

Where there are telephones, light or power poles, water mains, conduits, pipes or drains or other construction, either public or private, in or on the streets or alleys, the Work shall be so conducted that no interruption or delay will be caused in the operation or use of the same. Proper written notice shall be given, and all the facilities, afforded the owners of such construction encountered or likely to be encountered, as will enable them to preserve the same from injury.

The Contractor shall not be permitted to interfere with public travel and convenience by grading or tearing up streets indiscriminately, but the Work of constructing the various items in this contract shall proceed in an orderly, systematic and progressive manner.

Contractor shall not load nor permit any part of any structure to be loaded with weights that will endanger the structure, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

Where lifting operations involving the use of specialized cranes are required as part of construction, Contractor must make undertake the following investigation and submit the results and documentation to the Engineer prior to commencing any lifting operations: marking a very specific area in the field for the placement of the crane; a drawing showing the limitations of the job operation (i.e. not over adjacent properties or pedestrian and high vehicular traffic areas); underground utility exploration in the vicinity of the crane location, which may include ground penetrating radar to identify voids or old pipe or other subsurface features that could lead to sudden failure; assessment of the underlying soil and roadway materials and a worst case analysis based on entire load being distributed on just one or two outriggers; provision of properly sized pads under the outriggers; loading charts from manufacturer showing allowable configurations/loads; and inspection to make sure crane operation is in accordance with the permit conditions.

**GC - 09 - DISEASE REGULATIONS** - The Contractor shall enforce all sanitary regulations and take all precautions against infectious diseases as the Public Works Director may deem necessary. Should any infectious or contagious diseases occur among his employees, he shall arrange for the immediate removal of the employee from the Site and isolation of all persons connected with the Work.

**GC - 10 - CONTRACTOR TO CHECK PLANS, SPECIFICATIONS, AND DATA** - The Contractor shall verify all dimensions, quantities, and details shown on the plans, supplementary drawings, schedules, or other data received from the Public Works Director, and shall notify the Public Works Director of all errors, omissions, conflicts and discrepancies found therein within three (3) working days of discovery. Failure to discover or correct errors, conflicts, or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction, or improper operation resulting there from nor from rectifying such condition at his own expense.

**GC - 11 - SUPPLEMENTARY DRAWINGS** - When, in the opinion of the Public Works Director, it becomes necessary to explain more fully the Work to be done, or to illustrate the work further, or to show any changes which may be required, drawings, known as supplementary drawings, with specifications pertaining thereto, will be prepared by the Public Works Director and copies will be given to the Contractor.

The supplementary drawings shall be binding upon the Contractor with the same force as the original Plans. Where such supplementary drawings require either less or more than the estimated quantities of work, credit to the City or compensations therefore to the Contractor shall be subject to the terms of the Contract.

**GC - 12 - MATERIALS AND WORKMANSHIP** - All material and workmanship shall, in every respect, be in conformity with approved modern practice and with prevailing standards of performance and quality. In the event of dispute the Public Works Director's decision shall be final. Wherever the Plans, specifications, Contract Documents, or the directions of the Public Works Director are unclear as to what is permissible and/or fail to note the quality of any Work, that interpretation will be made by the Public Works Director, which is in accordance with approved modern practice, to meet the particular requirements of the Contract.

In all cases, new materials shall be used, unless this provision is waived by notice from the City in writing.

**GC - 13 - SAFEGUARDING MARKS** - The Contractor shall safeguard all points, stakes, grade marks, monuments, and bench marks made or established on the Work, bear the cost of re-establishing same if disturbed, or bear the entire expense of rectifying Work improperly installed due to not maintaining or protecting or for removing without authorization, such established points, stakes and marks. The Contractor shall safeguard all existing and known property corners, monuments and marks not related to the Work and, if required, shall bear the cost of having them re-established by a licensed surveyor if disturbed or destroyed during the course of construction.

**GC - 14 - EXISTING UTILITY SERVICE** - All existing utility service shall be maintained with a minimum of interruption at the expense of the Contractor.

**GC - 15 - JOB DESCRIPTION SIGNS** - Contractor, at Contractor's expense, shall furnish, erect, and maintain suitable weatherproof signs on jobs over \$100,000 containing the following information:

1. City Seal (in colors)
2. Project or Improvement Number
3. Job Description

4. Estimated Cost
5. Completion Date

Minimum size of sign shall be four feet high, eight feet wide and shall be suitably anchored. The entire sign shall be painted and present a pleasing appearance. Exact location of signs will be determined in the field. Two (2) signs will be required, one at each end of the job. All costs of this work shall be included in other parts of the work.

**GC - 16 - FLORIDA EAST COAST RIGHT-OF-WAY** - Whenever a City contractor is constructing within the Florida East Coast Railway Company's Right-of-Way, it will be mandatory that the contractor carry separate bodily injury and property damage insurance in the amounts as stated below. This insurance shall be taken out and maintained during the life of the Contract.

Bodily injury insurance in an amount not less than \$500,000.00 for injuries, including wrongful death to any one person, and subject to the same limit for each person, in an amount not less than \$1,000,000.00 on account of any one occurrence, and

Property damage insurance in an amount not less than \$500,000.00 for damages on account of any one occurrence and in an amount not less than \$1,000,000.00 for damages on account of all occurrences.

**GC - 17 - ACCIDENTS** - The Contractor shall provide such equipment and facilities as are necessary and/or required, in the case of accidents, for first aide services to be provided to a person who may be injured during the project duration. The Contractor shall also comply with the OSHA requirements as defined in the United States Labor Code 29 CFR 1926.50.

In addition, the Contractor must report immediately to the Public Works Director every accident to persons or damage to property, and shall furnish in writing full information, including testimony of witnesses regarding any and all accidents.

**GC - 18 - SAFETY PRECAUTIONS** - Contractor must adhere to the applicable environmental protection guidelines for the duration of a project. If hazardous waste materials are used, detected or generated at any time, the Project Manager must be immediately notified of each and every occurrence. The Contractor shall comply with all codes, ordinances, rules, orders and other legal requirements of public authorities (including OSHA, EPA, DERM, the City, Broward County, State of Florida, and Florida Building Code), which bear on the performance of the Work.

The Contractor shall take the responsibility to ensure that all Work is performed using adequate safeguards, including but not limited to: proper safe rigging, safety nets, fencing, scaffolding, barricades, chain link fencing, railings, barricades, steel plates, safety lights, and ladders that are necessary for the protection of its employees, as well as the public and City employees. All riggings and scaffolding shall be constructed with good sound materials, of adequate dimensions for their intended use, and substantially braced, tied or secured to ensure absolute safety for those required to use it, as well as those in the vicinity. All riggings, scaffolding, platforms, equipment guards, trenching, shoring, ladders and similar actions or equipment shall be OSHA approved, as applicable, and in accordance with all Federal, State and local regulations.

**GC - 19 - DUST PREVENTION** - The Contractor shall, by means of a water spray, or temporary asphalt pavement, take all necessary precautions to prevent or abate a dust nuisance arising from dry weather or Work in an incomplete stage. All costs of this Work shall be included in cost of other parts of the Work.

Should the Contractor fail to abate a dust nuisance by the above methods, and then he will be required to immediately construct temporary patches per City standards.

**GC - 20 - PLACING BARRICADES AND WARNING LIGHTS** - The Contractor shall furnish and place, at his own expense, all barricades, warning lights, automatic blinker lights and such devices necessary to properly protect the work and vehicular and pedestrian traffic. Should the Contractor fail to erect or maintain such barricades, warning lights, etc., the Public Works Director may, after 24 hours' notice to the Contractor, proceed to have such barricades and warning lights placed and maintained by City or other forces and all costs incurred thereof charged to the Contractor and may be retained by the City from any monies due, or to become due, to the Contractor.

**GC - 21 - TRAFFIC CONTROL** - The Contractor shall coordinate all Work and obtain, through the Engineering Department, any permits required to detour traffic or close any street before starting to work in the road. The following section: Part VI Traffic Controls for Street and Highway Construction and Maintenance Operations, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, U.S. Department of Transportation Federal Highway Administration, 2009, or current edition, shall be used as a guide for requirement and placement of traffic control devices, signs and barricades. The Public Works Director shall determine requirements for the above. The above publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. In the event that a Maintenance of Traffic (MOT) Plan is required, the Plan shall be prepared by an A.A.S.T.A. certified technician.

All traffic control devices, flashing lights, signs and barricades shall be maintained in working condition at all times.

**GC - 22 - COORDINATION** - The Contractor shall notify all utilities, transportation department, etc., in writing, with a copy to the Public Works Director before construction is started and shall coordinate his Work with them. The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal, construction and rearrangement operations in order that services rendered by these parties will not be unnecessarily interrupted.

The Contractor shall arrange his Work and dispose of his materials so as to not interfere with the operation of other Contractors engaged upon adjacent work and to join his Work to that of others in a proper manner and to perform his Work in the proper sequence in relation to that of other Contractors all as may be directed by the Public Works Director.

Each Contractor shall be responsible for any damage done by him or his agents to the work performed by another Contractor.

The Contractor shall contact the Broward County Transportation Department and the Florida Department of Transportation, as applicable, to verify and obtain location of any and all traffic conduits, loops, and street light underground services.

**GC - 23 - WATER** - Bulk water used for construction, flushing pipelines, and testing shall be obtained from fire hydrants. Contractor shall make payment for hydrant meter at Treasury Billing

Office, 1st Floor, City Hall, 100 N. Andrews Avenue. With the paid receipt, contractor can pick up hydrant meter at the utility location office. No connection shall be made to a fire hydrant without a meter connected.

**GC - 24 - PROHIBITION AGAINST CONTRACTING WITH SCRUTINIZED COMPANIES** - Subject to *Odebrecht Construction, Inc., v. Prasad*, 876 F.Supp.2d 1305 (S.D. Fla. 2012), *affirmed*, *Odebrecht Construction, Inc., v. Secretary, Florida Department of Transportation*, 715 F.3d 1268 (11th Cir. 2014), this Section applies to any contract for goods or services of \$1 million or more:

The Contractor certifies that it is not on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List and that it does not have business operations in Cuba or Syria as provided in section 287.135, Florida Statutes (2014), as may be amended or revised. The City may terminate this Contract at the City's option if the Contractor is found to have submitted a false certification as provided under subsection (5) of section 287.135, Florida Statutes (2014), as may be amended or revised, or been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or has been engaged in business operations in Cuba or Syria, as defined in Section 287.135, Florida Statutes (2014), as may be amended or revised.

**GC - 25 - LOCATION OF UNDERGROUND FACILITIES** - If the Proposer, for the purpose of responding to this solicitation, requests the location of underground facilities through the Sunshine State One-Call of Florida, Inc. notification system or through any person or entity providing a facility locating service, and underground facilities are marked with paint, stakes or other markings within the City pursuant to such a request, then the Proposer shall be deemed non-responsive to this solicitation in accordance with Section 2-184(5) of the City of Fort Lauderdale Code of Ordinances.

**GC - 26 – USE OF FLORIDA LUMBER TIMBER AND OTHER FOREST PRODUCTS** - In accordance with Florida Statute 255.20 (3), The City specifies that lumber, timber, and other forest products used for this project shall be produced and manufactured in the state of Florida if such products are available and their price, fitness, and quality are equal. This requirement does not apply to plywood specified for monolithic concrete forms, if the structural or service requirements for timber for a particular job cannot be supplied by native species, or if the construction is financed in whole or in part from federal funds with the requirement that there be no restrictions as to species or place of manufacture.

The Bidder affirms by submitting a bid response to this solicitation that they will comply with section 255.20 (3) Florida Statutes.

**GC – 27 – PUBLIC RECORDS** - Contractor shall:

- a) Keep and maintain public records that ordinarily and necessarily would be required by the City in order to perform the service.
- (b) Provide the public with access to public records on the same terms and conditions that the City would provide the records and at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes (2013), as may be amended or revised, 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.

(d) Meet all requirements for retaining public records and transfer, at no cost, to the City, all public records in possession of the contractor upon termination of this contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the City in a format that is compatible with the information technology systems of the City.

Project No. 12060

**SECTION 01000 - SUMMARY OF WORK****PART 1 GENERAL****1.01 SCOPE****A. City of Fort Lauderdale**

1. City's Representative/Engineer: Luisa Fernanda Arbeláez, PE, PMP, Project Manager II
2. Project Description: This project consists of the design and construction of three (3) athletic fields to be used for either soccer or lacrosse at Mills Pond Park. This project would include installing either synthetic (artificial) turf or natural grass athletic fields with lighting. Calvin Giordano & Associates is the Design Consultant for this project.
3. Project Location: 2201 NW 9th Avenue, Fort Lauderdale, FL 33311
4. DESCRIPTION OF WORK  
The following is a general list of the work included. It is not intended to be complete. Consult the contract drawings and specifications for all contract requirements.

- Mobilization
- Maintenance of Traffic
- Pavement Marking & Signage
- Landscape and irrigation
- Clearing/Grubbing, Demolition
- Erosion and Sediment Control
- Excavation/Embankment/Grading
- Synthetic Fields, Grass Fields, and Drainage
- Storm Drainage Systems
- Sheet Pile Wall/Retaining Wall
- Fencing & Netting
- Parking and Sports lighting
- Permeable Paver Parking
- Concrete Curb, Concrete Sidewalk
- Water Service, Sanitary Sewer Service, Water Main, Force Main.
- Site Restoration
- Tree Relocation & Removal

**1.03 NOTICE TO BIDDERS**

- A. The successful bidder, in order to be considered responsive, must possess the appropriate License as described in the Contract Documents.



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- B. It should also be noted that the successful bidder will, at the time of the pre-construction conference, be required to show that each of the CONTRACTOR'S subcontractors is in compliance with the City's Code of Ordinances.

#### 1.04 SITE INVESTIGATION

- A. The CONTRACTOR, by virtue of signing the Contract and any associated Task Orders, acknowledges that CONTRACTOR and all subcontractors have satisfied themselves to the nature and location of the work, the general and local conditions including, but not restricted to: those bearing upon transportation; disposal, handling and storage of materials; access roads to the site; the conformation and conditions of the work area; and the character of equipment and facilities needed preliminary to and during the performance of the work. Failure on the part of the CONTRACTOR to completely or properly evaluate the site conditions shall not be grounds for additional compensation.
- B. The CONTRACTOR, by virtue of signing the Contract and associated Task Orders, acknowledges that CONTRACTOR and subcontractors have satisfied themselves as to the nature and extent of soil and (underground) water conditions on the project site. No additional payment will be made to the CONTRACTOR because of differences between actual conditions and those shown by the boring logs.

#### 1.05 WORK BY OTHERS

- A. Concurrent Work by Other CONTRACTORS: The CONTRACTOR'S attention is directed to the fact that other CONTRACTORS may conduct work at the site during the performance of the WORK under this Contract. The CONTRACTOR shall conduct its operations so as to cause little or no delay to WORK of such other CONTRACTORS, and shall cooperate fully with such CONTRACTORS to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts.
- B. Interference with Work on Utilities: The CONTRACTOR shall cooperate fully with all utility forces of the OWNER or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the WORK, and shall schedule the WORK so as to minimize interference with said relocation, altering, or other rearranging of facilities.

#### 1.06 WORK SEQUENCE

- A. The CONTRACTOR shall schedule and perform the work in such a manner as to result in the least possible disruption to the public's use of any parking lot or park facilities, roadways, driveways, and utilities. Utilities shall include but not be limited to water, sewerage, drainage structures, ditches and canals, gas, electric, television, fiber optic lines, and telephone. Prior to commencing with the WORK, the CONTRACTOR shall perform a location investigation of existing underground utilities and facilities in accordance with Section 01530 entitled "Protection of Existing Facilities" and shall have obtained all required permits and permissions, the CONTRACTOR shall also deliver written notice to the CITY'S ENGINEER, and property occupants (private and public) of all planned disruption to roadway,

Project No. 12060

driveways, temporary displacement of fences, mailboxes, street signs and traffic signs, and utilities 72 hours in advance of disruption.

#### 1.07 WORK SCHEDULE

A. Time is of the essence in completing this project and each associated Task Order. Because time is of the essence the CONTRACTOR shall commit the necessary resources to this project to complete it in a timely manner. Those resources may include multiple working crews, working overtime, etc. Because time is of the essence, the CONTRACTOR'S construction progress will be monitored closely on a weekly basis. The Construction progress will be measured with the approved construction schedule submitted by the CONTRACTOR. If the CITY'S ENGINEER determines that the CONTRACTOR is behind schedule based on the approved schedule's critical path, or if the schedule does not meet the Critical Path Method (CPM) requirements as specified in Section 01311, the CONTRACTOR will be required to commit those resources necessary to ensure the completion of the project in a timely manner including working overtime, adding other work crews, etc. All costs incurred to implement measures to complete the work in timely manner, including any overtime or other fees associated with required inspections, will be borne by the CONTRACTOR at no additional cost to the OWNER.

#### B. REQUIRED PERIODS OF WORK SUSPENSION

1. CONTRACTOR shall shut down operations for all City Holidays, terminating production work by noon on the day preceding the holiday (or the weekend before said holiday) and not resuming operations until the start of the following week (or the day after the holiday, whichever is later). The CONTRACTOR shall ensure that the site is restored per Sections 01001 and 01010 and all areas that are off limits to the public will be clearly delineated and protected. For a full list of holidays, please refer to the City's website, however these include, but are not limited to New Year's Eve and Day, Martin Luther King's Birthday, Memorial Day, the 4<sup>th</sup> of July, Labor Day, Thanksgiving Day and the day after Thanksgiving Day, Christmas Eve and Christmas.
2. The CONTRACTOR shall include these provisions in the schedule required in 01311 and there shall be no additional time granted for these work suspensions.
3. No additional compensation shall be granted for demobilization, cleaning and remobilization as a result of these work suspensions.
4. During the work suspensions, the CONTRACTOR shall remain liable for the safety and security of the project site and be available 24 hours per the Contract Documents. CONTRACTOR shall have personnel visit the site daily during these suspensions to ensure the safety and security of the site.

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## C. SCHEDULE

1. CONTRACTOR shall submit scheduling information for the work noted in the Contract and/or each associated Task Order, as required in Section 013200 "Construction Progress Documentation".
2. No separate payment shall be made for preparation and/or revision of the schedule.

- D. Work Hours: 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 Supplementary Conditions, all work at the site shall be performed during regular working hours between 8 a.m. and 5:00 p.m., Monday through Friday. The Contractor will not permit overtime work or the performance of work on Saturday, Sunday or any legal holiday (designated by the City of Fort Lauderdale) without the Project Manager's written consent at least seventy two (72) hours in advance of starting such work. If the Project Manager permits overtime work, the Contractor shall pay for the additional charges to the City with respect to such overtime work. Such additional charges shall be a subsidiary obligation of the Contractor and no extra payment shall be made to the Contractor for overtime work. It shall be noted that the City's Inspector work hours are from 8:00 AM to 4:30 PM and any Work requiring inspection oversight being performed outside of this timeframe shall be paid for by the Contractor as Inspector overtime. The cost to the Contractor to reimburse the City for overtime inspection is established at direct-labor and overtime costs for each person or inspector required. Incidental overtime costs for engineering, testing and other related services will also be charged to the Contractor at the actual rate accrued

## 1.08 COMPUTATION OF CONTRACT TIME

- A. It is the CONTRACTOR'S responsibility to provide clear and convincing documentation to the ENGINEER as to the effect additional work will have with respect to additional contract time extension that may be justified. If additional quantities of work can be carried out concurrent with other existing construction activities without disrupting the critical path of the project then no contract time extension will be granted. The CONTRACTOR is obligated to provide documentation to the CITY if additional elements of work affect the critical path of the project. If work set forth in the original scope of the project is deleted, the contract time may be reduced. This contract is a calendar day contract. While the CONTRACTOR may be granted time to suspend work operations for vacations or holidays, contract time will not be suspended. During suspensions, the CONTRACTOR shall be responsible for all maintenance of traffic and liability without additional compensation from the CITY.

## 1.09 CONTRACTOR USE OF PREMISES

- A. The CONTRACTOR's use of the project site shall be limited to its construction operations. The CONTRACTOR will arrange for storage of materials and a copy of an agreement for use of other property shall be furnished to the ENGINEER.

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#### 1.10 POST AWARD KICK-OFF MEETING

- A. After the award of the Contract, a Post Award Kick-Off Meeting will be held between the CONTRACTOR, the CITY'S ENGINEER, City Staff and other interested parties. The ENGINEER will set the time and place of the conference. The purpose of this meeting is to communicate administrative and operational requirements of the Contract. The requirements for construction mobilization, quality, safety, and execution of the project will be explained and documented. Submittal requirements, project communications, schedule, quality and safety requirements will be outlined and dates set for submission of pre-construction submittals.

#### 1.10 PRE-CONSTRUCTION CONFERENCE

- A. After the award of Contract, a Pre-construction Work Conference will be held between the CONTRACTOR, the ENGINEER, the CITY, other interested Agencies, representatives of Utility Companies and others affected by the work. The ENGINEER will set the time and place of this conference. The CONTRACTOR shall bring to the conference a copy of the proposed work schedule for the approval by the ENGINEER of the proposed methods and manner of executing the work including sequences of operation and time schedule. The work shall be performed in accordance with such schedule or approved amendments thereto.

#### 1.11 UTILITY LOCATIONS

- A. As far as possible, all existing utility lines in the project area have been shown on the plans. However, the CITY does not guarantee that all lines are shown, or that said lines are in their true location. It shall be the CONTRACTOR'S responsibility to identify and locate all underground or overhead utility lines or equipment affected by the project. No additional payment will be made to the CONTRACTOR because of discrepancies in actual and plan location of utilities and damages suffered as a result thereof.
- B. The CONTRACTOR shall notify each utility company involved at least thirty (30) days prior to the start of construction to arrange for positive underground location, relocation or support of its utility where that utility may be in conflict with or endangered by the proposed construction. The CONTRACTOR shall pay for relocation of water mains or other utilities for the convenience of the CONTRACTOR. The CONTRACTOR shall pay for all charges by utility companies for temporary support of its utilities. All costs of permanent utility relocations to avoid conflict shall be the responsibility of the CONTRACTOR and the utility company involved.
- C. The CONTRACTOR shall schedule and coordinate their work in such a manner that they are not delayed by the utility companies relocating or supporting their utilities. No compensation will be paid to the CONTRACTOR for any loss of time or delay.
- D. All overhead, surface, and underground structures and/or utilities encountered are to be carefully protected from damage or displacement. All damage to said structures and/or utilities is to be completely repaired within a reasonable time; needless delay will not be tolerated. The CITY reserves the right to remedy any damage by ordering outside parties to make repairs at the expense of the CONTRACTOR. All repairs

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made by the CONTRACTOR are to be made to the satisfaction of the utility owner and shall be inspected by a representative of the utility owner and the ENGINEER.

- E. The CONTRACTOR should be aware of the Sunshine State One Call Center, which has a free locating service for CONTRACTORS and excavators. Within forty-eight hours before excavating, dial toll free 1-800-432-4770 (or local 811), and a locator will be dispatched to the work location. CONTRACTOR shall reasonably notify other utility companies not notified by Sunshine State One Call Center.
- F. The permits listed below will be obtained for the project by the CITY prior to beginning construction (when applicable). The CONTRACTOR is responsible for compliance with any and all permit conditions. In the event that the CITY must obtain permits in addition to those listed below, the CONTRACTOR shall not have any claim for damages arising from any delay caused by the CITY'S obtaining said additional permits.
  - a. Wastewater/Force Main (Relocation) Permit and Drainage Permit: Broward County Environmental Protection & Growth Management Department.
  - b. Water Main (Relocation) Permit: Florida Department of Health in Broward County.
- G. CONTRACTOR shall obtain applicable construction permits with Local, County, and State prior to commencement of work.

#### 1.12 LINE AND GRADE

N/A

#### 1.13 PROTECTION AND RESTORATION OF SURVEY MONUMENTS

- A. The CONTRACTOR shall carefully protect from disturbance all survey monuments, stakes and bench marks, whether or not established by CONTRACTOR, and shall not remove or destroy any surveying point until it has been properly witnessed by the ENGINEER. All major survey monuments that have been damaged by the CONTRACTOR such as section corners, 1/4 section corners, property corners or block control points shall be replaced at the CONTRACTOR'S expense with markers of a size and type approved by the ENGINEER. The replacement shall be under the supervision of a Florida Registered Land Surveyor where directed by the ENGINEER.

#### 1.14 EQUIPMENT

- A. All equipment necessary and required for the proper construction of all facilities shall be on the construction site, in first-class working condition.

#### 1.15 STORAGE SITES

- A. The CONTRACTOR shall furnish, at CONTRACTOR's expense, properly zoned areas suitable for field office, material storage and equipment service and storage. No material may be stored in the public right of way without prior authorization by the agency having jurisdiction. The CONTRACTOR shall keep these areas in a clean

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and orderly condition so as not to cause a nuisance or sight obstruction to motorists or pedestrians.

#### 1.16 OWNERSHIP OF EXISTING MATERIALS

- A. All materials removed or excavated from the job site shall remain the property of the CITY until released by the Contract Administrator, at which time it shall become the property of the CONTRACTOR, who shall dispose of it in a manner satisfactory to the ENGINEER.

#### 1.17 EXCESS MATERIAL

- A. Upon direction of the ENGINEER, all vegetation, debris, concrete or other unsuitable materials shall be disposed of in areas provided by the CONTRACTOR and approved by the ENGINEER. Any excess material desired to be retained by the CITY shall be delivered by the CONTRACTOR to a designated area within a 5-mile radius of the project, at no extra cost to the CITY.

#### 1.18 AUDIO-VISUAL PRECONSTRUCTION RECORD

- A. General:
  - 1. Prior to beginning any Contract or Task Order work, the CONTRACTOR shall thoroughly photograph or have a continuous color audio-video recording taken along the entire length of the project to serve as a record of preconstruction conditions.

#### 1.21 ENVIRONMENTAL PROTECTION

- A. The CONTRACTOR shall furnish all labor and equipment and perform all work required for the prevention of environmental pollution during and as a result of the work under this contract. For the purpose of this contract, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life, affect other species of importance to man, or degrade the utility of the environment for aesthetic and recreational purposes. The control of environmental pollution requires consideration of air, water, land and involves noise, solid waste management and management of radiant energy and radioactive materials, as well as other pollutants. Environmental pollution prevention shall be in accordance with NPDES requirements with no additional cost to the CITY.

#### 1.22 MAINTENANCE AND PROTECTION OF TRAFFIC

- A. The CONTRACTOR shall provide all necessary traffic control devices in order to redirect, protect, warn or maintain existing vehicular and pedestrian traffic during the course of construction.
  - 1. Construction Phasing Requirements:  
Contractor shall follow phasing requirements shown on construction drawings. Contractor shall submit a written request to the City's Project Manager for approval to start work on each phase.

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**B. TRAFFIC CONTROL**

1. The CONTRACTOR is required to submit a conceptual Traffic Control Plan at the Pre-Construction Conference. This preliminary plan should identify the phases of construction that the CONTRACTOR plans to proceed with and identify traffic flows during each phase. The ENGINEER will have ten (10) days to notify the CONTRACTOR of any comments. Once the conceptual plan for maintaining traffic has been approved, the CONTRACTOR will be required to submit a detailed plan showing each phase's Maintenance and Protection Plan prior to starting construction of any phase.
2. The "Maintenance of Traffic" plan shall include pedestrian traffic as well as vehicular traffic.

It shall be the responsibility of the CONTRACTOR for any necessary Construction, Pavement Marking and Signage or any Pedestrian Signalization and/or Signal Modification to accommodate an alternate safe walk route.

3. The CONTRACTOR, at all times, shall conduct the work in such a manner as to insure the least obstruction to traffic as is practical. Convenience of the general public and of the residents adjacent to the work shall be provided for in a satisfactory manner, as determined by the CITY'S ENGINEER.
4. Sidewalks, gutters, drains, fire hydrants and private drives shall, insofar as practical, be kept in condition for their intended uses. Fire hydrants on or adjacent to the work shall be kept accessible to fire apparatus at all times, and no material or obstruction shall be placed within twenty (20) feet of any such hydrant.
5. All existing stop and street name signs will be maintained as long as deemed necessary by the CITY'S ENGINEER.
6. The CONTRACTOR shall furnish a sufficient number of protective devices to protect and divert the vehicular and pedestrian traffic from working areas closed to traffic, or to protect any new work. Failure to comply with this requirement will result in the ENGINEER shutting down the work until the CONTRACTOR provides the necessary protection.
7. Any time traffic is diverted for a period of time that will exceed one-work day temporary pavement markings will be required. Existing pavement markings that conflict with the new work zone traffic pattern must be obliterated. Painting over existing pavement markings (black out) is not permitted.

**1.23 MAINTENANCE AND PROTECTION OF EXISTING DRAINAGE SYSTEM**

- A. It shall be the responsibility of the contractor to maintain positive drainage on the surface and to ensure that the existing underground drainage system continues to function as intended during the construction. The contractor shall follow the plans to

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ensure that existing catch basins and manholes are being protected during the entire phase of construction.

#### 1.24 APPLICATION FOR PAYMENT FOR STORED MATERIALS

- A. Application for payment for stored materials may not be made by the CONTRACTOR.

#### 1.25 SPECIAL CONDITIONS FOR CONSTRUCTION BY OTHER AGENCIES

- A. It will be the CONTRACTOR'S responsibility to coordinate construction schedules with other contractors so as to minimize disruptions, and inconveniences. The project site shall be safe at all times for construction workers and marina visitors.

#### **PART 2 PRODUCTS (Not Applicable)**

#### **PART 3 EXECUTION (Not Applicable)**

**END OF SECTION**



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**SECTION 01001 - GENERAL REQUIREMENTS****PART 1 PROJECT DESCRIPTION****1.01 GENERAL**

- A. A brief description of the Work is stated in the INVITATION TO BID. To determine the full scope of the project or any particular part of the project, coordinate the applicable information in these Contract Documents and review the available project drawings.
- B. Project specific drawings and specifications are made part of this Contract. If a conflict occurs within the plans and/or specifications then the most stringent requirement shall apply. Contractor shall immediately check furnished drawings and specifications and notify the CITY of any discrepancies.
- C. Project Environmental Goals: Contractor shall distribute copies of the Environmental Goals to each subcontractor and the City Engineer. The overall goal for design, construction, and operation is to produce a facility/building that meets the functional program needs and incorporates the principles of sustainability. Specifically:
  - 1. Preserve and restore the site ecosystem and biodiversity; avoid site degradation and erosion. Minimize offsite environmental impact.
  - 2. Use the minimum amount of energy, water, and materials feasible to meet the design intent. Select energy and water efficient equipment and strategies.
  - 3. Use environmentally preferable products and decrease toxicity level of materials used.
  - 4. Use renewable energy and material resources.
  - 5. Optimize operational performance (through commissioning efforts) in order to ensure energy efficient equipment operates as intended.
  - 6. Consider the durability, maintainability, and flexibility of building systems.
  - 7. Manage construction site and storage of materials to ensure no negative impact on the indoor environmental quality of the building.
  - 8. Reduce construction waste through reuse, recycling, and supplier take-back.
- D. Work under this Contract shall be performed by the Contractor as required by the City of Fort Lauderdale (City). Work will be authorized by a Notice to Proceed (NTP) issued to the Contractor. The Contractor shall complete all work within the number of calendar days stipulated in the Contract unless an extension in the time of completion is granted by the CITY'S ENGINEER, as stated in the Instructions to Bidders. Upon satisfactory completion of the work and compliance with applicable provisions in the Contract Documents, the Contractor will receive final payment for all work done.

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- E. Occupancy of Premises: Building(s) will be occupied during performance of work under this Contract. Before work is started, the Contractor shall arrange with the CITY ENGINEER a sequence of procedure, means of access, space for storage of materials and equipment, use of approaches and any potential impacts to traffic and/or installation operations.
- F. Existing Work: In addition to requirements to protect existing vegetation, structures, equipment, utilities or other improvements, remove or alter existing work in such a manner as to prevent injury or damage to any portions of the existing work which will remain. Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as approved by the CITY'S ENGINEER. At the completion of operations, existing work shall be in a condition equal to or better than that which existed before new work started.
- G. The following additional information, though not all-inclusive, is given to assist contractors in their evaluation of the work required to meet the project objectives.
- H. The Contractor shall become familiar with the existing operating conditions of the City's water system, sewage transmission system and pumping stations and take such into consideration in planning and scheduling work. No extra claims shall be made for work required to achieve conditions beyond those obtainable under normal operation of the existing transmission, collection and pumping facilities necessary to accomplish the Work.
- I. Contractor shall be required to submit a Maintenance of Traffic (MOT) plan for work in the county and state highways and City streets. Contractor shall coordinate with MOTs for nearby or highway work and obtain approval for all traffic control as required by the permits contained elsewhere in this Section.

## **PART 2      SEQUENCE OF OPERATIONS**

### **2.01    SCHEDULING**

- A. General: Prepare and submit schedule in accordance with the provisions of Section 01311, Construction Progress Documentation.
- B. Plan the work and carry it out with minimum interference to the operation of the existing facilities. Prior to starting the work, confer with the CITY to develop an approved work schedule, which will permit the facilities to function normally as practical. It may be necessary to do certain parts of the construction work outside normal working hours in order to avoid undesirable conditions. The Contractor shall do this work at such times, and at no additional cost to the City. Do not make connections between existing work and new work until necessary inspection and tests have been completed on the new work and it is found to conform in all respects to the requirements of the Contract Documents.
- C. No work shall be started until the Contractor has received approved shop drawings, established material/delivery dates for all equipment, and received approval of the

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construction schedule from the CITY. The Contractor shall have sufficient manpower, equipment, and material to complete the project.

- D. No work shall commence without express consent of the CITY.
- E. If a privately owned staging area is required, no work shall commence until approval of the facility is obtained from City Planning and Zoning in accordance with Section 47-19.2 of the Unified Land Development Regulations. Submit a copy of the approval and agreement to the CITY.
- F. Special Scheduling Requirements: Have materials, equipment, and personnel required to perform the work at the site prior to the commencement of the work. The Contractor shall conduct his operations so as to cause the least possible interference with normal operations of the activity. Permission to interrupt any Activity roads, railroads, and/or utility service shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption. The work under this Contract may require special attention to the scheduling and conduct of the work in connection with existing operations.

## 2.02 MOBILIZATION AND DEMOBILIZATION

- A. Contractor shall be responsible for mobilization and demobilization of labor, materials and equipment. Payment for mobilization and demobilization shall be included in the lump sum price indicated in the Proposal for the project.

## 2.03 COORDINATION

- A. Contractor shall cooperate in the coordination of separate activities in a manner that will provide the least interference with the Owner's operations and other contractors and utility companies working in the area, and in the interfacing and connection of the separate elements of the overall project work.
- B. If any difficulty or dispute should arise in the accomplishment of the above, the problem shall be brought immediately to the attention of the CITY.

## 2.05 OPERATION OF EXISTING SYSTEM PROHIBITED

- A. At no time is the Contractor to undertake to close off any utility lines or open valves or take any other action, which would affect the operation of existing systems. The City's operations crew will operate all valves. Provide at least one business day notice to City prior to any operations.

# PART 3 SITE CONDITIONS

## 3.01 SITE INVESTIGATION AND REPRESENTATION

- A. The Contractor acknowledges satisfaction as to the general nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, availability of labor, water, electric power, roads, and uncertainties

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of weather, river stages, or similar physical conditions, the character of equipment and facilities needed preliminary to and during the prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Contract.

- B. Failure by the Contractor to become acquainted with the physical conditions and all the available information will not relieve the Contractor from responsibility for properly estimating the difficulty or cost of successfully performing the Work.
- C. The Contractor warrants that as a result of examination and investigation of all the aforesaid data, the Contractor can perform the work in a good and workmanlike manner and to the satisfaction of the City. The City assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this Contract, unless (1) such representations are expressly stated in the Contract, and (2) the Contract expressly provides that the responsibility therefore is assumed by the City.

### 3.02 INFORMATION ON SITE CONDITIONS

- A. General: Information obtained by the CITY regarding site conditions, subsurface information, groundwater elevations, existing construction of site facilities, as applicable, and similar data will be available for inspection at the office of the CITY upon request. Such information is offered as supplementary information only. The CITY does not assume any responsibility for the completeness or interpretation of such supplementary information.

### 3.03 UTILITIES

- A. The Contractor shall be responsible for determining and/or confirming, at his cost, the locations of all utilities within the project area, and shall be responsible for contacting each utility for location and notification prior to commencing work.
- B. The Contractor shall contact potentially affected utilities as provided in Section 01060, Regulatory Requirements & Permits.
- C. The Contractor shall contact Sunshine State One Call at 811 or visit [www.callsunshine.com](http://www.callsunshine.com) at least 2 business days (10 business days for water crossings) prior to any excavation and make arrangements for locating all utilities in the project area.
- D. Utility Cutovers and Interruptions: Make utility cutovers and interruptions after normal working hours or on Saturdays, Sundays, and City holidays. Conform to procedures required in the paragraph "Work outside Regular Hours." Ensure that new utility lines are complete, except for the connection, before interrupting existing service. Interruption to water, sanitary sewer, storm sewer, telephone service, electric service, air conditioning, heating, fire alarm, compressed air, and CATV or other communications shall be considered utility cutovers pursuant to the paragraph entitled "Work Outside Regular Hours."

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### 3.04 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTIES AND SERVICE

- A. Where the Contractor's operations could cause damage or inconvenience to utilities, telephone, television, power, water, or sewer systems, the operations shall be suspended until all arrangements necessary for the protection of these utilities and services have been made by the Contractor with the owner of the utility affected.
- B. Notify all utility offices, which are affected by the construction operation at least 2 business days in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities.
- C. The Contractor shall be solely and directly responsible to the Owner and operators of such properties for any damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of any injuries or damage, which may result from the construction operations under this Contract.
- D. Neither the Owner nor its officers or agents shall be responsible to the Contractor for damages as a result of the Contractor's failure to protect utilities encountered in the Work.
- E. In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no case shall interruption of any water or utility service be allowed to exist outside working hours unless prior approval is granted.
- F. In the event the Contractor encounters water service lines or sewer laterals that interfere with trenching, he may, by obtaining prior approval of the property owner, and the CITY, cut the service, dig through, and restore the service with similar and equal materials at the Contractor's expense.
- G. The Contractor shall replace, at his own expense, all existing utilities or structures removed or damaged during construction, unless otherwise provided for in these Contract documents or ordered by the CITY.

### 3.05 INTERFERING STRUCTURES

- A. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground.
- B. Protect underground and aboveground existing structures from damage, whether or not they lie within the limits of the easements obtained by the City. Where such existing fences, gates, sheds, buildings, or any other structure must be removed in order to properly carry out the construction, or are damaged during construction, restore to their original condition to the satisfaction of the property owner involved at the Contractor's own expense. Notify the City of any damaged underground structure, and make repairs or replacements before backfilling.

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- C. Without additional compensation, the Contractor may remove and shall replace in a condition as good as or better than original, such small miscellaneous structures as fences, mailboxes, and signposts that interfere with the Contractor's operations.

### 3.06 EASEMENTS AND WORK ON PRIVATE PROPERTY

- A. Where portions of the work are located on public or private property, easements and permits will be obtained by the City, except as otherwise noted in these Specifications. Easements will provide for the use of property for construction purposes to the extent indicated on the easements. Copies of these easements and permits are available upon request to the City. It shall be the Contractor's responsibility to determine the adequacy of the easement obtained in every case and to abide by all requirements and provisions of the easement. The Contractor shall confine his construction operations to within the easement limits or street right-of-way limits or make special arrangements with the property owners or appropriate public agency for the additional area required. Any damage to property, either inside or outside the limits of the easements provided by the City or street rights-of-way, shall be the responsibility of the Contractor as specified herein. The Contractor shall provide immediate notice to the owner of any damage to fencing and provide temporary fencing as required to provide a functionally similar level of security. The Contractor shall remove, protect, and replace all fences or other items encountered on public or private property. Before final payment will be authorized by the CITY, the Contractor will be required to furnish the City with written releases from property owners or public agencies where side agreements or special easements have been made by the Contractor or where the Contractor's operations, for any reason, have not been kept within the construction right-of-way obtained by the City or the street right-of-way.
- B. The Contractor shall be responsible for all damage to private property where work related activities have occurred without proper easement or authorization. The City may withhold payment to the Contractor pending resolution of any claims by private owners.
- C. It is anticipated that the required easements and permits will be obtained before construction is started. However, should the procurement of any easement or permit be delayed, the Contractor shall schedule and perform the work around these areas until such a time as the easement or permit has been secured.
- D. Prior to removing an existing structure or item, provide written notice to the Owner at least 14 days in advance of the anticipated removal.
- E. The Contractor shall not engage in private construction activities within the project area without the presence of a contract with the private owner of the property containing a hold harmless clause protecting the City from any and all damages that occur during the performance of the privately authorized work.

## PART 4 SAFETY AND CONVENIENCE

### 4.01 SAFETY AND ACCESS

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- A. The Contractor shall do all work necessary to protect the general public from hazards, including, but not limited to, surface irregularities or un-ramped grade changes in pedestrian sidewalk or walkway, and trenches or excavations in roadway. Barricades, lanterns, and proper signs shall be furnished in sufficient amount to safeguard the public and the work. All barricades and signs shall be clean and serviceable, in the opinion of the CITY.
- B. During construction, the Contractor shall construct and at all times maintain satisfactory and substantial temporary chain link fencing, solid fencing, railing, barricades or steel plates, as applicable, at all openings, obstructions, or other hazards in streets, sidewalks, floors, roofs, and walkways. All such barriers shall have adequate warning lights as necessary, or required, for safety. All lights shall be regularly maintained, and in a fully operational state at all times.
- C. The Contractor shall notify all residences and businesses of planned construction at least 5 (five) business days prior to the start of work in the block where they are located. Such notices shall be brochures or door-hangers with sufficient information to describe the extent and duration of the planned work. Notification activities shall be coordinated with the CITY.
- D. Homeowners and business owners shall be provided reasonable access. The Contractor shall provide temporary sidewalks, bridges or driveway access, including safe passage over open excavations as required.
- E. All work shall be done in a safe manner and in strict compliance with all requirements of the Federal Occupational Safety and Health Act (OSHA), The Florida Trench Safety Act and all other State and local safety and health regulations.

#### 4.02 ACCIDENT REPORTS

- A. In addition, the Contractor must promptly report in writing to the CITY all accidents whatsoever arising out of, or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses. If death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the CITY.
- B. If a claim is made by anyone against the contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the CITY, giving full details of the claim.

#### 4.03 SAFE ACCESS BY FEDERAL, STATE, AND LOCAL GOVERNMENT OFFICIALS

- A. Authorized representatives of the state, federal, or local governmental agencies, shall at all times have safe access to the work, and the Contractor shall provide proper facilities for such access and inspection.

#### 4.04 PROTECTION OF PROPERTY



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- A. Protect stored materials located adjacent to the proposed work. Notify property owners affected by the construction at least two business days in advance of the time construction begins. During construction operations, construct and maintain such facilities as may be required to provide access by all property owners to their property. No person shall be cut off from access to his residence or place of business for a period exceeding 2 hours, unless the Contractor has made special arrangements with the affected persons.
- B. The Contractor shall identify and isolate his active work zone in such a manner as to exclude all personnel not employed by him or the City.

#### 4.05 FIRE PREVENTION AND PROTECTION

- A. The Contractor shall perform all work in a fire-safe manner. He shall supply and maintain on the site adequate fire-fighting equipment capable of extinguishing incipient fires. The Contractor shall comply with applicable federal, state, and local fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) shall be followed.

#### 4.06 ACCESS FOR POLICE, FIRE, AND POSTAL SERVICE

- A. Notify the fire department and police department before closing any street or portion thereof. No closing shall be made without the Owner's approval of MOT plan. Notify said departments when the streets are again passable for emergency vehicles. Do not block off emergency vehicle access to consecutive arterial crossings or dead-end streets, in excess of 300 linear feet, without special written permission from the fire department. Conduct operations with the least interference to fire equipment access, and at no time prevent such access. MOT plans that result in restricted access for emergency vehicles must be submitted and approved 2 weeks prior to the proposed closing with separate and specific notification made to the City's Project Manager to provide for appropriate agency coordination.
- B. The Contractor shall leave a night emergency telephone number or numbers with the police department, the City's Project Manager, and the Owner, so that contact may be made easily at all times in case of barricade and flare trouble or other emergencies.
- C. Maintain postal service facilities in accordance with the requirements of the U.S. Postal Service. Move mailboxes to temporary locations designated by the U.S. Postal Service, and at the completion of the work in each area, replace them in their original location and in a condition satisfactory to the U.S. Postal Service.

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**PART 5        PRESERVATION, RESTORATION, AND CLEANUP****5.01    SITE RESTORATION AND CLEANUP**

- A. At all times during the work, keep the premises clean and orderly, and upon completion of the Work, repair all damage caused by equipment and leave the project free of rubbish or excess materials of any kind.
- B. Stockpile excavated materials in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on private property, or on state, county, or city rights-of-way. Remove all excavated materials from grassed and planted areas, and leave these surfaces in a condition equivalent to their original condition. Replace excavated areas as specified in Section 02221, Trench Excavation and Backfill, raked and graded to conform to their original contours.

**5.02    FINISHING OF SITE, BORROW, AND STORAGE AREAS**

- A. Upon completion of the project, all areas used by the Contractor shall be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend in with the abutting property. Areas used for the deposit of waste materials shall be finished to properly drain and blend with the surrounding terrain. Grassed areas shall be restored as specified.

**5.03    HISTORIC PRESERVATION**

- A. The Contractor shall coordinate with the historic preservation representative supplied by the owner for initial excavation operations. If the project work should uncover prehistoric or historic artifacts associated with Native American cultures, early colonial cultures, or American settlements, all project activities in the area shall cease immediately.
- B. All such discoveries shall be reported to the Division of Historical Resources. Review and Compliance Section at (800) 847-7278.
- C. Project activities in the affected area cannot resume without authorization from the Division of Historic Resources.

**PART 6        PERMITS****6.01    GENERAL**

- A. City has prepared the following application for the Contractor to submit and obtain Permit:
  - a. Not Applicable for this project.
- B. Permits to be obtained by the Contractor include, but are not limited to the following:

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- a. Local, County, and State contracting licenses.
  - b. MOT approval from local, county, and state agencies as required.
  - c. Broward County Planning and Environmental Regulation Division (BCPERD): Dewatering permit, including National Pollution Discharge Elimination System (NPDES) permit if required.
  - d. Environmental Resource Permit if necessary.
- C. The Contractor shall comply with all applicable permit conditions.

## **PART 7 EXECUTION**

### **7.01 PRE-CONSTRUCTION RESPONSIBILITIES**

Upon receipt of the Notice To Proceed, the Contractor shall arrange for a Pre-Construction meeting. The meeting shall be held with a minimum of one weeks' notice and shall include the Engineer, the Owner and Representatives for all affected utility companies including but not limited to:

COMPANY	CONTACT	TELEPHONE
AT&T Florida	Otis Keeve	(954) 723-2540
Comcast	Leonard Maxwell-Newbold	(954) 447-8405
City of Fort Lauderdale	Jon Stahl Rick Johnson	(954) 828-7830 (954) 828-7809
FPL	Tracy Stern	(800) 868-9554
Sunshine State One Call		(800) 432-4770

### **7.02 TEMPORARY UTILITIES**

- A. The Contractor shall be responsible to arrange for and supply all temporary utilities including, but not limited to, water, sewer and electricity.
- B. The cost of temporary utilities shall be considered incidental to the cost of the Work and is therefore included in the Bid.

### **7.03 DISPOSAL**

- A. Do not dispose of any unsuitable fill, hazardous or organic material onsite. All such material shall be disposed of in a legal manner by the Contractor, the cost of which shall be included in the Bid.

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**7.04 TREES AND LANDSCAPING WITHIN PROJECT LIMITS**

- A. General: The CONTRACTOR shall exercise all necessary precautions so as not to damage or destroy any trees or landscaping on the project site, and shall not trim or remove any trees or landscaping unless such trees or landscaping have been approved for trimming or removal by the jurisdictional agency or owner. All existing trees or landscaping which are damaged during construction shall be replaced by the CONTRACTOR or a certified tree/landscaping company to the satisfaction of the owner.
- B. Replacement: The CONTRACTOR shall immediately notify the jurisdictional agency or owner if any tree or landscaping is damaged by the CONTRACTOR's operations. If, in the opinion of the jurisdictional agency or owner, the damage is such that replacement is necessary, the CONTRACTOR shall replace the tree or landscaping at its own expense. The tree or landscaping shall be of a like size and variety as the tree or landscaping damaged, or, if of a smaller size, the CONTRACTOR shall pay any compensatory payment.

**7.05 EXISTING IRRIGATION**

- A. All existing irrigation systems (if not shown on irrigation plans) within the area of the Work shall be restored to original condition or better and adjusted to finished grade. The cost of repairs and/or adjustment to existing irrigation shall be considered incidental to the cost of the Work and is therefore included in the Bid.

**7.06 DEMOLITION**

- A. Limits of demolition which may be shown in the Contract Documents are general in nature. Actual limits of demolition shall be as determined by the field conditions in conformance with the requirements of the Work.
- B. All sidewalks within the limits of construction which are not ADA compliant (cross-slopes which exceed 2% and/or running slopes which exceed 5% and/or changes in level of 1/4" or greater) shall be demolished and reconstructed to meet these requirements.
- C. When sidewalk tie-ins exist outside the limits of construction which are not ADA compliant, the contractor shall replace those sections as directed by the Owner.

**END OF SECTION**

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**SECTION 01005 - TECHNICAL PROVISIONS****PART 1 GENERAL****1.01 SCOPE**

- A. Work under this contract includes furnishing materials, labor, tools equipment, supervision and incidentals necessary to construct infrastructure improvements.

**1.02 ITEMS SPECIFIED ON DRAWINGS**

- A. Items of material, equipment, machinery and the like may be specified on the Drawings and not in the Technical Specifications. The CONTRACTOR shall provide such items in accordance with the General Notes on the Drawings.

**1.03 FIELD LAYOUT OF THE WORK AND RECORD DRAWINGS**

- A. After completion of construction, the CONTRACTOR shall provide a minimum of two hardcopy and electronic (PDF plots and DWG drawing files) sets of As-Built Drawings, drafted in electronic (AutoCAD) format, with all the As-Built information; all locations, coordinates, dimensions and elevations of the constructed facilities, certified, signed and sealed thereon by a Land Surveyor or a licensed Professional Engineer registered in the State of Florida. All elevations shall refer to N.A.V.D. 88 (North American Vertical Datum of 1988) and all state plane coordinates shall be NAD 83 (with 1990 adjustment). The cost of such field layout and recording work shall be the responsibility of the CONTRACTOR. The As-Built utility information shall meet the requirements of the City of Fort Lauderdale and other permitting agencies, as applicable.

**1.04 SALVAGE**

- A. Any existing equipment or material, including but not limited to valves, pipes, fittings, couplings, etc., which is removed as a result of construction under this project may be designated as salvage by the CONTRACT ADMINISTRATOR, and if so, shall be delivered clean to the CITY at a location directed by the CONTRACT ADMINISTRATOR. Any equipment or material not worthy of salvaging shall be disposed of by the CONTRACTOR at a suitable location in accordance with all applicable regulations, ordinances and laws at no additional cost to the CITY.

**1.05 POWER**

- A. The CONTRACTOR shall furnish and pay for all electrical power required for the construction, testing and trial operation, prior to final acceptance by the CITY.

**1.06 WATER SUPPLY**

- A. All water required for testing, flushing, and construction shall be furnished by the CITY and paid for by the CONTRACTOR. The purchase price shall be the prevailing rate as published by the CITY. The quantity of water used shall be determined by reading the meter at the start and at the finish of construction. The CONTRACTOR

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shall make all arrangements and incur all expense involved in having the CITY furnish and install the necessary water meters. Each water service line shall be provided with a vacuum relief or backflow preventer which shall meet the requirements of ASA A40.6, latest revision, and the local administrative authority.

#### 1.07 MAINTENANCE

- A. The CONTRACTOR shall fully cooperate at all times with the CITY in order to maintain the operation of the existing water and/or sewer system with the least amount of interference and interruption possible. The schedule, plans and work of the CONTRACTOR shall at all times be subject to alteration and revision if necessary for public health and safety considerations. The creation of a public nuisance will not be permitted.
- B. It may be necessary to interrupt the operation of the existing water and/or sewer system. In all cases where the CONTRACTOR must cause an interruption, CONTRACTOR shall prepare and submit to the CITY'S ENGINEER four (4) working days prior to commencing the work, a complete description of the proposed procedure and a time schedule, which CONTRACTOR will guarantee. At least forty-eight (48) hours prior to the time proposed for starting the work, the CITY'S ENGINEER will notify the CONTRACTOR whether or not the work will be permitted as proposed.
  - 1. The CITY'S ENGINEER reserves the right to require the CONTRACTOR to work 24 hours per day in all cases where, in ENGINEER'S opinion, interference with operation of the system may result in dangerous health hazards or offensive conditions.
  - 2. In no case will the CONTRACTOR be permitted to interfere with the existing system until all materials, supplies, equipment, tools and incidentals necessary to complete the work are on the site. Backup equipment on key equipment items shall be required on work necessitating interference with the existing system.

#### 1.08 SITE RESTORATION

- A. The CONTRACTOR shall remove all excess material and shall clean up and restore the site to its original condition or better. All damage, as a result of work under this Contract, done to existing structures, pavement, driveways, paved areas, curbs and gutters, sidewalks, shrubbery, grass, trees, utility poles, utility pipe lines, conduits, drains, catch basins, flagstones, rocked, graveled, or stabilized areas of driveways, and including all obstructions not specifically named herein, shall be repaired, or replaced, as determined by the CITY'S ENGINEER. Site restoration shall be done in a timely manner as the work progresses. Site restoration work shall be completed on private property within 30 days after being disturbed.

#### 1.09 SANITARY FACILITIES

- A. The CONTRACTOR shall provide temporary facilities at the site as directed by the CITY'S ENGINEER.

#### 1.10 STANDARDS

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- A. Wherever in these TECHNICAL SPECIFICATIONS or in the drawings name and/or number refer to certain standards or regulations, the applicable publication shall be the latest revision thereof. Reference by abbreviation is made in accordance with the Section 010700, "Abbreviations of Institutions."

#### 1.11 QUALITY OF ITEMS

- A. All material furnished for this project shall be new and unused. Any material, which has become excessively weathered or damaged since manufacture, shall not be considered as new. CITY'S ENGINEER shall be the sole judge as to what constitutes excessive weathering or damage.

#### 1.12 TESTING

- A. The City of Fort Lauderdale Engineering Minimum Design and Construction Standards may require that materials and equipment supplied meet given standards and testing to demonstrate conformance to the standards is a part of those standards. The cost of these tests shall be the obligation of the CONTRACTOR and no extra charge shall be made to the CITY on account of such testing.
- B. The CONTRACTOR shall select a recognized, certified, independent testing laboratory to make tests on concrete, reinforcing steel, soils and other materials for the construction phase to ensure conformity with the TECHNICAL SPECIFICATIONS. The CITY'S ENGINEER shall approve in advance the CONTRACTOR'S testing laboratory. The costs for all required testing shall be the responsibility of the Contractor.
- C. The CITY may select a recognized, independent testing laboratory to make additional tests on concrete, reinforcing steel, soils and other materials for the construction phase, which the CITY may decide to test for conformity with the TECHNICAL SPECIFICATIONS. The CONTRACTOR shall supply the necessary samples for this testing without cost to the CITY. The costs for this additional testing shall be paid for by the CITY except for tests which fail to meet the minimum specified tolerances set forth in the drawings and the TECHNICAL SPECIFICATIONS. The cost of the tests that fail will be charged to the CONTRACTOR by deducting the cost from the Contract price, or will be paid directly to the testing laboratory by the CONTRACTOR.
- D. Construction in areas where installation and restoration must satisfy the additional requirements of a local, state or federal authority may require testing to demonstrate conformance. The CONTRACTOR shall ascertain the extent of testing required by regulatory agencies within these areas. The CONTRACTOR is responsible for performing such tests, including but not limited to, tests of compaction, concrete strength and slump, etc., and all costs for these tests shall be the obligation of the CONTRACTOR and no extra charge shall be made to the CITY on account of such testing.



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### 1.13 UTILITY CROSSINGS

- A. It is intended that wherever existing utilities must be crossed that the pipe may be deflected up to 75% of the manufacturer's recommended limits, but shall not exceed the allowable limits of the CITY. Adequate cover shall be used to adequately clear the obstruction. However, when in the opinion of the CITY'S ENGINEER, this procedure is not feasible CITY'S ENGINEER may direct the use of fittings to clear a utility crossing as detailed on the Drawings. The cost of such crossing including joint restraints shall be on the basis of the schedule of pay items applied.
- B. Deflections and adjustments of the proposed water and/or sewer mains to avoid all other existing utilities shall be verified/determined in the field during construction.

### 1.14 BASIS OF MEASUREMENT

- A. Where mains are to be paid for on a unit price per linear foot basis, the number of linear feet will be determined by measurement along the centerline of the pipe in place, including fittings. Square yardage will be determined by the actual number of square yards installed.

### 1.15 ADJUSTMENT AND RELOCATION OF EXISTING LINES

- A. When the drawings indicate that existing lines must be deflected, the pipe may be deflected up to 75% of the manufacturer's recommended limits but shall not exceed the allowable limits of the CITY. The CONTRACTOR will need to be directed by the ENGINEER. If the ENGINEER determines that the use of new pipe and fittings is required for deflection, the CONTRACTOR will be directed to use this method. The price for either method shall be based upon the unit prices bid. This does not apply to connections to existing system (Paragraph 1.17, this Section).

### 1.16 CONNECTION TO EXISTING SYSTEM

- A. The CONTRACTOR shall perform all work necessary to locate, excavate and prepare for connection to the existing mains as shown on the Drawings. The cost of this work and for the actual connection to the existing main shall be based upon the unit prices for installing the pipe and appurtenances and shall not result in any additional cost to the CITY. The cost of ductile iron sleeves shall be included in the fittings unit price.
- B. Additional valves used for the CONTRACTOR's convenience shall not be considered as an extra cost payable by the CITY for the tie-in to the existing system.
- C. During all phases of the work, (i.e. installation, testing and restoration), the CONTRACTOR shall ensure at all times the safe operation of the existing water and/or sewage systems. Service to the customers shall be maintained with the least amount of interference and interruption as possible.

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### 1.17 RELOCATIONS

- A. The CONTRACTOR shall be responsible for the relocation of structures that are shown on the drawings, including, but not limited to, light poles, signs, fences, piping, conduits and drains that interfere with the proposed positioning of the water/sewer mains. The cost of all such relocations shall be included in the prices bid for the appropriate items.

### 1.18 UTILITIES

- A. Existing utilities are shown on the Drawings insofar as information is reasonably available; however, it will be the responsibility of the CONTRACTOR to preserve all existing utilities whether shown on the Drawings or not. If utility conflicts are encountered by the CONTRACTOR during construction, CONTRACTOR shall give sufficient notice to the CITY so that they may make the necessary adjustments. Damage to any utility, which in the opinion of the CITY is caused by carelessness on the part of the CONTRACTOR shall be repaired at the expense of the CONTRACTOR.

### 1.19 GUARANTEE

- A. The CONTRACTOR shall guarantee the equipment, material and labor performed under the Contract against any and all failures in proper use and operation for a period of one (1) year from date of written acceptance by the CITY.
- B. The CONTRACTOR shall also obtain warranties from manufacturers for each piece of equipment furnished so that the manufacturer's warranty fully covers the equipment for a period of one (1) year from the date of written acceptance by the CITY, unless otherwise specified in the specifications.
- C. The CONTRACTOR shall provide three (3) copies (Two (2) hard copies and one (1) electronic copy on CD-ROM) of all Operation and Maintenance Manuals for any installed equipment or materials.
- D. The CONTRACTOR shall provide initial operation and maintenance training for any installed equipment and materials to CITY STAFF.

### 1.20 PERFORMANCE OF WORK

- A. The CONTRACTOR shall provide all personnel and equipment required to complete all work specified herein and on the Drawings. In an emergency situation, if the CITY determines that it must provide staff and/or equipment to assist the CONTRACTOR in the satisfactory performance of the Contract terms and conditions, the CONTRACTOR at the applicable prevailing wage rates shall reimburse the CITY.
- B. CONTRACTOR shall provide forty-eight (48) hours advance written notice to the CITY for approval of CONTRACTOR'S intention to work overtime on weekdays or to work on the weekends.

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### 1.21 BARRICADING (SAFETY)

- A. The CONTRACTOR shall be responsible for the furnishing and maintaining of all required barricades, either the lighted or the reflector type, to ensure the public's safety during open trench work or for any other potentially unsafe or hazardous construction activities. Barricades shall be located and displayed in conformance with the most stringent regulations required by the governing agencies. All costs for barricading, including any permits, shall be the responsibility of the CONTRACTOR.
- B. All work in public rights-of-way and on private property shall be done in strict compliance with these specifications and Florida Department of Transportation Minimum Standards. Failure to so comply will result in cessation of operations and the removal of project related obstructions from the right-of-way until compliance is achieved.

### 1.22 EMERGENCY ACCESS AND SECURITY

- A. In order to provide protection to the workers and residents, the CONTRACTOR shall maintain emergency access to the property at all times during construction. These access ways shall be protected and delineated with lighted barricades or other such devices as approved by the regulatory agency. Both ends of the emergency access way shall be blocked in accordance with the MOT permit approved by the CITY with signage indicating that this access way is to be used by emergency vehicles only.
- B. No trenches or holes shall be left open after working hours. In the event a trench must be left open after hours, it shall be done so only with the express written permission from the ENGINEER, and it shall be the CONTRACTOR'S responsibility to provide proper protection of the open trench or hole as required by the regulatory agency. In addition, the CONTRACTOR shall provide a security guard at the site whenever the CONTRACTOR'S personnel are not present, 24 hours per day/ 7 days per week. It shall be the Security Guard's responsibility to protect the open trench or hole from trespassers and to direct emergency personnel on site. The Security Guard shall not have any other responsibilities such as operating pumps or equipment but shall be dedicated to protecting the trench or open hole. The Security Guard shall be equipped with a wireless telephone capable of calling 911 to report an emergency and shall keep that telephone on their person at all times. In addition to this provision the CONTRACTOR shall maintain trench safety and comply with current OSHA regulations and the Trench Safety Act. The CONTRACTOR shall maintain and keep all safety barricades, signage, flashers, and detours, in operating condition. A copy of the approved MOT plans, and details, shall be on site at all times.
- C. All roads are to be maintained during the described construction as to always allow Emergency Access. This item will be paid for under the bid item for Mobilization as named in the Bid Schedule.

### 1.23 VIBRATORY COMPACTION

- A. The use of vibratory compaction equipment shall be limited to a total gross weight of three (3) tons. The use of vibratory equipment shall be limited to compacting backfill of utility trenches and subgrade of paved areas only. If approved in writing by the

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ENGINEER, larger vibratory compaction equipment may be allowed if operated in a static mode only.

#### 1.24 REPORTING OF DAMAGE CLAIMS

- A. The CONTRACTOR shall keep the CITY informed of any damage claims made against the CONTRACTOR during the construction period. All claims for automobile damage, property damage/bodily injury will be reported to the CONTRACT ADMINISTRATOR within 24 hours of receipt of notice. CONTRACTOR will conduct a timely investigation of the claim and determine if they will honor the claim and/or report to their insurance carrier. CONTRACTOR will advise the City of Fort Lauderdale in writing of their decision/referral to carrier.

**PART 2 PRODUCTS (Not Applicable)**

**PART 3 EXECUTION (Not Applicable)**

**END OF SECTION**

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**SECTION 01012 – NOT IN CONTRACT (N.I.C.) ITEMS****PART I GENERAL****1.01 RELATED DOCUMENTS**

- A. All applicable provisions of the Contract Requirements and Division I - General Requirements shall govern the work under this section.

**1.02 ITEMS TO BE PROVIDED UNDER SEPARATE CONTRACTS**

- A. The following items of work are not included in the Contract (N.I.C. ITEMS) and shall be executed under separate contracts directly by the OWNER, other public entities, or other utilities:

Future Restroom Building  
Future Gazebos/Pavillions/Picnic Shelters

- B. All other items indicated on the Drawings as N.I.C. ITEMS, and any items listed in the proposal form as N.I.C. ITEMS.

**PART 2 PRODUCTS (Not Applicable)****PART 3 EXECUTION (Not Applicable)****END OF SECTION**

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**SECTION 01025 - MEASUREMENT AND PAYMENT****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. This Section includes administrative and procedural requirements for determining Work completed under the Lump Sum price contract.

**1.02 RELATED SECTIONS**

- A. Section 00300 – Bid Form
- B. Section 01030 – Special Project Procedures
- C. Section 01152 – Applications for Payment
- D. Section 01370 – Schedule of Values
- E. Other Sections as applicable.

**1.03 REFERENCE STANDARDS**

- A. Manual of Uniform Traffic Control Devices (MUTCD)
- B. FDOT Standard Specification for Road and Bridge Construction (Standard Specifications)
- C. FDOT Design Standards for Design, Construction, Maintenance and Utility Operations in the State Highway System (Standard Indexes)
- D. Broward County Public Works and Transportation Department, Highway Construction and Engineering Division Minimum Standards

**1.04 GENERAL REQUIREMENTS**

- A. Prices shall include all costs required for the completed, in-place construction of the specified unit of work. This may include but not be limited to, materials and delivery; cost of installation; incidentals; labor including social security, insurance, and other required fringe benefits; workman's compensation insurance; bond premiums; rental of equipment and machinery; taxes; testing; surveys; incidental expenses; and supervision.
- B. Installation, acceptance and payment shall be in accordance with the REFERENCE STANDARDS.
- C. The City reserves the right to reject the Contractor's measurement of completed work that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the City's

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expense.

- D. Contract Sum adjustments will be by Change Order on basis of net accumulative change for each unit price category.
  - 1. Except as otherwise specified, unit prices shall apply to both deductive and additive variations of quantities.
  - 2. Lump sum and unit prices in the Agreement shall remain in effect until date of final completion of the entire Work.
- E. Partial payment for material and equipment properly stored and protected will be made in accordance with requirements of the General Conditions.
- F. No separate payment will be made for Record Drawings.
- G. Abbreviations:
  - 1. Acre - AC
  - 2. Allowance - AL
  - 3. Cubic Yard - CY
  - 4. Each - EA
  - 5. Furnish and Install - F & I
  - 6. Gallons - GA
  - 7. Gross Mile - GM
  - 8. Linear Feet – LF
  - 9. Lump Sum - LS
  - 10. Million Gallons – MG
  - 11. Net Mile - NM
  - 12. Square Foot – SF
  - 13. Square Yard – SY
  - 14. Ton - TN

## PART 2 - PRODUCTS (NOT APPLICABLE)

## PART 3 - EXECUTION

### 3.01 MEASUREMENT AND PAYMENT

- A. Payment shall constitute full compensation and will be made as indicated in the RELATED SECTIONS.
- B. The Contractor shall submit a Schedule of Values for Engineer approval in accordance with Section 01370 prior to the first Application for Payment.

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- C. The quantity approved for payment shall be either:
1. Percentage of the Lump Sum price - A percentage of the lump sum price equivalent to the percentage of the project completion as determined by the Engineer as of the date of the pay request submitted. The percent completion of the project shall be based on the percent of the total project actually constructed and not on the percent of the Contract price completed.
  2. Measured Quantities - The actual quantities in-place and accepted as measured by the Engineer on the date of the pay request submitted in the units specified in the bid form or schedule of values.

### 3.02 PROTECTION

- A. Where pavement, pipes, valves, appurtenances, trees, shrubbery, fences, other property or structures are in proximity to the WORK, adequate protection shall be provided. Such protection is considered incidental to construction and shall not be assigned to any pay item.

### 3.03 RESTORATION

- A. Where pavement, pipes, valves, structures, appurtenances, trees, shrubbery, fences, other property or structures not designated as pay items, have been damaged, removed or disturbed by the Contractor, whether deliberately or through failure to carry out the requirements of the Contract Documents, state laws, municipal ordinances or the specific direction of the Engineer, or through failure to employ usual and reasonable safeguards, such property and surface structures shall be replaced or repaired at the expense of the Contractor to a condition equal to that before work began within a time frame approved by the Engineer. Such restoration is considered incidental to construction and shall not be assigned to any pay item.

### 3.04 DESCRIPTION OF BID ITEMS:

#### A. BASE BID #1– THREE NEW SYNTHETIC TURF FIELDS WITHOUT PARKING.

1. Bids must be submitted electronically at [www.bidsync.com](http://www.bidsync.com). Construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for Options #1 and #3. Option #1 includes the construction of two (2) new synthetic turf fields (Fields "A" and "B") in the northwest area of the park. This Work includes filling an area east of the existing grass field and the installation of an aluminum sheet pile retaining wall system, and the drainage system, fencing and netting poles, and sports lighting associated with the two (2) synthetic turf fields. Option #3 includes the construction of one (1) new synthetic turf field (Field "C") in the south area of the park. This Work includes the relocation of several underground utilities, including a portion of an existing water main, a short section of force main, a portion of an irrigation mainline, and two (2) electrical lines, as well as the drainage system, fencing and netting poles, and sports lighting associated with the one (1) synthetic turf field. The Work also includes the removal and relocation of existing trees and the installation of new landscaping and irrigation, as well as the modification of the existing irrigation system in the park. This shall also include any mobilization, demobilization, and maintenance of

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traffic costs. Mobilization and demobilization items shall include any insurance, bond, license and other miscellaneous administrative costs, and all other costs to the Contractor not specifically identified in the costs of other work under the Contract. No additional payment shall be made for transportation, communications, office maintenance, project signs, and any other incidental work, or services. No further payment shall be made for remobilization unless all of the work is suspended by the Engineer for a period in excess of three (3) months and through no fault to the Contractor. Please note that payment item for mobilization shall not exceed five percent (5%) of the contract price. Maintenance of Traffic costs shall include setting up and maintaining traffic control measures and facilities along the circulation roadway within the park only for both Option #1 and Option #3. Price for all Synthetic Turf Fields shall include Sand/S.B.R. (Crumb Rubber) mix for the In-Fill Material. Payment shall be made based on a percentage of the Lump Sum price.

**B. ALTERNATE BASE BID #2: TWO NEW SYNTHETIC TURF FIELDS AND ONE NEW GRASS FIELD WITHOUT PARKING.**

1. Construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for Options #1 and #5. Option #1 includes the construction of two (2) new synthetic turf fields (Fields "A" and "B") in the northwest area of the park. This Work includes filling an area east of the existing grass field and the installation of an aluminum sheet pile retaining wall system, and the drainage system, fencing and netting poles, and sports lighting associated with the two (2) synthetic turf fields. Option #5 includes the construction of one (1) new natural grass field (Field "C") in the south area of the park. This Work includes the installation of the irrigation system, drainage system, fencing and netting poles, and sports lighting associated with the one (1) natural grass field. The Work also includes the removal and relocation of existing trees and the installation of new landscaping and irrigation, as well as the modification of the existing irrigation system in the park. This shall also include any mobilization, demobilization, and maintenance of traffic costs. Mobilization and demobilization items shall include any insurance, bond, license and other miscellaneous administrative costs, and all other costs to the Contractor not specifically identified in the costs of other work under the Contract. No additional payment shall be made for transportation, communications, office maintenance, project signs, and any other incidental work, or services. No further payment shall be made for remobilization unless all of the work is suspended by the Engineer for a period in excess of three (3) months and through no fault to the Contractor. Please note that payment item for mobilization shall not exceed five percent (5%) of the contract price. Maintenance of Traffic costs shall include setting up and maintaining traffic control measures and facilities along the circulation roadway within the park only for both Option #1 and Option #5. Price for all Synthetic Turf Fields shall include Sand/S.B.R. (Crumb Rubber) mix for the In-Fill Material. Payment shall be made based on a percentage of the Lump Sum price.

**C. OPTION A: ADD 55 ADDITIONAL PERMEABLE PAVER PARKING SPACES AT THE NORTH FIELDS.**

1. Construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for Option #2 excluding the work necessary for. the construction of the two (2) new synthetic turf fields (Fields "A" and "B") in the northwest

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area of the park which is already included in Base Bid #1. This work includes the construction of fifty-five (55) new permeable paver parking spaces along with all associated grading, drainage, sidewalks and lighting. The Work also includes the removal and relocation of existing trees and the installation of new landscaping and irrigation, as well as the modification of the existing irrigation system in the park. This add item amount shall be added to the Base Bid #1 or the Alternate Base Bid #2 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

**D. OPTION B: ADD 106 ADDITIONAL PERMEABLE PAVER PARKING SPACES AT THE SOUTH FIELD (WITH THAT FIELD BEING SYNTHETIC TURF).**

1. Construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for Option #4 excluding the work necessary for the construction of one (1) new synthetic turf field (Field "C") in the south area of the park which is already included in Base Bid #1. This Work includes the construction of one hundred six (106) new permeable paver parking spaces along with all associated grading, drainage, sidewalks and lighting. The Work also includes the removal and relocation of existing trees and the installation of new landscaping and irrigation, as well as the modification of the existing irrigation system in the park. This add item amount shall be added to the Base Bid #1 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

**E. OPTION C: ADD 106 ADDITIONAL PERMEABLE PAVER PARKING SPACES AT THE SOUTH FIELD (WITH THAT FIELD BEING NATURAL GRASS).**

1. Construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for Option#6 excluding the work necessary for the construction of one (1) new natural grass field (Field "C") in the south area of the park which is already included in Base Bid #2. This Work includes the construction of one hundred six (106) new permeable paver parking spaces along with all associated grading, drainage, sidewalks and lighting. The Work also includes the removal and relocation of existing trees and the installation of new landscaping and irrigation, as well as the modification of the existing irrigation system in the park. This add item amount shall be added to the Alternate Base Bid #2 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

**F. OPTION D: OPTIONAL UPGRADE TO LED SPORTS LIGHTING – NORTH FIELDS ONLY.**

1. This add item is the cost difference between the Base Bid which includes HID/Metal Halide sports lighting and the cost to construct all of the Work contained in the Contract Documents for the improvements shown in the plan sheets for the optional upgrade for the LED sports lighting for the two (2) North Fields (Fields "A" & "B") in the plan sheets for Options #1 and #2 LED Option only. This add item amount shall be added to the Base Bid #1 or the Alternate Base Bid #2 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

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**ADD ALTERNATES FOR OPTIONAL IN-FILL MATERIALS**

Note: The base bid prices for all synthetic turf fields shall include Sand / S.B.R. (Crumb Rubber) mix for the In-fill Material.

**G. OPTION E: OPTIONAL UPGRADE FOR INSTALLING TOTALLY ORGANIC IN-FILL SYSTEM – NORTH FIELDS ONLY.**

1. Option E – This add item is the cost difference between the Sand/SBR (Crump Rubber) In-fill Material and additional upcharge for installing a totally organic in-fill material system for the northwest fields (Fields “A” and “B”) for Options # 1 or Option #2. This add item amount shall be added to the Base Bid #1 or the Alternate Base Bid #2 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

**H. OPTION F: OPTIONAL UPGRADE FOR INSTALLING TOTALLY ORGANIC IN-FILL SYSTEM – SOUTH FIELD ONLY.**

1. Option F – This add item is the cost difference between the Sand/SBR (Crump Rubber) In-fill Material and additional upcharge for installing a totally organic in-fill material system for the south field (Field “C”) for Options #3 or Option #4. This add item amount shall be added to the Base Bid #1 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price

**I. OPTION G: OPTIONAL UPGRADE FOR INSTALLING HEAT REDUCING ORGANIC COMPOSITE IN-FILL SYSTEM – NORTH FIELDS ONLY.**

1. Option G – This add item is the cost difference the Sand/SBR (Crump Rubber) In-fill Material and additional upcharge for installing a Heat Reducing Organic Composite in-fill material system for the northwest fields (Fields “A” and “B”) for Options # 1 or Option #2. This add item amount shall be added to the Base Bid #1 or the Alternate Base Bid #2 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

**J. OPTION H: OPTIONAL UPGRADE FOR INSTALLING HEAT REDUCING ORGANIC COMPOSITE IN-FILL SYSTEM – SOUTH FIELD ONLY.**

1. Option “H” – This add item is the cost difference the Sand/SBR (Crump Rubber) In-fill Material and additional upcharge for installing a Heat Reducing Organic Composite in-fill material system for the south field (Field “C”) for Options # 3 or Option #4. This add item amount shall be added to the Base Bid #1 amount at the time of award and payment shall be made based on a percentage of the adjusted Base Bid Lump Sum price.

NOTE: THE FOLLOWING ALLOWANCE ITEMS WILL BE ADDED TO THE BIDS AS

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DETERMINED (AND APPLICABLE) BY THE CITY.

K. ALLOWANCE ITEM – RELOCATION OF COMCAST CABLE LINE.

This item is for the relocation of an existing Comcast Cable facility located along the north and west side of the existing circulation roadway in the park. The extent with which this existing line will need to be relocated will depend on the specific Option that is chosen and what improvements will be made to the south field (Field "C"). The figure of \$10,000.00 is included as an allowance and will be adjusted to the actual amount allowed with approval from the Engineer and the City's Representative.

L. ALLOWANCE ITEM – PERMIT FEES.

Payment for this item shall be made at the amount that will be determined at the time of permitting by the Contractor. The figure of \$40,000.00 is included as an allowance and will be adjusted to the actual amount of the fees with approval from the Engineer and the City.

M. ADDITIONAL ALLOWANCE ITEM FOR OPTION E ONLY.

Payment for this item shall be made at the amount that will be determined at the time of installation by the Contractor. This item shall include the installation of an automatic irrigation system (not yet designed) for the "wetting" of the new synthetic fields constructed with organic in-fill material. The City will provide the design plans, construction drawings, and specifications for the additional irrigation system. The figure of \$150,000.00 is included as an allowance and will be adjusted to the actual amount with approval from the Engineer.

N. ADDITIONAL ALLOWANCE ITEM FOR OPTION F ONLY.

Payment for this item shall be made at the amount that will be determined at the time of installation by the Contractor. This item shall include the installation of an automatic irrigation system (not yet designed) for the "wetting" of the new synthetic field constructed with organic in-fill material. The City will provide the design plans, construction drawings, and specifications for the additional irrigation system. The figure of \$75,000.00 is included as an allowance and will be adjusted to the actual amount with approval from the Engineer.

**END OF SECTION**

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**SECTION 01030 - SPECIAL PROJECT PROCEDURES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. This Section provides for provisions which are specific to the Work.

**1.02 RELATED SECTIONS**

- A. Section 01015 – General Requirements
- B. Other Sections as applicable.

**1.03 OBSTRUCTIONS**

- A. The attention of the Contractor is drawn to the fact that during digging at the Project site, the possibility exists of the Contractor encountering water, sewer, petroleum, gas, telephone, electrical, or other utility lines not shown on the Drawings. The Contractor is responsible for obtaining utility locations from the utility Citys or utility locate company. The Contractor shall exercise extreme care before and during digging to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to an existing line, The Contractor shall repair the line at the no cost to the City.
- B. The Contractor shall be responsible for uncovering and exposing existing utilities sufficiently in advance of pipe laying operations to confirm elevation, size, material and clearance separation(s). If, upon excavation, an existing utility is found to be in conflict with the proposed construction or be of a size or material different from what is shown on the plans, the Contractor shall immediately notify the Engineer, who will in turn prepare a recommendation. Failure of the Contractor to perform the advance investigation shall not relieve it of any claims for delay or damages.

**1.04 PROVISIONS FOR THE CONTROL OF DUST**

- A. Sufficient precautions shall be taken during construction to minimize the amount of dust created. Appropriate precaution may include wetting down the site or other action as directed by the Engineer to prevent dust as a result of vehicular traffic.

**1.05 SALVAGE**

- A. Any existing equipment or material, including but not limited to, motors, electrical components or controls,, pipes, fittings, couplings, etc., which is removed or replaced as a result of construction under this project may be designated as salvage by the Engineer or City, and. if so, shall be removed or excavated, if necessary, and delivered to the City at a location directed by the City. Any equipment or material not worthy of salvaging, as directed by the City, shall be disposed of by the Contractor at a suitable location.

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#### 1.06 MAINTENANCE OF EXISTING WATER, WASTEWATER, DRAINAGE FACILITIES OPERATION

- A. The Contractor shall take notice that existing sanitary sewer pump station is operated in the construction area. It is the responsibility of the Contractor to contact the City's utility operator and ascertain the extent of any specific service area.
- B. The Contractor shall fully cooperate at all times with the City in order to maintain the operation of the existing facilities with the least amount of interference and interruption possible. Continuous service, public health, and safety considerations shall exceed all others and the Contractor's schedule, plans, and work shall at all times be subject to alteration and revision, if necessary, for the above considerations.
- C. The Engineer and City reserve the right to require the Contractor to work 24 hours per day in all cases where, in their opinion, interference with operation of the system may result.
- D. In no case will the Contractor be permitted to interfere with the existing system until all materials, supplies, equipment, tools, and incidentals necessary to complete the interfering portion of the work are on the site, or a temporary by-pass system is effectively in place. All existing utilities shall be pothole located prior to construction of conflicting piping.
- E. The Contractor shall provide emergency sanitary sewer pumping if required.

#### 1.07 UTILITY CROSSINGS

- A. It is intended that wherever existing utilities such as water, chemical, electrical, or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when, in the opinion of the City or Engineer, this procedure is not feasible the Engineer may direct the use of fittings for a utility crossing as detailed on the Drawings. All existing utilities shall be pothole located prior to construction of conflicting piping.

#### 1.08 CONNECTIONS TO EXISTING SYSTEMS

- A. The Contractor shall perform all work necessary to locate, excavate, and prepare for connections to the terminus of the existing mains all as shown on the Drawings or where directed by the City. The cost of this work and the cost for the actual connection to the existing mains shall be included in the bid price and shall not result in any additional cost to the City.

#### 1.09 RELOCATIONS

- A. The Contractor shall be responsible for the relocation of structures, including but not limited to, light poles, signs, sign poles, fences, piping, irrigation conduits, and drains that interfere with the positioning of the work as set out on the Drawings. The cost of all such relocations shall be included in the bid for the

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project and shall not result in any additional cost to the City.

#### 1.10 WARRANTIES

- A. All warranties shall be in accordance with Section 01740.
- B. All warranties and bonds shall be submitted prior to the issuance of final payment.

#### 1.11 HURRICANE PREPAREDNESS PLAN

- A. Within thirty days of the date of Notice to Proceed, the Contractor shall submit to the Engineer and City a Hurricane Preparedness Plan. The plan should outline the necessary measures that the Contractor proposes to perform at no additional cost to the City in case of a hurricane warning. The plan shall detail these measures with specific action items defining responsible personnel.
- B. In the event of inclement weather, or whenever Engineer shall direct; Contractor will cause Subcontractors to protect carefully the Work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of Contractor or any Subcontractor to so protect the Work, such Work and materials shall be removed and replaced at the expense of the Contractor.

#### 1.12 EQUIPMENT, TESTING & INSPECTION

- A. Regardless of the number of days specified in the individual sections for the manufacturer's representative to be present on the site for inspection and testing, if the equipment fails to perform as specified, then the representative shall remain on site until the malfunction is corrected.
- B. The cost for the additional days shall not be added to the cost for the City, but shall be to the account of the Contractor.

#### 1.13 ADJACENT PROPERTY CITY NOTIFICATION

- A. The Contractor shall prepare a written notice to property Citys adjacent to the project work site notifying them of the schedule of work affecting them and anticipated inconveniences they may expect. The notice shall meet the approval of the Engineer and be delivered to property Citys at least 72 hours prior to construction adjacent to their property. This notice shall indicate the work to be performed, the time it will take to perform the work, and the time when the water service to the property City will be disrupted.

#### 1.14 RIGHT-OF-WAY'S

- A. The Contractor shall not do any work that would affect any oil, gas, sewer, or water pipeline; any telephone, telegraph, or electric transmission line; any fence; or any other structure, nor shall the Contractor enter upon the rights-of-way involved until notified by the Engineer that the City has secured authority therefore from the proper party. After authority has been obtained, the

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Contractor shall give said party due notice of its intention to begin work, if required by said party, and shall remove, shore, support, or otherwise protect such pipeline, transmission line, ditch, fence, or structure or replace the same. When two or more contracts are being executed at one time on the same or adjacent land in such manner that work on one contract may interfere with that on another, the City shall determine the sequence and order of the work. When the territory of one contract is the necessary or convenient means of access for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the City to the Contractor so desiring, to the extent and amount, and in the manner and at the times permitted. No such decision as to the method or time of conducting the work or the use of territory shall be made the basis of any claim for delay or damage.

#### 1.15 PROTECTION OF STREET OR ROADWAY MARKERS

- A. The Contractor shall not destroy, remove, or otherwise disturb any existing survey markers or other existing street or roadway markers without proper authorization. No pavement breaking or excavation shall be started until all survey or other permanent marker points that will be disturbed by the construction operations have been properly referenced for easy and accurate restoration. It shall be the Contractor's responsibility to notify the proper representatives of the City of the time and location that work will be done. Such notification shall be sufficiently in advance of construction so that there will be no delay due to waiting for survey points to be satisfactorily referenced for restoration. All survey markers or points disturbed by the Contractor without proper authorization by the Engineer will be accurately restored by the City at the Contractor's expense after all street or roadway resurfacing has been completed.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01045 - CUTTING AND PATCHING****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Contractor shall be responsible for all cutting, fitting and patching required to complete the work or to:
  - 1. Make its several parts fit together properly.
  - 2. Uncover portions of the Work to provide for installation of ill-timed work.
  - 3. Remove and replace defective work.
  - 4. Remove and replace work not conforming to requirements of Contract Documents.
  - 5. Remove samples of installed work as specified for testing.
  - 6. Investigate subsurface conditions or utilities.

**1.02 RELATED SECTIONS**

- A. Section 01010: Summary of Work
- B. Other Sections as applicable.

**1.03 SUBMITTALS**

- A. Submit a written request to the Engineer in advance of executing any cutting or alteration which affects:
  - 1. Work of the Owner or any separate contractor.
  - 2. Structural value or integrity of any element of the Project.
  - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
  - 4. Efficiency, operational life, maintenance or safety of operational elements.
  - 5. Visual qualities of sight-exposed elements.

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- B. Request shall include:
1. Identification of the Project.
  2. Description of affected work.
  3. The necessity for cutting, alteration or excavation.
  4. Effect on work of Owner or any separate contractor, or on structural or weatherproof integrity of Project.
  5. Description of proposed work:
    - a. Scope of cutting, patching, alteration, or excavation.
    - b. Trades who will execute the work.
    - c. Products proposed to be used.
    - d. Extent of refinishing to be redone.
  6. Alternatives to cutting and patching.
  7. Cost proposal, when applicable.
  8. Written permission of any separate contractor whose work will be affected.
- C. Submit written notice to the Engineer designating the date and the time work will be uncovered.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Comply with specifications and standards for each specific project involved.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting or patching.
- B. After uncovering work, inspect conditions affecting installation of Products, or performance of work.
- C. Report unsatisfactory or questionable conditions to the Engineer in writing; do not proceed with work until the Engineer has provided further instructions.

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**3.02 PREPARATION**

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.
- B. Provide devices and methods to protect other portions of Project from damage.
- C. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

**3.03 PERFORMANCE**

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.
- B. Execute cutting methods which will prevent settlement or damage to other work.
- C. Employ original Installer or Fabricator to perform cutting and patching for:
  - 1. Weather-exposed or moisture-resistant surfaces.
  - 2. Sight-exposed finished surfaces.
- D. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.
- E. Restore work which has been cut or removed; install new products to provide completed Work in accord with requirements of Contract Documents.
- F. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- G. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
  - 1. For continuous surfaces, refinish to nearest intersection.
  - 2. For an assembly, refinish entire unit.

**END OF SECTION**

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**SECTION 01050 - FIELD ENGINEERING AND SURVEYING****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Provide and pay for field engineering and surveying services required for Project as follows:
  - 1. Surveying work required for the lay-out and execution of Work.
  - 2. Surveying work required to identify and maintain existing control points, bench marks and property line corners.
  - 3. Surveying work required to verify existing utility locations.
  - 4. Surveying work as required to create Project Record Documents.
  - 5. Civil, structural, or other professional engineering services specified, or required to execute the Contractor's construction methods.
  - 6. Testing, sampling, calibrating and training services specified, or required to execute the Contractor's construction methods including soils, concrete, material, etc.

**1.02 RELATED SECTIONS**

- A. Section 01410 – Materials and Installation Testing
- B. Section 01720 - Project Record Documents
- C. Other Sections as applicable.

**1.03 QUALIFICATIONS OF PROFESSIONAL**

- A. Florida Registered Professional Surveyor and Mapper, acceptable to the City and the Engineer.
- B. Florida Registered Professional Engineer(s) of the specialty required for on the Project, acceptable to the City and the Engineer.

**1.04 SURVEY REFERENCE POINTS**

- A. Horizontal and vertical control points for the Project are to be established by the Engineer and provided to the Contractor.
- B. Locate and protect control points prior to starting work, and preserve all permanent reference points during construction.



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1. Make no changes or relocations without prior written notice to the Engineer.
2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
3. Require surveyor to replace project control points which may be lost or destroyed.
  - a. Establish replacements based on original survey control.

## 1.05 PROJECT SURVEY REQUIREMENTS

- A. Establish a minimum of two temporary bench marks on site, referenced to data by survey control points.
  1. Record locations, with horizontal and vertical data, on Project Record Documents.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
  1. Site Improvements
    - a. Line and grade of pipe and structure installation; top of pipe, invert, slope, etc.
    - b. Grading for fill and topsoil placement, roadway sub-base and base installation.
  2. Controlling lines and levels required for all trades.
- C. From time to time, verify layouts by same methods.

## 1.06 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses in accordance with Section 01720.

## 1.07 SUBMITTALS

- A. Submit name and address of Professional Surveyor and Mapper or Professional Engineer to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by registered surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.
- D. Submit Project Record Documents in accordance with Section 01720.

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**PART 2 - PRODUCTS (NOT USED)****PART 3 - EXECUTION****3.01 ADVANCE INVESTIGATIONS**

- A. The Contractor shall be responsible for uncovering and exposing existing utilities sufficiently in advance of pipe laying operations to confirm elevation, size, material and clearance separation(s). If, upon excavation, an existing utility is found to be in conflict with the proposed construction or be of a size or material different from what is shown on the plans, the Contractor shall immediately notify the Engineer, who will in turn prepare a recommendation. Failure of the Contractor to perform the advance investigation shall not relieve it of any claims for delay or damages.

**END OF SECTION**

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**SECTION 01090 - REFERENCES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Applicable Publications: Whenever in these specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- B. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These assignments shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. The final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

**1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS**

- A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.
- B. References herein to "Building Code" or SFBC shall mean the South Florida Building Code, Broward Edition. The latest edition of the code as approved and used at the local agency having jurisdiction, shall apply to the WORK herein, including, all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflicts between codes, reference standards, drawings and other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the ENGINEER for clarifications and directions prior to ordering or providing any materials or labor. The CONTRACTOR shall bid the most stringent requirements.
- D. Applicable Standard Specifications: The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract

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Documents and the referenced portion of those referenced codes, standards, and specifications listed herein; except, that wherever references to "Standard Specifications" are made, the provisions therein for measurement and payment shall not apply.

- E. References herein to "OSHA Regulations for Construction" shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations, including all changes and amendments thereto.
- F. References herein to "OSHA Standards" shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

### 1.03 TRADE NAMES AND ALTERNATIVES

- A. For convenience in designation in the Contract Documents, materials to be incorporated in the WORK may be designated under a trade name or the name of a manufacturer and its catalog information. The use of alternative material which is equal in quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:
  - 1. The burden of proof as to the quality and suitability of such alternative equipment, products, or other materials shall be upon the CONTRACTOR.
  - 2. The ENGINEER will be the sole judge as to the comparative quality and suitability of such alternative equipment, products, or other materials and its decisions shall be final.
  - 3. Base Bid requirements outlined in the Supplement to Bid Form, shall supersede any language contained hereinafter.
- B. Whenever in the Contract Documents the name or the name and address of the manufacturer or distributor is given for a product or other material, or if any other source of a product or material is indicated therefore, such information is given for the convenience of the CONTRACTOR only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the CONTRACTOR to determine the accurate identity and location of any such manufacturer, distributor, or other source of any product or material called for in the Contract Documents.
- C. The CONTRACTOR may offer any material, process, or equipment which it considers equivalent to that indicated. Unless otherwise authorized in writing by the ENGINEER, the substantiation of offers of equivalency must be submitted within 30 days after execution of the Agreement. The CONTRACTOR, at its sole expense, shall furnish data concerning items it has offered as equivalent to those specified. The CONTRACTOR shall have the material as required by the ENGINEER to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the items will fulfill its intended function. Installation and use of a substitute item shall not be made until accepted by the ENGINEER. If a substitute offered by the CONTRACTOR is found to be not equal to the specified

material, the CONTRACTOR shall furnish and install the specified material.

- D. The CONTRACTOR'S attention is further directed to the requirement that failure to submit data substantiating a request for the substitution of an "or equal" item within said 30-day period after the execution of the Agreement, shall be deemed to mean that the CONTRACTOR intends to furnish one of the specific brand-named products named in the specification, and the CONTRACTOR does hereby waive all rights to offer or use substitute products in each such case. Wherever a proposed substitute product has not been submitted within said 30-day period, or wherever the submission of a proposed substitute product fails to meet the requirements of the specifications and an acceptable resubmittal is not received by the ENGINEER within said 30-day period, the CONTRACTOR shall furnish only one of the products originally-named in the Contract Documents.

#### 1.04 ABBREVIATION

- A. Wherever in these specifications references are made to the standards, specifications, or other published data of the various national, regional, or local organizations, such organizations may be referred to by their acronyms or abbreviation only. As a guide to the user of these specifications, the following acronyms and abbreviations which may appear in these specifications shall have the meanings indicated herein.

#### 1.05 ABBREVIATIONS AND ACRONYMS

- A. Abbreviations and acronyms contained in the Contract Documents may include, but not be limited to, the following:

AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of the State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ACPPA	American Concrete Pressure Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGC	Associated General Contractors
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute

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APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWPI	American Wood Preservers Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturers Association
CBM	Certified Ballast Manufacturers
CEMA	Conveyors Equipment Manufacturers Association
CGA	Compressed Gas Association
CLPCA	California Lathing and Plastering Contractors Association
CLFMI	Chain Link Fence Manufacturers Institute
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DCDMA	Diamond Core Drill Manufacturers Association
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
HI	Hydraulic Institute
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturers Association
MPTA	Mechanical Power Transmission Association
MTI	Marine Testing Institute
NAAM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electric Code

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NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NGLI	National Grease Lubricating Institute
NMA	National Microfilm Association
NRCA	National Roofing Contractors Association
NWMA	National Woodwork Manufacturers Association
NWWA	National Water Well Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Precast Concrete Institute
PDI	Plumbing and Drainage Institute
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturers Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SBC	Southern Building Code Congress International, Inc. (SBCCI)
SIS	Swedish Standards Association
SJI	Steel Joist Institute
SMA	Screen Manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPR	Simplified Practice Recommendation
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
USGS	United States Geological Survey
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WIC	Woodwork Institute of California
WPCF	Water Pollution Control Federation
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**



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**SECTION 01150 - PAYMENT PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
  - 1. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
  - 2. Other Sections as applicable.
- C. BASIS OF PAYMENT - The price for each items shall include the furnishing of all labor, materials, equipment and incidentals required to complete the construction and to repair in a manner satisfactory to the Engineer any and all damage, as a result of work under this contract, done to existing structures, pavement, driveways paved areas, curbs and gutters, sidewalks, shrubbery, grass, trees, utility poles, utility pipe lines, conduits, drains, catch basins, flagstones, rocked, graveled or stabilized areas or driveways and including all above and underground obstructions not specifically named here-in: replacing in a manner satisfactory to the Engineer and or all of the above items which may be damaged beyond repair as a result of work under this contract: performing the work necessary to complete any and all special connections, hangers, supports, bracing, blocking, shoring and patching necessary to complete the contract in a finished workmanlike manner ready for operation.
- D. Retainage: The City shall retain a portion of each partial payment according to the following schedule:
  - 1. The City will retain ten percent (10%) of all monies earned by Contractor until the work is fifty percent (50%) complete.
  - 2. After the work is fifty percent (50%) complete, the City will retain five percent (5%) of all monies earned by Contractor until project is complete and final payment is issued.

**1.3 DEFINITIONS**

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing

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Contractor's Applications for Payment.

#### 1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
    - a. City's Form - Periodic Estimate for Partial Payment.
    - b. Submittals Schedule.
    - c. Contractor's Construction Schedule.
  2. Submit the Schedule of Values to City Representative at earliest possible date but no later than **seven (7)** days before the date scheduled for submittal of initial Applications for Payment.
  3. Sub-schedules: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the Schedule of Values:
    - a. Project name and location.
    - b. Project Number
    - c. Contractor's name and address.
    - d. Date of submittal.
  2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
    - a. Related Specification Section or Division.
    - b. Description of the Work.
    - c. Name of subcontractor.
    - d. Name of manufacturer or fabricator.
    - e. Name of supplier.
    - f. Change Orders (numbers) that affect value.
    - g. Dollar value.
      - 1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.
  3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.

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4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
  - a. Differentiate between items stored on-site and items stored off-site. If specified, include evidence of insurance or bonded warehousing.
6. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
7. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
  - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the Schedule of Values or distributed as General Conditions expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

## 1.5 APPLICATIONS FOR PAYMENT

- A. The General Contractor must meet with the City Representative on or about the 25th of each month. The City Representative will go over the pay items and agree on the quantities and the dollar amounts of the work completed during the month. A copy of the agreed amounts will be signed by the parties and a copy will be left with each representative.
- B. The General Contractor will make up a partial pay request using the City-supplied forms and submit the request to the City Representative before the first of the upcoming month.
- C. Each pay request must be accompanied by an updated project schedule. The schedule must show the originally accepted construction schedule and milestone and the current percentage complete for each using a gphant chart format. A vertical red line should indicate that progress date. The project's critical path should be clearly indicated by red bars. Any approved change orders should be reflected in the schedule.

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- D. Each pay request must be accompanied by a partial release of lien by the General Contractor and by all Subcontractors, suppliers, and for all labor, as outlined below.
1. Starting with the second (2nd) pay request and for each and every pay request thereafter, the General Contractor shall submit partial release of liens from all Subcontractors, suppliers, and laborers covering the preceding month's request (SEE FOLLOWING EXAMPLE).
  2. EXAMPLE: In the first (1st) pay request, payment is requested by General Contractor for the asbestos contractor and the electrician. The General Contractor must attach his partial release of lien.
  3. For the second (2nd) pay request, the General Contractor must attach his partial release of lien from the asbestos contractor and the electrician for the amounts billed in the 1st pay request; i.e., the General Contractor will be running one (1) month behind with the releases from the Subcontractors, suppliers, etc., until the final pay request.
- E. For the final pay request, the General Contractor will be required to submit FINAL release of liens for ALL Subcontractors, suppliers, etc., and for ALL labor BEFORE FINAL PAYMENT WILL BE MADE.
- F. No partial payments, after the first payment, will be made until all partial release of liens are submitted for the preceding month's billing, as described
- G. Each Application for Payment shall be consistent with previous applications and payments as certified by and paid for by City.
- H. Payment Application Forms: Use City Form "PERIODIC ESTIMATE FOR PARTIAL PAYMENT" as form for Applications for Payment.
1. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. City will return incomplete applications without action.
  2. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
  3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- I. Release of Lien: With each Application for Payment, submit release of lien from every entity lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial release of lien on each item for amount requested in previous application, after deduction for retainage, on each item.
  2. When an application shows completion of an item, submit final release of lien.
  3. City reserves the right to designate which entities involved in the Work must submit release of lien forms.
- J. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

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1. List of subcontractors.
  2. Schedule of Values.
  3. Contractor's Construction Schedule.
  4. Submittals Schedule
  5. List of Contractor's staff assignments.
  6. Copies of building permits.
  7. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
  8. Report of preconstruction conference.
  9. Certificates of insurance and insurance policies..
  10. Performance and payment bonds.
- K. City may withhold, in whole or in part, payment to such extent as may be necessary to protect itself from loss on account of:
1. Defective Work not remedied.
  2. Claims filed or reasonable evidence indicating probable filing of claims by other parties against Contractor or City because of Contractor's performance.
  3. Failure of Contractor to make payments properly to Subcontractors or for material or labor.
  4. Damage to another contractor not remedied.
  5. Liquidated damages and costs incurred by City and/or Consultant for extended construction administration.
  6. Failure of Contractor to provide any and all documents required by the Contract Documents.
- L. No partial payment estimate will be processed for any contract which is beyond the contract completion date. After a contract runs past the completion date, only a final payment will be made when all work is complete.
- M. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Evidence of completion of Project closeout requirements.
  2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
  3. Updated final statement, accounting for final changes to the Contract Sum.
  4. Evidence that claims have been settled.
  5. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when City took possession of and assumed responsibility for corresponding elements of the Work.
  6. Final, liquidated damages settlement statement.
- N. The acceptance of final payment shall constitute a waiver of all claims by contractor, except those previously made in strict accordance with the provisions of the Contract and identified by Contractor as unsettled at the time of the application for final payment.
- O. If evidence is produced before the final settlement of all or any balance, that the party of the second part has failed to pay to laborers, employed on this work, or failed to pay

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for the materials used therein, or if the City has reason to suspect the same, the City may withhold such balance and, upon written evidence satisfactory to the City as to the amount due for such labor and materials, settle and pay for the same and charge the amounts to the party of the second part and deduct the same from said balance or balances.

**PART 2 - PRODUCTS (Not Used)****PART 3 - EXECUTION (Not Used)****END OF SECTION**

**SECTION 01152 - APPLICATIONS FOR PAYMENT****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Agreement between Owner and Contractor and the Contract Documents.

**PART 2 - RELATED SECTIONS**

- A. Section 01050 - Field Engineering
- B. Section 01310 - Construction Schedules
- C. Section 01370 - Schedule of Values
- D. Section 01700 - Contract Close Out
- E. Section 01720 - Project Record Documents

**2.02 FORMAT AND DATA REQUIRED**

- A. Submit applications typed on forms provided by the Owner (or forms provided by Contractor and agreed to by Owner), Application for Payment, with itemized data typed on 8 1/2 inch x 14 inch white paper and continuation sheets.
- B. Payment forms shall show significant detail to substantiate request. Additional detail may be required by the Engineer.

**2.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT**

- A. Application Form:
  - 1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
  - 2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
  - 3. Execute certification with signature of a responsible officer of Contract firm.
- B. Continuation Sheets:
  - 1. Fill in total list of scheduled component items of work, with item number and scheduled dollar value for each item.
  - 2. Fill in dollar value in each column for each scheduled line item when work



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has been performed or products stored.

a. Round off values to nearest dollar, or as specified.

3. List each Change Order Number, and description, as for an original component item or work.

#### 2.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:

1. Project
2. Application number and date
3. Detailed list of enclosures
4. For stored products:
  - a. Item number and identification as shown on application.
  - b. Description of specific material.
  - c. Copy of material invoice.
  - d. Address of location where item is stored
  - e. Photographs of item (if requested)

B. Submit one copy of data cover letter for each copy of application.

C. As a prerequisite for payment, Contractor is to submit the following:

1. a "Surety Acknowledgment of Payment Request" letter showing amount of progress payment which the Contractor is requesting,
2. updated record drawings for review by the Engineer,
3. updated construction schedule for review by the Engineer,
4. construction photographs.

#### 2.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Provide FINAL COMPLETION documentation for the final statement of accounting as specified in Section 01700 - Contract Closeout.

C. Submit final record drawings.

#### 2.06 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the Engineer at the times stipulated in the Agreement.

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- B. Number: Five copies of each Application.
- C. When the Engineer finds Application properly completed and correct, he will transmit certificate of payment to Owner, with copy to Contractor.

PART 3 - PRODUCTS (NOT USED)

PART 4 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01200 - PROJECT MEETINGS****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. The Engineer shall schedule and administer preconstruction meetings, periodic progress meetings, and specially called meetings throughout the progress of work. The Engineer shall:
  - 1. Prepare agenda for meetings.
  - 2. Make physical arrangements for meetings.
  - 3. Preside at meetings.
  - 4. Record in writing the minutes; include significant proceedings and decisions.
  - 5. Record the meeting with an audio recording device.
  - 6. Reproduce and distribute copies of minutes within five working days after each meeting:
    - a. To participants in the meeting.
    - b. To parties affected by decisions made at the meeting.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The Contractor shall attend meetings to ascertain that work is executed consistent with Contract Documents and construction schedules.

**1.02 RELATED SECTIONS**

- A. Document 00100 - Instructions to Bidders.
- B. Section 01310 - Construction Schedules.
- C. Section 01340 - Shop Drawings, Working Drawings, and Samples.
- D. Other Sections as applicable.

**1.03 PRECONSTRUCTION MEETING**

- A. Schedule a preconstruction meeting no later than 15 days after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties designated by the City.
- C. Attendance:
  - 1. City's Representative.

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2. Engineer and his Professional Consultants.
  3. Resident Project Representative.
  4. Contractor's Superintendent.
  5. Major Subcontractors.
  6. Major Suppliers.
  7. Utilities.
  8. Others as appropriate.
- D. Suggested Agenda:
1. Distribution and discussion of:
    - a. List of major subcontractors and suppliers.
    - b. Projected Construction Schedule.
  2. Critical work sequencing/critical path scheduling.
  3. Major equipment deliveries and priorities.
  4. Project Coordination.
    - a. Designation of responsible personnel.
  5. Procedures and processing of:
    - a. Field decisions.
    - b. Proposal requests.
    - c. Submittals.
    - d. Change Orders.
    - e. Applications for Payments.
  6. Adequacy of Distribution of Contract Documents.
  7. Procedures for maintaining Record Documents.
  8. Use of Premises:
    - a. Office, Work and Storage Areas.
    - b. City's Requirements.
  9. Construction facilities, controls and construction aids.
  10. Temporary Utilities.

#### 1.04 PROGRESS MEETINGS

- A. Schedule regular periodic meetings. The progress meetings will be held as required by progress of the work.
- B. Hold called meetings as required by progress of the work.

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- C. Location of the meetings: Project field office of the Contractor or Engineer.
- D. Attendance:
  - 1. Engineer, and his professional consultants as needed.
  - 2. Subcontractors as appropriate to the agenda.
  - 3. Suppliers as appropriate to the agenda.
  - 4. Others as appropriate.
- E. Suggested Agenda:
  - 1. Review, approval of minutes of previous meeting.
  - 2. Review of work progress since previous meeting.
  - 3. Field observations, problems and conflicts.
  - 4. Problems which impede Construction Schedule.
  - 5. Review of off site fabrication, delivery schedule.
  - 6. Corrective measures and procedures to regain projected schedule.
  - 7. Revisions to Construction Schedule.
  - 8. Progress, schedule, during succeeding work period.
  - 9. Coordination of schedules.
  - 10. Review submittal schedules; expedite as required.
  - 11. Maintenance of quality standards.
  - 12. Pending changes and substitutions.
  - 13. Review proposed changes for:
    - a. Effect on Construction Schedule and on a completion date.
    - b. Effect on other contracts of the Project.
  - 14. Other business.
  - 15. Construction schedule.
  - 16. Critical/long lead items.
- F. The Contractor is to attend progress meetings and is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of work, etc.
- G. The Contractor is to provide a current submittal log at each progress meeting in accordance with Section 01340.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01260 - CONTRACT MODIFICATION PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Sections include the following:
  - 1. Division 01 Section "Product Requirements" for administrative procedures for handling requests for substitutions made after Contract award.

**1.3 MINOR CHANGES IN THE WORK**

- A. Construction Project Manager will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on form included following the end of Part 3.

**1.4 REQUESTS FOR INFORMATION**

- A. If latent or unforeseen conditions arise that may require changes in the Work, the Contractor may submit a Request for Information to Construction Project Manager on the form included following the end of Part 3.

**1.5 PROPOSAL REQUESTS**

- A. City-Initiated Proposal Requests: Construction Project Manager will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Construction Project Manager are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within ten (10) days, when not otherwise specified after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.



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- d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - e. Quotation Form: Use forms acceptable to Construction Project Manager.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Construction Project Manager.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
  - 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
  - 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
  - 4. Include costs of labor and supervision directly attributable to the change.
  - 5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
  - 6. Comply with requirements in Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
  - 7. Proposal Request Form: Use forms acceptable to Construction Project Manager.

## 1.6 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: Refer to Division 01 Section "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.
- B. Unit Price Adjustment: Refer to Division 01 Section "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

## 1.7 CHANGE ORDER PROCEDURES

- A. On City's approval of a Proposal Request, Construction Project Manager will issue a Change Order for signature of the Contractor on City's standard form. The Change Order will not be official until approved by the appropriate City Officials and signed by the City Engineer, City Manager and/or Mayor.

## 1.8 CONSTRUCTION CHANGE DIRECTIVE

Construction Change Directive: Construction Project Manager may issue a Construction Change Directive on AIA Document G714], EJCDC Document C-940 or form acceptable to the Construction Project Manager. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in

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a Change Order.

1. Construction Change Directive contains a complete description of change in Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

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**SECTION 01310 - CONSTRUCTION SCHEDULES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Promptly after Award of the Contract and within ten days after the effective date of the Agreement, prepare and submit to the Engineer an estimated construction progress schedules for the work, with sub-schedules of related activities which are essential to its progress.
- B. Submit revised progress schedules on a monthly basis.
- C. No partial payments shall be approved by the Engineer until there is an approved up to date construction progress schedule on hand.
- D. The Contractor shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the Contractor shall have direct project control and complete authority to act on behalf of the Contractor's schedule.

**1.02 RELATED SECTIONS**

- A. Document GC-1 – General Conditions of the Construction Contract
- B. Section 01010 - Summary of Work
- C. Section 01152 - Applications for Payment
- D. Section 01200 - Project Meetings
- E. Section 01340 - Shop Drawings, Working Drawings and Samples
- F. Other Sections as applicable.

**1.03 FORM OF SCHEDULES**

- A. Prepare schedules for submittal each month with pay request. The form of the schedule is to be Microsoft Project or approved equal. The Schedule is to indicate work completed to date and additions to or deletions from the schedule.
  - 1. Provide separate horizontal bar for each trade or operation within each structure or item.
  - 2. Horizontal time scale: In weeks from start of construction and identify the first work day of each month.
  - 3. Scale and spacing: To allow space for notations and future revisions.
- B. Format of listings: The chronological order of the start of each item of work for each structure.

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- C. Identification of listings: By major specification section numbers as applicable and structure.

## 1.04 CONTENT OF SCHEDULES

## A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity.
2. Show the dates for the beginning of, and completion of, each major element of construction in no more than a two week increment scale. Specifically list, but not limited to:
  - a. Receiving Materials
  - b. Construction Activity
  - c. Testing
  - d. Restoration
  - e. Startup
  - f. Record Drawings
  - g. Permit Close-out
  - h. Punch List
  - i. Owner Activities, Including Inspections
3. Show projected percentage of completion for each item, as of the first of each month.
4. Show projected dollar cash flow requirements for each month of construction.
5. Use of float suppression techniques such as preferential sequencing or logic, special lead/lag logic restraints, and extended activity times are prohibited, and use of float time disclosed or implied by use of alternate float-suppression techniques shall be shared to proportionate benefit of the Owner and Contractor.
6. Pursuant to above float-sharing requirement, no time extensions will be granted nor delay damages paid until a delay occurs which (i) impacts Project's critical path, (ii) consumes available float or contingency time, and (iii) extends work beyond contract completion date.
7. If the Contractor provides an accepted schedule with an early completion date, the Owner reserves the right to reduce the duration of the work to match the early completion date by issuing a deductive Change Order at no change in Contract Price.

## B. Submittal Schedule for Shop Drawings and Samples in accordance with Section 01340. Must show:

1. The dates for Contractor's submittals.

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2. The dates submittals will be required for owner furnished products, if applicable.
3. The dates approved submittals will be required from the Engineer.
- C. A list of all long lead items (equipment, materials, etc).

## 1.05 PROGRESS REVISIONS

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
  1. Major changes in scope.
  2. Activities modified since previous submission.
  3. Revised projections of progress and completion.
  4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
  1. Problem areas, anticipated delays, and the impact on the schedule.
  2. Corrective action recommended, and its effect.
  3. The effect of changes on schedules of other prime contractors.

## 1.06 SUBMISSIONS

- A. Submit initial schedules to the Engineer within 10 days after the effective date of the Agreement.
  1. The Engineer will review schedules and return review copy within 21 days after receipt.
  2. If required, resubmit within 7 days after return of review copy.
- B. Submit a minimum of five (5) copies of revised monthly progress schedules with that month's application for payment.

## 1.07 DISTRIBUTION

- A. Distribute copies of reviewed schedules to:
  1. Owner (Two copies)
  2. Engineer (Two copies)
  3. Job Site File (One copy)
  4. Subcontractors (As needed)
  5. Other Concerned Parties (As needed)
- B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedule.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01315 – PROJECT MANAGEMENT AND COORDINATION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Coordination Drawings.
  - 2. Special Project Procedures
  - 3. Administrative and supervisory personnel.
  - 4. Project meetings.
  - 5. Requests for Interpretation (RFIs).
- B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.
- C. Related Sections include the following:
  - 1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
  - 2. Division 01 Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
  - 3. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

**1.3 DEFINITIONS**

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

**1.4 COORDINATION**

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

**1.5 SUBMITTALS**

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

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1. Name, address, and telephone number of entity performing subcontract or supplying products.
  2. Number and title of related Specification Section(s) covered by subcontract.
- B. Key Personnel Names: Within 15 days of notice to proceed, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

## 1.6 SPECIAL PROJECT PROCEDURES

- A. Discrepancies, Errors: Should discrepancies or errors appear in the drawings or specifications concerning materials, workmanship, or quantity of work to be performed, the Contractor will be required to immediately notify the City before proceeding with the work. If the Contractor fails to notify the City and proceeds with the work, Contractor will be required to correct the errors at his/her own expense. In the event of a conflict between the drawings and specifications, the City will decide on the way to perform the work or supply the materials. See also General Conditions, "Contractor to Check Plans and Data," Section 5-76.
- B. Dimensions and Measurements: The figured dimensions on the drawings or notes including dimensions shall be used for construction instead of measurements of the drawings by scale. No scale measurements shall be used as a dimension for construction. Dimensions on all drawings as well as the detail drawings themselves are subject in every case to measurements of adjacent or previously completed work. All such measurements necessary shall be taken before undertaking any work dependent upon such data. Field verification of dimensions on plans is mandatory since actual locations, distances, and levels will be governed by actual field conditions.
- C. Discrepancies or Inconsistencies: Should any discrepancy or inconsistency appear between larger and smaller scale drawings in any of the divisions of the specifications or in any of the contract documents, such discrepancy shall be immediately submitted to the City for correction before proceeding with the work in question. In no case shall the Contractor make any alterations, erasures, changes or modifications in the drawings or specifications.
1. Should it appear that any of the work as specified or shown by the drawings is not sufficiently detailed or explained, the Contractor shall apply to the City for such further details or information as may be necessary for full understanding of the work in question.
  2. The data set forth in these specifications and indicated on the drawings are as accurate as can be obtained, but their extreme accuracy is not guaranteed. Final application thereto shall be determined on the job as conditions may demand and subject to the approval of the City.
- D. Plans and Specifications Acknowledgment by Subcontractors and Suppliers: All Subcontractors and suppliers must submit, through the General Contractor to the City Engineer, a statement on their individual letterhead stationery, signed and sealed with their corporate seal, or a notarized statement on their letterhead stationery in the

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absence of a corporate seal, that the individual Subcontractor or Supplier:

1. Has received or reviewed a FULL set of approved plans and specifications for the project,
  2. Is aware that items concerning their particular trade may be shown and/or detailed in other trades or sections of the plans and specifications, and
  3. Will comply with said plans, specifications and all applicable codes and permit requirements.
- E. In the event a Subcontractor or Supplier notes a mistake or details appear incomplete, or if there are questions or concerns with the plans and specifications, the Subcontractor or Supplier will immediately notify the General Contractor. No work will proceed until such conflicts or questions are resolved in writing.
- F. The Subcontractor will not be permitted to start work, nor will any Shop drawings/submittals be accepted for review from a supplier until this letter of acknowledgment is received and approved by the General Contractor and City Engineer. Also, the City will not process any pay request for the work of any Subcontractor or Supplier whose acknowledgment letter is not on file with the City.

#### **1.7 ADMINISTRATIVE AND SUPERVISORY PERSONNEL**

- A. The Contractor shall employ a competent superintendent who can communicate with spoken English, and who shall be in attendance at the site full-time when any work is in progress. The superintendent shall be satisfactory to the City's Engineer and shall not be changed except with the consent of the City's Engineer.
- B. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

#### **1.8 PROJECT MEETINGS**

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify City Representative of scheduled meeting dates and times.
  2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
  3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including City Representative and Engineer, within 48 hours of the completion of the meeting.
    - a. Minutes from all meetings shall be prepared by the Contractor, reflecting all items discussed as well as agreed upon or suggested solutions. These minutes shall be a true reflection of what actually happened at the meeting.
    - b. Items discussed and not resolved or being handled by any one of the parties present shall be reflected along with the name of the person responsible in all ongoing minutes until it is resolved.
    - c. Minutes shall be typewritten within 24 hours from the completion of the

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meeting. They shall immediately be FAXED to all parties present and followed by a copy through the mail.

- d. All items requiring information and not resolved shall be reflected in each and every set of minutes thereafter until it is totally resolved
- B. Preconstruction Meeting: After the contract(s) has been awarded, executed, and a tentative work schedule has been composed, and prior to the start of the work, the Contractor(s), the Engineer, the City's Representative, and other persons and/or governmental agencies that are involved shall meet. The minimum agenda is to include but is not limited to the following:
1. Distribute and discuss list of major Subcontractors
  2. Tentative construction schedule
  3. Critical work sequencing and long-lead items
  4. Designation of key personnel and their duties
  5. Procedures for processing field decisions and Change Orders
  6. Procedures for RFIs
  7. Procedures for testing and inspecting
  8. Adequacy of distribution of contract documents
  9. Submittal of Shop drawings, project data, and samples
  10. Procedures for maintaining Record documents
  11. Use of premises
  12. Protection of existing construction including landscape materials
  13. Work restrictions
  14. Construction waste management and recycling
  15. Parking availability
  16. Working hours
  17. Safety and first-aid procedures
  18. Security procedures
  19. Housekeeping procedures including progress cleaning.
  20. Schedule of values.
  21. Processing of payments or contract.
- C. Progress Meetings: Conduct progress meetings at biweekly intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of City and Engineer, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
  2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
    - a. Review and approve minutes of previous Progress Meeting.
    - b. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule

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revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- 1) Review schedule for next period.
- c. Review present and future needs of each entity present, including the following:
  - 1) Sequence of operations.
  - 2) Status of submittals.
  - 3) Deliveries.
  - 4) Off-site fabrication.
  - 5) Access.
  - 6) Work hours.
  - 7) Hazards and risks.
  - 8) Progress cleaning.
  - 9) Quality and work standards.
  - 10) Status of correction of deficient items.
  - 11) Field observations.
  - 12) RFIs.
  - 13) Status of proposal requests.
  - 14) Pending changes.
  - 15) Status of Change Orders.
  - 16) Pending claims and disputes.
  - 17) Documentation of information for payment requests.
3. Minutes: General Contractor shall record the meeting minutes. These minutes shall indicate all items discussed as well as agreed upon or suggested solutions. They shall be a true reflection of what occurred at the meeting.
4. Reporting: Within 24 hours, distribute minutes of the meeting by fax transmittal to each party present and to parties who should have been present.
  - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

## 1.9 REQUESTS FOR INTERPRETATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
  1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
  2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
  1. City Project Number

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2. City Project Name.
  3. Date.
  4. Name of Contractor.
  5. RFI number, numbered sequentially.
  6. Specification Section number and title and related paragraphs, as appropriate.
  7. Drawing number and detail references, as appropriate.
  8. Field dimensions and conditions, as appropriate.
  9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  10. Contractor's signature.
  11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
    - a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.
- C. Hard-Copy RFIs: Form as provided and instructed by the Construction Management Department.
1. Identify each page of attachments with the RFI number and sequential page number.
- D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above. Word Template is available upon request from the City Engineer's Office.
1. Attachments shall be electronic files in Adobe Acrobat PDF format.
- E. Engineer's Action: Engineer will review each RFI, determine action required, and return it. Allow seven working days for Engineer's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
    - a. Requests for approval of submittals.
    - b. Requests for approval of substitutions.
    - c. Requests for coordination information already indicated in the Contract Documents.
    - d. Requests for adjustments in the Contract Time or the Contract Sum.
    - e. Requests for interpretation of Engineer's actions on submittals.
    - f. Incomplete RFIs or RFIs with numerous errors.
  2. Engineer's action may include a request for additional information, in which case Engineer's time for response will start again.
  3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
    - a. If Contractor believes the RFI response warrants change in the Contract

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Time or the Contract Sum, notify Engineer in writing within 10 days of receipt of the RFI response.

- F. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within seven days if Contractor disagrees with response.
- G. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log bi-weekly. Include the following:
  - 1. Project name.
  - 2. Name and address of Contractor.
  - 3. RFI number including RFIs that were dropped and not submitted.
  - 4. RFI description.
  - 5. Date the RFI was submitted.
  - 6. Date Engineer's response was received.
  - 7. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
  - 8. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

**PART 2 - PRODUCTS (Not Used)**

**PART 3 - EXECUTION (Not Used)**

**END OF SECTION**

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**SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
1. Contractor's Construction Schedule.
  2. Submittals Schedule.
  3. Daily construction reports.
  4. Material location reports.
  5. Site condition reports.
  6. Special reports.
- B. Related Sections include the following:
1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
  2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
  3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.
  4. Division 01 Section "Photographic Documentation" for submitting construction photographs.
  5. Division 01 Section "Quality Requirements" for submitting a schedule of tests and inspections.

**1.3 SUBMITTALS**

- A. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
1. Scheduled date for first submittal
  2. Name of subcontractor.
  3. Description of the Work covered.
  4. Scheduled date for Engineer's final release or approval.
- B. Contractor's Construction Schedule: Submit three copies of initial schedule, large enough to show entire schedule for entire construction period.
- C. Daily construction Reports: Submit two copies at weekly intervals.
- D. Field Condition Reports: Submit two copies at time of discovery of differing conditions.
- E. Special Reports: Submit two copies at time of unusual event.



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**PART 2 - PRODUCTS****2.1 SUBMITTALS SCHEDULE**

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
  - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
  - 2. Initial Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

**2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL**

- A. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- B. Activities: Treat each separate area as a separate numbered activity for each principal element of the Work. Comply with the following: The schedule shall clearly indicate the critical path and all activities associated with it. The dependencies shall be clearly delineated.
  - 2. All activities with a time duration exceeding five (5) days shall be shown as separate items.
  - 3. Include review and resubmittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
  - 4. Where materials require more than one (1) week fabrication or order time, this order/fabrication time shall be shown.
- C. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, Final Completion, and Certificate of Occupancy.
- D. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

**2.3 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)**

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

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## 2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
1. List of subcontractors at Project site.
  2. Approximate count of personnel at Project site.
  3. Equipment at Project site.
  4. Material deliveries.
  5. High and low temperatures and general weather conditions.
  6. Accidents.
  7. Meetings and significant decisions.
  8. Unusual events (refer to special reports).
  9. Stoppages, delays, shortages, and losses.
  10. Emergency procedures.
  11. Orders and requests of authorities having jurisdiction.
  12. Change Orders received and implemented.
  13. Construction Change Directives received and implemented.
  14. Services connected and disconnected.
  15. Equipment or system tests and startups.
  16. Substantial Completions authorized.
- B. Site Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

## 2.5 SPECIAL REPORTS

- A. General: Submit special reports directly to City within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise City in advance when these events are known or predictable.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
  2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and

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- activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to City Representative, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
  2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

**END OF SECTION**

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## SECTION 01330 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
- B. Related Sections include the following:
  - 1. Division 01 Section "Payment Procedures" for submitting Applications for Payment and the Schedule of Values.
  - 2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes and for submitting Coordination Drawings.
  - 3. Division 01 Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
  - 4. Division 01 Section "Photographic Documentation" for submitting **construction photographs and construction video recordings**.
  - 5. Division 01 Section "Quality Requirements" for submitting test and inspection reports **and for mockup requirements**.
  - 6. Division 01 Section "Closeout Procedures" for submitting warranties.
  - 7. Division 01 Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
  - 8. Division 01 Section "Operation and Maintenance Data" for submitting operation and maintenance manuals.
  - 9. Division 01 Section "Demonstration and Training" for submitting videotapes of demonstration of equipment and training of City's personnel.
  - 10. Divisions 02 through 33 Sections for specific requirements for submittals in those Sections.

#### 1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

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- C. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

#### 1.4 ACTION SUBMITTALS

- E. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
  - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
  - 2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
  - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
    - a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
  - 4. Format: Arrange the following information in a tabular format:
    - a. Scheduled date for first submittal.
    - b. Specification Section number and title.
    - c. Submittal category: Action; informational.
    - d. Name of subcontractor.
    - e. Description of the Work covered.
    - f. Scheduled date for Architect's final release or approval.
    - g. Scheduled date of fabrication.
    - h. Scheduled dates for purchasing.
    - i. Scheduled dates for installation.
    - j. Activity or event number.

#### 1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- F. Design Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by the City for Contractor's use in preparing submittals.
  - 1. City will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings **and Project record drawings**.
    - a. City makes no representations as to the accuracy or completeness of

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- digital data drawing files as they relate to the Contract Drawings.
- b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD Civil 3D (current version) dwg format.
- G. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
  3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
  4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
- a. City reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- H. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on the City Project Manager's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: Allow **Ten (10)** days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. The City's Project Manager will advise Contractor when a submittal being processed must be delayed for coordination.
  2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  3. Resubmittal Review: Allow **Ten (10)** days for review of each resubmittal.
- I. Paper and/or Electronic Submittals: Place a permanent label or title block on each submittal item for identification and include a cover letter of transmittal.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
  2. Provide a space approximately **3 by 6 inches (75 by 150 mm)** on label or beside title block to record Contractor's review and approval markings and action taken by the City.
  3. Items being submitted requiring an engineer's, architect's, or surveyor's signature and seal shall be submitted in hardcopy format.
  4. Include the following information for processing and recording action taken:
    - a. Project name and City Project Number.
    - b. Date of submittal.
    - c. Name of Contractor.
    - d. Name of firm or entity that prepared submittal.
    - e. Name of supplier/manufacturer

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- f. Specification Section number related to the submittal
  - g. Submittal number or other unique identifier, including revision identifier.
    - 1) Submittal number shall use a sequential numbering system (e.g. 001, 002, 003, etc...). Resubmittals shall indicate the original submittal number with a revision number (e.g. 001-rev01).
  - h. Drawing number and detail references, as appropriate.
  - i. Location(s) where product is to be installed, as appropriate.
  - j. Other necessary identification.
5. Additional Hardcopies: Unless additional copies are required for final submittal, and unless City observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
  6. If a submittal is electronic (i.e. via email) then the subject line of the email shall include reference to the City Project Number and the submittal title and submittal number – at a minimum.
  7. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by City on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
  8. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
    - a. Note date and content of previous submittal.
    - b. Note date and content of revision in label or title block and clearly indicate extent of revision.
    - c. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
  9. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
  10. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from City's action stamp.
- F. Options: Identify options requiring selection by Architect/Construction Project Manager.
- C. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by City on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.
- D. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary

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for performance of construction activities. Show distribution on transmittal forms.

Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from City's action stamp.

## PART 2 - PRODUCTS

### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.
1. Action Submittals: Submit **five (5)** paper copies of each submittal unless otherwise indicated. City will return **three (3)** copies.
  2. Informational Submittals: Submit **five (5)** paper copies of each submittal. City will return **three (3)** copies.
  3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
    - a. Provide a notarized statement on original paper copy certificates and certifications where indicated.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  2. Mark each copy of each submittal to show which products and options are applicable.
  3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.
    - c. Standard color charts.
    - d. Statement of compliance with specified referenced standards.
    - e. Testing by recognized testing agency.
    - f. Application of testing agency labels and seals.
    - g. Notation of coordination requirements.
    - h. Availability and delivery time information.
  4. For equipment, include the following in addition to the above, as applicable:
    - a. Wiring diagrams showing factory-installed wiring.
    - b. Printed performance curves.
    - c. Operational range diagrams.
    - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.



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5. Submit Product Data before or concurrent with Samples.
  6. Submit Product Data in the following format:
    - a. PDF electronic file.
- C. Submit **five (5)** paper copies of each submittal unless otherwise indicated. City will return **three (3)** copies.
- D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on City's digital data drawing files is otherwise permitted.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
    - a. Identification of products.
    - b. Schedules.
    - c. Compliance with specified standards.
    - d. Notation of coordination requirements.
    - e. Notation of dimensions established by field measurement.
    - f. Relationship and attachment to adjoining construction clearly indicated.
    - g. Seal and signature of professional engineer if specified.
  2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least **[8-1/2 by 11 inches (215 by 280 mm), but no larger than 24 by 36 inches (610 by 915 mm)]**.
  3. Submit Shop Drawings in the following format:
    - a. PDF electronic file.
    - b. **Five (5)** opaque copies of each submittal. Architect will retain **two (2)** copies; remainder will be returned.
- E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Number and title of applicable Specification Section.
    - e. Specification paragraph number and generic name of each item.
  3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

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4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
    - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
    - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
  5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
    - a. Number of Samples: Submit **two (2)** full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return one submittal with options selected.
  6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit **five (5)** sets of Samples. City will retain **two (2)** Sample sets; remainder will be returned. **Mark up and retain one returned Sample set as a project record sample.**
      - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      - 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least **three (3)** sets of paired units that show approximate limits of variations.
- F. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
  2. Manufacturer and product name, and model number if applicable.
  3. Number and name of room or space.
  4. Location within room or space.
  5. Submit product schedule in the following format:

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- a. PDF electronic file.
  - b. Submit **five (5)** paper copies of each submittal unless otherwise indicated, or if submitted via Oracle Unifier. City will return **three (3)** copies.
- G. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- H. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- I. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- J. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01 Section "Quality Requirements."
- K. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- L. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- M. LEED Submittals: Comply with requirements specified in Division 01 sustainable design requirements Section.
- N. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- O. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.
- P. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- Q. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- R. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- S. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- T. Material Test Reports: Submit reports written by a qualified testing agency, on testing

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agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

- U. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- V. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
  - 1. Name of evaluation organization.
  - 2. Date of evaluation.
  - 3. Time period when report is in effect.
  - 4. Product and manufacturers' names.
  - 5. Description of product.
  - 6. Test procedures and results.
  - 7. Limitations of use.
- W. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- X. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- Y. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- Z. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

## **2.2 DELEGATED-DESIGN SERVICES**

- AA. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- BB. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data,

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and other required submittals, submit **three (3)** paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

## **PART 3 - EXECUTION**

### **3.1 CONTRACTOR'S REVIEW**

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to City.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 "Closeout Procedures."
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

### **3.2 REVIEWER'S ACTION**

- D. General: The City will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- E. Action Submittals: City will review each submittal, make marks to indicate corrections or modifications required, and return it. City will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
  1. Approved as submitted
  2. Approved as noted
  3. Revise and resubmit
  4. Rejected.
- F. Informational Submittals: City will review each submittal and will not return it, or will return it if it does not comply with requirements. City will forward each submittal to appropriate party.
- G. Partial or incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- H. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

**END OF SECTION**

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**SECTION 01340 - SHOP DRAWINGS, WORKING DRAWINGS AND SAMPLES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. The contractor shall submit to the Engineer for review, such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this article called data), and material samples (hereinafter in this article called samples) as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.
- B. The Contractor shall submit five (5) copies of shop drawings or other data to the Engineer.
- C. Within thirty (30) calendar days after the effective date of the Agreement, the Contractor shall submit to the Engineer a complete list of preliminary data for which Shop Drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specific items. Review of this list by the Engineer shall in no way expressed or implied relieve the Contractor from submitting complete Shop Drawings and providing materials, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.
- D. The contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and Engineer. This log should include the following items:
  - 1. Submittal-Description and Number assigned.
  - 2. Date to Engineer.
  - 3. Date returned to Contractor (from Engineer).
  - 4. Status of Submittal (Approved/Resubmit/Rejected).
  - 5. Date of Resubmittal and Return (as applicable).
  - 6. Date material released (for fabrication).
  - 7. Projected date of fabrication.
  - 8. Projected date of delivery to site.
  - 9. Status of O & M submittal.

**1.02 RELATED SECTIONS**

- A. Section 01310 - Construction Schedules
- B. Section 01730 - Operating and Maintenance Data

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- C. Other Sections as applicable.

1.03 CONTRACTOR'S RESPONSIBILITY

- A. It is the duty of the Contractor to check all drawings, data and samples prepared by or for him before submitting them to the Engineer for review. Each and every copy of the Drawings and data shall bear Contractor's stamp will be returned to the Contractor for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents.
- B. Determine and verify:
1. Field measurements
  2. Field construction criteria
  3. Catalog numbers and similar data
  4. Conformance and Specifications
- C. The Contractor shall furnish the Engineer a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.
- D. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed Shop Drawings, Working Drawings and Samples will be needed.
- E. The Contractor shall not begin any of the work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned to him, approved by the Engineer.
- F. The Contractor shall submit to the Engineer all shop drawings, working drawings and samples sufficiently in advance of construction requirements and shall account for Engineers Shop Drawing review time accordingly.
- G. The Contractor shall submit two (2) copies of descriptive or product data submittals to complement shop drawings for the Engineer plus the number of copies which the Contractor requires. The Engineer will retain two (2) sets. All blueprint shop drawings shall be submitted with one (1) set of reproducible and four (4) sets of print. The Engineer will review the drawings and return to the Contractor the set of marked-up drawings with appropriate review comments.
- H. The Contractor shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to the review and Approval by Engineer of the necessary Shop Drawings.

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## 1.04 ENGINEER'S REVIEW OF SHOP DRAWINGS

- A. The Engineer's review of drawings, data and samples submitted by the Contractor will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation. The Engineer's review and exception if any, will not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown.
- B. The review of drawings and schedules will be general, and shall not be construed:
  - 1. as permitting any departure from the Contract requirements;
  - 2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
  - 3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.
- C. If the drawings or schedule as submitted describe variations and/or show a departure from the Contract requirements which Engineers finds to be in the interest of the Owner and to be minor as not to involve a change in the Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.
- D. When reviewed by the Engineer, each of the Shop Drawings will be identified as having received such review being so stamped and dated. Shop Drawings stamped "REJECTED" and with required corrections shown will be returned to the Contractor for correction and resubmittal.
- E. Resubmittals will be handled in the same manner as the first submittals. On resubmittals, the Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, to revisions other than the corrections requested by the Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.
- F. If the Contractor considers any correction indicated on the drawings to constitute a change to the Contract Drawings or Specifications, the Contractor shall give written notice thereof to the Engineer.
- G. The Engineer will review one submittal and one re-submittal after which cost of review will be borne by the Contractor. The cost of engineering shall be equal to the Engineer's charges to the Owner under the terms of the Engineer's agreement with the Owner.
- H. When the Shop Drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.
- I. No partial submittals will be reviewed. Submittals not complete will be returned to the Contractor, and will not be considered "Rejected" until resubmitted.

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- J. The Engineer shall return Shop Drawing submittals to the Contractor within twenty-one (21) days calendar days from the date the Engineer receives them.

#### 1.05 SHOP DRAWINGS

- A. When used in the Contract Documents, the term "Shop Drawings" shall be considered to mean Contractor's plans for material and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop Drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature, and performance and test data, shall be considered only as supportive to required Shop Drawings as defined above.
- B. Drawings and schedules shall be checked and coordinated with work of all trades involved, before they are submitted for review by the Engineer and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.
- C. Each Shop Drawing, shall have a blank area 3 1/2 inches by 3 1/2 inches, located adjacent to the title block. The title block shall display the following:
1. Number and title of the drawing.
  2. Date of drawing or revision.
  3. Name of project building or facility.
  4. Name of contractor and subcontractor submitting drawing.
  5. Clear identification of contents and location of work.
  6. Specification title and number.
- D. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations he shall not be relieved of the responsibility for executing the work in accordance with the Contract, even though such drawings have been reviewed.
- E. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.
- F. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, address and telephone number of the manufacturer's representative and service company so that service and spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted along with each shop

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drawing submittal.

- G. All manufacturers or equipment supplier who proposes to furnish equipment or products under Divisions 11, 12, 13, 14, 15 and 16 shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and has been in operation for a period of at least five (5) years.
- H. Only the Engineer will utilize the color "red" in marking Shop Drawing submittals.
- I. Before final payment is made, the Contractor shall furnish to Engineer two (2) sets of record shop drawings all clearly revised, complete and up to date showing the permanent construction as actually made for all reinforcing and structural steel, miscellaneous metals, process and mechanical equipment, piping, electrical system and instrumentation system.

#### 1.06 WORKING DRAWINGS

- A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's plans for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false-work; for underpinning; and for such other work as may be required for construction, but does not become an integral part of the project.
- B. Copies of working drawings as noted in subparagraph 1.06A above, shall be submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the Engineer) in advance of their being required for work.
- C. Working drawings shall be signed by a Registered Professional Engineer, currently licensed to practice in the State of Florida and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior to commencing such work, working drawings must have been reviewed without specific exceptions by the Engineer, which review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. The Contractor assumes all risks of error; the Owner and Engineer shall have no responsibility therefore.

#### 1.07 SAMPLES

- A. The Contractor shall furnish, for the approval of the Engineer, samples required by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until approved by the Engineer.

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- B. Samples shall be of sufficient size and quantity to clearly illustrate:
1. Functional characteristics of the product, with integrally related parts and attachment devices.
  2. Full range of color, texture and pattern.
  3. A minimum of two samples of each item shall be submitted.
- C. Each sample shall have a label indicating
1. Name of Project
  2. Name of Contractor and Subcontractor
  3. Material or Equipment Represented
  4. Place of Origin
  5. Name of Producer and Brand (if any)
  6. Location in Project
- (Samples of finished materials shall have additional marking that will identify them under the finished schedules.)
- D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in subparagraph 1.07B above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the Engineer. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.
- E. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the work. Approved samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the approved samples. Samples which failed testing or were not approved will be returned to the Contractor at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**DOCUMENT 01370 - SCHEDULE OF VALUES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within 10 days after the effective date of the Agreement.
- B. Upon request of the Engineer, support the values with data which will substantiate their correctness.
- C. The Schedule of Values shall be used as the basis for the Contractor's Applications for Payment.

**1.02 RELATED SECTIONS**

- A. Section 01152 - Applications for Payment
- B. Other Sections as applicable.

**1.03 FORM AND CONTENT OF SCHEDULE OF VALUES**

- A. Present schedule on an 8-1/2 inch x 11 inch white paper; Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
  - 1. Title of Project and location
  - 2. Engineer and Project number
  - 3. Name and Address of Contractor
  - 4. Contract designation
  - 5. Date of submission
- B. Schedule shall list the installed value of the component parts to include individual equipment, piping, electrical, construction items, paving, of the Work (as required) in sufficient detail to serve as a basis for computing values for progress payments during construction and for additions and deletions to the Work.
- C. For the various portions of the Work:
  - 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
- D. The sum of all values listed in the schedule shall equal the total Contract Sum.
- E. Schedules are subject to Engineer's approval wherein additional line item detail may be required.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - PRODUCTS (NOT USED)

**END OF SECTION**

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**SECTION 01380 - PHOTOGRAPHIC DOCUMENTATION****PART 1 - GENERAL****1.1 SUMMARY**

- A. Employ competent photographer to take construction record photographs for preconstruction conditions, periodically during course of Work, and post-construction.
- B. Related Sections include the following:
  - 1. Division 01 Section "Submittal Procedures" for submitting photographic documentation.
  - 2. Division 01 Section "Closeout Procedures" for submitting digital media as Project Record Documents at Project closeout.
  - 3. Other Sections as applicable.

**1.2 INFORMATIONAL SUBMITTALS**

- A. Provide photographs taken on cutoff date for each scheduled Application for Payment.
- B. View and Quantities Required:
  - 1. Take a minimum of 24 exposures of the site and adjacent property at preconstruction, monthly, and post-construction.
  - 2. Aerial photography shall be acceptable in addition to ground level exposures for items out of sight of aerial photography.
- C. Negatives:
  - 1. Remain property of photographer
  - 2. Require that photographer maintain negatives for a period of two years from Date of Completion of entire project.
  - 3. Photographer shall agree to furnish additional prints to Owner and the Engineer at commercial rates applicable at time of purchase.
- D. Construction Photographs: Submit digital media files of each photographic view within seven days of taking photographs.
  - 1. Format: Minimum 3200 by 2400 pixels, in unaltered original files, with same aspect ratio as the sensor, uncropped, date and time stamped, in folder named by date of photograph. File names shall be in the following format: City project number – date taken (YYMMDD) – picture number (example: 10350-090408-011 would indicate project number 10350 taken on April 8, 2009 photograph number 11). Submit on CD with folders for separate dates.
  - 2. Identification: On jewel case and CD, provide an applied label with the following information:
    - a. Name of Project.

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- b. Name of Contractor.
- c. Dates photographs were taken.

### **1.3 USAGE RIGHTS**

- A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

## **PART 2 - PRODUCTS**

### **2.1 PHOTOGRAPHIC MEDIA**

- A. Digital Images: Provide images in JPG format, produced by a digital camera with minimum sensor size of 8 mega pixels, and at an image resolution of not less than 3200 by 2400 pixels.

## **PART 3 - EXECUTION**

### **3.1 CONSTRUCTION PHOTOGRAPHS**

- A. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
  - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- B. Photograph from locations to adequately illustrate condition of construction and state of progress.
  - 1. At successive periods of photography, take at least one photograph from the same overall view as previously.
  - 2. Consult with the Engineer at each period of photography for instructions concerning views required.
- C. Preconstruction Photographs: Before starting construction, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, or, as directed by Engineer.
- D. Periodic Construction Photographs: Take minimum 20 photographs weekly, with timing each month adjusted to coincide with the cutoff date associated with each Application for Payment. Select vantage points, including aerial photographs to show status of construction and progress since last photographs were taken.
- E. Final Completion Construction Photographs: Take 20 color photographs after date of Substantial Completion for submission as Project Record Documents. Construction Manager will direct photographer for desired vantage points.
  - 1. Do not include date stamp.

**END OF SECTION**

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**SECTION 01410 - MATERIALS AND INSTALLATION TESTING****PART 1 - GENERAL****1.01 DISCRIPTION**

- A. Contractor shall employ and pay for the services of an independent testing laboratory to perform materials and installation testing of the type and frequency specified in the Contract Documents including, but not limited to, Geotechnical Testing Services and concrete testing.
- B. Geotechnical Testing Services shall include, but not be limited to, periodic site inspections, soil proctor tests, soil classification tests and soil densities or compaction tests.
- C. The engineer may, at any time, elect to have materials and equipment tested for conformity with the Contract Documents.
- D. Contractor shall include cost of testing in the Contract Price.
- E. Piping pressure test and bacteriological testing shall be in accordance with the applicable Section.

**1.02 RELATED SECTIONS**

- A. Section 01050 – Field Engineering
- B. Section 02200 – Earthwork
- C. Other Sections as applicable.

**1.03 REFERENCES**

- A. FDOT Design Standards.
- B. FDOT Standard Specifications for Road and Bridge Construction.
- C. Broward County Traffic Engineering Division (BCTED) Minimum Standards and the BCTED Pavement Markings & Signs Detail Sheet.

**1.04 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY**

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents
  - 2. Approve or accept any portion of the Work
  - 3. Perform any duties of the Contractor



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## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

## 3.01 CONTRACTOR'S RESPONSIBILITIES

- A. Provide all testing required by the Contract Documents as well as laws, ordinances, rules, regulations, orders, or approvals of public authorities.
- B. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.
- C. Cooperate with laboratory personnel, and provide access to Work and to Manufacturer's operations.
- D. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- E. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- F. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contractor Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.
- G. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested
  - 2. To obtain and handle samples at the Project site or at the source of the product to be tested
  - 3. To facilitate inspections and tests
  - 4. For storage and curing of test samples
- H. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
  - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- I. Employ and pay for the services of the same or a separate, equally qualified

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independent testing laboratory to perform additional inspections, sampling, and testing required for the Contractor's convenience.

- J. If the Owner requests tests in addition to those specified in the contract, and if the test results indicate the material or equipment complies with the Contract Documents, the Owner shall pay for the cost of the testing laboratory. If the tests and any subsequent retests indicate the materials and equipment fail to meet the requirements of the Contract Documents, the Contractor may pay for the laboratory costs directly to the testing firm or the total of such costs shall be deducted from any payments due the Contractor.
- K. The Contractor shall pay costs for additional trips to the project by the agency when scheduled times for tests and inspections are canceled and agency is not notified sufficiently in advance of cancellation to avoid the trip.

### 3.02 TESTING

- A. The Contractor shall obtain the services of a professional testing laboratory approved by the Engineer to perform the following type of tests and test frequencies. Copies of all reports are to be sent to the Engineer as soon as possible.
- B. Density tests for trench backfill at a minimum rate of three (3) tests per lift in 1,000 feet of trench, but not less than two (2) tests per lift if less than 500 feet of trench, at Engineer's discretion based on field observation.
- C. Density tests for subgrade compaction at a minimum rate of three (3) tests in 1,000 feet of roadway, but not less than two (2) tests, at Engineer's discretion based on field observation.
- D. Density tests for limerock base at a minimum rate of three (3) tests per day on each course of completed compacted base, but not less than two (2), at Engineer's discretion based on field observation.
- E. Density tests for roadway crossings at the rate of one test per lane per lift of compacted material, beginning one foot above the normal water table.
- F. If in the opinion of the Engineer, suitable compaction has not been achieved around structures, density tests may be required.
- G. Concrete compressive strength at the rate of three (3) cylinders per the lesser of 50 cubic yards or per day.
- H. Should the above test results indicate deficiencies, the Engineer may order additional tests at the Contractor's expense, and all reworked areas shall be retested at the Contractor's expense.
- I. Testing in the County right-of-way shall meet the requirements of the Florida Department of Transportation.

**END OF SECTION**

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**SECTION 01505 - CONTROL OF WORK****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. The Contractor shall furnish personnel and equipment which will be efficient, appropriate and a quantity large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Proposal. If at any time such personnel appear to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character or increase the personnel and equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

**1.01 RELATED SECTIONS**

- A. Section 01000 – Summary of Work
- B. Section 01001 – General Requirements
- C. Section 01030 – Special Project Procedures
- D. Other Sections as applicable.

**1.02 PIPE LOCATIONS**

- A. Proposed facilities shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons.

**1.03 OBSTRUCTIONS**

- A. The attention of the Contractor is drawn to the fact that during digging at the Project site, the possibility exists of the Contractor encountering various water, sewer, gas, telephone, electrical, or other lines not shown on the Drawings. The Contractor shall exercise extreme care before and during digging to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to an existing line, The Contractor shall repair the line at no cost to the Owner.
- B. The Contractor shall protect all existing utilities and improvements not designated for removal and shall restore damaged or temporarily relocated utilities and improvements to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the Contract Documents.

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- C. The Contractor shall verify the exact locations and depths of all utilities shown and the Contractor shall make exploratory excavations of all utilities that may interfere with the work. All such exploratory excavations shall be performed as soon as practicable after award of the contract and, in any event, a sufficient time in advance of construction to avoid possible delays to the Contractor's work. When such exploratory excavations show the utility location as shown to be in error, the Contractor shall so notify the Engineer.
- D. The number of exploratory excavations required shall be that number which is sufficient to determine the alignment and grade of the utility. Test pits shall be dug at the Contractor's expense, as directed.
- E. The Contractor shall protect all Underground Utilities and other improvements which may be impaired during construction operations. It shall be the Contractor's responsibility to ascertain the actual location of all existing utilities and other improvements that will be encountered in its construction operations, and to see that such utilities or other improvements are adequately protected from damage due to such operations. The Contractor shall take all possible precautions for the protection of unforeseen utility lines to provide for uninterrupted service and to provide such special protection as may be necessary.
- F. In case it shall be necessary to move the property of any public utility or franchise holder, such utility company or franchise holder will, upon request of the Contractor, be notified by the Owner to move such property within a specified reasonable time. When utility lines that are to be removed are encountered within the area of operations, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- G. Where the proper completion of the work requires the temporary or permanent removal and/or relocation of an existing utility or other improvement which is indicated, the Contractor shall remove and, without unnecessary delay, temporarily replace or relocate such utility or improvement in a manner satisfactory to the Engineer and the owner of the facility. In all cases of such temporary removal or relocation, restoration to former location shall be accomplished by the Contractor in a manner that will restore or replace the utility or improvement as nearly as possible to its former locations and to as good or better condition than found prior to removal.
- H. Existing utility lines that are indicated or the locations of which are made known to the Contractor prior to excavation and that are to be retained, and all utility lines that are constructed during excavation operations shall be protected from damage during excavation and backfilling and, if damaged, shall be immediately repaired or replaced by the Contractor at the Contractor's expense. Sewer laterals are included.
- I. All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement owner before being concealed by backfill or other work.

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- J. All power, telephone or the communication cable ducts, gas and water mains, irrigation lines, sewer lines, storm drain lines, poles, and overhead power and communication wires and any other cables encountered along the line of the work shall remain continuously in service during all the operations under the Contract, unless other arrangements satisfactory to the Engineer are made with the owner of said pipelines, duct, main, irrigation line, sewer, storm drain, pole, or wire or cable. The Contractor shall be responsible for and shall repair all damage due to its operations, and the provisions of this Section shall not be abated even in the event such damage occurs after backfilling or is not discovered until after completion of the backfilling.

## 1.04 OPEN EXCAVATIONS

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of open trench or prohibiting stacking excavated material in the street, and requiring that the trenches shall not remain open overnight.
- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

## 1.05 SITE CLEANLINESS

- A. Dust Abatement - The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operation from producing dust in amounts damaging to property, cultivated vegetation, or domestic animals, or causing a nuisance to persons living in or occupying buildings in the vicinity. The Contractor shall be responsible for any damage resulting from any dust originating from its operations. The dust abatement measures shall be continued until the Contractor is relieved of further responsibility by the Engineer.
- B. Rubbish Control - During the progress of the work, the Contractor shall keep the site of the work and other areas used by it in a neat and clean condition, and free from any accumulation of rubbish. The Contractor shall dispose of all rubbish and waste materials of any nature occurring at the work site, and shall establish regular intervals of collection and disposal of such materials and waste. The Contractor shall also keep its haul roads free from dirt, rubbish, and unnecessary obstructions resulting from its operations. Disposal of all rubbish and surplus materials shall be off the site of construction in accordance with local codes and ordinances governing locations and methods of disposal, and in conformance with all applicable safety laws, and to the particular requirements of Part 1926 of

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the OSHA Safety and Health Standards for Construction.

C. Sanitation

1. Toilet Facilities - Fixed or portable chemical toilets shall be provided wherever needed for the use of employees. Toilets at construction job sites shall conform to the requirements of Part 1926 of the OSHA Standards for Construction.
2. Sanitary and Other Organic Wastes - The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

1.06 RELOCATIONS

- A. The Contractor shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out on the Drawings. The cost of all such relocations shall be included in the bid for the project and shall not result in any additional cost to the Town.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 COOPERATION WITHIN THIS CONTRACT

- A. All firms or persons authorized to perform any work under this Contract shall cooperate with the General Contractor and his subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.
- B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

3.02 PROTECTION OF CONSTRUCTION AND EQUIPMENT

- A. All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions injured shall be reconstructed by the Contractor at his own expense.
- B. Further, the Contractor shall take all necessary precaution to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted and taken over by the Owner.

**END OF SECTION**

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**SECTION 01510 - TEMPORARY UTILITIES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Furnish, install and maintain temporary utilities required for construction, remove on completion of work.
- B. Pay all fees associated with temporary utilities including water consumption charges.

**1.02 RELATED SECTIONS**

- A. Section 01010: Summary of Work
- B. Other Sections as applicable.

**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 and Environmental Regulations.

**PART 2 - PART 2 - PRODUCTS****2.01 MATERIALS**

- 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, 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.
- B. Install circuit and branch wiring, with the area distribution boxes located so that power and lighting is 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

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adequate to work, and all areas accessible to the public.

#### 2.03 TEMPORARY WATER

- A. Arrange with the CITY to provide water for construction purposes.
- B. Install branch piping with taps located so that water is available throughout the construction by the use of hoses.
- C. Install at each and every connection to the Owner water supply a backflow preventer meeting the requirements of ANSI A40.6 and AWWA C511. Contractor shall be required to meter and pay for all water used.

#### 2.04 TEMPORARY SANITARY FACILITIES

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

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. Maintain and operate systems to assure continuous service.
- B. Modify and extend systems as work progress requires.

#### 3.02 REMOVAL

- A. Completely remove temporary materials and equipment when their use is no longer required.
- 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.

**END OF SECTION**

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**SECTION 01530 - EXISTING UTILITIES****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. This Section provides for specifications related to construction in the vicinity of existing utilities.

**1.01 RELATED SECTIONS**

- A. Section 01010 – Summary of Work
- B. Section 01015 – General Requirements
- C. Section 01030 – Special Project Procedures
- D. Other Sections as applicable.

**1.02 CONTRACTOR RESPONSIBILITIES**

- A. The term existing utilities shall be deemed to refer to both publicly-owned and privately-owned utilities including, but not limited to, electric power and lighting, telephone, water, gas, storm drains, process lines, sanitary sewers and all appurtenant structures.
- B. Prior to underground construction, the Contractor is required by the Underground Facility Damage Prevention and Safety Act, Chapter 556 FS to contact Sunshine 811, for the location of underground utilities.
- C. Where existing utilities and structures are indicated in the Contract Documents, it shall be understood that all of the existing utilities and structures affecting the work may not be shown and that the locations of those shown are approximate only. It shall be the responsibility of the Contractor to ascertain the actual extent and exact location of existing utilities and structures. In every instance, the Contractor shall notify the proper authority having jurisdiction and obtain all necessary directions and approvals before performing any work in the vicinity of existing utilities.
- D. The Contractor shall be responsible for uncovering and exposing existing utilities sufficiently in advance of pipe laying operations to confirm elevation, size, material and clearance separation(s). If, upon excavation, an existing utility is found to be in conflict with the proposed construction or be of a size or material different from what is shown on the plans, the Contractor shall immediately notify the Engineer, who will in turn prepare a recommendation. Failure of the Contractor to perform advance investigations shall not relieve it of any claims for delay or damages.
- E. The work shall be carried out in a manner to prevent disruption of existing services and to avoid damage to the existing utilities. Temporary connections shall be provided, as required, to insure uninterrupted of existing services. Any damage resulting from the work of this Contract shall be promptly repaired by the Contractor at his own expense in a manner approved by the Engineer and further subject to the requirements of any authority having jurisdiction. Where it is required by the

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authority having jurisdiction that they perform their own repairs or have them done by others, the Contractor shall be responsible for all costs thereof.

- F. Where excavations by the Contractor require any utility lines or appurtenant structures to be temporarily supported and otherwise protected during the construction work, such support and protection shall be provided by the Contractor. All such work shall be performed in a manner satisfactory to the and the respective authority having jurisdiction over such work.

### 1.03 NOTIFICATION BY THE CONTRACTOR

- A. Prior to any excavation in the vicinity of any existing underground facilities, including all water, sewer, storm drain, gas, petroleum products, or other pipelines; all buried electric power, communications, or television cables; all traffic signal and street lighting facilities; and all roadway and state highway rights-of-way the CONTRACTOR shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than three days nor more than seven days prior to excavation so that a representative may be present during such excavation.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.01 RESTORATION OF PAVEMENT

- A. General: All paved areas including concrete, asphaltic concrete, berms cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents. All pavements which are subject to partial removal shall be neatly saw-cut in straight lines.
- B. Temporary Resurfacing: Wherever required by the public authorities having jurisdiction, the CONTRACTOR shall place temporary surfacing promptly after backfilling and shall maintain such surfacing for the period of time fixed by said authorities before proceeding with the final restoration of improvements.
- C. Permanent Resurfacing: In order to obtain a satisfactory junction with adjacent surfaces, the CONTRACTOR shall saw-cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with adjacent undisturbed pavement.

**END OF SECTION**

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**SECTION 01540 - SECURITY****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. This Section provides for requirements of security, entry control, personnel identification and miscellaneous restrictions

**1.02 RELATED SECTIONS**

- A. Section 01010 - Summary of Work
- B. Other Sections as applicable.

**1.03 SECURITY PROGRAM**

- A. Protect Work, existing premises and Owner's operations from theft, vandalism and unauthorized entry.
- B. Initiate program in coordination with Owner's existing security system at job mobilization.
- C. Maintain program throughout construction period until Owner occupancy as directed by Engineer.

**1.04 ENTRY CONTROL**

- A. Restrict entrance of persons and vehicles into project site and existing facilities.
- B. Allow entrance only to authorized persons with proper identification.
- C. Maintain log of workmen and visitors, make available to Owner on request.
- D. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

**1.05 PERSONNEL IDENTIFICATION**

- A. Become familiar with Owner and Engineer representatives.
- B. Restrict access to job site to these representatives.

**PART 2 - PART 2 – PRODUCTS (NOT USED)****PART 3 - PART 3 - EXECUTION (NOT USED)****END OF SECTION**

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**SECTION 01550 - SITE ACCESS AND STORAGE****PART 1 - GENERAL****1.01 HIGHWAY LIMITATIONS**

- A. The Contractor shall make his own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to the site of the work.

**1.02 TEMPORARY CROSSINGS**

- A. Temporary restoration shall be completed within five days of pipe installation. Temporary restoration shall include all driveways, sidewalks and roadways. They shall be swept clean and be maintained free of dirt and dust. All areas disturbed by the construction activities shall be restored to proper grade, cleaned up, including the removal of debris, trash, and deleterious materials. All construction materials, supplies, or equipment, including piles of debris shall be removed from the area. All temporarily restored areas shall be maintained by the Contractor. These areas shall be kept clean and neat, free of dust and dirt, until final restoration operations are completed.
- B. The Contractor is responsible to utilize dust abatement operations in the temporarily restored areas as required, to the satisfaction of the Engineer.
- C. Final restoration shall be completed within thirty days of pipe acceptance. Final restoration shall include the completion of all required pavement replacement of roadways, driveways, curbs, gutters, sidewalks and other existing improvements disturbed by the construction; final grading, placement of sod, pavement marking, etc., all complete and finished, acceptable to the Engineer.
- D. In order to obtain a satisfactory junction with adjacent surfaces, the Contractor shall saw cut back and trim the edge so as to provide a clean, sound, vertical joint before permanent replacement of an excavated or damaged portion of pavement. Damaged edges of pavement along excavations and elsewhere shall be trimmed back by saw cutting in straight lines. All pavement restoration and other facilities restoration shall be constructed to finish grades compatible with the adjacent undisturbed pavement.

**1.03 CONTRACTOR'S WORK AND STORAGE AREA**

- A. The Contractor shall make his own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the work.

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PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01570 - TRAFFIC REGULATION****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. The Work to be performed under this section shall include furnishing all materials and labor necessary to regulate vehicular and pedestrian traffic.

**1.02 REFERENCES**

- A. The Work under this Contract shall be in strict accordance with the following codes and standards.
1. The applicable municipality
  2. Broward County Traffic Engineering Division
  3. Florida Department of Transportation Specifications (DOT)
  4. OSHA Safety and Health Standards for Construction.
  5. Federal Highway Administration Manual of Uniform Traffic Control Devices for Streets and Highways (MUTCD)
  6. Federal Highway Administration Traffic Controls for Street and Highway Construction and Maintenance Operations

**1.03 RELATED SECTIONS**

- A. Section 01015 – General Requirements
- B. Section 01030 – Special Project Procedures
- C. Section 01505 – Control of Work
- D. Other Sections as applicable.

**PART 2 - PRODUCTS (NOT USED)****PART 3 - EXECUTION****3.01 TRAFFIC AND VEHICULAR ACCESS:**

- A. Emergency Vehicles: No single family residence, multi-family residence, apartment, commercial building or place of employment shall be without access to emergency vehicles for a period longer than three hours. The Contractor shall notify in writing the Engineer, the police, fire and other emergency departments and agencies when and where work is to be accomplished that will affect their operations at least two days in advance of such work.



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- B. Major Road and Streets: No major roads or streets shall be blocked to traffic without adequate detour facilities for a period of more than 30 minutes or as directed by the governing authority.
- C. Residential Property: Access to residential property shall not be blocked for a period of more than 4 hours.

### 3.02 CONSTRUCTION IN OTHER THAN STATE HIGHWAY RIGHT-OF-WAY:

- A. Construction within right-of-way other than State highway shall be made in full compliance with all requirements of the Florida Department of Transportation and to the satisfaction of the local governing bodies. All necessary barricades, detours, lights and other protective measures shall be provided for the protection of both pedestrian and vehicular traffic.
- B. The Contractor shall provide and maintain such other warning signs and barricades in areas of and around their respective work as may be required for the safety of all those employed in the work or those visiting the site.

### 3.03 MAINTENANCE OF TRAFFIC

- A. For the maintenance and protection of vehicular and pedestrian traffic in public or private streets and ways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights and other safety devices in accordance with the requirements of the "Manual of Uniform Traffic Control Devices, Part VI - Traffic Controls for Street and Highway Construction and Maintenance Operations," published by U.S. Department of Transportation, Federal Highway Administration (ANSI D6.1).
- B. The Contractor shall provide a Maintenance of Traffic Plan, sealed by a Professional Engineer registered in the State of Florida. The plan, and subsequent revisions, must be approved by the applicable local municipality.
- C. The Contractor shall take all necessary precautions for the protection of the work and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of OSHA and Subpart G, Part 1926, of the OSHA Safety and Health Standards for Construction.
- D. The Contractor shall remove traffic control devices when no longer needed, shall repair all damage caused by installation of the devices, and shall remove post settings and backfill the resulting holes to match grade.

**END OF SECTION**

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**SECTION 01590 – CONSTRUCTION PROJECT SIGN****PART 1 - GENERAL**

Contractor shall furnish a 4' x 8' sign, below is a sample, not specific to the project. Sign shall be made to be weather resistant and on display for entire length of contract. Shop drawings must be submitted prior to sign construction. The exact style and design of the sign will be provided during the preconstruction meeting.



See Page 2, "Construction Sign Request Form", for information on the sign for this Project.

**END OF SECTION**

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# Construction Sign Request Form

Title (Bold):

Title (Not Bold):

What's Happening?

Benefits:

Number of Neighbors Benefitted:

Cost:

Month and Year of Expected Completion:

Contractor:

Phone: 954-828-8000

We're Working On:

Project Manager Signature

Date

Senior Project Manager Signature

Date

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**SECTION 01600 - MATERIAL AND EQUIPMENT****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Material and equipment incorporated into the Work.
  - 1. Conform to applicable specifications and standards.
  - 2. Comply with size, make, and type and qualify specified, or as specifically approved in writing by the Engineer.
  - 3. Manufactured and Fabricated Products.
    - a. Design, fabricate, and assemble in accord with the best engineering and shop practices.
    - b. Manufacture like part of duplicate units to standard sizes and gauges, to be interchangeable.
    - c. Two or more items of the same kind shall be identical, by the same manufacturer.
    - d. Products shall be suitable for service conditions.
    - e. Equipment capacities, sizes, and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
  - 4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

**1.02 RELATED SECTIONS**

- A. Section 01030: Special Project Procedures
- B. Section 01340: Shop Drawings, Product Data, and Samples
- C. Section 01720: Project Record Documents
- D. Other Sections as applicable.

**1.03 APPROVAL OF MATERIALS**

- A. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the work without prior approval of the Engineer.
- B. Within 30 days after the effective date of the Agreement, the Contractor shall submit to the Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product and to form an opinion as to its conformity to the specifications. The data shall comply with Paragraph 1.07 of this Section. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, either

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prior to beginning or during progress of the work, the Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Owner will make arrangements for and pay for the tests.

- C. The Contractor shall submit data and samples sufficiently early to permit work. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or the Engineer.
- D. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes, and surfaces, the Contractor shall provide such samples of workmanship or finish as may be required.
- E. The materials and equipment used on the work shall correspond to the approved samples or other data.

#### 1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instruction, obtain, and distribute copies of such instructions to parties involved in the installation, including copies to the Engineer.
  - 1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in conformity with specified requirements.
  - 1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
  - 2. Do not proceed with work without clear instructions.
- C. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

#### 1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of Products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site.
  - 1. Deliver Products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
  - 2. Immediately upon delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.

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- B. Provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

## 1.06 STORAGE AND PROTECTION

- A. The Contractor shall furnish a covered, weather-protected storage structure, providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be performed to allow easy access and be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including weather/humidity protection, connection of heaters, placing of storage lubricants in equipment, blocking, or skid storage, etc. Corroded, damaged, or deteriorated equipment and parts shall be replaced before acceptance of the project.
- B. Store Products in accord with manufacturer's instructions, with seals and labels intact and legible.
  - 1. Store products subject to damage by the elements in weather-tight enclosures.
  - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
  - 3. Store fabricated products above the ground, on blocking or skids, to prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
  - 4. Store loose granular materials in a well drained area on solid surfaces to prevent mixing with foreign matter.
- C. All materials and equipment to be incorporated in the work shall be handled and stored by the Contractor before, during, and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D. Cement, sand, and lime shall be stored under a roof, off the ground, and shall be kept completely dry at all times. All structural and miscellaneous steel and reinforcing steel shall be stored off the ground, or otherwise, to prevent accumulations of dirt or grease, and to minimize rusting. Brick, block, and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking, and spalling to a minimum.
- E. Moving parts shall be rotated a minimum of once weekly to insure proper lubrications, and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, at least half-load, once weekly, for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
- F. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended or specified, shall be promptly removed from the

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site of the work, and the Contractor shall receive no compensation for the damaged material or its removal.

- G. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specific conditions, and free from damage or deterioration.
- H. Contractor shall be responsible for protection after installation by providing substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.
- I. The Contractor shall be responsible for all materials, equipment, and supplies sold and delivered to the Owner under this Contract, until final inspection of the work and acceptance thereof by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the Contractor shall replace same without additional cost to the Owner.
- J. Should the Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering, and any other costs associated with making the necessary corrections.

#### 1.07 SUBSTITUTIONS AND PRODUCT OPTIONS

##### A. Products List

- 1. Within 30 days after the effective date of the Agreement, submit to the Engineer a complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.

##### B. Contractor's Options

- 1. For Products specified only by reference standard, select any product meeting that standard.
- 2. For Products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications, subject to the base bid procedures outlined under Document 00400 – Supplemental Bid Form.
- 3. For products specified by naming one or more Products or Manufacturers and an "or equal", the Contractor must submit a request for substitutions of any Product or Manufacturer not specifically named.

##### C. Substitutions

- 1. For a period of 30 days after the effective date of the Agreement, the

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Engineer will consider written requests from Contractor for substitution of Products.

2. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
  - a. Comparison of the qualities of the proposed substitution with that specified
  - b. Changes required in other elements of the work because of the substitution
  - c. Effect on the construction schedule
  - d. Cost data comparing the proposed substitution with the Product specified
  - e. Any required license fees or royalties
  - f. Availability of maintenance service, and source of replacement materials
3. The Engineer shall be the judge of the acceptability of the proposed substitution.
4. No substitutions will be considered by the Engineer after 30 days from the Contract Date.

D. Contractor's Representation

1. A request for a substitution constitutes a representation that Contractor:
  - a. Has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified
  - b. Will provide the same warranties or bonds for the substitution as for the Product specified
  - c. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects
  - d. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.
- E. The Engineer will review requests for substitutions with reasonable promptness, and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.08 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the Owner these tools and instructions in good order no later than upon completion of the Contract.



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## 1.09 STORAGE AND HANDLING OF EQUIPMENT ON SITE

- A. Because of the long period allowed for construction, special attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed.
1. Equipment shall not be shipped until approved by the Engineer. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer, unless upon arrival it is to be stored as specified in Paragraph 1.06. Operation and maintenance data, as described in Paragraph 1.08 of Section 01730 shall be submitted to the Engineer for review prior to shipment of equipment.
  2. All equipment having moving parts, such as gears, electric motors, etc. and/or instruments, shall be stored in a temperature and humidity controlled building approved by the Engineer, until such time as the equipment is to be installed.
  3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
  4. Manufacturer's storage instructions shall be carefully studied by the Contractor and reviewed with the Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
  5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication, and to avoid metal-to-metal "welding". Upon installation of the equipment, the Contractor shall start the equipment, at least half-load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
  6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed, and lubricated prior to testing and start up, at no extra cost to the Owner.
  7. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested, and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense

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#### 1.10 WARRANTY

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 01740.

#### 1.11 SPARE PARTS

- A. Spare parts for certain equipment provided under Division 11 through 16 have been specified in the pertinent sections of the Specifications. The Contractor shall collect and store all spare parts so required in an area to be designated by the Engineer. In addition, the Contractor shall furnish to the Engineer an inventory listing all spare parts, the equipment they are associated with, the name and address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

#### 1.12 LUBRICANTS

- A. During testing and prior to acceptance, the Contractor shall furnish all lubricants necessary for the proper lubrication of all equipment furnished under this Contract.

#### 1.13 GREASE, OIL AND FUEL

- A. All grease, oil, and fuel required for testing of equipment shall be furnished with the respective equipment. The Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by the manufacturer with each item of the equipment supplied under Division 11 through 16.
- B. The Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

#### 1.14 PROTECTION AGAINST ELECTROLYSIS

- A. Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resultant electrolysis. The insulation shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other acceptable materials.

#### 1.15 FASTENERS

- A. All necessary bolts, anchor bolts, nuts, washers, plates and bolt sleeves shall be furnished by the Contractor. Bolts shall have suitable washers and, where so required, their nuts shall be hexagonal.
- B. All bolts, anchor bolts, nuts, washers, plates, and bolt sleeves shall be Type 316 stainless steel unless otherwise specifically indicated or specified.

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- C. Unless otherwise specified, stud, tap, and machine bolts shall be of the best quality refined bar iron. Hexagonal nuts of the same quality of metal as the bolts shall be used.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**END OF SECTION**

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**SECTION 01670 - TESTING PIPING SYSTEMS****PART 1 - GENERAL****1.01 REQUIREMENTS INCLUDED**

- A. Perform specified services with Contractor's qualified personnel, or employ and pay for a qualified organization to perform specified services.
- B. Pressure and Piping Systems.

**1.02 RELATED REQUIREMENTS**

- A. Other Sections as applicable.

**1.03 DESCRIPTION**

- A. Perform testing of piping systems in accordance with the latest edition of AWWA and as specified below.
- B. Provide instrument required for testing of piping systems.
  - 1. Make instruments available to Engineer to facilitate spot checks during testing.
  - 2. Retain possession of instruments; remove from site at completion of services.
- C. Provide all water required for flushing and testing. The Contractor shall obtain a construction meter from the City at current rates and pay for meter rental and all water used.
- D. Provide all necessary pumping equipment and other equipment, materials and facilities required for proper completion of the flushing and testing specified.
- E. Source and quality of water, procedure and test equipment shall be acceptable to the Engineer. Length of tested line shall not exceed 2,000 feet.
- F. All tests shall be made in the presence of the Engineer. Notify Engineer at least 48 hours before any Work is to be inspected or tested.
- G. If inspection or test shows defects, the piping system(s) shall be repaired or replaced and inspection repeated, until such piping is acceptable to the Engineer.
- H. All pipe, fittings, valves and joints shall be carefully examined during test. Leaky joints shall be tightened by remaking the joint.
- I. Sections of the system may be tested separately. It shall be distinctly understood that any defect which may subsequently develop in section already tested and accepted shall promptly be corrected and that section retested.
- J. Disposal of the water used for testing shall be subject to the approval of the

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Engineer.

#### 1.04 QUALITY ASSURANCE

- A. The organization which performs the testing shall, prior to testing, provide their qualifications and demonstrate their ability to perform the services to the satisfaction of the Engineer.

#### 1.05 SUBMITTALS

- A. Preliminary
  - 1. Submit three copies of documentation to confirm compliance with Quality Assurance provisions:
    - a. Organization supervisor and personnel training and qualifications.
    - b. Specimen copy of each of the report forms proposed for use.
- B. At least fifteen days prior to Contractor's request for final inspection, submit three copies of final reports on applicable reporting forms, for review.
  - 1. Each individual final reporting form must bear the signature of the person who recorded data and that of the supervisor of the reporting organization.
  - 2. Identify instruments of all types which were used and last date of calibration of each.

#### 1.06 JOB CONDITIONS

- A. Prior to start of testing of piping systems, verify that required "Job Conditions" are met:
  - 1. System or system element installation is complete.
  - 2. All required materials, water, instruments, etc. are on hand.
  - 3. All other preparations are completed.

#### 1.07 TESTING PROCEDURES

- A. Domestic and Small Diameter Process Systems Test: Not Used.
- B. Interior Drainage System: Not Used.
- C. Underground Sewer System: Not Used.
- D. Exterior and Interior Piping Systems:
  - 1. Exterior and interior piping shall pass a hydrostatic pressure test and a leakage test as defined below before acceptance. The pressure and leakage test shall be made after all jointing operations are completed and after backfilling is completed. All concrete reaction blocks, or other bracing and restraining facilities, shall be in place at least 14 days before the initial filling of the line.
  - 2. The pressure and leakage tests may be applied to an individual section of

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line isolated between the existing line valves, or may be applied to shorter sections of line at the Contractor's option. If shorter sections are tested, test plugs or bulkheads as required at the ends of the test section shall be furnished and installed by the Contractor at his expense, together with all anchors, braces, and other devices required to withstand the hydrostatic pressure on such plug or plugs, without imposing any hydraulic thrust on the pipe line or any part thereof. The Contractor shall be solely responsible for any and all damage to the pipe line, and/or to any other facility, which may result from the failure of test plugs furnished by him or supports therefore, in any case.

3. Hydrostatic Tests:

- a. The section of line to be tested shall be slowly filled with water and all air expelled from the pipe. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the air valves.
- b. Hydrostatic test pressure shall be as follows:

<u>System</u>	<u>Test Rating</u>
Wastewater Force Main	150 psi
Potable Water	150 psi
Other Pressure Pipe	1.5 times maximum operation pressure.

- c. After the pipe has been laid, all newly laid pipe of any valved section thereof shall be subjected to a hydrostatic pressure test.
  - 1) Test pressure shall:
    - i. Not exceed pipe or thrust-restraint design pressures.
    - ii. Be of at least 2-hour duration.
    - iii. Not vary by more than  $\pm 5$  psi (0.35 Bar) for the duration of the test.
    - iv. Not exceed twice the rated pressure of the valves or hydrants when the pressure boundary of the test section includes closed gate valves or hydrants. NOTE: Valves shall not be operated in either direction at differential pressures exceeding the rated pressures.
    - v. Not exceed the rated pressure of the valves when the pressure boundary of the test section includes closed valves.
  - 2) Each valved section of pipe shall be filled with water slowly and the specified test pressure based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gauge shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. Valves shall not be operated

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in either the opening or closing direction at differential pressures above the rated pressure. The system shall be allowed to stabilize at the test pressure before conducting the leakage test.

- d. Examination. Any exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe fittings, valves or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.

1) Leakage Test

- i. A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or valved section thereof, to maintain pressure within 5 psi (0.35 Bar) of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. Leakage SHALL NOT BE MEASURED BY A DROP IN PRESSURE IN A TEST SECTION OVER A PERIOD OF TIME.
- ii. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD * P^{1/2}}{148,000}$$

In which L is the allowable leakage, in gallons per hour; S is the length of pipe tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test in pounds per square inch.

- (a) To obtain leakage in liter/hour, multiply the values in the table by 3.785.
- (b) When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gal/h/in (0.0012 L/h/mm) of nominal valve size shall be allowed.
- (c) When hydrants are in the test section, the test shall be made against the closed hydrant.
- (d) Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified in Section "b" above, Contractor shall, at his own expense, locate and make repairs as necessary until the leakage is within the specified allowance.
- (e) All visible leaks are to be repaired regardless of the amount of leakage.

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## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

## 3.01 GENERAL

- A. Prior to testing, pig and flush all piping systems with water to remove all debris in the system. Pigging of lines 12" and smaller is not required unless the line becomes contaminated.
- B. For testing refer to the Testing Procedures above.
- C. No separate payment for testing shall be made.

**END OF SECTION**



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**SECTION 01730 - OPERATING AND MAINTENANCE DATA****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
  - 1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
- B. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

**1.02 RELATED SECTIONS**

- A. Section 01030 – Special Project Procedures
- B. Section 01340 – Shop Drawings, Working Drawings and Samples
- C. Section 01780 – Contract Closeout
- D. Section 01740 – Warranties & Bonds
- E. Other Sections as applicable.

**1.03 QUALITY ASSURANCE**

- A. Preparation of data shall be done by personnel:
  - 1. Trained and experienced in maintenance and operation of described products.
  - 2. Familiar with requirements of this Section.
  - 3. Skilled as technical writers to the extent required to communicate essential data.
  - 4. Skilled as draftsman competent to prepare required drawings.

**1.04 FORM OF SUBMITTALS**

- A. Prepare data in form of an instructional manual for use by Owner's personnel.
- B. Format
  - 1. Size: 8 1/2 inches x 11 inches
  - 2. Paper: 20 pound minimum, white, for typed pages.
  - 3. Text: Manufacturer's printed data, or neatly typewritten.
  - 4. Drawings:
    - a. Provide reinforced punched binder tab, bind in with text.
    - b. Reduce larger drawings and fold to size of text pages, but not

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larger than 11 inches x 17 inches.

5. Provide fly-leaf for each separate product, or each piece of operating equipment.
  - a. Provide types description of product, and major component parts of equipment.
  - b. Provide indexed tabs.
6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:
  - a. Title of Project
  - b. Identity of separate structure as applicable.
  - c. Identity of general subject matter covered in this manual.

C. Binders

1. Commercial quality three-ring binders with durable and cleanable plastic covers.
2. Maximum ring diameter shall be 2 inches.
3. When multiple binders are used, correlate the data into related consistent groupings.

## 1.05 CONTENT OF MANUAL

A. Neatly typewritten Table of Contents for each volume, arranged in systematic order.

1. Contractor, name of responsible principal, address, and telephone number.
2. A list of each product required to be included, indexed to content of the volume.
3. List, with each product, name, address, and telephone number of:
  - a. Subcontractor of installer
  - b. Maintenance contractor, as appropriate
  - c. Identify area of responsibility of each
  - d. Local source of supply for parts and replacement.
4. Identify each product name and other identifying symbols as set forth in Contract Documents.

B. Product Data

1. Include only those sheets which are pertinent to the specific product.
2. Annotate each sheet to:
  - a. Clearly identify specific product or part installed.
  - b. Clearly identify data applicable to installation.
  - c. Delete references to inapplicable information.

C. Drawings

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1. Supplement product data with drawings as necessary to clearly illustrate:
    - a. Relations of component parts of equipment and systems.
    - b. Control and flow diagrams.
  2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
  3. Do not use Project Record Documents as maintenance drawing.
- D. Written text, as required to supplement product data for the particular installation:
1. Organize in consistent format under separate headings for different procedures.
  2. Provide logical sequence of instructions of each procedure.
- E. Copy of each warranty, bond and service contract issued:
1. Provide information sheet for Owner's personnel, give:
    - a. Proper procedures in event of failure.
    - b. Instances which might affect validity of warranties or bonds

#### 1.06 MANUAL FOR MATERIALS AND FINISHES

- A. Submit five copies of complete manual in final form.
- B. Content for architectural products, applied materials and finishes
1. Manufacturer's data, giving full information on products.
    - a. Catalog number, size, composition.
    - b. Color and texture designations.
    - c. Information required for re-ordering special-manufactured products.
  2. Instructions for care and maintenance.
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods which are detrimental to product.
    - c. Recommended schedule for cleaning and maintenance.
- C. Content, for moisture-protection and weather-exposed products
1. Manufacturer's data, giving full information on products
    - a. Applicable standards.
    - b. Chemical composition.
    - c. Details of installation.
  2. Instructions for inspection, maintenance and repair.

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- D. Additional requirements for maintenance data: Respective sections of Specifications.
- E. Provide complete information for products specified.

#### 1.07 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit five copies of complete manual in final form.
- B. Content, for each unit of equipment and system, as appropriate:
  - 1. Description of unit and component parts.
    - a. Function, normal operating characteristics and limiting conditions
    - b. Performance curves, engineering data and tests
    - c. Complete nomenclature and commercial number of replaceable parts
  - 2. Operating procedures
    - a. Start-up, break-in, routine and normal operating instructions
    - b. Regulation, control, stopping, shut-down and emergency instructions
    - c. Summer and winter operating instructions
    - d. Special operating instructions
  - 3. Maintenance Procedures
    - a. Routine operations
    - b. Guide to "trouble-shooting"
    - c. Disassembly, repair and reassembly
    - d. Alignment, adjusting and checking
  - 4. Servicing and lubrication schedule
    - a. List of lubricants required
  - 5. Manufacturer's printed operating and maintenance instructions
  - 6. Description of sequence of operation by control manufacturer
  - 7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance
    - a. Predicted list of parts subject to wear
    - b. Items recommended to be stocked as spare parts
  - 8. As-installed control diagrams by controls manufacturer
  - 9. Each contractor's coordination drawings
    - a. As-installed color coded piping diagrams
  - 10. Charts of valve tag numbers, with location and function of each valve
  - 11. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage

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12. Other data as required under pertinent sections of specifications
- C. Contents, for each electric and electronic system, as appropriate
1. Description of system and component parts
    - a. Function, normal operating characteristics, and limiting conditions
    - b. Performance curves, engineering data and tests
    - c. Complete nomenclature and commercial number of replaceable parts
  2. Circuit directories of panel-boards
    - a. Electrical service
    - b. Controls
  3. As-installed color coded wiring diagrams
  4. Operating procedures:
    - a. Routine and normal operating instructions
    - b. Sequences required
    - c. Special operating instructions
  5. Maintenance procedures
    - a. Routine operations
    - b. Guide to "trouble-shooting"
    - c. Disassembly, repair and reassembly
    - d. Adjustment and checking
  6. Manufacturer's printed operating and maintenance instructions
  7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
  8. Other data as required under pertinent sections of specifications
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.
- E. Additional requirements for operating and maintenance data: Respective sections of Specifications.
- F. Provide complete information for product specified.

#### 1.08 SUBMITTAL SCHEDULE

- A. Submit two copies of preliminary draft of proposed formats and outlines of contents of Operation and Maintenance Manuals within 30 days after Notice to Proceed.
1. The Engineer will review the preliminary draft and return one copy with comments.
- B. Submit two copies of completed data in final form no later than 30 days following the

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Engineer's review of the last shop drawing and submittal specified under Section 01340.

1. One copy will be returned with comments to be incorporated into final copies.
- C. Submit specified number of copies of approved data in final form directly to the offices of the Engineer, Calvin, Giordano & Associates, within 30 calendar days of product shipment to the project site and preferably within 30 days after the reviewed copy is received.
- D. Submit six copies of addendum to the operation and maintenance manuals as applicable and certificates as specified in paragraph 1.01B of Section 01030 within 30 days after final inspection and plant start-up test.
- E. Final Operation and Maintenance submittals shall be in large three-ring binders organized by specification Section and plainly marked per paragraph 1.04Ca.

#### 1.09 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment, and maintenance of products, equipment and systems.
- B. Operating and maintenance manual shall constitute the basis of instruction.
  1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

#### 1.10 ENGINEER'S O & M CHECKLIST

- A. The Engineer will review Operation and Maintenance Manuals submittals on operating equipment for conformance with the requirements of this Section. The review will generally be based upon the *O&M Review Checklist* (presented on the pages at the end of this section for the benefit of the Contractor and his suppliers).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**O & M REVIEW CHECKLIST**

EQUIPMENT SUBMITTED	_____	DATE OF SUBMITTAL	_____
MANUFACTURER	_____	DEGREE OF APPROVAL	_____
SPECIFICATION SECTION	_____	DRAWING NUMBER	_____

- \_\_\_\_\_ Is the submittal correct for model/series/configuration originally submitted with shop drawings?
- \_\_\_\_\_ Is the binding correct with assigned color/printing etc.?  
(Pertains to final three volumes)
- \_\_\_\_\_ Is the submittal properly indexed?
- \_\_\_\_\_ Does the submittal pertain only to equipment being furnished?
- \_\_\_\_\_ Is the submittal easily understood and instructively arranged?
- \_\_\_\_\_ Does the submittal include start-up, shutdown and troubleshooting procedures?
- \_\_\_\_\_ Are sufficient drawings and schematics included to supplement written descriptions?
- \_\_\_\_\_ Is the listing of name plate data for each piece of supplied equipment provided and attached?
- \_\_\_\_\_ Are all submitted "C" and "D" size drawings printed on paper that is 11 inches high and folded to 8 1/2 inches wide?
- \_\_\_\_\_ Is proper and complete instruction for servicing included?
- \_\_\_\_\_ Is there a suggested operating log sheet for equipment?
- \_\_\_\_\_ Is schedule for lubrication provided?
- \_\_\_\_\_ Is there a recommended preventative maintenance schedule?
- \_\_\_\_\_ Are necessary safety precautions clearly indicated where they relate to the equipment?
- \_\_\_\_\_ Is the Area Representative information provided, i.e., Name, Address, Telephone Number?
- \_\_\_\_\_ Are specified spare parts indicated and listed?

The following are the points of rejection requiring resubmittal by Contractor:

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**END OF SECTION**



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**SECTION 01740 - WARRANTIES AND BONDS****PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Compile warranties and bonds as specified in the Contract Documents.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to the Engineer for review and transmittal to Owner.

**1.02 RELATED SECTIONS**

- A. Instructions to Bidders
- B. General Conditions of the Construction Contract
- C. Section 01030 - Special Project Procedures
- D. Section 01780 - Contract Closeout
- E. Other Sections as applicable.

**1.03 SUBMITTAL REQUIREMENTS**

- A. Assemble warranties, bond, service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.
- B. Number of original signed copies required: two (2) each.
- C. Table of Contents: neatly typed, in orderly sequence. Provide complete information for each item.
  - 1. Product or work item
  - 2. Firm, with name of principal, address and telephone number
  - 3. Scope
  - 4. Date of beginning of Warranty, bond or service and maintenance contract
  - 5. Duration of warranty, bond or service maintenance contract
  - 6. Provide information for Owner's personnel:
    - a. Proper procedure in case of failure
    - b. Instances which might affect the validity of warranty or bond
  - 7. Contractor, name of responsible principal, address and telephone

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number

**1.04 FORM OF SUBMITTALS**

- A. Prepare in duplicate packets
- B. Format:
  - 1. Size 8 1/2 inches x 11 inches, punch sheets for standard 3-post binder
  - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
    - a. Title of Project
    - b. Name of Contractor
- C. Binders: Commercial quality, three-post (3) binder, with durable and cleanable plastic covers and maximum post width of 2 inches.

**1.05 WARRANTY SUBMITTAL REQUIREMENTS**

- A. For all equipment, submit a one-year warranty from the equipment manufacturer, unless otherwise specified. The manufacturer's warranty period shall be concurrent with the Contractor's for one year commencing at the time of acceptance by the Owner.
- B. The Contractor shall be responsible for obtaining certificates for equipment warranty for all major equipment and which has a 1 HP motor or which lists for more than \$1,000. The Engineer reserves the right to request warranties for equipment not classified as major. The Contractor shall still warrant equipment not considered to be "major" in the Contractor's one-year warranty period even though certificates of warranty may not be required.
- C. In the event that the equipment manufacturer or supplier is unwilling to provide a one-year warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty commencing at the time of equipment delivery to the job site. This two-year (2) warranty from the manufacturer shall not relieve the Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.

**PART 2 - PRODUCTS (NOT USED)****PART 3 - EXECUTION (NOT USED)****END OF SECTION**

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**SECTION 01770 - CLOSEOUT PROCEDURES****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Substantial Completion procedures.
  - 2. Final completion procedures.
  - 3. Warranties.
  - 4. Final cleaning.
  - 5. Repair of the Work.
- B. Related Sections include the following:
  - 1. Division 01 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
  - 2. Division 01 Section "Photographic Documentation" for submitting Final Completion construction photographs and negatives.
  - 3. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
  - 4. Other Sections as applicable.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For cleaning agents.
- B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.
- C. Certified List of Incomplete Items: Final submittal at Final Completion.

**1.4 CLOSEOUT SUBMITTALS**

- A. Certificates of Release: From authorities having jurisdiction.
- B. Certificate of Insurance: For continuing coverage.
- C. Field Report: For pest control inspection.

**1.5 MAINTENANCE MATERIAL SUBMITTALS**

- A. Schedule of Maintenance Material Items: For maintenance material submittal items

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specified in other Sections.

## 1.6 SUBSTANTIAL COMPLETION PROCEDURES

- A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
- B. Submittals Prior to Substantial Completion: Complete the following a minimum of **ten (10)** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
  2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
  3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
  4. Submit maintenance material submittals specified in individual Divisions 02 through 33 Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by City. Label with manufacturer's name and model number where applicable.
    - a. Schedule of Maintenance Material Items: Prepare and submit schedule of maintenance material submittal items, including name and quantity of each item and name and number of related Specification Section. Obtain City's signature for receipt of submittals.
  5. Submit test/adjust/balance records.
  6. Submit sustainable design submittals required in Division 01 sustainable design requirements Section and in individual Division 02 through 33 Sections.
  7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of **ten (10)** days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
  2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
  3. Complete startup and testing of systems and equipment.
  4. Perform preventive maintenance on equipment used prior to Substantial Completion.
  5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video

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- recordings specified in Division 01 Section "Demonstration and Training."
6. Advise Owner of changeover in heat and other utilities.
  7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
  8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
  9. Complete final cleaning requirements, including touchup painting.
  10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of **ten (10)** days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Construction Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Construction Project Manager will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by City, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
  2. Results of completed inspection will form the basis of requirements for final completion.

## 1.7 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
  2. Certified List of Incomplete Items: Submit certified copy of City's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by City. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
  3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
  4. Submit pest-control final inspection report.
- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of **ten (10)** days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Construction Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements. Construction Project Manager will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

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## 1.8 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, **starting with exterior areas first and proceeding from lowest floor to highest floor.**
  2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
  3. Include the following information at the top of each page:
    - a. Project number and name.
    - b. Date.
    - c. Name of Inspector
    - d. Name of Contractor.
    - e. Page number.
  4. Retain and revise one of four subparagraphs below if default submittal format in Division 01 Section "Submittals Procedures" is not appropriate. Due to nature of punch list process, electronic worksheet software is often preferred file type. Submit list of incomplete items in the following format:
    - a. City of Fort Lauderdale Punch List Inspection Form
    - b. MS Excel electronic file. Construction Project Manager will return annotated file.
    - c. PDF electronic file. Construction Project Manager will return annotated file.
    - d. Three (3) paper copies. Construction Project Manager will return two (2) copies.

## 1.9 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Construction Project Manager for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within fifteen (15) days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive **8-1/2-by-11-inch (215-by-280-mm)** paper.
  2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.

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3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
  4. Warranty Electronic File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
- D. Provide additional copies of each warranty to include in operation and maintenance manuals.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

## **PART 3 - EXECUTION**

### **3.1 FINAL CLEANING**

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
    - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    - f. Remove debris and surface dust from limited access spaces, including

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roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

- g. Sweep concrete floors broom clean in unoccupied spaces.
  - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
  - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
  - j. Remove labels that are not permanent.
  - k. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - l. Replace parts subject to unusual operating conditions.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
- 1) Clean HVAC system in compliance with NADCA Standard 1992-01. Provide written report on completion of cleaning.
- p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
  - q. Leave Project clean and ready for occupancy.

- C. Pest Control: Comply with pest control requirements in Division 01 Section "Temporary Facilities and Controls." Prepare a report.
- D. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls" and Division 01 Section "Construction Waste Management and Disposal."

### 3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
  - B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
1. Remove and replace chipped, scratched, and broken glass, reflective surfaces,

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- and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.
    - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
  3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
  4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

**END OF SECTION**

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**SECTION 01780 - CONTRACT CLOSEOUT****PART 1 GENERAL****1.01 SUBMITTALS****A. Informational Submittals:**

1. Submit prior to application for final payment.
  - a) Record Documents.
  - b) As-built drawings (signed and sealed hardcopies and electronic format – PDF and CAD files)
  - c) Special Bonds, Special Guarantees, and Service Agreements.
  - d) Consent of Surety to Final Payment.
  - e) Releases or Waivers of Liens and Claims.
  - f) Releases from Agreements.
  - g) Final Application for Payment: Submit in accordance with procedures and requirements stated in Section 001025, Measurement and Payment.
  - h) Spare Parts, Special Tools and Extra Materials: As required by individual Specification sections.

**A. Subcontractor Identification Form:**

1. Submit form with final pay request.
2. Submit a separate form for each subcontractor used.
3. For Capital Improvement Projects, submit form along with final pay request to the PCM.
4. Form is attached as a Supplement to this Section.

**1.02 RECORD DOCUMENTS****A. Quality Assurance:**

1. Furnish qualified and experienced person, whose duty and responsibility shall be to maintain record documents.
2. Accuracy of Records:
  - a. Coordinate changes within record documents, making legible and accurate entries on each sheet of Drawings and other documents where such entry is required to show change.
  - b. Purpose of Project record documents is to document factual information regarding aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination.
3. Make entries within 24 hours after receipt of information that a change in the Work has occurred.

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4. Prior to submitting each request for progress payment, request PCM's review and approval of current status of record documents. Failure to properly maintain, update, and submit record documents may result in a deferral by PCM to recommend whole or any part of Contractor's Application for Payment, either partial or final.

### 1.03 RELEASES FROM AGREEMENTS

- A. Furnish Owner written releases from property owners or public agencies where side agreements or special easements have been made, or where Contractor's operations have not been kept within the Owner's construction right-of-way.
- B. In the Event Contractor is Unable to Secure Written Releases:
  1. Inform PCM of the reasons.
  2. Owner or its representatives will examine the site, and Owner will direct Contractor to complete the Work that may be necessary to satisfy terms of the side agreement or special easement.
  3. Should Contractor refuse to perform this Work, Owner reserves right to have it done by separate contract and deduct cost of same from Contract Price, or require Contractor to furnish a satisfactory Bond in a sum to cover legal claims for damages.
  4. When Owner is satisfied that the Work has been completed in agreement with Contract Documents and terms of side agreement or special easement, right is reserved to waive requirement for written release if:
    - (i) Contractor's failure to obtain such statement is due to grantor's refusal to sign, and this refusal is not based upon any legitimate claims that Contractor has failed to fulfill terms of side agreement or special easement, or
    - (ii) Contractor is unable to contact or has had undue hardship in contacting grantor.

### 1.04 AS-BUILT DRAWINGS

- A. Quality Assurance
  1. As-built drawings must meet all minimum City of Fort Lauderdale CAD standards and be submitted in the latest version of AutoCAD available at the time the contract is signed.
  2. As-built drawings will be submitted in both electronic and hard copy forms as follow:
    - a. 3 hard copy sets of as-builts will be submitted on 24x36 paper signed, sealed, and dated by a Florida Professional Licensed Surveyor (PLS).
    - b. 1 CD or jump drive which will include both DWG files for the package and a PDF document including the surveyors signature and seal.
  3. As-built drawings will include the following:
    - a. PLS name, business name, license numbers, address, and telephone number
    - b. The following statement must be included:

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"I hereby certify that the as-built location information of the potable water, reclaimed water, wastewater and drainage facilities shown on these drawings conforms to the minimum technical standards for land surveying in the State of Florida, Chapter 5J-17.050(10)(i) (Florida Administrative Code), as adopted by the Department of Agriculture and Consumer Services, Board of Professional Surveyors and Mappers, and that said as-builts are true and correct to the best of our knowledge and belief."

- c. As-built drawings will contain the information on the design drawings (plan and profile views) plus document changes between the design and construction including correcting all information that is incorrect due to changes during construction. Incorrect or no longer relevant information will be erased or struck through. All location changes constructed materially different (one-tenth foot horizontal, one tenth vertical) than the design location will have their design location struck through and will be redrafted at the constructed location. Design drawing dimensioning will be corrected as necessary.
4. Drawing will be a complete set including cover sheet, index, and any other sheets included in the approved design set. Standard detail sheets are not necessary.

B. Minimum As-Built Drawing Requirements (Not applicable for this project), except in cases where a permitting agency requires an as-built.

1. Show the location of easements used by the water and wastewater facilities.
2. Indicate pipe joint locations where water and wastewater or reclaimed water piping crosses.
3. Indicated the length of gravity wastewater piping and actual slope between manhole centers.
4. Show all abandoned in place facilities including the extent and method of abandonment.
5. Show elevations to the nearest tenth of a foot for top of pipe for water mains, force mains, and reclaimed water mains at vertical deflection points, all bends, valves and fittings and every 200 feet along straight runs and where they cross all other facilities.
6. Show elevations to the nearest one hundredth of a foot for manhole rims, gravity main inverts at the manhole, force main connections to manholes, lift station top of slab, bottom of wet well, influent pipe invert and control set points.

## **PART 2      PRODUCTS (NOT USED)**

## **PART 3      EXECUTION**

### **3.01      MAINTENANCE OF RECORD DOCUMENTS**

#### **A.      General:**

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1. Promptly following commencement of Contract Times, secure from Engineer, at no cost to Contractor, one complete set of Contract Documents. Drawings will be full size.
2. Delete Engineer title block and seal from all documents.
3. Label or stamp each record document with title, "RECORD DOCUMENTS," in neat large printed letters.
4. Record information concurrently with construction progress and within 24 hours after receipt of information that change has occurred. Do not cover or conceal Work until required information is recorded. Contractor is responsible for maintaining up-to-date "red-lined" markups, on site, of all changes including revised locations of buried features and provide access to the City for review at any time.
5. All piping inserts, fittings, and valve locations shall be located by a Florida Licensed Surveyor in accordance with City of Fort Lauderdale surveying standards and per NAVD 88. Contractor shall provide adequate notice to the surveyor to ensure that all locations are accessible, prior to backfill.

## B. Preservation:

1. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
2. Make documents and Samples available at all times for observation by PCM or Engineer.

## C. Making Entries on Drawings:

1. Using an erasable colored pencil (not ink or indelible pencil), clearly describe change by graphic line and note as required.
  - a. Color Coding:
    - 1) Green when showing information deleted from Drawings.
    - 2) Red when showing information added to Drawings.
    - 3) Blue and circled in blue to show notes.
2. Date entries.
3. Call attention to entry by "cloud" drawn around area or areas affected.
4. Legibly mark to record actual changes made during construction, including, but not limited to:
  - a. Depths of various elements of foundation in relation to finished first floor data if not shown or where depth differs from that shown.
  - b. Horizontal and vertical locations of existing and new Underground Facilities and appurtenances, and other underground structures, equipment, or Work. Reference to at least two measurements to permanent surface improvements.
  - c. Location of internal utilities and appurtenances concealed in the construction referenced to visible and accessible features of the structure.
  - d. Locate existing facilities, piping, equipment, and items critical to the interface between existing physical conditions or construction and new construction.

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- e. Changes made by Addenda and Field Orders, Work Change Directive, Change Order, Written Amendment, and Engineer's written interpretation and clarification using consistent symbols for each and showing appropriate document tracking number.
- 5. Dimensions on Schematic Layouts: Show on record drawings, by dimension, the centerline of each run of items such as are described in previous subparagraph above.
  - a. Clearly identify the item by accurate notes such as "cast iron drain," "galv. water," and the like.
  - b. Show, by symbol or note, vertical location of item ("under slab," "in ceiling plenum," "exposed," and the like).
  - c. Make identification so descriptive that it may be related reliably to Specifications.

#### D.Coordination with Florida Licensed surveyor:

1. Contractor shall not cover any bends, valves, or fittings installed until they have been located by the survey crews for the purpose of preparing as-built and/or Record Drawings.
- 2.If the above conditions are not met, for any reason, Contractor shall bear the cost of potholing the constructed installation to allow for the locations.

#### 3.02 FINAL CLEANING

- A. At completion of the Work or of a part thereof and immediately prior to Contractor's request for certificate of Substantial Completion; or if no certificate is issued, immediately prior to Contractor's notice of completion, clean entire site or parts thereof, as applicable.
  1. Leave the Work and adjacent areas affected in a cleaned condition satisfactory to Owner and PCM.
  2. Remove grease, dirt, dust, paint or plaster splatter, stains, labels, fingerprints, and other foreign materials from exposed surfaces.
  3. Repair, patch, and touch up marred surfaces to specified finish and match adjacent surfaces.
  4. Clean all windows.
  5. Clean and wax wood, vinyl, or painted floors.
  6. Broom clean exterior paved driveways and parking areas.
  7. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
  8. Rake clean all other surfaces.
  9. Replace air-handling filters and clean ducts, blowers, and coils of ventilation units operated during construction.
  10. Leave water courses, gutters, and ditches open and clean.
  - 11.
- A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.
- B. Meet all requirements of Section 02575, Surface Restoration.



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3.03 SUPPLEMENTS

A. The supplements listed below, following "END OF SECTION," are part of this Specification.

1. Subcontractor Identification Form.

**END OF SECTION**

This form shall be completed by all City of Fort Lauderdale Prime Contractors who subcontracted out any portion of his/her City contract. The form shall be forwarded to the City of Fort Lauderdale's Public Services Department (Engineering and Architectural Services) with the prime contractor's final pay request. A separate form is to be completed and submitted for each subcontractor. Please telephone (954) 761-5057 or 761-5083, if you have any questions regarding this form.

1) CITY OF FORT LAUDERDALE PROJECT NO. \_\_\_\_\_

2) PROJECT DESCRIPTION \_\_\_\_\_

3) SUB-Contractor \_\_\_\_\_

\_\_\_\_\_  
*Business Name*

\_\_\_\_\_  
*Address*

\_\_\_\_\_  
*Telephone & Fax Nos.*

\_\_\_\_\_  
*Email Address/Company Website (if applicable)*

4) SUBCONTRACTOR'S PRINCIPAL OFFICER \_\_\_\_\_

5) CLASSIFICATION OF WORK SUBCONTRACTED OUT \_\_\_\_\_

6) COST OF WORK SUBCONTRACTED OUT \_\_\_\_\_

7) Please check the item(s) which properly identify the ownership status of the subcontractor's firm:

- ☐ Subcontractor firm is not a MBE or WBE
- ☐ Subcontractor firm is a MBE, as at least 51 percent is owned and operated by one or more socially and economically-disadvantaged individuals:
- ☐ American Indian    ☐ Asian    ☐ Black    ☐ Hispanic    ☐ White
- ☐ Subcontractor firm is a WBE, as at least 51 percent is owned and operated by one or more women.
- ☐ American Indian    ☐ Asian    ☐ Black    ☐ Hispanic    ☐ White

8) **PRIME Contractor** \_\_\_\_\_

\_\_\_\_\_  
**NAME & TITLE OF PRIME CONTRACTOR'S REPRESENTATIVE COMPLETING THIS FORM** (*Please Print*)

\_\_\_\_\_  
(*Telephone No.*)

\_\_\_\_\_  
(*Fax No.*)

\_\_\_\_\_  
(*Email Address*)

**SIGNATURE** \_\_\_\_\_ **DATE** \_\_\_\_\_  
*Prime Contractor's Representative*

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## SECTION 02100

## SITE PREPARATION

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Section covers clearing, grubbing, stripping and demucking of the construction site, complete as specified herein.
- B. Clear and demuck the area within the limits of construction as required, including drainage easements.

## 1.02 RELATED SECTIONS

- A. Section 02220 - Structural Excavation, Backfill & Compaction
- B. Section 02221 - Trenching, Bedding & Backfill for Pipe
- C. Section 02510 - Walkways
- D. Section 02513 - Asphaltic Concrete Paving
- E. Other Sections as applicable.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

## 3.01 CLEARING

- A. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish and all other objectionable obstructions resting on or protruding through the surface of the ground. However, those trees which are designated by the Engineer shall be preserved as hereinafter specified. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, so as to provide for the safety of employees and others. Clearing for structures shall consist of topsoil and vegetation removal. Clearing for pipelines shall consist of vegetation removal.

## 3.02 GRUBBING

- A. Grubbing shall consist of the complete removal of all stumps, roots larger than 1½ inches in diameter, matted roots, brush, timber, logs and any other organic or metallic debris resting on, under or protruding through the surface of the ground to a depth of 18 inches below the subgrade. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

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**3.03 STRIPPING**

- A. In areas so designated, top soil, not muck shall be stockpiled. Topsoil stockpiled shall be protected until it is placed as specified. Any topsoil remaining after all work is in place shall be disposed of by the Contractor.

**3.04 DEMUCKING**

- A. When encountered, organic material (muck) shall be excavated and removed. This material may be stockpiled temporarily, but must be disposed of as directed by the Engineer or the Owner.

**3.05 DISPOSAL OF CLEARED AND GRUBBED MATERIAL**

- A. The Contractor shall dispose of all material and debris from the clearing and grubbing operation by shipping such material and debris and disposing such material to a suitable location as required by the Engineer or the governmental agencies. Disposal by deep burial will not be permitted. The cost of disposal of material (including hauling) shall be considered a subsidiary obligation of the Contractor, the cost of which shall be included in the contract prices.

**3.06 PRESERVATION OF TREES**

- A. Those trees which are designated by the Engineer or as shown on the drawings for preservation shall be carefully protected from damage. The Contractor shall erect such barricades, guards, and enclosures as may be considered necessary by him for the protection of the trees during all construction operations.

**3.07 PRESERVATION OF DEVELOPED PRIVATE PROPERTY**

- A. The Contractor shall exercise extreme care to avoid necessary disturbance of developed private property as applicable. Trees, shrubbery, gardens, lawn and other landscaping, which in the opinion of the Engineer must be removed, shall be replaced and replanted to restore the construction easement to the condition existing prior to construction.
- B. All soil preparation procedures and replanting operations shall be under the supervision of nurseryman experienced in such operations.
- C. Improvements to the land such as fences, walls, outbuildings, etc., which of necessity must be removed shall be replaced with equal quality materials and workmanship.
- D. The Contractor shall clean up the construction site across developed private property directly after construction is complete upon approval of the Engineer.

**3.08 PRESERVATION OF PUBLIC PROPERTY**

- A. The appropriate paragraphs of Articles 3.06 and 3.07, of these specifications shall apply to the preservation and restoration of all damaged areas of public lands, rights-of-way, easements, etc.

**END OF SECTION**

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## SECTION 02200

## EARTHWORK

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Earthwork operations necessary to achieve the Work including, but not limited to, excavation of soil, grading, removal and replacement of unsuitable soil, fill, backfill, embankment and compaction more specifically described as follows:
1. Earthwork operations generally consists of excavation and embankment of soil materials from the existing elevations to the proposed elevations.
  2. Embankment necessary to achieve the proposed elevations may consist of in situ soils, whether classified as suitable or unsuitable, or imported suitable soil material. All imported soil material for embankment is to be included in the Contract price.
  3. Soil material categorized as sub-grade is to be imported suitable soil. The Owner reserves the right to decline imported sub-grade material should in-situ suitable material be encountered and seek a credit for imported, placed and compacted sub-grade per the Unit Price Schedule.
  4. Where unsuitable soil materials are encountered under or around sidewalks, pipes, exfiltration trenches or structural elements, the Owner reserves the right to specify removal and replacement of unsuitable soil with imported suitable soil. All imported suitable soil material for placement under of around structural elements is to be paid out of the Owners Contingency.

## 1.02 RELATED SECTIONS

- A. Section 01410 – Materials and Installation Testing
- B. Section 02100 – Site Preparation
- C. Section 02210 – Finish Grading
- D. Other Sections as applicable.

## 1.03 REFERENCES

- A. FDOT Standard Specifications for Road and Bridge Construction
- B. FDOT Design Standards

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- C. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D. AASTHO M-145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes

#### 1.04 PROJECT CONDITIONS

- A. Locate existing underground utilities in areas of work. Provide adequate means of support and protection during earthwork operations.
- B. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
- C. Do not interrupt existing utilities serving occupied facilities.
- D. Use of Explosives: If the use of explosives is necessary for the execution of the Work, and the use of explosives is allowed by local government, the Contractor shall conduct his blasting operations in conformance with these specifications and all applicable state and local codes and regulations.
  - 1. The contractor shall obtain a testing laboratory to perform pre and post blasting surveys of all nearby structures at no cost to the Owner.
- E. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

#### PART 2 - PRODUCTS

##### 2.01 SOIL MATERIALS

- A. Satisfactory or Suitable Soil Materials: ASTM D2487 soil classification groups GW, GP, GP-GM and SW.
- B. Unsatisfactory or Unsuitable Soil Materials: ASTM D2487 soil classification groups GM, GC, SW, SM, SC, CL, ML, OL, CH, MH, OH and PT.
- C. Satisfactory and unsatisfactory soil materials for roadway embankment, including pipe trench backfill under roadways, shall meet the requirements as defined in AASHTO M-145 soil classification groups and FDOT index 505.
- D. Satisfactory materials encountered during excavation, may be stored in segregated stockpiles for reuse. All material which, in the opinion of the Engineer, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable

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materials.

E. Sub-base material:

1. Satisfactory materials may be Select, Structural or Common fill.

F. Select or Structural Fill or backfill:

1. Select or structural fill material shall be a satisfactory soil material, well graded, consisting of a minimum of 60 percent clean medium fine grain sized quartz sand, free of organic, deleterious and/or compressible percent clean medium fine grain sized quartz sand, free of organic, deleterious and/or compressed material. Rock in excess of 2 inches in diameter shall not be permitted.

G. Common Fill:

1. Common fill material shall be a satisfactory soil material containing no more than 20 percent by weight finer than No. 200 mesh sieve. It shall be free from organic matter, muck, marl, and rock exceeding 2 1/2 inches in diameter.

H. Course Aggregate:

1. Course aggregate, or gravel, shall be used for rock bedding, drainage rock or as otherwise depicted in the Drawings. Unless otherwise noted, course aggregate shall consist of washed and graded crushed rock meeting FDOT specification 901, size number 57 or approved equal.

I. Sand

1. Where specified, sand, clean sand, silica sand or other nomenclature shall refer to silica sand meeting FDOT specification 902-2.

J. Satisfactory or suitable soil materials shall free of muck, clay, rock or gravel larger than 2-1/2 inches in any dimension, debris, trash, waste, frozen materials, broken concrete, masonry, rubble, vegetable or other similar materials or deleterious matter. Materials of this nature encountered during the excavation which, in the opinion of the Engineer, is not suitable for reuse shall be stockpiled for disposal as unsuitable materials.

K. Material substitutions may be permitted if accompanied by a geotechnical engineers report substantiating the proposed substitution which is approved by the Engineer and is at no cost to the Owner.



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## PART 3 - EXECUTION

## 3.01 EXCAVATION

- A. The contractor shall perform trench excavations in accordance with applicable trench safety standards and is responsible to determine any safety or safety related standards that apply to the Project. The Owner and Engineer are not responsible to review and/or assess safety precautions, programs and costs, and the means, methods, techniques or technique adequacy, reasonableness of cost, sequences and procedures of any safety precaution, including, but not limited to, compliance with any and all requirements of Florida Trench Safety Act.
- B. Excavation is Unclassified, and includes excavation to sub-grade elevations indicated, regardless of character of materials and obstructions encountered.
- C. Unauthorized Excavation: Removal of materials beyond indicated sub-grade elevations or dimensions without specific direction. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.
- D. Additional Excavation:
  - 1. Where unsuitable soil materials are encountered under or around structural elements, the Owner reserves the right to specify removal and replacement of unsuitable soil with imported suitable soil. All imported suitable soil material for placement under of around structural elements is to be paid out of the Owners Contingency.
- E. Stability of Excavations:
  - 1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction.
  - 2. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
  - 3. Maintain sides and slopes of excavations in safe condition until completion of backfilling.
- F. Shoring and Bracing:
  - 1. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
  - 2. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
- G. Dewatering:

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1. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer.
  2. Prevent surface water and sub-surface or ground water from flowing into excavations. Do not allow water to accumulate in excavations.
  3. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
  4. The Contractor shall obtain all dewatering permits as required from agencies having jurisdiction
- H. Stockpile satisfactory excavated materials where directed, until required for embankment, backfill or fill. Place, grade and shape stockpiles for proper drainage.
- I. Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide minimum 6 in. clearance on each side of pipe or conduit.
1. Excavate trenches to depth indicated or required for indicated flow lines and invert elevations.
  2. Where rock is encountered, carry excavation 6 in. below scheduled elevation and backfill with a 6 in. layer of crushed stone or gravel prior to installation of pipe.
  3. For pipes or conduit 5 in. or less, excavate to indicate depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.
  4. For pipes or conduit 6 in. or larger, tanks and other work indicated to receive sub-base, excavate to sub-base depth indicated, or, if not otherwise indicated, to 6 in. below bottom of work to be supported.
  5. Except as otherwise indicated, excavate for exterior water-bearing piping so top of piping is minimum 3'-6" below finished grade.
  6. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- J. Do not backfill trenches until tests and inspections have been made and backfilling authorized by Engineer.

## 3.02 COMPACTION

- A. Areas to be compacted shall be moistened and compacted by either rolling, tamping or any other approved method by the Engineer in order to obtain the desired density.
- B. Hydraulic compaction will require a geotechnical engineers recommendation, observation and certification at the Contractors expense.

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- C. The Contractor shall inspect all compacted areas prior to further construction operations to ensure that satisfactory compaction has been obtained.
- D. All sub-grade shall be compacted as indicated on the Drawings unless otherwise stated in the FDOT Standard Specifications for Road and Bridge Construction
- E. All embankment shall be compacted by proof-rolling to achieve 95% of AASHTO T-99.
- F. All soil beneath structures shall be compacted to 98% of AASHTO T-180.
- G. Hydraulic compaction shall be permitted if accompanied by a geotechnical engineers report substantiating the proposed methods. The geotechnical engineers report shall be submitted to the Engineer prior to any work and shall be at no cost to the Owner.
- H. The frequency of testing shall be as indicated on the Drawings unless otherwise stated in the FDOT Standard Specifications for Road and Bridge Construction
- I. All earthwork testing shall be at the expense of the Contractor unless otherwise stated in the Contract Documents.
- J. The Contractor shall instruct the testing laboratory to forward copies of all test reports to the Engineer.
- K. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

### 3.03 EMBANKMENT, BACKFILL AND FILL

- A. Place specified soil material in layers required to achieve proposed elevations:
  - 1. Place materials in layers of 8 inches loose depth for material compacted by heavy compaction equipment and 4 in. in loose depth for material compacted by hand operated tampers.
  - 2. Place materials in layers of 12 inches loose depth for material compacted by proof rolling equipment.
  - 3. Under grassed areas, use satisfactory or unsatisfactory excavated or imported soil material if approved by the Engineer.
  - 4. Under walks and pavements, use sub-base material, or satisfactory excavated or borrow material, or combination of both. Place shoulders along edges of sub-base course to prevent lateral movement with satisfactory excavated or borrow material.
  - 5. Under steps, use sub-base material.
  - 6. Under building slabs, use drainage fill material.

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7. Under piping and conduit, use sub-base material where sub-base is indicated under piping or conduit; shape to fit bottom 90 degrees of cylinder.
- B. Backfill excavations as promptly as work permits, but not until completion of the following:
1. Acceptance of construction below finish grade including waterproofing and perimeter insulation.
  2. Inspection, testing, approval, and recording locations of underground utilities.
  3. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
- C. Remove all trash, roots, vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
- D. When existing ground surface has a density less than that specified for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.
- E. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
- F. Place backfill and fill materials evenly adjacent to structures, without wedging against structures or displacement of piping or conduit. Compaction equipment used within 10 ft. of buried walls and soil supported structures shall not exceed 2000 lbs.

### 3.04 GRADING

- A. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding and as follows:
1. Finish to within not more than 0.10 ft. above or below required sub-grade elevations.
  2. Walks: Shape surface to line, grade and cross-section, with finish surface not more than 0.10 ft. above or below required sub-grade elevation.
  3. Pavements: Shape surface to line, grade and cross-section, with finish surface 1/2 in. above or below required sub-grade elevation.
  4. Sod: Where sod abuts pavement, sidewalks, etc., finish surface below as required to accommodate thickness of sod as not to prohibit drainage.

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- B. Grading Surface of Fill under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to 1/2 in. below required elevation.

### 3.05 QUALITY CONTROL

- A. Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Contractor will engage soil testing and inspection service for quality control testing during earthwork operations.
- C. Allow testing service to inspect and approve sub-grades and fill layers before further construction work is performed.
- D. If in opinion of Engineer, based on testing service reports and inspection, sub-grade or fills which have been placed below specified density, provide additional compaction and testing at no additional expense to Owner.

### 3.06 CLEANING AND PROTECTION

- A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
- C. Remove excess excavated and waste materials, including unacceptable excavated material, trash and debris, and legally dispose of it at no cost to the Owner.

END OF SECTION

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## SECTION 02205

## CLEARING AND GRUBBING

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. This Section includes removal and disposal of all designated trees, palms, brush, stumps, grass, roots, and other such protruding objects.

## 1.02 RELATED SECTIONS

- A. Section 01410 – Materials and Installation Testing
- B. Section 02100 – Site Preparation
- C. Section 02200 - Earthwork
- D. Section 02210 – Finish Grading
- E. Other Sections as applicable.

## PART 2 - PRODUCTS - NOT USED

## PART 3 - EXECUTION

## 3.01 CLEARING AND GRUBBING

- A. Clearing and Grubbing within areas specified in the Contract Documents or as directed by the Owner's representative included but not limited to the following:
  - 1. Removal and disposal of all designated trees, palms, brush, stumps, grass, roots, and other such protruding objects.
  - 2. Removal and disposal of fencing, existing pavement, and debris not required to remain or to be salvaged that is necessary to prepare the area for the proposed improvements.
  - 3. Contractor shall notify all utility companies or utility owners, both public and private of their intent to perform such work and shall coordinate field location of utility lines prior to commencement of construction.

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4. Other miscellaneous work considered necessary for the complete preparation of the overall project site is also included under this Section, included, but is not limited to, the following:
  - a. Leveling, harmonization and restoration of terrain outside the limits of construction for purposes of facilitating maintenance, proper grading and other post-construction operations.
  - b. Trimming of certain trees and shrubs within project limits for utilization in subsequent landscaping of the project.
- B. Unless otherwise shown in the Drawings or Contract Documents, Clearing and Grubbing shall be done within the following areas:
  1. In all athletic field areas.
  2. All areas where any type of excavation is to be done.
  3. All areas where any type of filling and embankment will be constructed.
  4. All areas where any type of pavement will be constructed.
  5. Other areas designated in the Plans or by the Specifications.
  6. No clear and grubbing shall take place beyond the wetland delineation line established by the Engineer and the Broward County Environmental Division.
- C. Depths of Removal
  1. In the 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 Landscape Architect.
- D. Trees to Remain: As an exception to the above provisions, where so directed by the Existing Tree Disposition Plan, the Landscape Architect or Engineer, desirable trees within the clearing limits shall be protected and left standing. 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 rocks or boulders greater than two (2) inches in diameter 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. No boulders or rock shall be left or placed on-site.

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### 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 Landscape Architect for aesthetic purposes.
- B. Desirable trees, that are designated by the Landscape Architect to remain, shall be protected and trimmed in such a way to avoid damage to limbs during construction. All pruning of trees and palms shall be performed by, or under the direct supervision of, a certified arborist.

### 3.03 ERADICATION OF EXOTIC VEGETATION

- A. N/A

### 3.04 REMOVAL OF EXISTING STRUCTURES

- A. Work specified in this Article shall include removal and disposal of existing sidewalks, footers, 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, or Landscape Architect, the portion of the existing structure to remain shall be backfilled, plugged, or filled in such a way that will prevent the settlement, movement, erosion or collapse of the adjacent soils.

### 3.05 DISPOSAL OF MATERIALS

- A. All materials from Clearing and Grubbing operations shall be legally disposed of off-site as determined by the Contractor.
- B. All disposal costs shall be included in the Bid.

### 3.06 OWNERSHIP OF MATERIALS

- A. Except as may be otherwise stated in the Contract Documents, or directed by the Owner's Representative, 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.

### 3.07 MEASUREMENT AND PAYMENT

- A. Unless stated otherwise, the cost of Clearing and Grubbing shall be incidental to the cost of construction.

END OF SECTION

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## SECTION 02210

## FINISH GRADING

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Provide all labor, materials, necessary equipment or services to complete the Finish Grading work, as indicated on the Contract Documents.

## 1.02 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 02400 - Landscaping
- C. Section 02410 - Shrub and Tree Relocation
- D. Section 02420 - Soil Preparation and Soil Mixes
- E. Section 02430 - Sodding
- F. Section 02450 - Tree and Plant Protection
- G. Other Sections as applicable.

## 1.03 SITE INSPECTION

- A. The Contractor shall visit the site and acquaint himself with all existing conditions. The Contractor shall be responsible for his own subsurface investigations, as necessary, to satisfy requirements of this Section. All subsurface investigations shall be performed only under time schedules and arrangements approved in advance by the Engineer or Owner's Representative.

## 1.04 EXISTING CONTOURS

- A. The existing elevations shown on the drawings are approximate only. The contractor is responsible for grading to meet existing elevations as required.
- B. The contours and elevations established under contract will be the finished grades shown. The Contractor under this Contract shall perform the work for construction using the finished grades previously established and making whatever corrections and/or repairs to grades to make them consistent with the requirements of the drawings and specifications.

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## 1.05 UTILITIES

- A. Before starting site operations verify that the earlier contractors have disconnected all temporary utilities which might interfere with the fine grading work.
- B. Locate all existing, active utility lines traversing the site and determine the requirements for their protection. Preserve in operating condition all active utilities adjacent to or transversing the site that are designated to remain.
- C. Observe rules and regulations governing respective utilities in working under requirements of this section. Adequately protect utilities from damage, remove or relocate as indicated, specified or required. Remove, plug or cap inactive or abandoned utilities encountered in excavation. Record location of active utilities.

## 1.06 QUALITY ASSURANCE

- A. Requirements of all applicable building codes and other public agencies having jurisdiction upon the work.
- B. Primary emphasis should be given to the aesthetic appearance and functioning of berming and swales, as directed by the Engineer or Owner's Representative. The Contractor shall employ skilled personnel and any necessary equipment to ensure that finish grading is smooth, aesthetically pleasing, drains well, and is ideal for receiving sod and plant materials.
- C. As-build survey drawings of all finished grading are to be submitted to the Engineer for review prior to landscape installation or agency certifications.

## PART 2 - MATERIALS

### 2.01 TOP SOIL

- A. Refer to Related Sections for material specifications.
- B. In areas to receive turf, rough grade shall be a minimum of 2 inches below finished grades.
- C. Rough grade fill is to be fine, compacted, satisfactory fill material, with no rocks larger than 2-inches.
- D. Both surface and subsurface, both before and after fill operations, shall be checked to confirm that percolation/compaction levels meet the needs of the proposed planting for that area.

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**PART 3 - EXECUTION****3.01 EXCAVATION**

- A. Excavate where necessary to obtain subgrades, percolation, and surface drainage as required.
- B. All unsatisfactory soil materials are to be removed and replaced with satisfactory soil materials.
- C. Remove entirely any existing obstructions after approval by the Engineer's or Owner's Representative.
- D. Remove from site and dispose of debris and excavated material not required.

**3.02 GRADING**

- A. The Contractor shall establish finished grades as shown on the Engineers grading plans, and as directed by Engineer and/or Owner's Representative, including areas where the existing grade has been disturbed by other work.
- B. Finished grading shall be smooth, aesthetically pleasing, drain well and ready to receive sod and other plant material to full satisfaction of Engineer and Owner's Representative.
- C. Finish grading accuracy is to be within 1/10 foot of specified elevations.
- D. Finish grading is to be performed using hand raking throughout and shall remove all objectionable material and rocks greater than 1 inch in diameter.
- E. A finish grading inspection is required prior to sod placement.

**3.03 COMPACTION**

- A. Compact each layer of fill in designated areas with approved equipment in accordance with Section 02200.
  - 1. In landscaped areas, compaction shall not exceed 85% of maximum density and no less than 75%.
  - 2. In landscaped areas which are sloped at 1:4 or steeper, compaction shall not exceed 90% of maximum density and no less than 85%.
- B. No backfill shall be placed against any masonry or other exposed building surface until permission has been given by the Owner's Representative, and in no case until the masonry has been in place seven days.
- C. Compaction in limited areas shall be obtained by the use of mechanical tampers or

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approved hand tampers. When hand tampers are used, the materials shall be deposited in layers not more than four inches thick. The hand tampers used shall be suitable for this purpose and shall have a face area of not more than 100 square inches. Special precautions shall be taken to prevent any wedging action against masonry, or other exposed building surfaces.

#### 3.04 CORRECTION OF GRADE

- A. Bring to required grade levels areas where settlement, erosion, or other grade changes occur. Adjust grades as required to carry drainage away from buildings and to prevent ponding around the buildings and on pavements.
- B. All soil surfaces shall have sufficient percolation and surface drainage to support grasses and plant material.
- C. Contractor shall be responsible for stabilizing grades by approved methods prior to landscaping, and shall be responsible for correction of grades as mentioned above, and cleanup of any wash outs or erosion.

END OF SECTION

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## SECTION 02221

## TRENCHING, BEDDING, AND BACKFILL FOR PIPE

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Furnish labor, materials, equipment, and incidentals necessary to perform all excavation, backfill, fill, grading, and slope protection required to complete the piping work shown on the Drawings and specified herein. The work shall include, but not necessarily be limited to, manholes, vaults, duct conduit, pipe, roadways, paving, bedding, backfilling, fill, required borrow; grading, disposal of surplus and unsuitable materials, and all related work such as sheeting, bracing, and dewatering

## 1.02 RELATED SECTIONS

- A. Section 01340 – Shop Drawings, Working Drawings and Samples
- B. Section 02100: Site Preparation
- C. Section 02200 - Earthwork
- D. Section 02220: Structural Excavation, Backfill & Compaction (NOT USED)
- E. Other Sections as applicable.

## 1.03 REFERENCES

- A. FDOT Standard Specifications for Road and Bridge Construction
- B. FDOT Design Standards
- C. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- D. AASTHO M-145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes

## 1.04 JOB CONDITIONS

- A. The Contractor shall examine the site and review the available test borings or undertake his own soil borings prior to submitting his bid, taking into consideration all conditions that may affect his work. The Owner and Engineer will not assume responsibility for variations of sub-soil quality or conditions at locations other than places shown and at the time the available test borings were made.
- B. Existing Utilities: Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.
  - 1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the Engineer and the Owner of such piping or utility immediately for directions.

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2. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
  3. Demolish and completely remove from site existing underground utilities indicated on the drawings to be removed.
- C. Protection of Persons and Property: Contractor shall barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction.
1. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

#### 1.05 SUBMITTALS

- A. The Contractor shall furnish the Engineer, for approval, a certificate of origin and compliance with specifications for any fill material obtained from off-site sources.
- B. At the discretion of the Engineer, the Contractor shall furnish the Engineer, for approval, a representative sample of fill material obtained from on-site sources weighing approximately 50 pounds, at least ten calendar days prior to the date of anticipated use of such material.
- C. At the discretion of the Engineer, for each material obtained from off-site sources, the Contractor shall notify the Engineer of the source of the material and shall furnish the Engineer, for approval, a representative sample weighing approximately 50 pounds, at least ten calendar days prior to the date of anticipated use of such material.

### PART 2 - PRODUCTS

#### 2.01 MATERIALS

- A. Satisfactory Soil Materials: ASTM D2487 soil classification groups GW, GP, SW, and SP.
- B. Unsatisfactory Soil Materials: ASTM D2487 soil classification groups GM, GC, SM, SC, CL, ML, OL, CH, MH, OH and PT.
- C. Satisfactory and unsatisfactory soil materials for roadway embankment, including pipe trench backfill under roadways, shall meet the requirements as defined in AASHTO M-145 soil classification groups and FDOT index 505.
- D. Satisfactory materials encountered during excavation, may be stored in segregated stockpiles for reuse. All material which, in the opinion of the Engineer, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable materials.
- E. Sub-base material:
  1. Refer to roadway section and/or specifications.
- F. Select or Structural Fill or backfill:

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1. Select or structural fill material shall be a satisfactory soil material, well graded, consisting of a minimum of 60 percent clean medium fine grain sized quartz sand, free of organic, deleterious and/or compressible percent clean medium fine grain sized quartz sand, free of organic, deleterious and/or compressed material. Rock in excess of 1 inches in diameter shall not be permitted.
- G. Common Fill:
1. Common fill material shall be a satisfactory soil material containing no more than 20 percent by weight finer than No. 200 mesh sieve. It shall be free from organic matter, muck, marl, and rock exceeding 2 1/2 inches in diameter.
- H. Course Aggregate:
1. Course aggregate, or gravel, shall be used for rock bedding, drainage rock or as otherwise depicted in the Drawings. Unless otherwise noted, course aggregate shall consist of washed and graded crushed limerock meeting FDOT specification 901, size number 57 or approved equal.
- I. Sand
1. Where specified, sand, clean sand, silica sand or other nomenclature shall refer to silica sand meeting FDOT specification 902-2.
- J. Satisfactory soil materials shall free of muck, clay, rock or gravel larger than 2-1/2 inches in any dimension, debris, trash, waste, frozen materials, broken concrete, masonry, rubble, vegetable or other similar materials or deleterious matter. Materials of this nature encountered during the excavation which, in the opinion of the Engineer, is not suitable for reuse shall be stockpiled for disposal as unsuitable materials.
- K. Material substitutions may be permitted if accompanied by a geotechnical engineers report substantiating the proposed substitution which is approved by the Engineer and is at no cost to the Owner.

### PART 3 - EXECUTION

#### 3.01 GENERAL

- A. All excavation, backfill and grading necessary to complete the work shall be made by the Contractor and the cost thereof shall be included in the Contract price.
- B. Material shall be furnished as required from off-site sources and hauled to site.
- C. The Contractor shall take all necessary precautions to maintain the work area in a safe and workable condition.
- D. The Contractor shall protect his work at all times by flagging, marking, lighting and barricading. It shall also be the Contractor's responsibility to preserve and protect all above and underground structures, pipe lines, conduits, cables, drains, or utilities which are existing at the time he encounters them. Failure of the Drawings to show the existence of these obstructions shall not relieve the Contractor from this

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responsibility. The cost of repair of damage which occurs to these obstructions during or as a result of construction shall be borne by the Contractor without additional cost to the Owners.

### 3.02 DEWATERING

- A. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer.
- B. Prevent surface water and sub-surface or ground water from flowing into excavations. Do not allow water to accumulate in excavations.
- C. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
- D. The Contractor shall obtain all dewatering permits as required from agencies having jurisdiction

### 3.03 TRENCH EXCAVATION

- A. Excavation for all trenches required for the installation of pipes shall be made to the depths indicated on the Drawings. Excavate trench to provide minimum of 30-inch clear cover over the pipe bell unless otherwise noted on the Drawings. Excavate in such manner and to such widths as will give suitable room for laying the pipe within the trenches, for bracing and supporting and for pumping and drainage facilities. The trench width at the top of the pipe shall not exceed the allowable as determined by the depth of cut and indicated on the Drawings.
- B. Rock shall be removed to a minimum 8-inches clearance around the bottom and sides of all the pipe or ducts being laid.
- C. Where pipe is to be laid in limerock bedding or encased in concrete, the trench may be excavated by machinery to or just below the designated subgrade provided that the material remaining in the bottom of the trench remains undisturbed.
- D. Where the pipes or ducts are to be laid directly on the trench bottom the lower part of the trenches shall not be excavated to the trench bottom by machinery. The last of the material being excavated shall be done manually in such a manner that will give a flat bottom true to grade so that pipe can evenly and uniformly supported along its entire length on undisturbed material or bedding rock. Bell holes shall be made as required manually so that there is no bearing surface on the bells and pipes are supported along the barrel only.
- E. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer. Excavate any organic soil material from the bottom of the trench and replace with rock bedding, at least 6 inches thick.

### 3.04 TRENCH PROTECTION

- A. The contractor shall perform trench excavations in accordance with applicable trench safety standards and is responsible to determine any safety or safety related standards that apply to the Project. The Owner and Engineer are not responsible to review and/or assess safety precautions, programs and costs, and the means, methods, techniques or technique adequacy, reasonableness of cost, sequences and

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procedures of any safety precaution, including, but not limited to, compliance with any and all requirements of Florida Trench Safety Act.

- B. The Contractor shall construct and maintain sheeting and bracing as required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, existing piping, and foundation material from disturbance, undermining, or other damage. Care shall be taken to prevent voids outside of the sheeting, but if voids form, they shall be immediately filled and compacted.
- C. For pipe trench sheeting, no sheeting is to be withdrawn if driven below mid-diameter of any pipe, and no wood sheeting shall be cut off at a level lower than 1 foot above the top of any pipe unless otherwise directed by the Engineer. If during the progress of the work the Engineer decides that additional wood sheeting should be left in place, he may direct the Contractor in writing. If steel sheeting is used for trench sheeting, removal shall be as specified above, unless written approval is given by the Engineer for an alternate method of removal.
- D. All sheeting and bracing not left in place, shall be carefully removed in such a manner as not to endanger the construction or other structures, utilities, existing piping, or property. All voids left or caused by withdrawal of sheeting shall immediately be refilled with sand or rammed with tools especially adapted to that purpose, by watering or otherwise as may be directed.
- E. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

### 3.05 PIPE INTERFERENCES AND ENCASEMENT

- A. The contractor shall abide by the following schedule of criteria concerning interferences with other utilities.
  - 1. In no case shall there be less than 0.5 feet between any two pipe lines and structures.
  - 2. Class I Concrete Encasement: Wherever there is more than 0.5 foot, but not less than 1.5 foot clearance between water mains or water services, then a concrete encasement shall be provided in accordance with the typical detail as shown on the Drawings.
  - 3. Class II Concrete Encasement: Wherever there is more than 0.5 foot, but less than 1.0 foot clearance between any two pipe lines, or between pipe lines and structures, then a concrete encasement shall be provided in accordance with the typical detail as shown on the Drawings.
- B. The Engineer shall have full authority to direct the placement of the various pipes and structures in order to facilitate construction, expedite completion and to avoid

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conflicts.

### 3.06 BACKFILLING

- A. Do not backfill trenches until tests and inspections have been made and backfilling authorized by Engineer.
- B. Perform backfill in lifts and compact as specified in the Drawings.
- C. Backfilling over pipes shall begin as soon as practical after the pipe has been laid, jointed, and inspected and the trench filled with suitable compacted material to the mid-diameter of the pipe.
- D. Backfilling over ducts shall begin not less than three days after placing concrete encasement.
- E. All backfilling shall be prosecuted expeditiously as detailed on the Drawings.
- F. Any space remaining between the pipe and sides of the trench shall be packed full by hand shovel with selected earth and thoroughly compacted with a tamper as fast as placed, up to a level of one foot above the top of pipe.
- G. The filling shall be carried up evenly on both sides with at least one man tamping for each man shoveling material into the trench.
- H. The Contractor shall take all precautions necessary to maintain the bedding in a compacted state and to prevent washing, erosion or loosening of this bed.
- I. In areas where unsuitable soil is discovered in the pipe bedding, the unsuitable soil shall be removed and stockpiled for disposal by the contractor. Suitable soils shall be substituted at a depth as directed by the Engineer. If gravel is required by the Engineer as suitable bedding, the gravel shall be wrapped in filter fabric prior to backfill operations.
- J. Gravel bedding shall not be used under any circumstances as a drain for ground water.
- K. In locations where pipes pass through building walls, the Contractor shall take the following precautions to consolidate the refill up to an elevation of at least 1 foot above the bottom of the pipes:
  - 1. Place structural fill in such areas for a distance of not less than 3 feet either side of the centerline of the pipe in level layers not exceeding 6-inches in depth.
  - 2. Wet each layer to the extent directed and thoroughly compact each layer with a power tamper to the satisfaction of the Engineer.

### 3.07 COMPACTION

- A. Perform compaction and compaction tests as specified in the Drawings.
- B. Hydraulic compaction shall be permitted if accompanied by a geotechnical engineers report substantiating the proposed methods. The geotechnical engineers report shall be submitted to the Engineer prior to any work and shall be at no cost to the Owner.

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### 3.08 GRADING

- A. Grading shall be performed at such places as are indicated on the Drawings, to the lines, grades and elevations shown or as directed by the Engineer and shall be made in such manner that the requirements for formation of embankments can be followed. All unacceptable material encountered, of whatever nature within the limits indicated, shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the prosecution or condition of the work.
- B. If at the time of excavation it is not possible to place any material in its proper section of the permanent structure, it shall be stockpiled in approved areas for later use. No extras will be considered for the stockpiling or double handling of excavated material.
- C. The right is reserved to make minute adjustments or revisions in lines or grades if found necessary as the work progresses, due to discrepancies on the Drawings or in order to obtain satisfactory construction.
- D. Stones or rock fragments larger than 2 1/2 inches in their greatest dimensions will not be permitted in the top 6 inches of the subgrade line of all fills or embankments.
- E. All fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings, or as directed by the Engineer.
- F. In cut, all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as specified by the Engineer.
- G. No grading is to be done in areas where there are existing pipe lines that may be uncovered or damaged until such lines which must be maintained are relocated, or where lines are to be abandoned, all required valves are closed and drains plugged at manholes.
- H. The Contractor shall replace all pavement cut or otherwise damaged during the progress of the work as specified elsewhere herein or as shown on the Drawings.

### 3.09 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

- A. All surplus and unsuitable excavated material shall be disposed of at the Contractor's cost in one of the following ways as directed by the Engineer.
  - 1. Transport to soil storage area on Owner's property and stockpile or spread as directed by the Engineer.
  - 2. Transport from Owner's property and legally dispose of. Any permit required for the hauling and disposing of this material beyond Owner's property shall be obtained prior to commencing hauling operations. Copies of all required permits shall be provided to the Engineer.
- B. Suitable excavated material may be used for fill if it meets the specifications for common fill and is approved by the Engineer. Excavated material so approved may

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be neatly stockpiled at the site where designated by the Engineer provided there is an area available where it will not interfere with the operation of the facility nor inconvenience traffic or adjoining property owners.

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## SECTION 02276

## STORMWATER POLLUTION PREVENTION

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Implementation of the Stormwater Pollution Prevention Plan as depicted in the Drawings, as required by law and specified herein.
- B. Permitting as required through the Florida Department of Environmental Protection (FDEP) - Florida's National Pollutant Discharge Elimination System (NPDES) program for construction activities.
- C. Designing, providing, maintaining, and removing temporary erosion and sedimentation controls and/or Best Management Practices as necessary.
- D. Temporary erosion controls may include, but are not limited to, mulching, netting, and watering, on site surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations that will ensure erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner.
- E. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, booms/curtains, and appurtenances at the foot of sloped surfaces and other areas that will ensure sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner.

## 1.01 RELATED SECTIONS

- A. Section 01010 – Summary of Work
- B. Section 01015 – General Requirements
- C. Section 01030 – Special Project Procedures
- D. Other Sections as applicable.

## 1.02 REQUIRMENTS

- A. Obtain a Generic Permit for Stormwater Discharge from Large and Small Construction Activities (CGP). From the Florida Department of Environmental Protection (FDEP) for all construction disturbances in size greater than one (1) acre.

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1. Disturbance includes clearing, grading and excavating.
  2. Projects which disturb less than one (1) acre will not require a CGP but will require the appropriate Best Management Practices and directed by the Owner, Engineer or governing authorities.
- B. Implement and maintain a Stormwater Pollution Prevention Plan (SWPPP).
1. The SWPPP found in the Drawings is pictorial in nature, is provide to depict the general layout of SWPPP elements and is not intended to depict all the possible requirements.
  2. The Contractor is the entity that owns and operates the project and has authority to ensure compliance and is therefore considered the "Operator".
  3. Neither the Owner nor the Engineer are responsible to specify, implement or maintain the SWPPP plan.
- C. Submit a CGP Notice of Intent (NOI) and the commencement of Construction.
- D. Submit reporting forms throughout the duration of Construction.
- E. Submit a CGP Notice of Termination (NOT) to discontinue permit coverage. An NOT may be submitted only when the site meets the eligibility requirements for termination specified in the CGP.
- F. For additional information on the NPDES Stormwater Program including all regulations and forms cited in the brochure visit:  
[www.dep.state.fl.us/water/stormwater/npdes/](http://www.dep.state.fl.us/water/stormwater/npdes/).

## 1.03 PRODUCTS

## 1.04 EROSION CONTROL

- A. Mulch: FDOT type per Section 981-3.2, Green Mulch
- B. Netting: Fabricated of material acceptable to the Owner.

## 1.05 SEDIMENTATION CONTROL

- A. Bales: Clean, seed free cereal hay type
- B. Netting: Fabricated of material acceptable to the Owner
- C. Filter stone: Crushed stone conforming to Florida Department of Transportation specifications.

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## PART 2 - EXECUTION

## 2.01 EROSION CONTROL

- A. Minimum procedures for mulching and netting are:
  - 1. Apply mulch loosely to a thickness of between 3/4 inch and 1 1/2 inches.
  - 2. Apply netting over mulched areas on sloped surfaces.

## 2.02 SEDIMENTATION CONTROL

- A. Install and maintain silt dams, traps and barriers, and booms/curtains as shown on the approved schedule. Hay bales and fabric that deteriorates and filter stone that becomes dislodged shall be replaced as required.

## 2.03 PERFORMANCE

- A. Should any of the temporary erosion and sediment control measures employed by the Contractor fail to produce results that comply with the requirements of the Owner, Contractor shall immediately take any and all necessary steps to correct the deficiency at his own expense.

END OF SECTION



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## SECTION 02410

## SHRUB AND TREE RELOCATION

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. Provide all labor, materials, necessary equipment and services to complete the shrub and tree relocation work, as indicated on the drawings and as specified herein or both.

## 1.02 RELATED WORK

- A. Section 02210 – Fine Grading
- B. Section 02484 – Soil Preparation and soil mixes
- C. Section 02490 – Landscaping

## 1.03 DESCRIPTION

- A. Plant materials to be relocated on site are designated on the drawings or as directed by the Landscape Architect.
- B. The Contractor's crew utilized for the relocation of existing trees and shrubs shall have minimum five years experience in relocation of existing plant materials and be recognized by the Florida Nurserymen and Growers Association (FNGA).
- C. Existing trees to remain shall be protected during all construction phases as noted on demolition tree deposition and/or landscape plans. Any trees or shrubs scarred or destroyed designated to remain will be replaced at the Contractor's expense, with equal or better.
- D. Remove other trees, saplings, shrubs, bushes, vines and undergrowth as directed by the Landscape Architect to accommodate new plantings.
- E. Resulting tree pits and shrub bed pits of relocated material shall be backfilled with clean 80% sand/20% muck planting soil mix and brought back flush with surrounding grade as required. It shall be the contractor's responsibility to correct problems caused by erosion, wind, etc., in the reclaimed area where digging has occurred.
- F. In areas where new plant material will replace relocated plant material, 80% sand/20% muck planting soil mix shall be used as backfill.

## 1.04 SUBMITTALS

- A. Contractor to submit a schedule by day as to how many units can be dug and relocated to specified areas. Note for those materials that may require root pruning, the relocation schedule to begin at the end of the specified root-pruning period.
- B. Contractor shall apply and secure any and all permits and/or licenses if required by any municipal, state, or federal agency or governing body prior to commencement of any work.

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**1.05 GUARANTEE**

- A. Guarantee all plant material for a period of twelve months after date of Final Completion.
- B. Replacement plants under this guarantee shall be replaced within two weeks of rejection and guaranteed for twelve months from date of installation.
- C. Repair damage to other plants, lawn or construction work during plant replacement at no cost to the Owner (this includes, but is not limited to, damage to curbs, walks, roads, fences, site furnishings, etc.).

**1.06 TAGGING**

- A. Trees and shrubs within the designated areas for relocation shall be clearly marked by means of pink plastic surveyor's ribbons and coordinated with Landscape Architect and shall be inspected and approved by the Owner's representative prior to root pruning and/or digging.

**1.07 ROOT PRUNING**

- A. Trees to be relocated shall be root pruned with clean sharp equipment at least 50% around root ball then the remaining 50% after 30 days for a total of at least 90 days prior to digging. No mechanical means (i.e., Backhoes) may be utilized for the root pruning only shovels or jackhammer type shovels shall be permitted. The specific requirements for root ball sizes shall be in accordance with the table below or to the drip line of the tree. The root-pruned trees shall be watered as specified hereinafter by Landscape Contractor as part of this contract.
- B. Palms and shrubs to be relocated shall be root pruned at least 30 days prior to digging, with clean, sharp equipment. No mechanical means (i.e., Backhoes) may be utilized for the root pruning only shovels or jackhammer type shovels shall be permitted. Palms relocated by tree spade may forego the root-pruning requirement, but shall adhere to root ball size charts below. Palms shall be watered as shown on the contract drawings.
- C. All trees and palms that has been root pruned shall be staked and guyed or braced per drawing immediately after root-pruning.
- D. Root Ball Size Chart - Note: Root ball sizes shall be in accordance with minimum standards set forth in Grades and Standards for Nursery Plants Part II, Palms and Trees, Florida Department of Agriculture.

**1. LARGE SHRUBS - Minimum Ball Sizes:**

<b>DBH</b>	<b>Minimum Ball Diameter</b>
1 " - 1-1 /2"	16"
1-1/2" - 1-3/4"	20"

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1-3/4" - 2"	22"
2" - 2-1/2"	24"
2-1/2" - 3-1/2"	26"
3-1/2" - 4"	28"
4' - 4-1/2"	30"
4-1/2" - 5"	32"
5" - 5-1/2"	34"

Larger sizes increase proportionately

2. TREES - Minimum Ball Depth: All trees shall be root pruned to the dripline of the tree (8" to 10" per DBH) unless directed otherwise by Landscape Architect. No canopy shall be removed as part of this process.
3. PALMS - Minimum Ball Sizes:
  - a. Heavy Trunk Types:

<b>DBH 4.5'</b> (above ground)	<b>Minimum Ball Size</b> (Measurements from Base of Trunk at Ground Level)
3"	6-1 /2"
4"	7"
5"	7 1/2"
6"	8"
7"	8 1/2"
8"	9"
9"	9 1/2"
10"	10"

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## b. Slender Trunk Types (Palms):

Maximum 2 feet - Clear trunk wood

<b>DBH 4.5'</b> (above ground)	<b>Minimum Ball Size</b> (Measurements from Base of Trunk at Ground Level)
3"	6-1 /2"
4"	7"
5"	7 1/2"
6"	8"
7"	8 1/2"
8"	9"
9"	9 1/2"
10"	10"

Clear trunk wood

2-3 feet or more. 36"

## c. Depth of Ball Minimum Ball Depth

- 1) Up to 2 ft 14" clear wood
- 2) 2 ft or more 22"° clear wood

## d. Cluster Types

Minimum ball to exceed 8" beyond outer trunk

Depth of Ball		Minimum Ball Depth
1)	1-6 ft clear trunk	22"
2)	7 ft or more clear trunk	30"

- e. Roots must be sturdily established in ball that has been tightly wrapped and securely tied with twine or wire, or pinned.
- f. Burlapping will not be required if the palm is dug from marl or heavy soil that adheres to roots and retains its shape without shattering, provided moistened material is used to cover the ball, the roots are not directly exposed to wind or sun, and the palm is planted within 24 hours after being dug.

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- g. When collected palms are grown on top of rock and are peeled off, the depth of the ball may be less than minimum ball size in chart, but width of ball and volume of roots should be sufficient to ensure normal recovery and continued growth.

#### 1.08 WATERING

- A. Following root pruning, trees designated for transplanting shall be watered for a period of five consecutive days following root pruning and then every other day until moving. Such watering shall thoroughly saturate the root ball to its full depth.

#### 1.09 CROWN PREPARATION

##### A. Sabal Palms:

1. Cut off bottom fronds as necessary according to condition of palm and time of moving
2. Cut off one or more unopened leaves on each side of tightly closed center leaf.
3. Tie several fronds in upright position to unopened center leaves.
4. Tie remaining fronds together using untreated cotton twine or 2-inch burlap strips.

NOTE: Another acceptable procedure is providing palms with a hurricane cut, which is to say that all fronds are cut with no damage to bud.

##### B. Cluster Type Palms

1. Wire against the palm trunk a piece of 2x4 lumber of sufficient length to give adequate support to open and unopened leaves. The lumber must also be long enough to extend upward from where the bud emerges to within 3/4 of length of all leaves and downward approximately the same distance from where it is wired to trunk.
2. Tie fronds in upright position to lumber using untreated cotton twine.
3. Trunks with little or no wood may have their fronds tied to another trunk that is supported by wood.

##### C. Shade and Flowering Trees:

1. Minimal trimming to the canopy shall occur. In so doing, preserve the basic shape and form of the tree, eliminate cross-branching and dead or diseased branches. Wrap 6 layers of burlapping around the trunk where nursery ties are to be placed.
2. Selected species shall have all leaves hand stripped following pruning and prior to moving at the direction of the landscape architect.
3. Trees moved with leaves intact may be treated with spray antidessicant according to manufacturer's recommendations and upon Landscape Architect's direction prior to moving.

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### 1.10 TREE SPADING/HAND DIGGING

- A. Plant materials indicated to be relocated may be relocated by means of a tree spade. The specific requirements for root ball size shall be in accordance with root ball size charges, Section 1.08.
- B. Burlapping will be required if trees, large shrubs, or palms will be relocated to an area not accessible by the tree spade equipment or if a tree spade is not used. Trees or palms that are dug by tree spade and then burlapped for relocation shall comply and be handled in same manner as new plant materials specified in Section 02490.

### PART 2 - PRODUCTS "NOT APPLICABLE"

### PART 3 - EXECUTION

#### 3.01 HANDLING AND TRANSPORTATION

- A. Trees, palms, and large shrubs shall be properly handled during moving so trunks will not be scarred or damaged and to avoid broken limbs. Broken limbs or scarred/damaged trunks shall cause plant to be unacceptable and rejected at Landscape Architect's option. Broken limbs and wounds which do not (in the Landscape Architect's judgment) cause the tree to be rejected shall be repaired under the following guidelines:
  - 1. Properly prune dead, dying, or damaged branches with clean, sharp equipment.
  - 2. Remove injured bark and wood of a tree wound with a clean, sharp knife to a point where healthy bark and wood make contact at their margins.
  - 3. Inspect and treat wounds for insect and disease.
- B. Transport plant material on vehicles of adequate size to prevent overcrowding, broken limbs, foliage damage or root ball damage.
- C. Root ball should be kept moist during all phases of relocation.
- D. Tree and palm crowns shall be protected with shade cloth to prevent desiccation and wind burn. Crowns shall be periodically sprayed with water to help ensure against desiccation.
- E. Groundcovers designated as divisions will consist of healthy offshoots with adequate root mass to ensure successful transplant.
- F. Inspect all plant material for insect/disease problems. Take appropriate action before loading to ensure all plant material is free of any harmful insect/disease problem. This precaution does not preclude rejection at the site. Apply pesticides in strict accordance with manufacturer's recommendations and all government standards.
- G. Plant material shall be handled only in ways and means accepted by the industry and approved by the landscape Architect.
- H. Plant material shall be planted the same day it is dug. Preparation of planting pits or beds shall be coordinated to ensure this schedule.

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## 3.02 FERTILIZER

- A. Relocated plant materials may be fertilized immediately after transplanting. The type of fertilizer should be a root stimulator such as 'Root Plus' or equal

## 3.03 STAKING AND GUYING

- A. Designated material shall be staked and guyed or braced per drawings.

## 3.04 WATERING

- A. Contractor shall be responsible for the manual watering of relocated plant materials by providing a 90-day watering program (unless otherwise noted on the drawings), until they are established.
- B. Following tree spading and/or relocation, trees and palms designated for transplanting shall be watered twice a day for the first two weeks, every two days for the third week to the sixth week following the installed date, every third day for the remainder of the 90-day period (unless otherwise noted on the drawings), completely saturating the root ball to its full depth.

END OF SECTION



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## SECTION 02420

## SOIL PREPARATION AND SOIL MIXES

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Provide all labor, materials, necessary equipment and services to complete the soil preparation and soil mixes work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".
- B. Including, but not limited to:
  - 1. Topsoil
  - 2. Soil Conditioners
  - 3. Planting Soil Mixes

## 1.02 RELATED WORK

- A. Section 02400 – Landscaping
- B. Section 02410 – Shrub and Tree Relocation
- C. Section 02430 – Sodding
- D. Section 02450 – Tree and Plant Protection
- E. Other Sections as applicable.

## 1.03 QUALITY ASSURANCE

- A. Testing Agency: Approved Independent testing laboratory utilizing EPA, ASTM, USGS methods.
- B. Requirements or Regulatory Agencies: Conform to requirements of all Municipal, County and State agencies.
- C. Reference standards.

## 1.04 SUBMITTALS:

- A. Test Reports: Test reports shall consist of pH range, major and minor element analysis, including but not limited to Ammonia,, Nitrate, Phosphorus, Potassium, Magnesium, Calcium, Sulfur, Boron, Zinc, Manganese, Iron, Copper and soluble salt

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and any other materials designed by the Landscape Architect. Recommendations shall be made by the testing agency as to the type and quantity of soil additives required to bring the nutrient and ph to an acceptable or optimum range for planting. Reports shall be identified by project name, date, and soil mix type.

1. Results of topsoil (on-site existing soil) analysis.
2. Results of planting/top soil mix(es) analysis: One test required per each type of soil mix.

B. Certificates:

1. The Contractor must submit certificates from suppliers stating that the planting/topsoil mix, turfgrass sod and other landscape material used comply with requirements specified.
2. Manufacturer's certificate of fertilizer's chemical composition including but not limited to percentage and derivation of nitrogen, phosphorus, potassium, and micronutrients.
3. Testing laboratory certification that content of soil conditioners meet specification requirements.

C. Soil Samples:

1. Submit a one-pound sample of each soil mix specified.

D. All State, County and Municipal governmental regulations must be met including any licensing or certifications requirements for uses or applications.

E. Costs of all submittals, including but not limited to Test reports, Certificates, Licenses, and samples will be borne by the Contractor.

#### 1.05 JOB CONDITIONS

- A. Contractor shall become familiar with the site and the required work to complete this section in accordance with the drawings and what is specified herein.
- B. Responsibility for finish grading shall occur under a separate contract. Any changes, modifications, or disturbances to the finish grading shall be corrected by the responsible contractor.
- C. PROTECTION: Protect and avoid any damage whatsoever to existing walks, pavement, curbs, utilities, plant material, and any other existing work.

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## PART 2 - PRODUCTS

## 2.01 TOP SOIL

- A. Topsoil shall be an 80-20 mix, 80% fresh water sand (medium to coarse grade) and 20% inland glades muck thoroughly mixed with a commercial shredder/blender or equivalent. It shall be suitable for ornamental plant growth and free from hard clods, stiff clay, hardpan, gravel, subsoil, brush, large roots, weeds, refuse or other deleterious material, and of reasonably uniform quality. No site mixing will be acceptable.
- B. Mechanical analysis: Topsoil and soil mixture(s) shall meet these specifications and the following mechanical analysis, and shall be proportioned by volume rather than by weight.

Sieve Size	% Passing By Dry Weight
1 inch	99-100
1/4 inch	97-99
No. 100	40-60

Materials larger than one-half inch shall be disposed of off the site or as directed by the architect. Existing leaf litter and plant material shall be excluded from topsoil and soil mix.

- C. Maximum Soluble Salts: 300 ppm.
- D. Sterilize topsoil to be used in soil mixture(s) to make free of all viable nut grass, and other undesirable weed seeds.
- E. A sample of the sand and a sample of the 80-20 sand and muck mixture shall be submitted to the Owner for approval prior to installation.
- F. The Landscape Architect has the right to reject topsoil utilized at anytime during the execution of work that does not meet specifications. Topsoil and planting soil will be tested at Owners request for suitability of horticultural use.

## 2.02 SOIL CONDITIONERS

- A. Dolomitic Limestone: Approved product, designated for agriculture use.
- B. Aluminum Sulfate: Manufacturer's standard commercial grade.
- C. Florida Peat: Suitable for plant growth, capable of sustaining vigorous plant growth, and specifically pulverized for agricultural use. Florida peat shall be free of deleterious materials that would be harmful to plant growth, shall be free of nematodes, shall be of uniform quality, and shall have a pH value between 5.5 and 6.5 (as determined in accordance with ASTM E70). Florida peat shall be sterilized to make free of all viable nut grass and other undesirable weeds.

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- D. Pesticides: As recommended by applicable Agricultural Public Agencies.
- E. Herbicides: As recommended by applicable Agricultural Public Agencies.
- F. Soil Fumigants: As recommended by applicable Agricultural Public Agencies.
- G. Fertilizer:
  - 1. Specified commercial grade fertilizer to comply with State of Florida Fertilizer laws. Chemical designation shall be as specified with at least 50% of the nitrogen derived from a non-water soluble organic source and all potash to be derived from sulfate forms for all plantings excluding sod and plantings on the lake edges.  
 Chemical designation shall be as specified with at least 80% of the nitrogen derived from a non-water-soluble organic source and all potash to be derived from sulfate forms for all sod and plantings on lake edges.  
 The following minor elements shall be included:
 

2.2% ZnO	0.25% CuO
4.0% MgO	0.005% Fe2O3
0.5% MnO	0.1% B2O3
  - a. Federal Specifications O-F0241 Type 1, Grade A or B.
  - b. The chemical designation for granular fertilizer for all plantings shall be 12-8-8.
- H. Water: Free of substances harmful to growth of plants. Water shall also be free of staining agents as well as elements causing odors.
- I. Soil Sterilizers: As recommended by State and Local Agriculture agencies.
- J. Sand: Clean, white, coarse-grained builders sand, free of substances harmful to growth of plants.
- K. Supply complete information on all analysis/test methodologies and results; laboratory certifications, manufacturer's specifications, and agency approvals to Landscape Architect prior to placement of soil conditioners. Landscape contractor shall make all modifications and improvements to soil and soil mixes deemed necessary by Landscape Architect to meet requirements herein, and to ensure proper growing medium for all plant material without cost to Owner, prior to planting.

## 2.03 PLANTING SOIL MIXES

- A. Planting soil shall be an evenly blended mixture of 80% sand/20% muck, (with any other soil conditions per Testing Agency recommendations) specified to each cubic yard of soil and thoroughly mix. Mix shall be suitable for plant growth and free

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from hard clods, stiff clay, hardpan, gravel, brush, large roots, nematodes, weeds, refuse, or other deleterious material, and of reasonably uniform quality.

- B. Palms: Planting soil mixture to be placed as backfill around the root balls of all Palms shall consist of a mixture as specified above.

Note: Bottom 1/4 of planting pit shall be backfilled with clean, coarse-grained builder's sand.

- C. Trees, Shrubs, and Groundcovers: Planting soil mixture to be placed as backfill around the root balls of all trees, shrubs, and groundcovers shall consist of a mixture of 80% sand and 20% muck.
- D. Sterilize planting soil mixtures to make free of all viable nut grass, and other undesirable weed seeds.
- E. All planting soil mixes shall be thoroughly blended to form a uniform planting medium suitable for exceptional plant growth.
- F. Test PH of existing soil and planting soil mixtures by method acceptable to current industry standards. If pH is not between 6.0 and 7.0, add approved soil conditioner/additive to bring PH within that range.
- G. Supply complete information on all analysis/test methodologies and results; laboratory certifications, manufacturer's specifications, and agency approvals and recommendations shall be made by the testing agency as to the type and quantity of soil additives required to bring the nutrient and pH to an acceptable or optimum range for planting to Landscape Architect prior to placement of soil mixtures. In addition, provide Landscape Architect with thoroughly mixed sample of all soil mixes for approval prior to placement (note PH ranges). Landscape Contractor shall make all modification and improvement to soil mixes deemed necessary by Landscape Architect to meet requirements herein, and to ensure proper growing medium for all plant material without cost to Owner, prior to planting.

### PART 3 - EXECUTION

#### 3.01 INSPECTIONS

- A. Examine areas to receive soil preparation to assure work of other trades has been completed.
- B. Verify that plants to remain undisturbed have been clearly identified and protected from injury during construction. If not, identify and protect plants to remain according to procedures set forth in Section 02490 - Trees, Plants and Groundcover. Refer to Protective Fencing on plans.
- C. Remove all construction materials and debris from all areas to be landscaped, without additional expense to Owner, prior to subsoil preparation.

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- D. Do not proceed with soil preparation until all unsatisfactory conditions are corrected.

## 3.02 SITE PREPARATION

- A. General: Within the entire area to be landscaped as shown on the drawings, the contractor shall complete the following site topsoil preparation items to eradicate all existing weed and/or natural groundcover. Initiate site topsoil preparation as stated herein and coordinate all work with the existing underground sprinkler system and electrical lines.
- B. Post Emergence Herbicide: Apply "Roundup" as manufactured by Monsanto Corp. according to manufacturer's recommended rate and specification within the limits of all areas to be landscaped not specified as existing, to be relocated, or to be removed. Protect existing plants from overspray.
- C. Pre-Emergence Herbicide: Apply "Ron-Star" or approved equal to all areas to be landscaped according to the manufacturer's recommended rate and specification. Contractor shall be responsible to re-apply appropriate herbicide to eradicate all remaining weeds and maintain a weed-free condition in all areas throughout all landscape planting operations.

## 3.03 PERFORMANCE

- A. Subsoil: Remove all debris, gravel, rocks and other deleterious material, within 12 inches of surface in areas to receive topsoil mixture, from the project site. Fine grade subsoil to assure finish grades are achieved by adding the specified depth of topsoil/planting mixture.
- B. Soil mixtures:
  - 1. Remove rocks and other objects
  - 2. Smooth soil mixtures to two 2 inches below top of surrounding paving, wherever planting beds abut paved surfaces.
  - 3. Do not compact planting soil mixture, but do wet-soak planting areas to assure proper settlement. Replace topsoil/planting soil mixture to specified grade after watering, where necessary.
  - 4. Smooth topsoil to two inches (2") below finish grade in areas to be sodded. Remove plant material not indicated as existing or be relocated in order to adhere to sod lines.
  - 5. Prior to installing planting soil, test tree pits and planting areas for percolation. If areas do not drain, it is the contractor's responsibility to assure percolation by approved means.

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6. Remove limerock or soil cement in tree planter islands within paved parking areas at the depth specified on the plans. Do not damage sub-base material for paved surfaces. Assure percolation and then backfill with approved planting soil mix.

#### 3.04 CLEAN-UP

- A. Immediately clean up spills, soil and conditioners on paved and finished surface areas.
- B. Remove debris and excess materials from project site immediately.

END OF SECTION



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## SECTION 02430

## SODDING

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Provide all labor, materials, necessary equipment and services to complete the turfgrass Sodding work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

## 1.02 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 02210 - Finish Grading
- C. Section 02400 - Landscaping
- D. Section 02410 - Shrub and Tree Relocation
- E. Section 02420 - Soil Preparation and Soil Mixes
- F. Section 02450 - Tree and Plant Protection
- G. Other Sections as applicable.

## 1.03 QUALITY ASSURANCE

- A. Standards: Federal Specifications (FS) 0-F-241c (1), Fertilizers, Mixed, Commercial.
- B. Requirements or Regulatory Agencies: Conform to the requirements of the State Department of Agriculture.

## 1.04 SUBMITTALS

- A. Growers Certifications:
  - 1. Turfgrass Sod species and location of field from which turfgrass sod is cut.
  - 2. Compliance with state and federal quarantine restrictions. Manufacturer's certification of fertilizer and herbicide composition.
  - 3. All Contractors' licenses and or certifications for the uses and or application of herbicides, pesticides and fertilizers per the State, County and governing municipality.

## 1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver turfgrass sod on pallets.
- B. Protect root system from exposure to wind or sun.
- C. Protect turfgrass sod against dehydration, contamination, and heating during transportation and delivery. Such protection shall encompass the entire period during which the turfgrass sod is in transit, being handled, or in temporary storage. Evidence of inadequate protection against drying out shall be cause for rejection.
- D. Do not deliver more turfgrass sod than can be installed within 24 hours.

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- E. Keep stored turfgrass sod moist and under shade, or covered with moistened burlap.
- F. Do not break, tear, stretch, or drop turfgrass sod. The Landscape Architect may reject sod that has been damaged by poor handling.
- G. Unless otherwise authorized by Landscape Architect, the Contractor shall notify the Landscape Architect at least 48 hours in advance of anticipated delivery date of the turfgrass sod. A legible copy of the invoice showing species and variety of the turfgrass sod included for each shipment shall be submitted to the Landscape Architect for approval.

#### 1.06 JOB CONDITIONS

- A. Begin installation of turfgrass sod after preceding related work is accepted.
- B. Environmental Requirements:
  - 1. Install turfgrass sod during months acceptable to the Landscape Architect.
  - 2. Do not install turfgrass sod on saturated soil.
- C. Protection: Erect signs and barriers against vehicular traffic on areas prepared for sod.

#### 1.07 GUARANTEE

- A. Guarantee turfgrass sod for period of twelve months after date of Final Approval.
- B. Replacement turfgrass sod under this guarantee shall be guaranteed for twelve months from the date of installation.
- C. Repair damage to other plants during turfgrass sod replacement at no cost to the Owner.

### PART 2 - PRODUCTS

#### 2.01 TURFGRASS SOD

- A. Turfgrass Sod Species: Refer to species indicated on approved landscape plans.
  - 1. Turfgrass Producers International Grade: Premium Grade Turfgrass Sod.
- B. All turfgrass sod shall conform to the following requirements:
  - 1. Furnish in pads that are not stretched, broken, or torn.
    - a. Turfgrass Sod pads shall be 18x24 inches in size (plus or minus 5%) with a 1-1/2 inch thickness (excluding top growth and thatch). Broken and torn or uneven ends will not be accepted.
  - 2. Uniformly mowed height when harvested:
    - a. Turfgrass Sod - 2 inches in height.
  - 3. Thatch: Maximum 1/2 inch uncompressed.
  - 4. Inspected and found free of diseases, nematodes, pests, and pest larvae, by entomologist of State of Florida Department of Agriculture.

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5. Weeds:
  - a. Free of horse grass, nut grass or other objectionable weeds or weed seeds.
6. Uniform in green color, leaf texture, and density.

## 2.02 WATER

- A. Free of substances harmful to plant growth, objectionable odor or staining agents.

## 2.03 FERTILIZER

- A. FS 0-F-241c(1), Grade A or B.
- B. The Chemical designation for slow release granular fertilizer with minor trace elements in addition to 12% Nitrogen, 8% Phosphorous, and 8% Potassium (Lesco or approved equal) shall have at least 50% of the nitrogen from a non-water-soluble organic source for all plantings except on lake banks.
- C. Apply and distribute by methods and rates as recommended by manufacturer.
- D. All State, County, and Municipal governmental regulations must be met including any licensing or certification requirements for uses and/or applications.

## 2.04 HERBICIDES

- A. As recommended by the State of Florida Department of Agriculture.
- B. Post-emergent Herbicide: Roundup as manufactured by Monsanto Corp. or approved equal.
- C. Pre-emergent Herbicide: Ron Star or approved equal.
- D. When next to an aquatic water body, an approved aquatic herbicide or approved equal must be utilized that will meet the State, County or Municipal requirements.
- E. All State, County and municipal governmental regulations must be met including any licensing or certification requirements for uses or applications.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Verify that excavation for turfgrass sod is 4 inches below finish grade and approved Planting/Top Soil Mix to depth of 2 or more inches for turfgrass sod (2 inches) to meet finish grade.
- B. Water dry soil to depth of 6 inches 48 hours before turfgrass sodding.

### 3.02 INSTALLATION

- A. All areas to be turfgrass sodded shall receive finish grading per Section 02210.
- B. Transplant turfgrass sod within 48 hours after harvesting.
- C. Turfgrass Sod coverage must provide 100% coverage at Final Approval.
- D. Begin turfgrass sodding at bottom of slopes. When installing turfgrass sod adjacent to a water body, install turfgrass sod to the waterline.

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- E. Lay first row of turfgrass sod in straight line with long dimension of pads parallel to slope contours.
- F. Butt side and end joints. Ensure that joints are tight, thereby eliminating the need to patch and/or top-dress to eliminate gaps.
- G. Stagger end joints in adjacent rows.
- H. Do not stretch or overlap rows.
- I. Water turfgrass sod immediately after transplanting.
- J. Top dressing for turfgrass sodded areas may be clean sand(sterilized), mined from fresh water sources. Sand mined from salt water is unacceptable. Sand shall be free from construction debris, weeds, turfgrass sod, biodegradable materials, noxious pests and diseases and other deleterious materials.

### 3.03 LAWN ESTABLISHMENT

- A. Maintenance of sodded areas shall begin immediately after so installation and shall continue until final approval. Maintenance shall consist of protecting, watering, weeding, cutting, fertilizing, repairing eroded area and re-sodding dead and or damaged turfgrass sod.
- B. Watering:
  - 1. Keep turfgrass sod moist during first week after planting.
  - 2. After first week, supplement rainfall to produce a total of 2 inches per day until final acceptance.
  - 3. It is the contractors' responsibility to water all plant material.
- C. Mowing:
  - 1. Maintain turfgrass sod between 2 inches and 2-1/2 inches in height. When turfgrass sod reaches 3 inches in height, mow to 2 inches in height.
  - 2. Do not cut off more than 40% of grass leaf in single mowing.
  - 3. Remove all turfgrass sod clippings throughout.
- D. Re-turfgrass sod areas which in the opinion of the Landscape Architect is required to establish a uniform stand of turfgrass sod.
- E. Weed Eradication:
  - 1. Apply specified or approved equal post-emergent herbicide per manufacture's rate and method of application to all areas to receive sod.
  - 2. Apply specified or approved equal pre-emergent herbicide before sodding and between second and third mowing, per manufacturer's rate and method of applications.
  - 3. Verify that the herbicide and applicant technique will not damage sod prior to application, and replace all damaged sod and any other landscaping due to herbicide at no cost to the owner.

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- F. Fertilizer: Apply fertilizer uniformly at manufacturer's recommended rate 30 days after turfgrass sodding and at three-month intervals thereafter. Water in to avoid "burning" or damaging turfgrass sod.
- G. Establishment period shall extend until final acceptance by the Owner according to the conditions of the Contract.

#### 3.04 CLEANING

- A. Immediately clean spills from paved and finished surface areas.
- B. Remove debris and excess materials from project site.
- C. Dispose of protective barricades and warning signs at termination of lawn establishments.

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## SECTION 02450

## TREE AND PLANT PROTECTION

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Provide all equipment and materials, and do all work necessary to protect existing trees and plants from damage as a result of the contractor's operations.

## 1.02 RELATED SECTIONS

- A. Section 02400 – Landscaping
- B. Section 02410 – Shrub and Tree Relocation
- C. Section 02420 – Soil Preparation and Soil Mixes
- D. Section 02430 – Sodding
- E. Other Sections as applicable.

## 1.03 REFERENCED STANDARDS

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
  - 1. International Society of Arboriculture (ISA): Guide for Establishing Values of Trees and Other Plants

## 1.04 SUBMITTALS

- A. Proposed methods, materials to be employed, and schedule for effecting tree and plant protection shall be submitted for approval.

## 1.05 DAMAGE PENALTIES

- A. If any trees or shrubs are damaged, and replacement is required, a number and diameter of trees or shrubs of the same species and variety, as specified by the Owner, shall be furnished and planted by the Contractor. The total inch diameter of the replacement trees or shrubs shall equal the diameter of the tree or shrub to be replaced. The Contractor shall not be liable for any loss or damage which occurs while the Contractor is complying with instructions given by the Owner.

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## PART 2 - PRODUCTS

### 2.01 TREE PROTECTION FENCING

- A. Tree protection fencing shall be mesh fence, 6 ft. high minimum, with 4"x4"x6' pressure treated wood posts.
- B. Posts shall be spaced 10 ft. O/C (max)
- C. Fencing other than that specified above shall be subject to the approval of the Engineer.

## PART 3 - EXECUTION

### 3.01 INSTALLATION OF FENCING

- A. Prior to the start of demolition work and clearing and grubbing operations, tree protection fencing shall be installed in accordance with the following:
  - 1. Fencing shall be installed at the tree protection areas as directed by the Engineer or Owner.
  - 2. Fencing shall be located along the cut and fill lines staked by the project surveyor and approved by the Engineer or Owner.

### 3.02 ROOT PRUNING

- A. Prune minimum necessary to remove injured twigs and branches, deadwood, and suckers. Pruning shall be done with regard to natural form of plant material or as directed by the Engineer or Owner.
- B. Do not prune prior to delivery to site.
- C. All cuts one inch diameter or larger made during pruning of any plant material shall be painted with commercial grade sealant as approved and directed by Owner.
- D. Pruning cuts shall be monitored to ensure proper healing and to prevent insect/disease infestation.
- E. Landscape Contractor shall perform all specialized shearing and or pruning as directed by the Owner and as shown on the drawings at no additional cost to the Owner.

### 3.03 CLEARING WITHIN PROTECTION AREAS

- A. Elective clearing within tree protection areas shall only be performed when and as directed by the Owner.

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### 3.04 REMOVAL OF PROTECTION

- A. Except as otherwise indicated or requested by Owner, temporary protection devices and facilities installed during course of the work shall be removed only after all work which may injure or damage trees and plants is completed.

END OF SECTION

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## SECTION 02490

## TREES, PLANTS AND GROUNDCOVER

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. Provide all labor, materials, necessary equipment and services to complete the Trees, Plants and Groundcover work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS".

## 1.02 RELATED SECTIONS

- A. Section 02200 - Earthwork
- B. Section 2210 - Finish Grading
- C. Section 2400 - Landscaping
- D. Section 2410 - Shrub and Tree Relocation
- E. Section 2420 - Soil Preparation and Soil Mixes
- F. Section 2430 - Sodding
- G. Section 02450 - Tree and Plant Protection
- H. Other Sections as applicable.

## 1.03 QUALITY ASSURANCE

- A. Inspection
  - 1. Furnish plant materials inspected by State Department of Agriculture at the growing site and tagged or otherwise approved for delivery by Landscape Architect.
  - 2. Inspection at growing site does not preclude right of rejection at project site.
- B. Furnish plant materials certified by State Department of Agriculture to be free from harmful insects or apparent disease. Verify that all plant material is free of harmful insects and disease.
- C. All plant material shall be Florida #1 or better as defined by the Florida Department of Agriculture "Codes and Standards for Nursery Plants Part I and II".

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- D. Plant material shall be shade or sun grown, and/or acclimatized depending on planting location.

## 1.04 SUBMITTALS

- A. Certificate of inspection of plant material by State Authorities.
- B. Test Reports: Analysis of samples from planting soil supply areas.
- C. Maintenance Instruction: Prior to the end of the maintenance period, furnish three copies of written maintenance instructions to the Owner's Representative and Landscape Architect for maintenance and care of installed plants throughout their full growing season.

## 1.05 DELIVERY, STORAGE AND HANDLING

- A. Inventory:
  - 1. Verify that species of plants in holding area matches that on plant list and drawings.
- B. Preparation for Delivery:
  - 1. Prune head and/or roots of all trees under direction of Landscape Architect, and as required to assure safe loading, shipment and handling without damaging the natural form and health of the plant.
  - 2. Balled and Burlapped (B&B) Plants:
    - a. Dig and prepare for shipment in manner that will not damage roots, branches, shape, and future development after replanting. Oak trees shall be root pruned 30 days prior to digging and hardened off at the supplier's nursery under mist for 30 to 60 days.
    - b. Ball with firm, natural balls of soil, per Florida Grades and Standards.
    - c. Wrap ball firmly with burlap or strong cloth and tie: ANSI Z60.1.
  - 3. Specimen Plants: Exercise care in digging, wrapping, and binding of such specimens to assure safe loading, shipment and handling.
  - 4. Bare Root Plants:
    - a. Refer to Section 02481 in its entirety for trees and palms.
- C. Delivery:
  - 1. Deliver soil conditioners (pesticides, herbicides, fumigants, and fertilizers) to site in original unopened containers bearing manufacturer's guaranteed

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chemical analysis, name, trade name, trademark, and conformance to state law. Store in designated areas only.

2. Deliver planting soil mixes and mulch in bulk with manufacturer's guaranteed mix, name, and conformance to State law. Store in designated areas only.
3. Deliver plants with legible identification labels.
  - a. Label trees, evergreens, containers of like shrubs, or groundcover plants.
  - b. State correct plant name and size indicated on Plant List.
  - c. Use durable waterproof labels with water resistant ink which will remain legible for at least 60 days.
4. Protect during transport/delivery with shade cloth or other acceptable means to prevent wind burn.
5. Protect all plant material during delivery to prevent damage or desiccation to root ball or desiccation of crown and leaves.
6. Mist root balls, tree and palm crowns during delivery and handling to ensure against drying.
7. Remove unacceptable plant material immediately from job site.

D. Storage:

1. Balled and burlapped plant stock: Deliver direct from nursery.
2. Bare root plant material: Deliver direct from supplier.
3. Protect roots of all plant material from drying or other possible injury. Keep plant root ball and crown moist at all times.
4. Store plants in shade and protect from weather. Heel in trees in a vertical position as required. Irrigate all stored plants as required.
5. Maintain and protect plant material not to be planted within four hours. Plant palms upon delivery.

E. Handling:

1. Do not drop plants.
2. Do not pick-up container or balled plants by stems or trunks.
3. Do not use chains or cables on any trees or palms. Handle using nylon

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straps, 2 inch width min.

#### 1.06 JOB CONDITIONS

- A. Planting Season: Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.
- B. Verify that all existing trees to remain are properly identified and barricaded to prevent damage under this and future construction. Landscape Contractor shall be responsible for maintaining adequate identification and barricading of all existing plant material to remain throughout the installation and required maintenance period.

#### 1.07 GUARANTEE

- A. Guarantee all plant material as for one year after substantial completion.
- B. Replacement plants under this guarantee shall be replaced within two weeks of rejection and guaranteed for twelve months from date of installation.
- C. Repair damage to other plants, lawn or construction work during plant replacement at no cost to the Owner (this includes, but is not limited to, damage to curbs, walks, roads, fences, site furnishings, etc.).

#### 1.08 SCHEDULING

- A. Install trees, shrubs, and ground cover before lawns are installed.
- B. Notify Landscape Architect of anticipated installation date at last two weeks in advance.

### PART 2 - PRODUCTS

#### 2.01 PLANT MATERIAL

- A. Well-formed and shaped, true to type, and free from disease, insects, and defects such as knots, sun-scald, windburn, injuries, abrasion or disfigurement.
- B. True to botanical and common name and variety: American Joint Committee on Horticultural Nomenclature, Standardized Plant Names, latest edition.
- C. Minimum grade of Florida No. 1 in accordance with "Grades and Standards for Nursery Plants" published by the State of Florida Department of Agriculture.

All plants not listed in "Grades and Standards for Nursery Plants", published by the Division of Plant Industry, shall conform to a Florida No. 1 as to:

- 1. Health and vitality

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2. Condition of foliage
  3. Root system
  4. Freedom from pests or mechanical damage
  5. Heavily branched and densely foliated according to the accepted normal shape.
- D. Nursery Grown: ANSI Z60.1-1969
1. Grown under climatic conditions similar to those in locality of project.
  2. Container Grown Stock:
    - a. Growing in container for minimum 30 days before delivery, with sufficient root system for container.
    - b. Not root-bound or with root systems hardened off.
  3. Use only ground cover plants well-established in removable containers, integral containers, or formed homogenous soil sections.
- E. Minimum root ball sizes for all palms shall be as delineated within "Grades and Standards for Nursery Plants, Part II, Palms and Trees", published by the State of Florida Department of Agriculture.
1. All plants not listed in Grades and Standards for Nursery Plants, published by the Division of Plant Industry, shall conform to a Florida No. 1 as to:
    - a. Health and vitality
    - b. Condition of foliage
    - c. Root system
    - d. Freedom from pests or mechanical damage
    - e. Heavily branched and densely foliated according to the accepted normal shape of the species or sport.

## 2.02 PLANTING SOIL

- A. Planting soil mixture for backfill around trees, shrubs, and groundcover shall be as specified in Section 02484 - Soil Preparation and soil mixes.
- \* Terrasorb shall be added to all backfill.

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## 2.03 SOIL CONDITIONERS

- A. Soil conditioners shall be as specified in Section 02484 - Soil Preparation and soil mixes.
  - 1. As a fertilizer supplement to Phoenix Palms, a foliar spray shall be applied one week after installation (excluding summer months) and again at three-month intervals. The chemical designation shall be 8-6-6 with at least 95% of the nitrogen derived from a water-soluble, organic source. The potash source shall be derived from sulphate forms. The following minor elements shall be included:
    - .06% MG
    - .02% B
    - .05% CU
    - 1.00% Fe
    - 1.00% Mn
- B. It shall be the responsibility of the contractor to supply and transport water to all landscape areas.

## 2.04 TOP MULCH

- A. Shredded Eucalyptus, shredded, loose, substantially free of mineral waste materials, and showing an acid reaction.
- B. Minimum organic matter by weight on an oven dry basis: 85%.
- C. Processed specifically for use as top mulch around plant beds.

## 2.05 GUYING AND STAKING MATERIAL

- A. Stakes for Tree Support:
  - 1. Construction grade lumber.
  - 2. Braces and Vertical Stakes: Nominal 2" x 2 ".
  - 3. Stakes: Nominal 2" x 4" x 4'long and pointed at one end.
  - 4. Cross Braces: Nominal 1" x 4" boards.
  - 5. All above grade stakes shall be painted with one coat of brown paint. Paint to be approved by the Owner's Representative.
- B. Guying Wires: Annealed, galvanized iron or galvanized steel 12 gauge wire. Wire shall be flagged with white or yellow surveyor tape minimum 2 per guy wire, (one flag near ground level and one flag near the middle of the length of wire).

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## C. Hose:

1. Type: New /12 inch diameter 2-ply reinforced rubber or plastic hose.
2. Minimum size: 3/4 in.

## D. Turnbuckles:

1. Turnbuckles are recommended but not required. Landscape Contractor shall be responsible for keeping taut all guyed plant material and for keeping flagging in place. One turnbuckle per guy wire is required if used.
2. Method of tightening guy wires to be approved by Landscape Architect.
3. Guying to be tightened as needed, but always within two days of when found necessary.

## 2.06 SLOPE STABILIZATION

- A. Landscape contractor shall be responsible to stabilize grades by approved methods where necessary at his own cost.
- B. Contractor shall stabilize all sloped areas 3 to 1 or greater and areas found to be required to reduce surface erosion by the Owner's Representative with "Hold Gro" Erosion Control Fabric as manufactured by Gulf States Paper Company, Tuscaloosa, Alabama or approved equal. Contractor shall install erosion control fabric according to the manufacturer's instructions.

## 2.07 DRAINAGE GRAVEL

- A. Drainage gravel shall be River Run Gravel and shall be of graduated sizes.
- B. River Run Gravel shall be no smaller than one-half inch nor larger than two inches in any direction.
- C. Gravel shall be installed as shown on drawings or to a minimum depth of 2 inches above drains, and 4 inches throughout planters.
- D. Gravel shall be washed clean and contain no chemical elements harmful to plant growth.
- E. Coral rock shall not be used.

## PART 3 - EXECUTION

## 3.01 INSPECTION

- A. Verify final grades have been established prior to beginning planting operation.

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- B. Inspect trees, shrubs, and ground cover plants for injury, insect infestation, and trees and shrubs for improper pruning.
- C. Do not begin planting of trees until deficiencies are corrected, or plants replaced.

## 3.02 LOCATION/STAKING

- A. Stake out locations for plants and outline of planting beds on ground.
- B. Do not begin excavation until stake out of plant locations and plant beds are acceptable to the Landscape Architect.
- C. All trees are to be located and staked for inspection by the Landscape Architect.

## 3.03 PREPARATION

## A. Pits and Trenches:

## 1. Shape:

- a. Vertical sides and flat bottom.
- b. Plant pits to be square or circular.

## 2. Size:

## a. For Trees:

- 1) Depth: Minimum 2 ft. from finish grade and increased as necessary to accommodate planting ball and at least 6 inch planting soil backfill below ball or roots.
- 2) Width or Diameter: 2 ft. greater than diameter of planting ball unless otherwise approved by Landscape Architect for special planting areas.

## b. For Shrubs and Groundcovers:

## 1) Depth:

- (a) 2- and 3-gallon plant material shall receive a minimum of 2" of planting soil mixture beneath the root ball.
- (b) Plant materials sized 1 gallon or less, or materials planted 24 inches O.C. or less shall receive a full 12 inches of amended planting soil mix tilled to a minimum depth of 12 inches.

NOTE: All annuals beds shall receive a full 6 inches of amended planting soil mix tilled to a minimum depth of 6 inches.

- (c) For plants not requiring soil mix the entire bed shall

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be tilled by mechanical means to a depth of 12 inches.

- 2) Width or Diameter:
  - (a) All 2- or 3-gallon material shall be placed within a minimum 13-1/2 inch planting hole, and backfilled with the specified planting soil mix.
  - (b) All plant material sized 1 gallon or less, or material planted 24 inches O.C. or less shall receive complete bed amending. That is excavation of existing soil to a minimum of 12 inches  
  
(Note: 6 inches for all annual beds) below finished soil elevation, backfilling with a minimum 3 inches of planting soil mix, and then tilling with all required amendments to a depth of not less than 12 inches.  
  
(Note: 6 inches for all annual beds. All areas to be amended in such a manner shall be highlighted on contractor's record drawings.
- 3) Bring all beds and pits to smooth, even surface conforming to established grades after full settlement has occurred.  
NOTE: Amending of and quantities of planting soil mixes as outlined above contingent with existing soil conditions.

B. Planting Beds:

1. Planting beds to a depth of 12 inch topsoil mixture.
2. Bring beds to smooth, even surface conforming to established grades after full settlement has occurred.
3. Use acceptable excess excavated topsoil to form watering berms around the plants.

- C. Drainage percolation is available. Pits which are not adequately draining shall be excavated to a depth sufficient for drainage and backfilling with gravel or crushed rock. No allowances will be made for lost plants due to improper drainage. Landscape Contractor shall replace with same species size and specification at no cost to Owner.

### 3.04 PLANTING

A. General

1. Center plant in pit or trench.
2. Face for best effect, or as directed by Landscape Architect.
3. Set plant plumb and hold rigidly in position until soil has been tamped

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firmly around planting ball.

4. Use only planting soil backfill as specified hereinbefore.
5. Place sufficient planting soil under plant to bring top of planting ball to finish grade.
6. Backfill pit or trench with planting soil in 9 in. layers and water each layer thoroughly to settle soil and work soil completely around roots and planting ball.
7. After soil settles fill pit with planting soil, water, and leave pit surface even with finish grade.
8. Topsoil Berm:
  - a. Construct a topsoil berm 6 in. above finish grade forming a watering basin with a level bottom around each palm or tree.
  - b. Size: 2 ft. greater than diameter of planting ball.
  - c. Leave saucer for 3 months or as directed by Owner's Representative. At the end of 3 months regrade area and re-mulch 12 inches out from trunk (or planting bed) for all plantings. Remove excess from basin and clean area.

B. Balled Plants (B&B) and (WB&B):

1. Place in pit on planting soil backfill material that has been hand-tamped prior to placing plant.
2. Place with burlap intact so location of ground line at top of ball is same as at nursery where grown.
3. Remove binding at top 1/2 of planting ball and lay top of burlap back 6 inches. For wire balled trees, remove wire on top of ball.
4. Do not pull wrapping from under planting ball.
5. Do not plant if planting ball is cracked, broken or showing evidence of voids before or during planting process. Replace with plant of same species, size, and specification at no cost to Owner.

C. Container-Grown Plants:

1. Can/Container Removal:
  - a. Cut cans on two sides with an acceptable can cutter.
  - b. Do not injure planting ball.

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- c. Do not cut cans with spade or ax.
  - d. Do not cut sides on knockout cans.
  - e. Carefully remove plants without injury or damage to planting ball.
  - f. After removing plant. Superficially cut edge roots with knife on three sides.
2. Dig planting holes to size as shown.
  3. Hand place plants which are in containers less than one gallon in size.
  4. Hand backfill and hand tamp leaving slight depression around bases of plants.
  5. Do not cover top of root ball.
  6. Water for settlement and replace required planting soil.

## 3.05 FERTILIZER APPLICATIONS

- A. Apply granular fertilizer at time of planting and repeat 3 months from first application. Schedule fertilization with Landscape Architect.
- B. Apply granular fertilizer at following rates, to planting bed and saucer areas around each tree, palm and shrub:
  1. Trees:
    - a. Caliper 4 inches and larger:  
5 lbs. per in. of Caliper
    - b. Caliper under 4 inches:  
3 lbs. per in. of Caliper
    - c. Shrubs: 2 lbs. per 100 sq. ft. of area.
    - d. Ground Cover Plants: 2 lbs. per 100 sq. ft. of area.
    - e. Palms: 1 lb. per in. of palm trunk Caliper.
- C. Broadcast under foliage canopy and incorporate into soil.
- D. Water immediately until root structure of plant is wet. Assure protection from fertilizer burn.
- E. Apply foliar nutrient spray at time of planting (summer excluded) and repeat three months from first application. Schedule fertilization with Landscape Architect.

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Drench palm leaves with foliar nutrient spray at the manufacturer's recommended rate to all Phoenix Palm species.

## 3.06 WEED CONTROL

- A. Apply post-emergent herbicide, "Round-up" as manufactured by Monsanto Corp. or approved equal, per manufacturer's rate and method of application to all landscape bed areas as necessary.
- B. Apply pre-emergent herbicide "Ron-Star" before mulching and again as necessary throughout required maintenance period to prevent weed seed germination.
- C. The Landscape Contractor shall verify that the herbicide and application technique will not damage plant material prior to application, and shall replace, and/or repair damage to any plant injured by herbicide application at no cost to the Owner.

## 3.07 TOP MULCHING

- A. Top mulch planting pits, trenches, and areas within two days after planting.
- B. Cover watering basin or bed evenly with 3 inch compacted depth of top mulch material.
- C. Water thoroughly, immediately after mulching.
- D. "Cut in" mulch at plant bed/sod line.
- E. Hose down planting area with fine spray to wash leaves of plants at least twice a week, or as required.
- F. Exclude mulch from annual and Bromeliad beds.

## 3.08 GUYING AND STAKING OF TREES

- A. Stake trees as shown on the drawings except where they are planted in special locations where guying is not feasible.
  - 1. Stake Installation:
    - a. Drive stakes perpendicularly, 3 feet into ground at edge of root ball. Do not drive stake through soil separator or drainage gravel if present. Do not drive stakes through root ball.
    - b. Number of stakes as shown.
  - 2. Tying and Cross-bracing:
    - a. For trees over 4 inch caliper:
      - 1) Stake and tie firmly with guy wire.

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- 2) Separate guy wire from bark by hose section.
- b. For trees under 4 inches in caliper:
  - 1) Nail cross-brace between stakes.
  - 2) Tie tree to cross-brace guy wire.
  - 3) Separate guy wire from bark by hose section.
- B. Stake palm trees as shown. Contractor shall have the option to deepen the burial of Sabal Palmetto and Washingtonia Robusta for stabilization in lieu of staking. (Note: The clear trunk height shall be required as specified on plans after installation. The Contractor shall still be responsible for and guarantee the installation against toppling and be responsible for any and all damage incurred to toppling over.)
- C. Prune minimum necessary to remove injured twigs and branches, deadwood, and suckers. Pruning shall be done with regard to natural form of plant material or as directed by the landscape Architect.
  1. Do not prune prior to delivery to site.

Note: Pruning is required for collected palms and trees per "Grades and Standards for Nursery Plants Part II, Palms and Trees" and Section 02481.
- D. All cuts one inch diameter or larger made during pruning of any plant material shall be painted with commercial grade sealant as approved and directed by Landscape Architect.
- E. Pruning cuts shall be monitored to ensure proper healing and to prevent insect/disease infestation.
- F. Landscape Contractor shall perform all specialized shearing and or pruning as directed by the Landscape Architect and as shown on the drawings at no additional cost to the Owner.

## 3.09 MAINTENANCE

- A. General:
  1. Begin maintenance immediately after each item is planted and continue until final inspection and acceptance.
  2. Maintain a health growing condition by pruning, watering, cultivating, weeding, mowing, mulching, tightening, and repairing of guys, resetting plants to proper grades or upright position, restoration of plant saucer, and furnishing and applying such sprays as necessary to keep planting free of insects and diseases.
  3. The root system of plants shall be watered at such intervals as will keep the surrounding soil in best condition for promotion of root growth and plant life.

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4. Keep planting saucers and beds free of weeds, grass and other undesired vegetation growth.
  5. Protect planting areas and plants against trespassing and damage of any kind for the duration of the maintenance period.
  6. Insect plants at least once a week and perform maintenance promptly. Replace impaired or dead plants promptly. Do not wait until near the end of the guarantee period to make replacements of plants which have become unacceptable.
  7. Remove soil ridges from around watering basins prior to end of maintenance period, as directed by the Landscape Architect.
- B. Watering: Water when soil moisture is below optimum level for best plant growth.

## 3.10 CLEANING

- A. Fill all pits/depressions in holding area and rough grade to meet surrounding elevations. Remove any organic or other debris resulting from the plant relocation process.
- B. Sweep and wash all paved surfaces.
- C. Remove planting debris from project site and holding area.
- D. Remove soil conditioners, soil mixes, gravel, etc. from project site and holding area.

END OF SECTION

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## SECTION 02510

## WALKWAYS

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Furnish all labor, materials and equipment necessary to complete all walkways and related items shown in the drawings and specified herein.

## 1.02 REFERENCES

- A. All materials and methods of construction shall conform to the requirements of the "Florida Department of Transportation, Standard Specifications for Road and Bridge Construction".

## 1.03 SUBMITTALS

- A. Submit to the Engineer, as provided in the General Conditions, shop drawings showing dimensions and layouts of sidewalks and reinforcement for concrete work.

## 1.04 RELATED WORK

- A. Site preparation is specified in Section 02200

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. Concrete Materials:
  - 1. Concrete for work under this section shall be as specified in the detail drawings.
  - 2. Expansion joint material shall be as dimensioned on the detail drawing, bituminous type meeting AASHTO spec. M-213-65.
  - 3. Joint sealant shall be hot poured rubber confirming to Fed. Spec. SS-S-164.

## 2.02 SIDEWALK FOUNDATION:

- A. Sidewalk foundation shall be as specified in the detail drawings.

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## PART 3 - EXECUTION

## 3.01 INSTALLATION

- A. Sidewalk foundation shall thoroughly compacted as specified in the detail drawings.
- B. Forms shall conform to the shapes, lines and dimensions of the members as called for on the plans and shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape.
- C. Finishing:
  - 1. Float concrete until 1/4-inch cement gel is brought to surface; steel trowel until dense surface is obtained.
  - 2. Finish with broom at right angles to alignment of work, then round all exterior edges with 3/4-inch radius after brooming.
- D. Curing:
  - 1. Cover walks with sand, sawdust or shavings and keep wet for three (3) days.
  - 2. Cover walks until final clean-up to prevent damages.
  - 3. Other methods of curing may be used subject to approval of the Engineer prior to implementation.
- E. Concrete walks shall be constructed to lines, widths, grades and thickness as shown on the Drawings, but sloped not less than 1/8-inch per foot in direction of water flow. Concrete shall be placed on thoroughly compacted subgrade, having smooth surface and kept moist until time concrete is placed.
  - 1. Isolation joints shall be installed at all intersections with other walks, at head and bottom of steps, curbs and maximum 12-foot O.C. in runs. Expansion material shall be 1/2-inch thick, but not less than 1/4-inch, by depth of concrete; 3/4-inch thick where abutting curbs and gutters, and at parking bays. Expansion material shall extend from bottom of walk slab to within 1/2-inch of top, to be filled with poured joint filler.
  - 2. Dummy grooves shall be 1/2-inch x 1/2-inch having 1/2-inch aprons.
- F. Local conditions, codes and practices shall govern all drive cuts and aprons.

## 3.02 CLEANUP

- A. At the completion of the work, Contractor shall clean up all scraps, rubbish and surplus materials caused by this work and haul them away from the site and leave job in a neat, clean and orderly condition.

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## SECTION 02513

## ASPHALTIC CONCRETE PAVING

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Furnish all labor, materials, equipment and incidentals required and place asphaltic concrete pavement in accordance with the grades and typical sections shown on the Drawings and as specified herein.

## 1.02 RELATED SECTIONS

- A. Section 02100: Site Preparation
- B. Other Sections as applicable.

## 1.03 REFERENCES

- A. The Work under this Contract shall be in strict accordance with the following codes and standards.
  - 1. The applicable municipality
  - 2. Broward County Traffic Engineering Division
  - 3. Florida Department of Transportation Specifications (FDOT)
  - 4. OSHA Safety and Health Standards for Construction.

## 1.04 SUBMITTALS

- A. Submit mix design for concurrence.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. The limerock base shall consist of limerock as specified by the FDOT Standard Specification 200.
- B. The material used for the prime coat shall conform to FDOT Standard Specification 300.
- C. Bituminous material for tack coat shall be trackless and meet the FDOT Standard Specifications 300.
- D. The materials of the asphaltic concrete surface shall conform with applicable sections of FDOT Standard Specifications for Asphaltic Concrete with the following exception:
  - 1. Recycled asphalt may not be used for the final course.

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**PART 3 - EXECUTION****3.01 INSTALLATION**

- A. 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 subgrade brought to line and grade and to a foundation of uniform compaction and supporting power. The cost of removing and replacing unsuitable material shall be included in the bid for the paving.
- B. Where specified, stabilizing shall conform to FDOT Standard Specification 160.
- C. The subgrade, in both cut and fill sections, shall be compacted to a density of not less than 98 percent of the maximum dry density as determined by the AASHTO Method T-180. If shown on the Drawings, compact subgrade to a Florida Bearing Value of 75 psi. Unless the subgrade material at the time of compacting contains sufficient moisture to permit proper compaction it shall be moistened as necessary and then compacted. Subgrade material containing excess moisture shall be permitted to dry to the proper consistency before being compacted. The subgrade shall be shaped prior to making the density tests. The required density shall be maintained until the base or pavement has been laid or until the aggregate materials for the base or pavement course have been spread in place.
- D. The minimum compacted thickness of the limerock base shall be as depicted in the detail drawings applied in four-inch maximum layers of equal depth unless otherwise depicted in the Drawings. The width of the limerock base shall be wider than the pavement as depicted in the detail drawings.
- E. Before the prime coat is applied, all loose material, dust, dirt or other foreign material which might prevent bond with existing surface shall be moved to the shoulders to the full width of the base by means of revolving brooms, mechanical sweepers, blowers, supplemented by hand sweeping or other approved methods. The glazed finish shall have been removed from the base. The prime coat shall be applied by a pressure distributor so that approximately 0.1 gallons per square yard is applied uniformly and thoroughly to a clean surface.
- F. Prior to the application of the surface course, all loose material, dust, dirt and all foreign material which might prevent proper bond with the existing surface shall be removed to the full width of the repair by means of approved mechanical sweepers and supplemented by hand sweeping if required.
- G. Apply bituminous tack coat at a rate between 0.02 and 0.10 gallons per square yard. Bituminous material shall be heated as per manufacturers' recommendations.
- H. All manhole castings, valve boxes or other utility castings within the area to be surfaced shall be adjusted to the proposed surface elevation by the Contractor. The work shall be accomplished in such a manner as to leave the casting fixed permanently in its correct position.

**3.02 PAVEMENT REPAIR**

- A. All damage to pavement as a result of the work (construction or maintenance) under this contract shall be repaired according to the plans and specifications at the

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Contractor's cost. Pavement shall be repaired to match the original surface material and original grade; however, the asphalt concrete thickness shall not be less than 1 inch. The repair shall include the preparation of the subgrade, the placing and compacting of the limerock base, the preparation and priming of the base, the placing and maintaining of the surface treatment, all as specified herein and as shown on the Drawings.

- B. The width of all repairs shall extend at least 12 inches beyond the limit of the damage or as shown on the Drawings. The edge of the pavement to be left in place shall be saw cut to a true edge and should provide a clean edge to abut the repair. The line of the repair shall be reasonably uniform with no unnecessary irregularities.

### 3.03 TESTING

- A. The Contractor shall have and pay for density, soil bearing, materials and such other tests performed as it may deem necessary. The Contractor shall fully cooperate with the testing agency. Should any test indicate that any portion of the materials or workmanship does not comply with these Specifications; a retest shall be performed at the Contractor's expense. If the retest confirms the first test, that portion of the work shall be removed and replaced or reworked at no additional cost to the Owner until satisfactory compliance is attained.

END OF SECTION



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## SECTION 02580

## PAVEMENT MARKINGS AND SIGNING

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. The Contractor shall supply all labor, equipment, materials and incidentals necessary to install pavement markings and signing in accordance with the plans and the following specifications.

## 1.02 RELATED SECTIONS

- A. Section 01340 – Shop Drawings
- B. Other Sections as applicable.

## 1.03 REFERENCED SPECIFICATIONS, CODES AND STANDARDS

- A. The American Association of State Highway and Transportation Officials (AASHTO)
- B. Federal Highway Administration - Manual of Uniform Control Devices (MUTCD)
- C. FDOT Design Standards.
- D. FDOT Standard Specifications for Road and Bridge Construction.
- E. Broward County Traffic Engineering Division (BCTED) Minimum Standards and the BCTED Pavement Markings & Signs Detail Sheet.
- F. Other standards references in the Plans.

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. All pavement markings shall be thermoplastic unless otherwise noted. Thermoplastic pavement markings shall be fully reflectorized and meet the requirements of AASHTO M249 and the FDOT Standard Specifications for Road and Bridge Construction.
- B. Traffic paint shall be fully reflectorized and meet the requirements of the FDOT Standard Specifications for Road and Bridge Construction and shall be Sherwin-Williams "Pro-Mar" Traffic Marking Paint, series B29 or Glidden Traffic paint #63228. Provide two (2) coats of paint, 5 mil minimum wet film thickness each.
- C. Pavement markings on brick or concrete pavers shall be 3M 5730/31 tape applied with contact cement per manufacturers specifications.
- D. All signs in Broward County right of way shall have type IX prismatic sheeting.

## PART 3 - EXECUTION

- A. All pavement marking and signing shall be applied in accordance with Broward County Traffic Engineering Division (BCTED) Minimum Standards and the BCTED Pavement Markings & Signs Detail Sheet for Pavement Markings, Signing and

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Geometrics as applicable.

- B. All pavement markings shall be temporarily applied as paint upon completion of construction of asphalt paving. All such temporary paint shall be replaced with thermoplastic at least 90 days, but no later than 120 days, after paving.
- C. Precast concrete bumpers (wheelstops) are required for all parking stall unless specifically stated in the Drawings. Wheelstops are to be pinned using (2) - 24" #4 bar. Wheelstops are to be painted as directed by the Owner.
- D. Parking stalls shall be marked in accordance with the typical pattern indicated on the Drawings. Stall width and depth, and drive widths indicated are minimum and must not be reduced.
- E. An FDOT approved sealer must be applied to concrete surfaces prior to application of pavement markings.
- F. Paint concrete base and base plate at all parking lot lighting standards.
- G. Blue/blue RPM's are to be placed next to fire hydrants. The location shall be the center of the adjacent lane or as directed by the utility Owner.
- H. The contractor shall refurbish pavement marking and signs damaged during construction at no additional cost.
- I. All signs and sign supports intended for removal shall be removed completely and disposed of properly.
- J. All signs to be relocated shall be properly installed in a temporary location with applicable viability and not interfere with construction prior to proper installation in the proposed location.

END OF SECTION

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## SECTION 02617

## REINFORCED CONCRETE PIPE

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Furnish all labor, materials, equipment and incidentals required and install reinforced concrete pipe (RCP.) and appurtenances as described herein.

## 1.02 RELATED SECTIONS

- A. Section 01015 – General Requirements
- B. Section 01025 – Measurement and Payment
- C. Section 01340 – Shop Drawings, Working Drawings and Samples
- D. Section 02221: Trenching, Bedding and Backfill for Pipe
- E. Other Sections as applicable

## 1.03 QUALIFICATIONS

- A. All RCP and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. All RCP shall be manufactured and installed in accordance with the best practices and methods and shall comply with these Specifications as well as the requirements of the Owner.

## 1.04 SUBMITTALS

- A. Shop drawings shall be submitted to the Engineer in accordance with Section 01340 and shall include dimensioning and technical specification for all piping to be furnished.

## 1.05 TOOLS

- A. Special tools, solvents, lubricants, and caulking compounds required for normal installation shall be furnished with the pipe.

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## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. RCP shall conform to the requirements of FDOT Standard Specifications Section 430 and Section 449. Pipe Joints shall be Rubber Gasket Joints. Pipe Joints and Rubber Gaskets shall conform to the requirements of FDOT Standard Specifications Section 942.
- B. All pipes shall be bundled or packaged in such a manner as to provide adequate protection for the ends, threaded, or flanged, during transportation from the manufacturer.
- C. Round RCP shall meet the requirements of ASTM C 76 as modified in FDOT Standard Specifications, Section 449.
- D. Elliptical RCP shall meet the requirements of ASTM C 507, Class HE-III, except for the exceptions and modifications as specified in FDOT Standard Specifications, Section 449.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Pipe and fittings shall be installed in accordance with the requirements of the Manufacturer and Section 430 of FDOT Standard Specifications, these Specifications as well as the requirements of the Owner and Broward County.
- B. Bedding shall conform to the detail drawings and specifications. Blocking under the pipe is not allowed.
- C. All pipe joints shall be wrapped per the filter fabric jacket requirements of FDOT Design Standard Index 280.
- D. All connections to existing pipe shall be performed in accordance with the concrete jacket requirements of FDOT Design Standard Index 280.

END OF SECTION

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## SECTION 2623

## GEOTEXTILE FILTER FOR SUBSURFACE DRAINAGE

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install geotextile filter for subsurface drainage and appurtenances as described herein.

## 1.02 RELATED WORK

- A. Section 01015 – General Requirements
- B. Section 01025 – Measurement and Payment
- C. Section 01340 – Shop Drawings, Working Drawings and Samples
- D. Section 02221: Trenching, Bedding and Backfill for Pipe
- E. Other Sections as applicable

## 1.03 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO) “Standard Specification for Geotextile Specification for Highway Applications” Designation M 288-00.
- B. AASHTO Test Standards:
  - 1. T 88 – Standard Test Method for Particle Size Analysis of Soils
  - 2. T 90 – Standard Test Method for Determining the Plastic Limit and Plasticity Index of Soils
  - 3. T 99 – Standard Practice for Determination of the Moisture Density Relations of Soils Using a 5.5 lb hammer and 12 in drop (Standard Proctor)
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM D 123 – Standard Terminology Relating to Geotextiles
  - 2. ASTM D 276 – Standard Test Method for Identification of Fibers in Textiles

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3. ASTM D 4354 - Practice for Sampling of Geosynthetics for Testing.
4. ASTM D 4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
5. ASTM D 4439 - Terminology for Geotextiles.
6. ASTM D 4491 - Test Methods for Water Permeability of Geotextiles by Permittivity.
7. ASTM D 4533 - Test Method for Index Trapezoid Tearing Strength of Geotextiles.
8. ASTM D 4632 - Test Method for Grab Breaking Load and Elongation of Geotextiles.
9. ASTM D 4751 - Test Method for Determining Apparent Opening Size of a Geotextile.
10. ASTM D 4759 - Practice for Determining the Specification Conformance of Geosynthetics.

#### 1.04 DESCRIPTION

- A. This section is applicable to placing a geotextile against soil to allow for long-term passage of water into a subsurface drain system while retaining the in-situ soil.

#### 1.05 QUALIFICATIONS

- A. All geotextile filter for subsurface drainage and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. All geotextile filter for subsurface drainage shall be manufactured and installed in accordance with the best practices and methods and shall comply with these Specifications as well as the requirements of the Owner and Broward County.

#### 1.06 SUBMITTALS

- A. Shop drawings (as applicable) shall be submitted to the Engineer in accordance with Section 01340 and shall include dimensioning and technical specification for all piping to be furnished.
- B. Certification:
  1. The Contractor shall provide the Engineer a certificate stating the name of the geotextile manufacturer, product name, style, chemical compositions of filaments or yarns and other pertinent information to fully describe the geotextile.

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2. The Manufacturer is responsible for establishing and maintaining a quality control program to assure compliance with the requirements of the specification. Documentation describing the quality control program shall be made available upon request.
    - a. Minimum Average Roll Value (MARV): Property value calculated as typical minus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed value reported.
    - b. Maximum Average Roll Value (MaxARV): Property value calculated as typical plus two standard deviations. Statistically, it yields a 97.7 percent degree of confidence that any sample taken during quality assurance testing will be below the value reported.
  3. The manufacturer's certificate shall state that the furnished geotextile meets MARV requirements of the specification as evaluated under the manufacturer's quality control program. A person having legal authority to bind the Manufacturer shall attest to the certificate.
- C. Manufacturing Quality Control (MQC) test results shall be provided upon request.

#### 1.07 DELIVERY, STORAGE, AND HANDLING

- A. Geotextile labeling, shipment and storage shall follow ASTM D 4873.
- B. Product labels shall clearly show the manufacturer or supplier name, style name, and roll number.
- C. Each shipping document shall include a notation certifying that the material is in accordance with the manufacturer's certificate.
- D. Each geotextile roll shall be wrapped with a material that will protect the geotextile from damage due to shipment, water, sunlight, and contaminants.
- E. The protective wrapping shall be maintained during periods of shipment and storage. If the wrapping is damaged prior to installation, the outer wrap of geotextile material must be discarded before installation.
- F. During storage, geotextile rolls shall be elevated off the ground and adequately covered to protect them from the following: Site construction damage, extended exposure to ultraviolet (UV) radiation, precipitation, chemicals that are strong acids or strong bases, flames, sparks, temperatures in excess of 71 deg C (160 deg F) and any other environmental condition that might damage the geotextile.



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**PART 2 - PRODUCTS****2.01 MANUFACTURERS**

- A.** Marafi 140N by US Fabrics, 3904 Virginia Ave, Cincinnati, Ohio 45227  
Phone (513) 271-6000
- B.** Geotextile Fabric No. 4547 by Propex Inc., Chattanooga, Tennessee, 37422 USA,  
Phone (800) 621-1273.
- C.** Approved equal

**2.02 MATERIALS, QUALITY ASSURANCE SAMPLING, TESTING, AND ACCEPTANCE****A. Geotextile**

- 1. The geotextile construction shall be polypropylene, staple fiber, needlepunched nonwoven heat set on one side to ensure consistent roll width and roll-out.
- 2. Resistant to ultraviolet degradation and to biological and chemical environments normally found in soils.
- 3. Minimum Average Roll Values:

<b>Property</b>	<b>Test Method</b>	<b>Units</b>	<b>Property Requirement</b>
Grab Tensile Strength	ASTM D 4632	N (lbs)	712 (160)
Grab Elongation	ASTM D 4632	Percent	50
Trapezoidal Tear	ASTM D 4533	N (lbs)	267 (60)
Apparent Opening Size (Maximum Average Roll Value)	ASTM D 4751	mm (US Std. Sieve)	0.212 (70)
Permittivity	ASTM D 4491	sec-1	1.3
Water Flow Rate	ASTM D 4491	l/min/m <sup>2</sup> (gpm/ft <sup>2</sup> )	4480 (110)
UV Resistance	ASTM D 4355	Percent	70 at 500 hours

- 4. Quality Control
  - a. Manufacturing Quality Control (MQC): Testing shall be performed at a laboratory accredited by GAI-LAP for tests required for the geotextile, at frequency exceeding ASTM D 4354.

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## 5. Sewing Thread (if required)

- a. Sewing thread shall consist of high strength polypropylene or polyester (Nylon shall not be used).
- b. The thread shall be of a contrasting color to the geotextile.

## 2.03 QUALITY ASSURANCE SAMPLING, TESTING, AND ACCEPTANCE

## A. Geotextile:

1. Geotextiles shall be subject to sampling and testing to verify conformance with this specification. Sampling for testing shall be in accordance with ASTM D 4354.
2. Acceptance shall be in accordance with ASTM D 4759 based on testing of either conformance samples obtained using Procedure A of ASTM D 4354, or based on manufacturer's certifications and testing of quality control samples obtained using Procedure B of ASTM D 4354.

## B. Sewn Seams (if required):

1. For seams that are to be sewn in the field, the Contractor shall provide at least a 2 meter (6 ft) length of sewn seam for sampling by the Engineer before the geotextile is installed.
2. For seams that are sewn in the factory, the Engineer shall obtain samples of the factory seams at random from and roll of geotextile that is to be used on the project.
3. If seams are to be sewn in both directions, samples of seams from both directions shall be provided.
4. For seams that are field sewn, the seams sewn for sampling shall be sewn using the same equipment and procedures as will be used for the production seams.
5. The seam assembly description shall be submitted by the Contractor along with the sample of the seam. The description shall include the seam type, sewing thread, and stitch density.

## PART 3 - EXECUTION

## 3.01 PREPARATION

- A. Trench excavation shall be completed in accordance with details of the project plans.

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- B. In all instances excavation shall be performed in such a way so as to prevent large voids from occurring in the sides and bottom of the trench.

### 3.02 INSTALLATION

- A. In the placement of the geotextile for drainage applications, the geotextile shall be placed loosely with no wrinkles or folds, and with no void spaces between the geotextile and the ground surface. Successive sheets of geotextiles shall be overlapped a minimum of 300 mm (12 in), with the upstream sheet overlapping the downstream sheet.
- B. In trenches equal to or greater than 300 mm (12 in) in width, after placing the drainage aggregate the geotextile shall be folded over the top of the backfill material in a manner to produce a minimum overlap of 300 mm (12 in). In trenches less than 300 mm (12 in), but greater than 100 mm (4 in) wide, the overlap shall be equal to the width of the trench. Where the trench is less than 100 mm (4 in) the geotextile overlap shall be sewn or otherwise bonded. All seams shall be subject to the approval of the Engineer.
- C. Should the geotextile be damaged during installation or drainage aggregate placement, a geotextile patch shall be placed over the damaged area extending beyond the damaged area a distance of 300 mm (12 in), or the specified seam overlap, whichever is greater.
- D. Placement of drainage aggregate should proceed immediately following placement of the geotextile. The geotextile should be covered with a minimum of 300 mm (12 in) of loosely placed aggregate prior to compaction. If a perforated collector pipe is to be installed in the trench, a bedding layer of drainage aggregate should be placed below the pipe, with the remainder of the aggregate placed to the minimum required construction depth.
- E. The aggregate should be compacted with vibratory equipment to a minimum of 95 percent Standard AASHTO T99 density.

### 3.03 PROTECTION

- A. Atmospheric exposure of the geotextile to the elements following lay down shall be limited to 14 days to prevent damage.

END OF SECTION

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## SECTION 02630

## STORM DRAINAGE

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. This Section provides for materials, installation and testing of storm drainage piping and structures.

## 1.02 RELATED SECTIONS

- A. Section 02617 – Reinforced Concrete Pipe
- B. Other Sections as applicable.

## 1.03 REFERENCES

- A. Standards and Specifications of the allocable local municipality.
- B. Federal Highway Administration - Manual of Uniform Control Devices (MUTCD)
- C. FDOT Design Standards.
- D. FDOT Standard Specifications for Road and Bridge Construction.
- E. Broward County Traffic Engineering Division (BCTED) Minimum Standards and the BCTED Pavement Markings & Signs Detail Sheet.
- F. The Occupational Safety and Health Administration (OSHA)The Manual of Uniform Traffic Control Devices (MUTCD).ASTM C487 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections

## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. All drainage structures, including headwalls, shall be precast concrete as manufactured by U.S. Precast Corporation, or approved equal. Block catch basins will be allowed only with approval of the Engineer. The minimum wall and slab thickness shall be 8 inches and the minimum reinforcing shall be No. 4 bars at 12 inches each way, unless otherwise indicated.

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- B. Concrete for all drainage structures, including headwalls, shall be FDOT Class II in accordance with Standard Specification 346 and ASTM C487.
- C. Reinforced concrete pipe (RCP) for storm sewer shall conform to ASTM L70-79, Table III, Wall B, or latest revision. All pipes shall have modified tongue and groove joints, and have rubber gaskets, unless otherwise specified.
- D. Corrugated aluminum pipe (CAP) shall be helical type, manufactured in conformance with ASTM B-209 and AASHTO M-193, as manufactured by Kaiser Aluminum, Inc., or approved equal. The corrugation pattern and gauge shall be as follows:

DIAMETER	CORRUGATION	GAUGE
12" x 21"	2 2/3" x 1/2"	16
24" x 27"	2 2/3" x 1/2"	16
30"	2 2/3" x 1 1/2"	14
36" x 54"	3" x 1"	14
60" x 72"	3" x 1"	12

- E. Pipe couplings for CAP shall be 12" wide (minimum), 24" for 60" diameter or larger. Split bands of the same alloy as the pipe, and may be one gauge lighter than the pipe. Polyurethane or other manufacturer supplied sealant shall be used with the couplings.
- F. Corrugated polyethylene pipe shall be manufactured in accordance with ASTM F405 and AASHTO M252 as manufactured by ADS, or approved equal.
- G. The rip rap headwalls, which will be provided on an as needed basis, shall be constructed of sand/cement with a minimum 2000 psi compressive strength to meet FDOT standards. The bags shall be permeable burlap, cloth or paper. A concrete cap shall be poured on top of sand/cement rip rap bags with a minimum 3000 psi compression strength.

## PART 3 - EXECUTION

## 3.01 INSTALLATION

- A. Pipe and fittings shall be installed in accordance with the requirements of the manufacturer.
- B. All pipe shall be carefully laid true to line and grade. Any deflection proposed by the Contractor must be approved by the Engineer prior to placement.
- C. Pipe shall be placed on stable granular material, free of rock formation, other foreign formations, and in accordance with the detail drawings.
- D. Blocking under pipe is not permitted.

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- E. The Contractor shall avoid unnecessary crossing by heavy construction vehicles during construction.
- F. The contractor shall notify the local water control district at least 24 hours prior to the start of the construction and inspection

### 3.02 STORM DRAINAGE PRE-TREATMENT/EXFILTRATION SYSTEM

- A. Any conflict with existing or proposed utilities shall immediately be brought to the attention of the Engineer. Any impermeable material encountered in the excavation for the drainfield shall be removed as directed by the Engineer.
- B. The trench liner shall be used on the sides and top of drainfield ditch or in accordance with the local drainage authority. The top section of the material shall be lapped a minimum of 24 inches and the Contractor shall take extreme care in backfilling to avoid bunching of the fabric.
- C. Perforated pipe within the drainfield shall have 3/8 inch perforations 360° around the pipe with approximately 120 perforations per foot of pipe.
- D. Perforated pipe shall terminate five feet (5') from the drainage structure. The remaining five feet (5') shall be non-perforated pipe.
- E. Pipes shall terminate at an additional catch basin or a clean-out structure.

### 3.03 TESTING

- A. All drainage piping shall be lamped to the satisfaction of the Engineer prior to acceptance.
- B. At the conclusion of the Work, the Contractor shall thoroughly clean all of the pipe and structures, whether existing or proposed, within the area of work or as directed by the Engineer. All debris, obstructions, defective pipes, brick and mortar, joints, etc. shall be cleaned and repaired prior to acceptance.
- C. All drainage pipes and structures shall be maintained in working condition and kept clean until contract close-out.

END OF SECTION

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## SECTION 02631

## HIGH DENSITY POLYETHYLENE (HDPE) PIPE

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install High Density Polyethylene pipe (HDPE) and appurtenances as described herein.

## 1.02 RELATED WORK

- A. Section 01015 – General Requirements
- B. Section 01025 – Measurement and Payment
- C. Section 01340 – Shop Drawings, Working Drawings and Samples
- D. Section 02221: Trenching, Bedding and Backfill for Pipe
- E. Other Sections as applicable

## 1.03 DESCRIPTION OF SYSTEM

- A. A black high-density polyethylene corrugated pipe with an integrally formed smooth invert used to convey storm water. Corrugation shall be either annular or spiral.
- B. HDPE drainage piping shall be installed as indicated on the Drawings.

## 1.04 QUALIFICATIONS

- A. All HDPE and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished. All HDPE shall be manufactured and installed in accordance with the best practices and methods and shall comply with these Specifications as well as the requirements of the Owner and Broward County.

## 1.05 SUBMITTALS

- A. Shop drawings shall be submitted to the Engineer in accordance with Section 01340 and shall include dimensioning and technical specification for all piping to be furnished.

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**1.06 INSPECTION**

- A. The manufacturer shall inspect all pipe joints for out-of-roundness and pipe ends for squareness. The manufacturer shall furnish to the Engineer a notarized affidavit stating all pipe meets the requirements of AASHTO M252 and M294.
- B. The quality of the finished pipe shall be subject to inspection and approval by the Engineer and other representatives of the Owner. Pipe rejected after delivery shall be marked for identification and shall be removed from the project at once.

**1.07 TOOLS**

- A. Special tools, solvents, lubricants, and sealing compounds, etc. required for normal installation shall be furnished with the pipe.

**PART 2 - PRODUCTS****2.01 HIGH DENSITY POLYETHYLENE PIPE**

- A. Pipe shall comply with the requirements for test methods, dimensions, and markings found in AASHTO Designations M252 and M294. Pipe and fittings shall be made from virgin PE compounds which conform with the requirements of cell class 324420C as defined and described in ASTM D3350.
- B. The minimum parallel plate stiffness values, when tested in accordance with ASTM D2412, shall be as follows:

Diameter	Pipe Stiffness	Diameter	Pipe Stiffness
4" (100 mm)	50 psi (340 kN/m <sup>2</sup> )	18" (450 mm)	40 psi (280 kN/m <sup>2</sup> )
6" (100 mm)	50 psi (340 kN/m <sup>2</sup> )	24" (600 mm)	34 psi (240 kN/m <sup>2</sup> )
8" (100 mm)	50 psi (340 kN/m <sup>2</sup> )	30" (750 mm)	28 psi (200 kN/m <sup>2</sup> )
10" (100 mm)	50 psi (340 kN/m <sup>2</sup> )	36" (900 mm)	22 psi (150 kN/m <sup>2</sup> )
12" (100 mm)	50 psi (340 kN/m <sup>2</sup> )	42" (1050 mm)	19 psi (140 kN/m <sup>2</sup> )
15" (100 mm)	42 psi (290 kN/m <sup>2</sup> )	48" (1200 mm)	17 psi (120 kN/m <sup>2</sup> )

**2.02 PIPE FITTINGS**

- A. The fittings shall not reduce or impair the overall integrity or function of the pipeline. Fittings may be either molded or fabricated. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as tees, wyes, and end caps. These fittings

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may be installed by various methods, such as snap-on, screw-on, bell and spigot, and wrap around. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Only fittings supplied or recommended by the pipe manufacturer shall be used. A neoprene or rubber gasket shall be supplied at each coupling joint.

## 2.03 MANHOLE CONNECTIONS

- A. HDPE pipe shall be grouted into the concrete manhole wall using an approved non-shrink grout.

## PART 3 - EXECUTION

### 3.01 INSTALLATION, HANDLING PIPE AND FITTINGS

- A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe. Pipe and fittings shall not be dropped. All pipe and fittings shall be examined before laying, and no piece shall be installed which is found to be defective. Any damage to the pipe shall be cause to reject it.
- B. All pipe and fittings shall be subjected to a careful inspection prior to being installed.
- C. If any defective pipe is discovered after it has been installed it shall be removed and replaced with a sound pipe in a satisfactory manner at no additional expense to the Owner. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when installed, shall conform to the lines and grades required.

END OF SECTION

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## SECTION 02632

## SYNTHETIC TURF GRASS DRAINAGE SYSTEM

## PART 1 - GENERAL

## 1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install a synthetic turf grass drainage system and appurtenances as depicted in the Drawings and specified herein.

## 1.02 RELATED SECTIONS

- A. Section 01340 – Shop Drawings, Working Drawings and Samples
- B. Section 02221 - Trenching, Bedding and Backfill for Pipe
- C. Section 02863 - Synthetic Turf Grass System
- D. Other Sections as applicable

## 1.03 REFERENCES

- A. ASTM D-3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

## 1.04 DESCRIPTION OF SYSTEM

- A. This work shall include materials and installation of a drainage system comprised of high-density polyethylene (HDPE) collector drains install in drainage rock and wrapped in geo-fabric discharging to HDPE mainlines which are tied-into drainage catch basins.
- B. The quantities of drainage system materials as shown on the plans may be increased or decreased based on actual site conditions that occur during construction of the project. Such variations in quantity is considered incidental to the scope of the drainage system.

## 1.05 QUALIFICATIONS

- A. All synthetic turf grass drainage system materials and appurtenances shall be furnished by a single manufacturer who is fully experienced, reputable, and qualified in the manufacture of the items to be furnished for a minimum of five (5) years.

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- B. The synthetic turf grass drainage system manufacturer shall have a minimum of three similar installations in the State of Florida.
- C. The synthetic turf grass drainage system manufacturer shall be Multi-Flow Drainage Systems by Varicor Technologies or approved equal.

## 1.06 SUBMITTALS

- A. Shop drawings shall be submitted to the Engineer in accordance with Section 01340 and shall include dimensioning and technical specification for all piping to be furnished.

## 1.07 INSPECTION

- A. The manufacturer shall inspect all pipe joints for out-of-roundness and pipe ends for squareness.
- B. The manufacturer shall furnish to the Engineer a notarized affidavit stating all pipe meets the requirements of this specification.
- C. The quality of the finished pipe & associated material shall be subject to inspection and approval by the Engineer and other representatives of the Owner.
- D. Pipe & associated material rejected after delivery shall be marked for identification and shall be removed from the project at once.

## 1.08 TOOLS

- A. Special tools, solvents, lubricants, and sealing compounds, etc. required for normal installation shall be furnished with the pipe and associated materials.

## PART 2 - PRODUCTS

## 2.01 SYNTHETIC TURF GRASS DRAINAGE SYSTEM

- A. The collection system shall be of a flexible, prefabricated, rounded rectangular shaped, composite product, consisting of an inner core described in B (Below) and an outer geotextile wrap. The outer wrap shall function only as a filter and shall not be a structural component of the core.
- B. The synthetic turf grass drainage system shall be manufactured using virgin high density polyethylene (HDPE) meeting the minimum requirements of cell classification 424420C as defined and described in ASTM D3350, except that the carbon black content is from 2% to 4%.
- C. The collection system core shall be constructed using interconnected corrugated pipes that define and provide the flow channels and structural integrity of the

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collection system. Perforations shall be evenly distributed on both faces of the core. The core of the collection system shall conform to the following physical property requirements:

1.	Thickness, inches	ASTM D-1777	1.0
2.	Outflow Rate, gpm/ft*	ASTM D-4716	6-inch – 17 12-inch – 29 18-inch - 45
3.	Compressive Strength, psf	ASTM D-1621  (modified sand method)	6000
4.	Perforations / sq. ft. --- >		300

- D. The connectors used with the collection system shall be of a snap together design. In no case shall any product be joined without the use of the manufacturer's connector designed specifically for the purpose.

## 2.02 PIPE FITTINGS

- A. The fittings shall not reduce or impair the overall integrity or function of the pipeline. Fittings may be either molded or fabricated.
- B. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as tees, wyes, and end caps.
- C. These fittings may be installed by various methods, such as snap-on, screw-on, bell and spigot, and wrap around. Couplings shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints.
- D. Only fittings supplied or recommended by the pipe manufacturer shall be used. A neoprene or rubber gasket shall be supplied at each coupling joint.

## 2.03 DRAINAGE CONNECTIONS

- A. Drainage pipe connections shall be performed by core-drilling as indicated in the Drawings.
- B. Drainage pipe shall be grouted into the concrete drainage structures using an approved non-shrink grout.
- C. All pipe connections shall be sealed inside and out.

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## PART 3 - EXECUTION

## 3.01 INSTALLATION AND CONSTRUCTION REQUIREMENTS

- A. The collection system shall be installed in a horizontal orientation and placed directly upon the geotextile soil separator.
- B. The collection system and the transport pipe shall be installed per the lines and grades shown on the plans.
- C. The collection system shall be securely connected to the transport pipe using connectors approved by the manufacturer.
- D. All fitting and connectors shall be installed in accordance with the manufacturer's recommendations.
- E. Any damaged collection system or transport pipe shall be replaced or repaired by splicing in an undamaged section of like material.

END OF SECTION

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## SECTION 02863

## SYNTHETIC TURF GRASS SYSTEM

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Furnish all labor, materials, tools and equipment necessary to install the synthetic turf grass system as indicated on the Drawings and as specified herein.
- B. The installation of all synthetic turf grass shall be performed in strict accordance with the manufacturer's installation instructions.
- C. The synthetic turf grass and the infill shall be provided by the synthetic turf grass manufacturer.

## 1.02 RELATED SECTIONS

- A. Section 01050 – Field Engineering and Surveying
- B. Section 01340 – Shop Drawings, Working Drawings and Samples
- C. Section 01410 – Materials and Installation Testing
- D. Section 02210 – Finish Grading
- E. Section 02632 – Synthetic Turf Grass Drainage System
- F. Other Sections as Applicable

## 1.03 REFERENCES

At a minimum, and in addition to other industry reference standards, the following reference standards must be met:

- A. ASTM Standard Test Methods
  - 1. D1335 Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings
  - 2. D 1577 Standard Test Method for Linear Density of Textile Fibers
  - 3. D 2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
  - 4. D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
  - 5. D 5034 Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)
  - 6. D 5848 Standard Test Method for Mass per Unit Area of Pile Yarn Floor Coverings
  - 7. F 355-A Standard Test Method for Impact Attenuation of Playing Surface Systems and Materials
  - 8. F 1015 Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces

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9. F 1551 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials
10. F 1936 Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field.
11. F 2898 Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-Confined Area Flood Test Method
- B. The Fédération Internationale de Football Association (FIFA)
- C. 2001 NCAA and/or National Federation Football Rules and Interpretations; FIFA Rules of the Game. Where discrepancies are noted, the rules of the NCAA shall apply.
- D. International Artificial Turf Standards and test methods.
- E. FDOT Standard Specifications for Road and Bridge Construction
- F. City of Fort Lauderdale, Broward County and Florida, "City Code".

## 1.04 SUBMITTALS

- A. Prior to construction, Contractor shall submit the following:
  1. Shop Drawings in accordance with Section 01340 – Shop Drawings, Working Drawings and Samples, including, at a minimum the following:
    - a. Field Layout
    - b. Field Marking Plans (colorized) and details as noted on the construction plans.
    - c. Roll/Seaming Layout
    - d. Methods of attachment, field openings and perimeter conditions.
  2. Quarry certifications demonstrating compliance with the material specifications for the drainage base stone and finishing stone.
  3. Synthetic Turf Grass
    - a. Submit two samples, minimum of 6x6 inch in size, illustrating details of finished product.
    - b. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.
  4. Infill Material
    - a. Submit a detail indicating the number and thickness of the layers of the infill materials and the type and percentage of materials used.
    - b. Sand/S.B.R. Mix – provide the type and source of the sand and S.B.R. material included, the percentages of each used and certification of the grade and quality of the S.B.R. material used.
    - c. Organic Mix - Provide a list of all organic materials included, the percentage of each used and certification of the grade and quality of the organic based infill material used.

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- d. Heat reducing organic composite mix – provide a list of the type and source of the organic composite infill material included, and the thickness and percentages of the material in the top layer of the infill system, along with the types of materials and thickness of the layers under the top layer, as well as the certification of the grade and quality of all the infill materials used.
- e. Documentation shall be provided for the proposed heat reducing composite infill which demonstrate heat reducing properties with testing results.

## PART 2 - PRODUCTS

## 2.01 SYNTHETIC TURF GRASS

- A. Synthetic turf grass shall consist of a carpet made of slit-film, UV resistant, polyethylene fibers tufted into a fibrous, porous backing.
- B. The installed Synthetic turf grass system shall meet the International Artificial Turf Standards and have the following properties:

<b>Standard</b>	<b>Property</b>	<b>Specification</b>
ASTM F 1551	Pile Height	2-1/4" nominal, minimum*
ASTM D 1577	Fiber Denier	9000 <u>minimum</u>
ASTM D 5848	Pile Weight	36 oz./sq. yd. <u>minimum</u>
ASTM D 1335	Tuft Bind	8 lbs. (with infill)
ASTM D 5034	Grab Tear (width)	200 lbs./force
ASTM D 5034	Grab Tear (length)	250 lbs./force
ASTM F 1015	Relative Abrasiveness Index	<25
ASTM D 4491	Carpet Permeability	>15 inches /hour
ASTM F 355 & F 1936	Impact Attenuation, G-Max	80 Minimum 200 Maximum Less than 125 at Acceptance

\*Pile height may be greater as determined by synthetic turf grass manufacturer if need to achieve required G-Max values given the infill system, with the approval of the Owner and Engineer.

- C. The carpet shall consist of fibers tufted into a primary backing with a secondary backing.
  - 1. The carpet's primary backing shall be a double-layered polypropylene fabric treated with UV inhibitors or per listed approved vendor's specifications.
  - 2. The secondary coating shall consist of an application of porous, heat-activated urethane to permanently lock the fiber tufts in place. Perforated (i.e. with punched or burned holes) backed carpet shall be acceptable as an alternate, per manufacturer's recommendations.
- D. The carpet shall be furnished in 15' wide rolls or the metric equivalent. Rolls shall be long enough to go from sideline to sideline without splicing. The perimeter white line shall be tufted into the individual sideline rolls. Head seams, other than at sidelines, will not be acceptable.

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- E. Non-tufted or inlaid lines and markings shall be painted with paint approved by the Synthetic Turf Grass Manufacturer.
- F. Thread for sewing seams of turf shall be UV resistant and as recommended by the Synthetic Turf Grass Manufacturer.
- G. Glue and seaming fabric for inlaying lines and markings shall be as recommended by the Synthetic Turf Grass Manufacturer.
- H. Manufacturer Qualifications:
  - 1. The synthetic turf grass manufacturer must have installed a minimum of 5 fields in the State of Florida of 40,000 square feet or more within the last five (5) years in service for a minimum of two (2) years with the same products being proposed for this field.
  - 2. The synthetic turf grass manufacturer must be ISO 9000 certified.
- I. The synthetic turf grass shall be provided by one of the following manufacturers:
  - 1. Field Turf
  - 2. Astro Turf
  - 3. A Turf
  - 4. UBU Sports
  - 5. Shaw Sports Turf
  - 6. Limonta Sport

## 2.02 SAND/S.B.R. INFILL

- A. The infill shall consist of a resilient layered granular system, comprising selected and graded sand and S.B.R. crumb rubber.
- B. The combination of sand and S.B.R shall be installed in the ratio as determined by the Synthetic Turf Grass manufacturer which yields the required G-Max values and has a minimum combined weight of 8.0 pounds per square foot.
  - 1. The addition of a mat is at the discretion of the synthetic turf grass manufacturer and shall not contribute to the combined weight or G-Max value.
  - 2. The addition of a mat must be approved by the Owner and Engineer.
- C. The infill materials shall be approved and supplied by the synthetic turf manufacturer.
- D. System Qualifications:
  - 1. The infill system must meet the standards and testing criteria for synthetic turf fields and applied as such with at least 5 fields installed in the state of Florida within the last five (5) years.
  - 2. The infill system must prove reliable by having been installed in synthetic turf fields for commercial use for a minimum of two (2) years.

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3. The use of infill system must be proven by having been utilized in a minimum of 25 full-sized synthetic turf fields within the United States with no incidence of failure or replacement.

## 2.03 ORGANIC INFILL

- A. The infill shall consist of a resilient layered system, comprised of selected organic infill(s) and sand, including but not limited to sand/cork or sand/cork/coconut fiber.
- B. The combination of sand and organic infill(s) shall be installed in the ratio and combined weight as determined by the Synthetic Turf Grass manufacturer which yields the required G-Max values.
  1. The addition of a mat is at the discretion of the synthetic turf grass manufacturer and shall not contribute to the combined weight or G-Max value.
  2. The addition of a mat must be approved by the Owner and Engineer.
- C. The infill materials shall be approved and supplied by the synthetic turf manufacturer.
- D. Organic infill(s) shall be 100% organic and not chemically treated.
- E. The organic infill must be mineral free to avoid abrasiveness and compaction.
- F. System Qualifications:
  1. The organic infill system must meet the standards and testing criteria for synthetic turf fields and applied as such with at least one (1) field installed in the state of Florida
  2. The organic infill must prove reliable by having been installed in synthetic turf for commercial use for a minimum of 2 years.
  3. The utility of the organic infill must be proven by having been utilized in a minimum of 5 full-sized synthetic turf fields within the United States with no incidence of failure or replacement.
- G. End of Life Recyclability:
  1. The organic infill must be 100% organic and natural for utilization after removal from the turf as a top-dressing for natural grass or to be tilled into natural soil.
  2. The organic infill must be 100% organic and natural as to not contaminate the synthetic turf after its full life cycle with any inorganic components that would prevent it from re-purposing.

## 2.04 HEAT REDUCING ORGANIC COMPOSITE INFILL

- A. The infill system shall consist of resilient layered granular system, comprising of selected and graded sand, or a mixture of sand and S.B.R. crumb rubber or similar material, and a top layer of an organic composite material with heat reducing properties.
  1. Documentation shall be provided for the proposed heat reducing composite

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infill which demonstrate heat reducing properties with testing results.

- B. The combination of infill materials shall be installed in the ratio and combined weight as determined by the Synthetic Turf Grass manufacturer which yields the required G-Max values.
  - 1. The addition of a mat is at the discretion of the synthetic turf grass manufacturer and shall not contribute to the combined weight or G-Max value.
  - 2. The addition of a mat must be approved by the Owner and Engineer.
- C. The infill materials shall be approved and supplied by the synthetic turf manufacturer.
- D. The organic composite material shall be comprised of an extruded cork composite (coated or treated cork), or an approved equal composite infill material proven in the synthetic turf industry.
- E. System Qualifications:
  - 1. The infill system must meet the standards and testing criteria for synthetic turf fields and applied as such with at least one (1) field installed in the state of Florida.
  - 2. The infill system must prove reliable by having been installed in synthetic turf fields for commercial use for a minimum of two (2) years
  - 3. The use of the infill system must be proven by having been utilized in a minimum of five (5) fullsized synthetic turf fields within the United States with no incidence of failure or replacement.

## 2.05 FIELD GROOMER

- A. Provide one field grooming (sweeping) device for the maintenance of the synthetic turf grass system.
- B. Field groomer shall have adjustable tine rake & brush, consisting of four rows of spring tines ahead of a six-foot-wide stiff brush. Tines and brush are height adjustable to be utilized independently or in tandem.
- C. The field groomer shall include a towing mechanism compatible with a field utility vehicle, i.e. Taro Sand Pro, John Deere Gator, Club Car.
- D. The field groomer shall be the approved by the synthetic turf grass manufacturer.
- E. The Synthetic Turf grass manufacturer shall train the City's maintenance staff in the use of the field groomer.

## 2.06 SYNTHETIC TURF PERIMETER EDGE ATTACHMENT

- A. As required by the Synthetic Turf Grass manufacturer.

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify that area is ready to receive work, and excavation, dimensions, and elevations are as indicated on Construction plans.

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- B. Beginning of installation means acceptance of existing conditions.
- C. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the City prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.

### 3.02 PROTECTION OF WORK

- A. Make provisions for, and take the necessary precautions to protect existing and new work from damage during the entire life of the project.
- B. It is the responsibility of the Contractor to protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic and to alert the City to the presence or likelihood of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.
- C. Protect soils from excessive moisture. During periods of prolonged precipitation, take aggressive steps to avoid over-saturation, erosion, or homogenization of soils by covering with protective plastic sheeting, collection and controlled dewatering, detention for sediment removal, and allowing excessively wetted soils to remain fallow until approved by the City as appropriate for continued work.
- D. Apply supplemental moisture to overly dry soils.
- E. Do not operate heavy equipment near excavations where pipe, trench wall or cut-slope failure may result.

### 3.03 QUALITY ASSURANCE

- A. Laser fine grading is mandatory.
- B. The Contractor is responsible for verifying the quality of the work and shall perform compaction and density tests on request of the City to check compliance with these specifications. A copy of the test reports shall be furnished to the City.

### 3.04 PROJECT/SITE CONDITIONS

- A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the City.

### 3.05 PREPARATION OF SUB-GRADE

- A. The general extent of the drainage and sub-grade construction work is shown on the Drawings and includes, but is not limited to, the following:
  - 1. The sub-grade must have a minimum slope of 0.5% from the longitudinal center of the field towards the sidelines.
  - 2. The sub-grade must be compacted in both directions to attain the specified compaction rate.
  - 3. The soil bed or sub-grade must be prepared to tolerances of not more than ½" from design grade to allow for even drainage.
  - 4. Laser fine grading is mandatory.

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- B. Using laser operation survey instruments, the Contractor shall verify that subgrade has been prepared according to specification with regard to compaction, grade tolerances and is free of debris to beginning work.
- C. The field sub-grade shall be final graded to form a smooth, clean basin free of any debris and/or loose soil to the tolerances. The stone drainage base shall not be installed until all sub-grading and drainage are completed in order to avoid the mixing of other soil and materials with the drainage materials. Laser fine grading is mandatory.

### 3.06 SUB-GRADE VERIFICATION

- A. Upon installation of the sub-drainage system, the Contractor shall submit to the City for review, a sub-grade conformance survey, performed by a licensed surveyor, before any placement of the drainage stone.
  - 1. Elevations shall be taken on a 25-foot grid over the sub-grade of the entire playing field.
  - 2. Tolerance for Sub-Grade: Sub-grade shall be verified using laser-operation survey instruments. Laser fine grading is mandatory. Finish Grade must be within ½" of an inch plus or minus from the elevations shown on the construction plans. In addition, the sub-grade shall be measured so that no point within the 25-foot grid deviating more than .05 % from any other point within the 25-foot grid.
- B. After review, the conformance survey will be returned to Contractor with areas out of tolerance noted for connection. Contractor will be required to correct areas out of tolerance and certify that connections have been made prior to base drainage stone installation.

### 3.07 SUB-GRADE CERTIFICATION

- A. Prior to installation of collection pipes or field aggregate, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the sub-grade meets the compaction, planarity and permeability requirements.

### 3.08 INSTALLATION OF SYNTHETIC TURF PERIMETER EDGE

- A. Install synthetic turf perimeter edge attachment system in accordance with manufacturer's instructions and as approved by the City.

### 3.09 PREPARATION OF FIELD BASE AGGREGATE (FINISH AND BASE DRAINAGE STONE)

- A. Prior to commencing the base aggregate, install the horizontal multifold pipes and geotextile to the satisfaction of the City and the Engineer.
  - 1. Care should be taken to keep machinery on the base stone without damaging the drainage pipe or fabric avoid twisting and turning on the stone base.
  - 2. Do not operate machinery directly on approved geotextile.
- B. The stone shall be washed at the quarry and damp when transported to site and shall be kept damp during installation, to minimize segregation of the materials.

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- C. Base drainage stone throughout the field shall be carefully smoothed and compacted. The entire playing field surface shall then be checked for irregularities and adjusted to a uniform grade per the grading plans detailed on the construction plans, as follows:
1. Place approved Base Drainage Stone in a manner that will minimize disturbance to the subgrade geotextile installation. Use only approved transport methods for placement of materials.
  2. Thoroughly cover subgrade geotextile with sufficient Base Drainage Stone to evenly distribute compressive forces of placement operation in 6" maximum lifts.
  3. Grade the base stone base with a laser equipped grading rubber tire tractor with non-ag tires.
  4. Roll the base stone with a double drum non-vibratory roller to the satisfaction of the Engineer. The base stone must be laid and compacted without damaging or disturbing the sub-grade, geotextile or multi flow drains
  5. Once the finishing stone is on grade utilize a water truck or large hoses to water the entire base very thoroughly to settle the base drainage interface.
  6. Then laser grade the finishing stone again and roll with Steel Double Drum Roller thoroughly in two directions.
- D. Place approved Finishing Stone in a manner that will minimize disturbance to the approved Base Drainage Stone installation. Use only approved transport methods for placement of materials.
1. Spread a single lift of Finishing Stone to the depth specified, allowing for compaction. Perform compaction with a static roller of sufficient weight to insure proper compaction to the satisfaction of the Engineer.
  2. The final lift of aggregate should not be more than 2 inches deep.
  3. Provide complete compaction to the lines, grades, and slopes indicated on the Construction plans.

**3.10 FIELD BASE AGGREGATE VERIFICATION**

- A. The Contractor shall submit to the City for review, a field base aggregate verification survey,
1. Conformance Survey of Finish Stone: The Contractor shall perform a conformance survey by a licensed surveyor, before any placement of the synthetic turf, on a 25-foot grid over the finish stone of the entire playing field. Provide spot elevations, based on the established benchmark, on the Construction plans, at each grid intersection and at the intersection of the perimeter and the grid. Submit a drawing showing the results of the above survey. The drawing shall include the scaled grid, all spot elevations and show contours at 1/4" intervals of variation from the ideal planes. Interpolate spot elevations as required to provide contours.



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2. The City will require three (3) working days to review survey. After review, the survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to turf installation.
3. Tolerance for Finish Stone: Finish stone elevations shall be verified using laser-operation survey instruments. Finish Grade must be within  $\frac{1}{4}$ " of an inch plus or minus from the elevations shown on the plans. In addition, the finish stone shall be measured so that no point within the 25-foot grid deviates more than  $\frac{1}{2}$ " of an inch from any other point within the 25-foot grid.

### 3.11 FIELD BASE AGGREGATE CERTIFICATION

- A. Prior to installation of the synthetic turf, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the field base aggregate meets the compaction, planarity and permeability requirements.

### 3.12 SYNTHETIC TURF GRASS SYSTEM INSTALLATION

- A. Pre-Installation Meeting
  1. Convene one week before starting installation of the synthetic turf grass system.
- B. General
  1. Only trained technicians, skilled in the installation of athletic caliber synthetic turf grass systems, working under the direct supervision of the approved installer supervisors, shall undertake any cutting, sewing, gluing, shearing, topdressing or brushing operations.
  2. The designated Supervisory personnel on the project must be certified, in writing by the Synthetic Turf Grass Manufacturer, as competent in the installation of this material, including sewing seams and proper installation of the Infill mixture.
  3. All designs, markings, layouts, and materials shall conform to all currently applicable National Federation of High School Association rules and other domestic and international standards that may apply to this type of synthetic turf grass installation and as detailed on the construction plans.
- C. Turf Grass Installation
  1. Install shall be in accordance with Synthetic Turf Grass Manufacturer's instructions and the approved shop drawings. Any variance from these requirements must be accepted in writing, by the Synthetic Turf Grass Manufacturer's onsite representative, and submitted to the City, verifying that the changes do not in any way affect the warranty. Infill materials shall be approved by the Synthetic turf grass manufacturer and installed in accordance with the Synthetic Turf Grass Manufacturer's standard procedures.

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2. The carpet rolls are to be installed directly over the properly prepared aggregate base. Extreme care should be taken to avoid disturbing the aggregate base, both in regard to compaction and planarity.
3. The full width rolls shall be laid out across the field. Turf shall be of sufficient length to permit full cross-field installation from sideline to sideline. No head or cross seams will be allowed in the main playing area between the sidelines. Utilizing standard state of the art sewing procedures, each roll shall be sewed or glued properly to the next in accordance with the Manufacturer's specifications. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed at right angles to the playing field turf. These rolls shall be glued or sewn as well.
4. For sewn installation, all seams shall be sewn using double bagger stitches and polyester thread or adhered using seaming tape and high grade adhesive (per the Synthetic Turf Grass Manufacturer's standard procedures). Seams shall be flat, tight, and permanent with no separation or fraying. For glued installation, adhesives shall be hot-melt or a one-part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces of Scotch Plains, NJ or approved equal.
5. Prior to the application of any line painting, the turf shall be fibrillated by means of a nylon rotary brush to provide the look, feel, and safety of optimally maintained natural grass, including subtle undulations normally associated with natural grass athletic fields.
6. Non-tufted or inlaid lines and markings shall be painted according to the recommendations of the Synthetic turf grass manufacturer and of the paint manufacturer. Several applications may be required.
7. Synthetic turf shall be attached to the perimeter edge detail in accordance with the Synthetic Turf Grass Manufacturer's standard procedures.

## D. Infill Installation

1. Sand/S.B.R. infill
  - a. Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied.
  - b. The infill installation mixture shall be installed in accordance with, and to a depth determined by, the Synthetic Turf Grass Manufacturer.
  - c. Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional.
  - d. Upon completion, free pile height shall be no more than  $\frac{3}{4}$  inch and no less than  $\frac{1}{2}$  inch.
2. Organic Infill
  - a. Infill materials shall be applied in numerous thin lifts. The turf shall

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be brushed as the mixture is applied.

- b. The infill installation mixture shall be installed in accordance with, and to a depth determined by, the Synthetic Turf Grass Manufacturer.
- c. Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional.
- d. Upon completion, free pile height shall be no more than  $\frac{3}{4}$  inch and no less than  $\frac{1}{2}$  inch.
- e. Upon completion of filling, the field must be watered down to allow for settling of the infill components.
- f. Allow the infill to dry and apply a final layer to top-off the installation, then wet the field once again before delivering to customer.

3. Organic Composite

- a. Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied.
- b. The infill installation mixture shall be installed in accordance with, and to a depth determined by, the Synthetic Turf Grass Manufacturer.
- c. Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional.
- d. Upon completion, free pile height shall be no more than  $\frac{3}{4}$  inch and no less than  $\frac{1}{2}$  inch.
- e. The two, or three layered infill system shall be installed in a systematic order.

3.13 CLEANING

- A. Protect installed Synthetic turf from subsequent construction operations.
- B. Do not permit traffic over unprotected floor surface.
- C. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.
- D. All usable remnants of new material shall become the property of the City.
- E. The Contractor shall keep the area clean throughout the project and clear of debris.
- F. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the City.

3.14 UNDERGROUND UTILITIES

- A. The Contractor's attention is directed to the possible presence of water, sewer, gas mains, electric wires, conduit, communication cables (both overhead and underground), poles and house service connections in the street or common areas

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in which the construction project is to be performed. The Contractor shall locate all existing utilities, both private and public, and be responsible for their safety.

- B. Should any existing utilities be damaged or destroyed due to the operations of the Contractor, the damages or destroyed components shall be immediately replaced or repaired as necessary to restore the utility to a satisfactory working condition.
- C. These repairs or replacements shall be at no additional expense to the City or the utility owner. The contractor shall notify respective utility companies in accordance with State of Florida law regarding any work to be performed in the vicinity of existing lines, cables, or other utility features.

### 3.15 OWNER ACCEPTANCE

- A. Prior to Final Acceptance, the Contractor shall submit to the City:
  - 1. Three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system including, but not limited to, turf, infill, drainage system, painting and markings.
    - a. Provide specific guidelines to address proper and adequate maintenance needed to maintain G-Max values below the maximum.
    - b. Provide specific guidelines for the operation and maintenance of the field groomer.
  - 2. Project Record Documents in accordance with Section 01720 – Record Documents, including, at a minimum the following:
    - a. All proposed elevations.
    - b. The locations of seams, drains or other pertinent information.
    - c. The dimensions and location of all field markings.
  - 3. Warranty: Submit Manufacturer Warranty and ensure that forms have been completed in City's name and registered with Manufacturer.
  - 4. Certification: Submit certification signed by Contactor that installed materials conform to specified requirements and drainage system was successfully checked and tested prior to covering with drainage gravel.
  - 5. A certification from the synthetic turf grass manufacturer that the installation has been performed in accordance with manufactures recommendation and is suitable for play and the commencement of the warranty period.
  - 6. Certified initial G Max test results.

### 3.16 WARRANTIES

- A. The synthetic turf grass manufacturer and a third party (insurer) shall provide a warranty to the City that covers defects in materials and workmanship of the synthetic turf grass system for a period of 8 years from the date of Owner Acceptance.
- B. The synthetic turf grass manufacturer's warranty shall include general wear and

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damage caused from UV degradation. The warranty shall specifically exclude vandalism, and acts of God beyond the control of the City or the manufacturer.

C. Warranty Insurance

1. The synthetic turf grass manufacturer's Warranty must be supported by a prepaid, non-cancelable insurance policy in the amount of the full, non-prorated, replacement value for the full eight (8) year period, or an 8-year Warranty Bond.
2. The Surety shall have and maintain at least an "A" rating in A.M. Best Company's rating guide.
3. Bidders shall submit a sample 8 – year insurance policy or Warranty Bond from the manufacturer of the synthetic turf grass system that they are proposing to install for this project at the time of bid.

D. The Contractor shall provide a Warranty to the City that covers defects in the installation workmanship, and further warrant that the installation was done in accordance with both the Manufacturer's recommendations and any written directives of the Manufacturer's onsite representative.

E. Contractor shall be responsible for the testing of the G-Max levels:

1. At the installed synthetic turf at the completion of construction and
2. At years two, four, six, and six months prior to the completion of year eight.
3. If any of these tests do not fall within the G-Max range as specified, the Contractor will be required to modify the field composition to the sole satisfaction of the City so that it falls within the target G-Max range.
4. All costs associated with such work shall be borne solely by the Contractor.
5. Any failed test shall be retested to verify that the field meets the specifications.
6. All testing shall be paid by the Contractor.
7. All testing shall be completed by an independent testing laboratory accredited for such tests, and shall be pre-approved by the City.
8. All testing and analysis of findings shall be completed by qualified persons utilizing the required techniques outlined in the ASTM standards.

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## SECTION 02870

## PERMEABLE INTERLOCKING CONCRETE PAVERS

## PART 1 - GENERAL

## 1.01 SECTION INCLUDES

- A. Furnish and install permeable interlocking concrete paver units including all details as depicted in the Drawings included, but not limited to, the following:
  - 1. Furnishing and install permeable interlocking concrete pavers.
  - 2. Furnishing and install crushed stone bedding and joint filler materials.
  - 3. Furnishing and install upper sub-base aggregate.
  - 4. Furnishing and install lower sub-base aggregate.
  - 5. Furnishing and install geotextile.

## 1.02 RELATED SECTIONS

- A. Section 01340: Shop Drawings, Working Drawings, and Samples
- B. Section 01730: Operating and Maintenance Data
- C. Section 01740: Warranties and Bonds
- D. Other Sections as applicable.

## 1.03 REFERENCES

- A. American Society of Testing and Materials (ASTM):
  - 1. ASTM C 33 – Standard Specification for Concrete Aggregates
  - 2. ASTM C 131 - Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
  - 3. ASTM C 136 - Standard Test Method for Sieve Analysis for Fine and Coarse Aggregate
  - 4. ASTM C 936 - Standard Specification for Solid Concrete Interlocking Paving Units

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5. ASTM C 979 - Standard Specification for Pigments for Integrally Colored Concrete
6. ASTM D 698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m<sup>3</sup> (12,400 ft-lbf/ft<sup>3</sup>))
7. ASTM D 1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (2,700 kN-m/m<sup>3</sup> (56,000 ft-lbf/ft<sup>3</sup>))
8. ASTM D 1883 - Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils
9. Interlocking Concrete Pavement Institute (ICPI) - Permeable Interlocking Concrete Pavement Manual

## 1.04 SUBMITTALS

- A. In accordance Section 01340.
- B. Manufacturer's drawings and details: Indicate perimeter conditions, relationship to adjoining materials and assemblies, concrete paver layout, color and patterns and installation details.
- C. Quarry certification and sieve analysis per ASTM C33 and C136 for bedding material, upper and lower sub-base materials.
- D. Permeable Concrete Pavers:
  - a. Manufacturer's product catalog sheets with specifications.
  - b. Two representative full-size samples of each paver type, thickness, color and finish that indicate the range of color variation and texture expected in the finished installation to remain the property of the Engineer.
  - c. Accepted samples become the standard of acceptance for the work.
  - d. Test results from an independent testing laboratory certifying compliance of concrete pavers with ASTM C936.
  - e. Manufacturer's material safety data sheets for the safe handling of the specified materials and products.
  - f. Manufacturer's written quality control procedures including representative samples of production record keeping that ensure conformance of paving products to the project specifications.

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## E. Paver Installation Subcontractor:

- a. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
- b. Job references for a minimum of three projects completed of a similar size and complexity including names, postal address, phone, fax, and email address and dates of construction, and photographs of the project.
- c. Written Method Statement and Quality Control Plan that describes material staging and flow of the work. This plan must include installation procedures including representative reporting forms that ensure conformance to the project specifications.

## 1.05 QUALITY ASSURANCE

## A. Paving Subcontractor Qualifications:

- a. Utilize an experienced installer having successfully completed permeable concrete paver installations similar in design, material, and extent indicated for this project.
- b. Utilize an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
- c. Subcontractor shall provide the full installation of the pavers including preparation and compaction of the sub-grade, the upper and lower sub-base, the bedding, the geotextile and paver installation.
- d. Note that all paver colors must be inspected and approved by the Owner prior to installation.

B. Testing and inspection are required for each phase of installation. The Owner and Engineer are to be notified when each phase of installation is ready for inspection and testing.

C. Review the manufacturer's quality control plan, paver installation subcontractor's Method Statement and Quality Control Plan with pre-construction meeting of representatives from the manufacturer, paver installation subcontractor, general contractor, engineer and Owner.

## D. Mock-Ups:

- a. Install a 10 ft x 10 ft area with sub-base, bedding and pavers.



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- b. Install the mock-up area to all the required material thickness and tolerances specified with color patterns as specified or as directed by the Owner.
- c. This area will be used as the standard by which the work will be judged.
- d. Subject to acceptance by Owner, mock-up may be retained as part of finished work.
- e. If mock-up is not retained, remove and properly dispose of mock-up.

## 1.06 DELIVERY, STORAGE AND HANDLING

- A. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged packaging with identification labels intact.
  - a. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.
  - b. Deliver concrete pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
  - c. Unload pavers at job site in such a manner that no damage occurs to the product or existing construction.
- C. Storage and Protection: Store materials in a protected area such that they are kept free from mud, dirt and other foreign materials.
- D. Rejection of damage materials shall be in accordance with ASTM C936.

## 1.07 PROJECT/SITE CONDITIONS

- A. Environmental Requirements:
  - a. Do not install in heavy rain, wet or saturated soil conditions.
  - b. Do not install over during any freezing weather conditions.

## 1.08 MAINTENANCE

- A. Extra Materials: Provide 10% additional pavers for use by Owner for maintenance and repair. This includes 10% of each size or shape or color specified.
- B. Additional pavers shall be from the same production run as installed materials.

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## PART 2 - PRODUCTS

## 2.01 MATERIALS

- A. Manufacturer: Aquaflow Eco-Holland Stone by Coastal, an Oldcastle Company. No substitutions permitted.
- B. Material Standards: Pavers must meet requirements set forth in ASTM C 936 Standard Specification for Solid Concrete Interlocking Paving Units.
- C. Geotextiles: Inbitex, Marifi 140 N or approved equal.

## 2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

## 2.03 CRUSHED STONE BEDDING AND BASE MATERIALS

- A. Provide crushed stone with 90% fractured faces, LA Abrasion < 40 per ASTM C131, minimum CBR of 80% per ASTM D1883.
- B. Do not use limestone or rounded river gravel. Base and bedding materials must be crushed aggregates.
- C. All stone materials shall be washed with less than 1% passing No. 200 sieve.
- D. Joint/opening filler, bedding, lower and upper sub-base: conforming to ASTM D448 gradation as shown in Table 1 below:
- E. No. 89 or finer gradation may be used to fill permeable pavers with narrow joints.
- F. Grading requirements are as follows:

Grading Requirements for Bedding Course and Upper and Lower Sub-base per ASTM C33			
	Bedding Material ASTM No. 8	Upper Sub-base Material ASTM No. 57	Lower Sub-base Material ASTM No. 2
Sieve Size	Percent Passing	Percent Passing	Percent Passing
3 in. (75 mm)			100
2 1/2 in. (63 mm)			90 to 100
2 in. (50 mm)			35 to 70
1 1/2 in. (37.5 mm)		100	0 to 15
1 in. (25 mm)		95 to 100	
3/4 in. (19 mm)			0 to 5
1/2 in. (12.5 mm)	100	25 to 60	
3/8 in. (9.5 mm)	85 to 100		
No. 4 (4.75 mm)	10 to 30	0 to 10	
No. 8 (2.36 mm)	0 to 10	0 to 5	
No. 16 (1.16 mm)	0 to 5		

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## PART 3 - EXECUTION

## 3.01 ACCEPTABLE INSTALLERS

- A. Stone Age Pavers 205 NW 12<sup>th</sup> Ave. Pompano Beach, FL 33069 (954)-691-1700
- B. U.S. Brick and Block 2701 Reese Road Davie, FL 33314 (954)-792-0076
- C. Florida Pavers 6401 E. Rogers Circle, Suite 6, Boca Raton, FL 33487 877-968-2984

## 3.02 PRE-INSTALLATION

- A. The contractor shall submit an as-built survey to the Engineer for review and approval of the concrete edge restraint and sub-grade prior to paver sub-base installation.
- B. The contractor shall notify the engineer and Owner when the sub-grade is ready for testing and inspection. Density test shall be taken at the discretion of the Engineer.
- C. Subgrade is to be free from standing water, uniform, even, free of any organic material or sediment and debris, ready to accept bedding materials, pavers and imposed loads.
- D. Stockpile all materials such that they are free from standing water, uniformly graded, free of any organic material, contaminants or debris and ready for placement.

## 3.03 INSTALLATION

- A. Sub-grade:
  - a. Compaction of the soil sub-grade in pedestrian areas below the "open aggregate base" should meet a minimum 95% standard Proctor density per ASTM D 698. For the vehicular areas, a minimum 95% modified Proctor density per ASTM D 1557 is required.
- B. Geotextiles:
  - a. The geotextile is applied to the bottom and sides of the excavation with overlapped joints a minimum of 24".
  - b. Geotextile is to be secured in place to prevent wrinkling from vehicle tires and tracks.
  - c. Allow enough geotextile to exceed the final elevation of the paver surface.
  - d. Excess geotextile should be cut flush with the finished surface after final compaction.

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## C. Open-graded upper and lower sub-base:

- a. Moisten, spread and compact the lower sub-base in (4 to 6") lifts without wrinkling or folding geotextile. Place sub-base to protect geotextile from wrinkling under equipment tires. Track vehicles should not be used to spread the initial base course.
- b. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 Ton (10 t) vibratory roller until there is no visible movement of the lower sub-base stone. A plate compactor may be required in areas inaccessible to the roller such as corners and adjacent to edge restraint. Do not crush aggregate with the compaction equipment.
- c. The surface tolerance of the compacted lower sub-base shall be +/- (2 1/2") over a (10 ft) straight edge.
- d. Moisten, spread and compact No. 57 upper sub-base in (4") lift over the compacted lower sub-base with a minimum 10T (10 t) vibratory roller until there is no visible movement of the No. 57 stone. A plate compactor may be required in areas inaccessible to the roller such as corners and adjacent to edge restraint. Do not crush aggregate with the compaction equipment.
- e. The surface tolerance of the compacted No. 57 upper sub-base should not deviate more than +/- (1/2") over a (10 ft) straightedge.
- f. Place the geotextile over the upper sub-base with a minimum overlap of (12") in the direction of drainage.
- g. In place density of the base and sub-base may be checked per ASTM D 4254. Compacted density should be 95% of the laboratory index density established for the base and sub-base.

## D. Bedding layer:

- a. Moisten, spread and lightly compact the No. 8 bedding material using a plate compactor. No visible movement should occur in base material when compaction is complete.
- b. Loose screed the bedding course.
- c. Fill voids left by removed screed rails with No. 8 stone and re-compact.
- d. The surface tolerance of the screeded No. 8 bedding layer shall be +/- (3/8") over a (10 ft) straightedge.

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- e. Do not subject screeded bedding material to any pedestrian or vehicular traffic before unit paving installation begins.
- E. Permeable interlocking concrete pavers and joint/opening fill material:
- a. Lay the pavers in the pattern(s) shown on the drawings. Maintain straight pattern lines.
  - b. Fill gaps at the edges of the paved area with cut pavers, ensuring no cut unit is smaller than one third of its original size.
  - c. Cut pavers to be placed along the edge with masonry saw. Use of guillotine or paver splitters is not acceptable. Do not allow slurry from the cuts to adhere to the surface of the pavers.
  - d. Fill the openings and joints with No. 8 stone.
  - e. Note: Some paver joint widths may be narrow and not accept most of the No. 8 stone. Use joint material that will fill the joints such as washed ASTM No. 9 or No. 10 stone. These smaller stone sizes are recommended for filling joints in pedestrian applications that use 2 3/8" pavers.
  - f. Remove excess aggregate on the surface by sweeping pavers clean.
  - g. Compact and seat the pavers into the bedding material using a low amplitude plate compactor capable of at least (5200 lbf) compaction at a frequency of 75-90 hz. This will require at least two passes with the plate compactor. Remove and replace any damaged pavers after the first pass with the plate compactor.
  - h. Do not compact within (6 ft) of the unrestrained edges of the paving units.
  - i. Apply additional aggregate to the openings and joints, filling them completely. Remove excess aggregate by sweeping then compact the pavers. This will require at least two more passes with the plate compactor.
  - j. All pavers within (6 ft) of the laying face must be left fully compacted at the completion of each day.

## 3.04 FIELD QUALITY CONTROL

- A. The contractor shall submit an as-built survey of the final surface elevation of the compacted pavers and notify Engineer and Owner the final surface is ready for inspection.

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- B. If incorrect surface elevations are discovered on the as-built survey, corrections to the final surface elevations must be made prior to Engineer and Owner Quality Control inspection.
- C. Quality Control Inspection:
  - 1. The final surface tolerance of compacted pavers shall not deviate more than 3/8" under a (10 ft) long straightedge.
  - 2. The final surface elevation of pavers shall be 1/8 to 1/4 inch above adjacent drainage inlets, edge restraints, concrete headers, gutter or channels.
  - 3. The final surface elevation may be no greater than (1/8") difference in height between adjacent pavers.

## 3.05 CERTIFICATION

- A. At the completion of work, the Paver manufacturer shall provide to the Engineer and Owner, a letter certifying that the installation has been performed in accordance with manufacturers recommendations.

## 3.06 PROTECTION

- A. After work in this section is complete, the Contractor shall be responsible for protecting work from sediment deposition until the time of acceptance by the Owner.

END OF SECTION

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## SECTION 16000

## ELECTRICAL GENERAL REQUIREMENTS

## PART 1 - GENERAL

## 1.01 SCOPE

- A. Provide all labor, materials, tools, supplies, equipment, and temporary utilities to complete the work shown on the Drawings and specified herein. All systems are to be completely installed and fully operational. Specifically, the work includes, but is not limited to:
  - 1. Installation of underground conduits and splices.
  - 2. Service entrance, metering, panelboards, transformer, control cabinets, secondary feeders, branch circuits, wiring devices, contactors, all connections to controls, and equipment.
  - 3. Complete grounding system including system and equipment.
  - 4. Sports lighting systems and controls for soccer/lacrosse fields

## 1.02 RELATED DOCUMENTS

- A. The general provisions of the Contract, including General Conditions and Special Conditions, apply to all the work specified herein.

## 1.03 LAWS, PERMITS, FEES AND NOTICES

- A. Secure and pay all permits, fees, and licenses necessary for the proper execution and completion of the work. Submit all notices and comply with all laws, ordinances, rules and regulations of any public agency bearing on the work. Contractor shall be a licensed electrical contractor in the county of construction.

## 1.04 DEPARTURES

- A. If any departures from the Contract Drawings of Specifications are deemed necessary, details of such departures and the reasons therefore shall be submitted as soon as practicable to the ENGINEER for advance written approval.

## 1.05 BASIS FOR WIRING DESIGNS

- A. The Contract Drawings and Specifications describe specific sizes of switches, breakers, fuses, conduits, conductors, motor starters and other items of wiring equipment. These sizes are based on specific items of power consuming equipment (heaters, lights, motors for fans, compressors, pumps, etc.). Wherever another trade provides power consuming equipment that differs from the Drawings and Specifications, the wiring for such equipment shall be changed to proper sizes to match at no additional expense to the OWNER.

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**1.06 AS-BUILT INFORMATION**

- A. A set of "red-lined" electrical drawings shall be carefully maintained at the job site. Actual conditions are to be put on the drawings in red on a daily basis, so the drawings will continuously show locations and routings of cables, conduits, pull boxes, circuit numbers, and other information required by the ENGINEER.

**1.07 EXCAVATING FOR ELECTRICAL WORK**

- A. General – Excavation or drilling, backfill and repair of paving and grassing shall be in the bid of the electrical contractor. The actual work need not be performed by electrical trades. However, the electrical contractor is responsible for all excavation, drilling, dewatering, backfilling, tamping, and repair of pavements and grassing required in support of electrical work. All areas disturbed by electrical work shall be repaired to their original condition, or as indicated on the drawings.
- B. Coordination
1. The electrical contractor must check for existing utilities before commencing any excavation or drilling.
  2. Contract drawings and other trades are to be consulted to avoid interferences with other utilities on this project.
  3. In the event of damage to existing utilities, the OWNER and ENGINEER shall be immediately notified, and damage shall be immediately repaired.
- C. Precautions – The electrical contractor must take every reasonable precaution to avoid interferences. In the vicinity of a suspected interference, excavations shall be dug by hand.

**1.08 JOB SITE VISIT**

- A. Visit the project site before submitting a bid. Verify all dimensions shown on the Contract Drawings and determine the characteristics of existing facilities which will affect performance of the work, but which are not shown on the Drawings or described within these Specifications.

**1.09 CODES AND STANDARDS**

- A. Applicable provisions of the following codes and standards, and other codes and standards required by the State of Florida and local jurisdictions, are hereby imposed on a general basis for electrical work (in addition to specific applications specified by individual work sections of these specifications).
1. U.L. – Electrical materials shall be approved by the Underwriters' Laboratories, Inc. This applies to materials which are covered by U.L. standards.
  2. NEC – National Electrical Code (NFPA-70-2011)
  3. OSHA – Standards of the Occupational Safety and Health Administration are to be complied with.

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4. NEMA – National Electrical Manufacturers Association Standards are to be met wherever standards have been established by that agency, and proof is specifically required with material submittals for switchboards, motor control centers, panelboards, cable trays, motors, switches, circuit breakers, and fuses.
5. ANSI – American National Standards Institute
6. Florida Building Code

#### 1.10 ELECTRICAL SUBMITTALS

- A. The CONTRACTOR shall submit shop drawings, samples and certificates in accordance with the Special Conditions for additional instructions on substitutions. Submittals will not be accepted for partial systems. Submit all materials for each specifications section at one time. Submittals must be arranged, correlated, indexed and bound in orderly sets for ease of review.
- B. Shop drawings and manufacturer's data sheets are required for all electrical materials. Samples are to be supplied for any substitute as requested by the ENGINEER.
- C. Submit Shop Drawings, manufacturer's data, and certifications on all items of electrical work prior to the time such equipment and materials are to be ordered. Order no equipment or materials without approval from the ENGINEER.

#### 1.11 OPERATION AND MAINTENANCE MANUALS

- A. The CONTRACTOR shall submit Operation and Maintenance (O&M) Manuals in accordance with Division 1, General Requirements. O&M Manuals must contain, but are not limited to, the following:
  1. Brief description of system and basic features.
  2. Manufacturer's name and model numbers of all components of the system.
  3. List of local factory authorized service companies.
  4. Operating instructions, including preparation for starting up, seasonal changes, shut down and service.
  5. Maintenance instruction.
  6. Possible breakdowns and repairs.
  7. Manufacturer's literature describing each piece of equipment.
  8. Control diagrams by the control manufacturer.
  9. Description of sequence by the control manufacturer.
  10. Parts list.
  11. Wiring diagrams.

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**1.12 SPARE PARTS**

- A. Submit in accordance with Division 1, General Requirements, a list of Recommended Spare Parts for all major items of equipment. Include descriptions of each part, part number, and cost.

**1.13 PROJECT DOCUMENTS**

- A. For "As Built" drawing requirements, see Division 1.
- B. In addition, each "As Built" single line diagram shall be framed under glass and mounted on wall near respective contactors and controls.

**PART 2 - PRODUCTS****2.01 GENERAL**

- A. Electrical Temporary Facilities – The CONTRACTOR shall include in his bid the cost of furnishing, installing and maintaining all materials and equipment required to provide temporary light and power to perform the work of all trades during construction and until work is completed. Adequate lighting and receptacle outlets for operation of hand tools shall be provided throughout the project, including shanties, trailers, field offices, temporary toilet enclosures, and shall be extended as construction progresses.
- B. All reasonable safety requirements shall be observed to protect workers and the public from shock and fire hazards.
  - 1. Ground fault interrupters shall be employed in accordance with Codes.
  - 2. Ground wires are required in all circuits. Ground poles are required on all outlets. All metallic cases shall be grounded.
  - 3. Rain-tight cabinets shall be used for all equipment employed in wet areas.

**2.02 ELECTRICAL PRODUCTS**

- A. Unless otherwise indicated in writing by the ENGINEER, the products to be furnished under this specification shall be the manufacturer's latest design. Where two or more units of the same class of equipment are required, these units shall be products of the same purpose and rating shall be interchangeable throughout the project.
- B. All products shall be newly manufactured. Defective equipment or equipment damaged in the course of the installation or a test shall be replaced or repaired in a manner meeting the approval of the ENGINEER, at no additional expense to the OWNER.

**2.03 SUBSTITUTIONS**

- A. Comply with instruction in the Contract General Conditions and Special Conditions regarding substitutions.

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**2.04 ELECTRICAL IDENTIFICATION**

- A. Color Coding – Conductor colors shall be in accordance with NEC and NEMA requirements. Refer also to applicable sections of these specifications. Three-phase feeder and branch circuits shall be identified as follows:

<b>120 / 240</b>	<b>277 / 480</b>
A – Black	A – Brown
B – Red	B – Orange
C – Blue	C – Yellow
N - White	N – Gray
Green or bare for grounding conductors	
Green with Yellow trace for Special Grounding	

**2.05 NAMEPLATE**

- A. The following items shall be equipped with nameplates – All motors, motor starters, motor control centers, pushbutton stations, control panels, time switches, disconnect or relays in separate enclosures, transformers, receptacles, wall switches, high voltage boxes, and cabinets. All light switches and outlets shall carry a phenolic plate with the supply circuit number. Electrical systems shall be identified at junction and pull boxes, terminal cabinets and equipment racks.
- B. Nameplates shall adequately describe the function of the particular equipment involved. Nameplates for panelboards and switchboards shall include the panel designation, voltage and phase of the supply. For example, "Panel A, 277 / 480 V, 3-phase, 4-wire." The name of the machine on the motor nameplates for a particular machine shall be the same as the one used on all motor starters, disconnect and P.B. station nameplates for that machine. Nameplates shall be laminated phenolic plastic, white front and back with black core, with lettering etched through the outer covering; black engraved letters on white background. Lettering shall be 3/16 inch high at pushbutton stations, thermal overload switches, receptacles, wall switches and similar devices, where the nameplate is attached to the device plate. At all other locations, lettering shall be 1/4 inch high, unless otherwise detailed on the drawings. Nameplates shall be securely fastened to the equipment with No. 4 Phillips, rough-head, cadmium-plated, steel self-tapping screws or nickel-plated brass bolts. Motor nameplates may be nonferrous metal not less than 0.03 inch thick, die stamped. In lieu of separate plastic nameplates, engraving directly on device plates is acceptable. Engraved lettering shall be filled with contrasting enamel. Equipment nameplate schedule for all equipment shall be submitted with shop drawing submittal for ENGINEER's approval.
- C. All junction and splice boxes shall be labeled using permanent shipping tags attached to boxes, not covers.

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## 2.06 WIRE AND CABLE IDENTIFICATION

- A. All wire and cable shall be identified at each termination point and at each pull box, splice box, junction box, or manhole. Provide permanent, waterproof, non-metallic (paper unacceptable) tags indicating the circuit number in 3/16 inch letters. Circuit numbers shall be protected with clear shrinkable tubing.

## PART 3 - EXECUTION

### 3.01 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to project properly identified with names, model numbers, types, grades, compliance labels and similar information needed for distinct identification; adequately packaged or protected to prevent deterioration during shipment, storage and handling. Store in a dry, well ventilated, indoor space, except where prepared and protected by the manufacturer specifically for exterior storage. Comply with OWNER's instruction for storage locations.

### 3.02 ELECTRICAL COORDINATION

- A. The CONTRACTOR is responsible for coordination with the OWNER, ENGINEER, the power company, and the telephone company on all matters that have a bearing on the electrical work.
- B. The Drawings indicate the extent, the general location, and arrangement of equipment, conduit, and wiring. Study the Drawings, including details, so the equipment shall be properly located and readily accessible. Locate all electrical equipment to avoid interference with mechanical and / or structural features. Make necessary changes in spacings and locations of lighting fixtures, panelboards, cabinets, receptacles and other items of equipment provided that the overall patterns of layouts are not disrupted and remain uniform.

### 3.03 CUTTING AND PATCHING

- A. Cut and prepare all openings, chases, and trenches required for the installation of equipment and materials. Repair, remodel, and refinish in strict conformance with the quality of workmanship and materials in the surroundings. Obtain written permission from the ENGINEER for any alterations to structural members before proceeding. All penetrations through fire walls or floor / ceiling slabs shall be sealed to maintain the fire integrity of the wall or slab.

### 3.04 MAINTENANCE

- A. Render all necessary measures to insure complete protection and maintenance of all systems, materials, and equipment prior to final acceptance. Any materials or equipment not properly maintained or protected to assure a "factory new" condition at the time of final acceptance shall be replaced immediately at no additional cost to the OWNER.

### 3.05 WATERPROOFING

- A. Whenever any work penetrates any waterproof area, seal and render the work waterproof. All work shall be accomplished so as not to void or diminish any

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waterproofing bond or guarantee.

3.06 TESTS

- A. Conduct an operating test of equipment prior to the ENGINEER's approval. The equipment shall be demonstrated to operate in accordance with the requirements of these Specifications. The tests shall be performed in the presence of the ENGINEER or an authorized representative. The CONTRACTOR shall furnish all instruments, electricity and personnel required for the tests.

3.07 CLEANUP

- A. Maintain continuous cleanup during the progress of the work, and use appointed storage areas for supplies. The premises shall be kept free from accumulations of waste materials and rubbish.

END OF SECTION

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## SECTION 16011

## CODES &amp; STANDARDS

## PART 1 - GENERAL

1.01 THIS SECTION COVERS THE CODES, SPECIFICATIONS AND STANDARDS CONSIDERED MINIMUM REQUIREMENTS FOR MATERIALS, WORKMANSHIP AND SAFETY FOR ALL DIVISIONS 16 AND RELATED ELECTRICAL WORK.

## 1.02 SPECIFICATIONS, CODES AND STANDARDS

- A. Reference within this Specification to standards, codes or reference specifications implies that any item, product or material so identified must comply with all minimum requirements as stated therein, except packaging and shipping, unless indicated otherwise. Only the latest revised editions are applicable.

Some of the references used in this Division are as follows:

NFPA	National Fire Protection Association
NEC	National Electrical Code
NEMA	National Electrical Manufacturers' Association
U.L.	Underwriters' Laboratories, Inc.
ANSI	American National Standards Institute
FS	Federal Specification

- B. The Specifications, codes and standards indicated below and in other Sections, including the current addenda, amendments and errata, referred to by basic designation only, form a part of this specification.

NFPA-70	National Electrical Code (Current Edition)
NFPA-90A	Air Conditioning & Ventilation (Current Edition)
NFPA-101	Life Safety Code (Current Edition)
F.B.C.	Florida Building Code (Current Edition)

## 1.03 UNDERWRITERS' LABORATORIES

- A. Where materials and equipment are available under the continuing inspection and labeling service of U.L.; provide such material and equipment.
- B. Listing by Underwriters' Laboratories shall be evidenced by the label or:
- U.L. - Electrical Construction Materials List (Green Book)
  - U.L. - Electrical Appliance & Utilization Equipment List
  - U.L. - Building Materials List

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PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

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## SECTION 16050

## BASIC ELECTRICAL MATERIALS AND METHODS

## PART 1 - GENERAL

## 1.01 SCOPE

- A. Provide all material as required for a complete project as required by the Drawings and in this Specification.

## 1.02 SHOP DRAWING SUBMITTALS

- A. Submit shop drawings for the following:
  - All raceways
  - Wiring and Splices
  - Contactors, Relays, Photocells
  - Poles and Fixtures

## PART 2 - PRODUCTS

## 2.01 RACEWAY

- A. Galvanized Rigid Conduit (ANSI C80.0) – Rigid galvanized steel conduit "RGS" shall be U.L. Approved, Schedule 40, mild steel pipe, zinc-coated on the inside and outside. Fittings shall be zinc-coated, U.L. Approved.
- B. PVC Conduit – Underground PVC conduit shall be Schedule 40 or Schedule 80 unless otherwise noted, and shall be U.L. approved. PVC conduit shall be Schedule 80 when installed above ground.
- C. Locations: – Conduit shall be used as follows:
  - 1. All above ground grade exposed conduits shall be hot dipped galvanized rigid steel except otherwise noted on the Drawings.
  - 2. All conduits penetrating rated fire walls or rated fire floors shall be installed with U.L. Approved devices to maintain the fire rating of the wall or floor penetrated.

## 2.02 WIRE AND CONNECTORS

- A. Cable shall be rated for 600 volts and shall meet the requirements below:
  - 1. Conductors shall be stranded.
  - 2. All wire shall be brought to the job in unbroken packages and shall bear the date of manufacturing; not older than 12 months.

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3. Type of wire shall be THWN, THHN or XHHW rated 75 degrees C, suitable for wet locations except where otherwise required by the drawings.
4. No wire smaller than No. 12 AWG shall be used unless specifically indicated.
5. Conductor metal shall be copper.
6. All conductors shall be meggered after installation and insulation must be in compliance with the Insulated Power Cable Engineers Association Minimum Values of Insulation Resistance.

## 2.03 BOXES

- A. Boxes for wiring devices (switches and receptacles) installed outdoors or wet locations shall be weatherproof fiberglass with polycarbonate cover plates. Junction boxes shall be NEMA 4X construction. All boxes shall be securely mounted, plumb and level, in readily accessible locations.
- B. Pull boxes in ground shall be Pencil HHPL 172012 with green lid marked "ELECTRIC".

## 2.04 GROUNDING

- A. Grounding and Bonding – All Grounding and Bonding shall be in accordance with NFPA 70. Ground all exposed non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in raceways, and neutral conductor of wiring systems.
- B. Grounding Conductor – Provide an insulated, green-colored equipment grounding conductor in all feeder and branch circuits. This conductor shall be separate from the electrical system neutral conductor. Conduits will not be approved as grounding conductor.
- C. The CONTRACTOR shall install all ground rods, ground wires, and connectors as required for the complete grounding system.
- D. All metal parts and grounding conductors in each manhole or pullbox shall be grounded to a local ground rod.
- E. Resistance – Readings shall not be taken within 48 hours of a rainfall.
- F. The CONTRACTOR shall provide a written report for all grounding test results to the ENGINEER. The test shall include all ground connections. The report shall be signed by the OWNER of the contracting firm and shall include: test date, time, weather conditions on test date, weather conditions 3 days prior to the test date, location, and results.
- G. All raceways require grounding conductors; metallic raceways are not adequate grounding paths. Bonding conductors through the raceway systems shall be continuous from main switch ground buses to panel ground bars of panelboards, and from panel grounding bars of panelboards, and motor control centers to branch

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circuit outlets, motors, lights, etc. These ground conductors are required throughout the project regardless of whether conduit runs or the Cable and Conduit Schedule show ground conductors on the Drawings.

H. All connections made below grade shall be of the exothermic type.

### PART 3 - EXECUTION

#### 3.01 CONDUIT INSTALLATION

##### A. General

1. Nylon pull cords shall be installed in all empty conduits. Wire shall not be installed until all work of any nature that may cause damage is completed, including pouring of concrete. Mechanical means shall not be used in pulling in wires 8 AWG or smaller.
2. The use of running threads is prohibited and where some such device is necessary, split couplings, Erickson couplings, or equal shall be used. Where water-tight conduit installations are required, water-tight conduit unions shall be used.
3. All conduits shall be cleaned by pulling a brush swab through before installing cables.
4. All conduits shall be sealed at each end with electrical putty or Duct Seal. Special care shall be taken at all equipment where entrance of moisture could be detrimental to equipment.

##### B. Handling

1. Conduits subjected to rough handling or usage shall be removed from the premises.
2. Conduits must be kept dry and free of water or debris with approved pipe plugs or caps. Care shall be given that plugs or caps are installed before pouring of concrete. All spare conduits shall remain plugged or capped upon project completion.

##### C. Concrete and Masonry

1. Where conduits pass through exterior concrete walls or fittings below grade, the entrances shall be made watertight. This shall be done by providing pipe sleeves in the concrete with 1/2" minimum clearance around the conduits, and caulking with askum and sealant, or by means of conduit entrance seals.
2. Where embedded conduits cross expansion joints, furnish and install offset expansion joints or sliding expansion joints. Sliding expansion joints shall be made with straps and clamps.

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## D. Panelboards and Boxes

1. Conduits entering panelboards, pull boxes, or outlet boxes shall be secured in place by galvanized locknuts and bushings, one locknut outside and one locknut inside of box with bushing on conduit end. The locknuts shall be tightened against the box without deforming the box. Bushings shall be of the insulating type.

## E. Bending

1. Field conduit bends shall be made with standard tools and equipment manufactured especially for conduit bending.

## F. Mounting and Concealing

1. Conduit runs shall always be concealed in finished spaces and may be exposed in industrial spaces except where indicated on the Drawings.
2. Exposed runs of conduits shall be installed with runs parallel or perpendicular to walls, structural members or intersections of vertical planes and ceilings, with right angle turns consisting of symmetrical bends or pull boxes as indicated on the Drawings. Bends and offsets shall be avoided where possible.
3. Where conduits are run individually, they shall be supported by approved pipe straps, secured by means of: 1) toggle bolts or hollow masonry; 2) expansion shields and machine screws or standard preset inserts on concrete or solid masonry; 3) machine screws or bolts on metal surfaces, and wood screws on wood construction. The use of perforated straps or wires will not be permitted.
4. Concrete inserts and pipe straps installed shall be stainless steel unless otherwise noted on the Drawings. All bolts, nuts, washers, and screws shall be stainless steel. Individual hangers, trapeze hanger, and rods shall be prime-coated and painted. Conduit support clamps shall be the two-piece type.
5. Conduit support struts, clamps, bolts, nuts and washers installed outdoors and in corrosive atmosphere indoors or on floors shall be stainless steel.
6. In furred ceilings, conduit runs shall be supported from structure, not furring.

## 3.02 TERMINATIONS AND SPLICES

- A. Terminations of power cable shall be by means of U.L. approved connectors. All connectors shall meet U.L. 486B and shall be compatible with the conductor material.
- B. Splicing of power, control, or instrumentation wiring will not be allowed except by written approval of the ENGINEER. Where splicing is allowed, splices shall be made waterproof regardless of location.

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## 3.03 GROUNDING

- A. General – Grounding shall be as indicated, and as required by NFPA 70 and ANSI-C2.
- B. Grounding Connections – Grounding connections which are buried or otherwise normally inaccessible, and excepting specifically those connections for which access for periodic testing is required, shall be made by exothermic weld. Exothermic welds shall be made strictly in accordance with the weld manufacturer's written recommendations. Welds which have "puffed up" or which show convex surfaces, indicating improper cleaning, are not acceptable. No mechanical connector is required at exothermic weldments.
- C. Grounding Grid System – Conductors shall be buried a minimum of 24 inches in the ground. All cable crossings shall be securely bonded and the system connected to the ground system as well as to all equipment and structural steel work, and to all water piping.
- D. Grounding Conductors – Conductors shall be insulated copper wire and sized as required by National Electrical Code.

## 3.04 FIELD TESTS

- A. As an exception to requirements that may be stated elsewhere in the Contract, the ENGINEER shall be given five working days notice prior to each test. The CONTRACTOR shall demonstrate that all circuits and devices are in good operating conditions.
- B. Test on 600 volt wiring – Verify all 600 volt wiring has no short circuits or accidental grounds. Perform insulation resistance tests on all wiring using an instrument which applies a voltage of approximately 500 volts to provide a direct reading of resistance. Minimum resistance shall be 1 megohm. The conductor loop resistance of each pair shall also be measured. The mutual capacitance between conductors of each pair shall also be measured. Provide written results for approval.

## 3.05 WIRE AND CABLE INSTALLATION

- A. Conductors shall not be pulled into raceway until:
  - 1. Raceway system has been inspected and approved by the ENGINEER.
  - 2. Plastering and concrete have been completed in affected areas.
  - 3. Raceway system has been freed of moisture and debris.
- B. Conductors of No. 8 size and smaller shall be hand pulled. Larger conductors may be installed using power winches. Wire pulling lubricant, where needed, shall be U.L. approved. Wire in panels, cabinets, and gutter shall be neatly grouped, using nylon tie straps, and fanned out to terminals.

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- C. Building wire conductors THHN / THWN installed below grade, or in concrete slabs on grade, shall have type RHW-USE insulation, 600 volt. Building wire shall be stranded.
- D. Each cable or wire in panels, pull boxes, manholes, or troughs shall have a permanent identification, with numbers and letters indicated on the conduit and cable schedule. For underground cable identification tag, see drawing.
- E. Lubricants – Lubricants for assisting in the pulling of cables shall be those specifically recommended by the cable manufacturer. The lubricant shall not be deleterious to the cable sheath, jacket, or outer coverings, and shall be U.L. approved. Use Polywater J or equal.
- F. Cable Pulling Tensions – Shall not exceed the maximum pulling tension recommended by the cable manufacturer.

## 3.06 MOUNTING AND SUPPORTING ELECTRIC EQUIPMENT

- A. Furnish and install all supports, hangers, and inserts required to mount fixtures, conduits, cables, pull boxes, and other equipment furnished under this section or furnished for installation under this section.
- B. All items shall be supported from the structural portion of the building and studs, except standard ceiling-mounted lighting fixtures and small devices, that may be supported from ceiling system where permitted by the ENGINEER. However, no sagging of the ceiling will be permitted. Supports and hangers shall be of types approved by Underwriter's Laboratories.
- C. Perforated straps and wire are not permitted for supporting electrical devices. Anchors shall be of approved types.
- D. All supports, hangers, hardware, etc. used outdoors, shall be stainless steel and in corrosive atmosphere, or in hazardous areas shall be nonferrous, corrosion resistant, or stainless steel. Supports shall be selected to avoid galvanic reactions. Support devices shall be submitted for approval.

## 3.07 UNDERGROUND WORK

- A. Excavation for Electrical Work  
Excavation or drilling, backfill and repair of paving and grassing is to be in the bid of the electrical contractor. The actual work need not be performed by electrical trades. However, the electrical contractor is responsible for all excavation, drilling, dewatering, backfilling, tamping, and repair of pavements and grassing required in support of electrical work. All areas disturbed by electrical work shall be repaired to their original conditions, or as indicated on the Drawings.
- B. Coordination  
The electrical contractor must check for existing utilities before commencing any excavation or drilling. Contract Drawings and other trades are to be consulted to

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avoid interference with other utilities on this project. In the event of damage to existing utilities, the OWNER and ENGINEER shall be immediately notified, and the damage shall be immediately repaired at no cost to the Owner.

C. Precautions

The electrical contractor must take every reasonable precaution to avoid interferences. In the vicinity of a suspected interference, excavations shall be dug by hand.

D. Excavating, Drilling and Backfilling

1. Materials for backfill shall be as specified in Specification 02222 - Excavation and Backfill for Utility Systems, Section 2.02.
2. Locate and protect existing utilities and other underground work in a manner which will insure that no damage or service interruption will result from excavating and backfilling.
3. Protect property from damage which might result from excavating and backfilling.
4. Protect persons from injury at excavations, by shoring up, and using barricades, warnings and illumination.
5. Coordinate excavations with weather conditions, to minimize the possibility of washouts, settlements, and other damages and hazards.
6. Dewater excavations as necessary. Protect excavations from inflow of surface water. Pump minor inflow of ground water from excavations; protect excavations from major inflow of ground water by installing temporary sheeting and waterproofing. Provide adequate barriers which will protect other excavations and below grade property from being damaged by water, sediment, or erosion from or through the electrical work excavations.
7. No organic material is permitted in backfill. All vegetation, peat, sod or other organic matter shall be removed from the premises.
8. Except under roadways, backfill material shall be clean sand or shell rock. No debris or trash may be used as backfill.
9. Under roadways, backfill material shall be the same as comprising the road bed.
10. Backfill excavations using 8-inch high courses of backfill material, uniformly compacted to 95 percent density per ASTM Standard D1557, using power-driven, hand-operated compaction equipment. Watering the backfill for compaction is not an acceptable method.
11. Backfill to elevations matching adjacent grades. Where subsidence is measurable or observable at electrical work excavations during the warranty period, remove the surface (pavement, lawn or other finish) add backfill material, compact, and replace the surface treatment. Restore the appearance, quality, and condition of the surface or finish to match adjacent



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work, and eliminate evidence of restoration to the greatest extent possible.

12. Where excavation and backfill for electrical work passes through or occurs in a landscaped area, repair or replace the landscape work to match the original condition and quality of work.
13. Where excavation and backfill for electrical work passes through or occurs in an area of paving or flooring, replace and restore the construction and finish of the paving or flooring to match the original condition and quality of the work.

E. Underground

1. Underground conduits not under concrete slabs, shall be buried at least two feet below finished grade for circuits rated 600 volts or less, except under traffic areas, conduits shall be buried at least three feet below finished grade.
2. Where steel conduit penetrates ground or concrete, the conduit shall be painted with two coats of asphaltic base paint one foot on each side of penetration.
3. Transition from PVC to RGS shall be made prior to elbow below grade. Paint RGS with bitumastic, 12 inches above and below grade.

3.08 CONCRETE MANHOLES AND PULL BOXES

- A. Provide precast concrete manholes and pull boxes as indicated on the drawings. Manholes and pull boxes shall be installed on firmly compacted ground level and plumb at the elevations indicated on the drawings. Manholes and pull boxes shall be equipped with pulling-in irons opposite and below each ductway entrance. Manholes and pull boxes shall have cable supports so that each cable is supported at a minimum of 3 foot intervals within the manhole or pull box. Cable supports shall be fastened with galvanized bolts and shall be fabricated of fiberglass or galvanized steel.

Make provision for drainage and grounding. Install grounding rods at each manhole.

- B. Traffic Covers – H-2-044 traffic rated covers shall be provided for manholes and pull boxes with identification as follows:

ELECTRIC" where voltages within are 600 volts and less.

"SIGNAL" for instrumentation, telephone, and control.

- C. Covers and frames shall be cast iron or hot dip galvanized.

End bells shall be cast in boxes by precast manhole manufacturer for all conduit entrances indicated on the drawings.

- D. Every manhole shall be equipped with 24" x 24" concrete knockouts for future conduit installation on two opposing walls.

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## 3.09 CONDUIT INSTALLATION

- A. General – Conduits in structural slabs shall be placed between the upper and the lower layers of reinforcing steel, requiring careful bending of conduits. Conduits embedded in concrete slabs shall be spaced not less than eight inches on centers or as widely spaced as possible where they converge at panels or junction boxes. Conduits running parallel to slab supports, such as beams, columns and structural walls, shall be installed not less than 12 inches from such supporting elements. To prevent displacement during concrete pour, saddle supports for conduit, outlet boxes, junction boxes, inserts, etc., shall be secured.

## 3.10 WIRE AND CABLE INSTALLATION

- A. Installation of Cables in Manholes, Handholes, and Vaults. Do not install cables utilizing the shortest route, but route along those walls providing the longest route and the maximum spare cable lengths. Form all cables to closely parallel walls, not to interfere with duct entrances, and support on brackets and cable insulators. In existing manholes, handholes and vaults where new ducts are to be terminated, or where new cables are to be installed, the existing installation of cables, cable supports, and grounding shall be modified as required for a neat and workmanlike installation, with all cables properly arranged and supported. Support cable splices in underground structures by racks on each side of the splice. If splicing is approved, locate splices to prevent cyclic bending in the spliced sheath and out of the water. Install cables at middle and bottom of cable racks, leaving top space opening for future cables, except as otherwise indicated. Provide one spare three-insulator rack arm for each cable rack in each underground structure.
- B. Cable Markers (or tags) in Manholes and Handholes – Provide cable markers or tags for each cable or wire passing through or leaving manholes or handholes and at each terminal. Tags shall be stainless steel, bronze, lead strap, or copper strip, approximately 1/16 inch thick, or hard plastic 1/8 inch thick, suitable for immersion in salt water, and of sufficient length for imprinting the legend on one line, using raised letters not less than 1/4 inch in size, and shall be permanently marked or stamped with the identification as indicated. Use of two color laminated plastic is acceptable. Plastic markers shall be dark in color, and markings shall be light in color to provide contrast so that identification can be easily read. Fastening material shall be of a type that will not deteriorate when exposed to water with a high saline content.
- C. All supports, hangers, hardware, etc. used outdoors, shall be stainless steel. In corrosive atmosphere, or in hazardous areas, shall be non-ferrous, corrosion resistant, or stainless steel. Supports shall be selected to avoid galvanic reactions. Support devices shall be submitted for approval.
- D. Spare conduits shall be on top or accessible sides and identified uniquely at each location and active conduits shall be located on the bottom unless noted otherwise.

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## SECTION 16110

## RACEWAY AND BOXES

## PART 1 - GENERAL

## 1.01 SCOPE

- A. This Section includes basic materials and electrical methods for all of Division 16, Electrical and Related Work.

## 1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Concrete - Division 3

## PART 2 - PRODUCTS

## 2.01 RACEWAYS AND FITTINGS

- A. Rigid Metal Conduit – Hot-dipped galvanized heavy wall rigid steel conduit shall be used on all electrical and instrumentation systems. Conduit shall conform to Federal Specification WW-C-581d and fittings shall conform to Federal Specification W-F-408, Type I and III, Class 1, Style 2.
- B. Liquid Tight Flexible Metal Conduit – Flexible metal conduit shall be used on all electrical and instrumentation systems. Liquid tight flexible conduit shall conform to NEC Article 351 as manufactured by Appleton, Robroy, or Anaconda. Fittings shall be as manufactured by Midwest or Robroy and conform to Federal Specification W-F-406b, Type I, Class 3.
- C. Rigid Non-Metallic Conduit – Polyvinyl chloride (PVC) conduit, boxes and fittings shall conform to NEMA TC-2 and to Military Specifications MIL-C-23571 for Type II, Schedule 40 and shall be used on underground electrical systems, specified grounding and utility company systems only.
- D. Wireways and Auxiliary Gutters – Wireways and auxiliary gutters shall be galvanized steel with removable covers unless indicated as hinged. Components shall be as manufactured by Square 'D', Hoffman, Keystone, or General Electric. All wireways shall be without manufactured knockouts.

## 2.02 BOXES AND ACCESSORIES

- A. Sheet steel boxes and accessories shall conform to Federal Specification W-J-800c, as manufactured by Appleton, Steel City, or Racor.
- B. Cast metal ferrous outlets shall conform to Federal Specification W-C-568a, as manufactured by Appleton, Pyle-National, or Crouse-Hinds.
- C. Pull boxes and junction boxes larger than 4-11/16" shall be constructed of galvanized steel in accordance with NFPA 70, Articles #370 and #373. Boxes shall be as manufactured by Hoffman, Boss, or Keystone. All boxes shall be without manufactured knockouts.

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- D. Cast, malleable iron outlet boxes shall have threaded conduit entrances and gasketed covers. Aluminum-type is not permitted. Boxes shall have a minimum of two hubs on the bottom, as manufactured by Appleton or Crouse-Hinds.
- E. Monolithic concrete pull boxes shall be of the open bottom type, with a locking cover marked "ELECTRIC" or "SIGNAL" as applicable, and shall be U.L. Listed and meet all codes.
- F. Rigid Conduit Coupling – Where rigid steel conduit is used, jointing conduit runs shall be connected by a threaded coupling or three piece couplings. Threadless coupling will not be permitted.
- G. Rigid Conduit Bushing – Where rigid steel conduit is used, all terminations in boxes, panels, etc. shall have locknuts on both sides of equipment, with a bonded, grounding bushing.
- H. Field Cut Threads – Field-cut threads must be cleaned with oil and painted with a coat of aluminum, or galvanized paint. Newly cut threads that are not coated will have rust or corrosion develop, and will inhibit the grounding path of the conduit run.
- I. Conduit Nipples – The use of all-thread is prohibited.

## 2.03 EXPANSION FITTINGS

- A. Any expansion fittings used shall be manufactured by O-Z Electrical Manufacturing Company, and specified as follows: Rigid metal conduit - Type AX; Electrical metallic tubing - Type TX.
- B. Miscellaneous – Coatings – Tnemec 46-465

## PART 3 - EXECUTION

### 3.01 RACEWAYS

- A. Use rigid, non-metallic conduit as follows, unless noted otherwise: Grounding systems and utility systems only.
- B. Paint metal conduit in floor slab or in the ground with 2 coats of Tnemec 46-465.
- C. Use liquid tight, flexible metal conduit for all connections to vibrating equipment, such as motors, valves, and devices on piping or ductwork. The maximum length shall be restricted to 18" or less, any longer lengths must have approval. It shall be restricted for use within 24 inches above the floor elevation. (A green bonding conductor will be required in all runs, with other conductors.)
- D. Install exposed conduit parallel with, or at right angles to the building lines. Conduit larger than 1", except as indicated, in reinforced concrete slabs shall be parallel with, or at right angles to the supports of the slab. Conduit in concrete shall be located so as not to affect the structural strength of the slabs. Conceal all conduits in walls, above ceilings, in or under slabs or in furring, except in mechanical and electrical rooms and as indicated.
- E. Route feeders, home runs, and conduits where indicated, except those minor deviations as approved, will be permitted.

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- F. All conduits that are embedded in concrete, pass through concrete or stub-up shall have a 30 mil coating of Tnemec 46-465 over its entire length where embedded in concrete, and 12 inches before entering and 12 inches after exiting the concrete.

### 3.02 BOXES AND ACCESSORIES

- A. Minimum size outlet box shall be 4" square by 1-1/2" deep unless otherwise approved or indicated otherwise.
- B. Use cast malleable iron boxes for outlets with gasketed covers for all exterior and for all damp locations.

### 3.03 MISCELLANEOUS

- A. Provide approved fire stopping materials at all chases to prevent drafts.
- B. Provide expansion fittings in conduit runs crossing expansion joints in the structure.
- C. Provide Jet Line #232 in all empty conduits.
- D. Rigid Conduit fitting shall be cast, malleable iron, with stamped, galvanized steel, stainless steel screw covers, and gasket for use inside. Outside cast malleable iron galvanized, stainless steel screw and gasket.

END OF SECTION

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## SECTION 16120

## CONDUCTORS

## PART 1 - GENERAL

This Section includes basic materials and methods for all of Division 16, Electrical and Related Work.

## 1.01 RELATED WORK SPECIFIED ELSEWHERE

A. Signal Conductors

## 1.02 APPLICABLE REQUIREMENTS

NEC Article 310 and 400

F.S.J-C-30

F.S.W-S-6106

## PART 2 - PRODUCTS

## 2.01 CONDUCTORS

- A. Conductors shall conform to Federal Specification J-C-30 for 600 volt, Types THWN/THHN, or XHHW stranded or as shown on the drawings. Sizes are AWG unless otherwise noted.
- B. Grounding conductors larger than Size 1 AWG shall be soft drawn, bare copper or insulated copper. Control conductors for 100 to 600 volt shall be size 14 AWG copper, stranded, and color coded unless indicated otherwise.
- C. Control conductors for 50 volt and under shall be plastic jacketed thermostat cable, Size 18 AWG single conductor, copper, multi-conductor as required. Fixture wire shall be Type THHN for all through wiring where permitted.

## 2.02 PORTABLE CORDS

- A. Portable cord shall be stranded copper, UL Listed, and resistant to water, acid, and alkalis.
- B. Each cord shall have one green covered conductor that shall be used as a grounding conductor.

## 2.03 SPLICES AND TERMINATIONS

- A. Connections shall comply with Federal Specification W-S-610b. Connectors for temperatures to 105NC shall be Ideal Wing Nut or 3M-Scotchloc.
- B. Tape shall be Scotch 33 or slip-knot grey. Voids shall be filled with rubber tape or Scotchfill.
- C. Terminal boards shall be General Electric, Type CR151, type A2. Lugs for the terminal boards shall be the locking tongue type. Control terminals and motor connections up to size 3 shall be ring tongue type as manufactured by T&B Sta-Kon.

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- D. Heat shrink for all splices outdoors. Insulating and sealing of all in-line, cable splices from 16 AWG through 1000 kcmil shall be done in accordance with the instructions provided with the Shrink-Kon heat shrinkable insulators, catalog series HS as manufactured by Thomas & Betts.
- E. The connector insulator must be made of thermally stabilized, homogeneous polyolefin having internally applied sealant. It must have Underwriter's Listing (UL48, 90NC, 600V) and be approved for the use. It must be usable without additional covering or adhesive, both indoors and outdoors, in overhead, direct buried, and submersed applications at rated voltage. It must not be adversely affected by moisture, ozone, oils, fuels, mild acids and alkalis, or ultraviolet light. It must be compatible with all commonly used cable jacket materials including rubber, plastic, lead, steel, aluminum, and copper. All conductors larger than 10 AWG shall have Noalox Non-Corrosive Paste applied to wires' ends and terminals before connections are made. This will prevent or retard corrosion.

## PART 3 - EXECUTION

## 3.01 CONDUCTORS

- A. Conductors size 10 AWG and smaller shall be copper and have insulation colored for phases A, B, and N respectively as follows for single phase systems: 120/240 volts, black, red, and white.
- B. All-bonding conductors shall have a green covering and shall be the same size as the circuit conductors unless otherwise indicated.
- C. Installation of conductors shall be made only in completed raceway systems and all conductors in any conduit shall be pulled in together.
- D. Use wire pulling compounds or lubricants as listed by Underwriters' Laboratories or talc, graphite, or soapstone.

## 3.02 SPLICES AND TERMINATIONS

- A. Use solder-less terminal lugs on all standard conductors. Use approved solder-less connectors for all splices. Keep splices to a minimum.
- B. Splice all neutrals prior to connection to wiring devices. Splices other than pre-insulated connectors shall be covered neatly with insulation type equivalent in value to the conductor insulation. Use minimum of 2 layers of tape.

## 3.03 PHASING AND IDENTIFICATION

- A. The phase designation of all secondary conductors shall be the same and shall be indicated in or on all 3-phase outlets, transformers, panelboards, and disconnect switches, and they shall be connected with uniform phase sequence.
- B. Control wiring shall have a Brady® label or equal attached, secured with a clear piece of heat shrink tubing over the numbers. The numbers shall be attached 1 inch from each end. Tag each individual conductor or wire with a label stating the terminal designation indicated on schematic diagrams, or given on manufacturer's equipment lists, and at each terminal strip, relay, etc.

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## 3.04 NUMBER OF CONDUCTORS

- A. For convenience and simplicity, wire ties are shown only on home runs other than power circuits. The Contractor shall determine the correct combination of wires to be run in all raceways including home runs, branch circuit wiring and switch legs.
- B. A green ground wire must be included in all conduits. Neutral wires shall be determined by the load and proper phasing on multi-wire branch circuits.
- C. All conductors shall have identification per NEC and local codes.
  - 1. Colored tape for feeder conductors should be secured on the conductor with clear piece of heat shrink tubing.
- D. Conduit fill shall be sized per National Electric Code. All 120 volt circuits shall each have individual neutrals.

## 3.05 TESTING

- A. After wiring has been pulled in raceways and before hook-up, wires shall be subject to an insulation test. A Megometer of 500 volts shall be used, and a minimum of 10 megohms will be acceptable. Test shall be witnessed by the ENGINEER. A 48-hour notification must be given before test(s) commence. It is typical that wire was abused during installation, usually due to lack of lubrication. The test will reveal any damage to insulation on wiring.

END OF SECTION

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## SECTION 16140

## WIRING DEVICES

## PART 1 - GENERAL

## 1.01 RELATED WORK SPECIFIED ELSEWHERE

Basic Materials &amp; Methods

## 1.02 APPLICABLE DOCUMENTS

- NEMA WD-1 - Wiring Devices, Non-locking
- NEMA WD-5 - Wiring Devices, locking type
- F.S. W-S-896c - Toggle Switch
- F.S. W-P-455a - Wall Plates

## PART 2 - PRODUCTS

## 2.01 RECEPTACLES

- A. All receptacles shall be the grounding type and shall conform to applicable portions of NEMA Standards WD-1 and WD-5.

NEMA Configuration - #5-20, duplex, Ivory  
P & S #5342-I  
Leviton - #5342-I  
NEMA Configuration #1050  
Hubbell - 7512-G receptacle  
Hubbell - 7118 stainless steel plate  
Hubbell - 7914 cord set (length as required)

## 2.02 SWITCHES

- A. Toggle switches shall conform to Federal Specification W-S-896c, A.C., only type switch.

20 ampere, 120-277 volt, Ivory  
Leviton - 1121-I, 1123-I  
P & P - 521-I, 523-I

## 2.03 PLATES AND COVERS

- A. Wall plates for recessed devices shall conform to Federal Specification W-P-455a and shall be of Ivory color with matching screws unless indicated otherwise, and of the configuration required for the devices installed.

Leviton - 86000 Line, P & S or equal  
Surface (raised) covers for 4" square boxes shall be 1/2" deep.  
Surface covers shall be as manufactured by Steel City, Appleton or Raco of the configuration required. Cover plates indicated (WP) weatherproof shall be made of Type 302 stainless steel with stainless steel springs, screws and gaskets. Sierra Series "WP" of the configuration required.

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**2.04 ATTACHMENT CAPS AND CONNECTORS**

- A. Caps shall be NEMA Standard mates to the receptacles and connectors used and shall be as manufactured by Hubbell. Provide one cap for each receptacle other than the duplex type.
- B. Electrical contractor shall connect all equipment furnished by Owner or other contractors, including caps and cords and materials required to complete the installation.

**PART 3 - EXECUTION**

**3.01 INSTALL PLATES AND COVERS ON ALL OUTLETS. INSTALL ALL DEVICES UNIFORMLY IN EACH AREA. USE 20 AMPERE SWITCHES AND RECEPTACLES EVERYWHERE.**

**3.02 INSTALL A CORD AND CAP (PLUG) ON ALL EQUIPMENT INDICATED "C & P" ON THE SCHEDULES. CONNECT THE TOP HALF OF SPLIT RECEPTACLES HOT AND USE THE BOTTOM AS THE SWITCHED SECTION. TEST EACH SOCKET OF EACH OUTLET WITH A DEVICE INTENDED FOR THIS PURPOSE. GANG SWITCHES AND DIMMERS WHERE FEASIBLE.**

**3.03 MOUNTING HEIGHTS (TO CENTER LINE OF BOX):**

- A. Generally mount outlets 36" up unless noted.
- B. Mount switches and dimmers at 48" up.
- C. Mount outlets over mirrors 8" higher than mirror.
- D. Mount outlets over counters and centered in the back splash where it occurs.
- E. Adjust outlet heights in ceramic tile walls to be entirely in or entirely out of the tile.
- F. Outlets may be horizontal to meet space conditions.
- G. Mount exhaust fan thermostats 2' from ceiling and bypass switch 48" from finished floor.

**END OF SECTION**

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## SECTION 16160

## PANELBOARDS

## PART 1 - GENERAL

## 1.01 RELATED WORK SPECIFIED ELSEWHERE

- A. Basic Materials and Methods
- B. Section 16180 – Circuit Breakers, Switches & Fuses
- C. Starters
- D. Contactors

## 1.02 APPLICABLE DOCUMENTS

- A. NEMA PB-1, 1957 - Panelboards
- B. F.S. W-P-115a - Panelboards
- C. NFPA-70 - Articles 110, 240, 384

## 1.03 SUBMITTALS

- A. Submit Shop Drawings for review on each panelboard indicating cabinet dimensions, component arrangements, characteristics, and sizes.

## PART 2 - PRODUCTS

## 2.01 PANELBOARDS

- A. Panelboards shall conform to Federal Specification W-P=115a, complete with cabinets and locks. Fronts shall be finished to resist corrosion with not less than one priming coat and one pearl gray finishing coat. Components shall be arranged approximately as indicated. Bus shall be copper.
- B. Circuits shall be numbered serially from top to bottom with odd numbers on the left. Adjacent poles of single pole devices shall be of opposite polarity with split-phase bussing.
- C. Provide keys, each of which will operate all the panelboard cabinet locks. Provide a typewritten directory with a transparent protective cover on the inside of the panelboard cover. Panels shall be factory assembled and tested. Circuit breaker panelboards shall be Type I, Class 1, bolt-on type.
- D. Panelboards shall be as manufactured by Square “D”, Siemens, or Eaton Corporation.
- E. Panelboard bus shall be copper.

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## PART 3 - EXECUTION

## 3.01 GENERAL

- A. Mount all panels with tops at 6' above the floor, except as noted or approved otherwise. Mount grouped equipment on backboards. Identify all panels and all devices. Nipple all adjacent panels together using minimum 1-1/2" conduit. Clean all debris out of cabinets prior to installing covers. Provide a minimum of two empty conduit stubs from flush mounted panels to ceiling spaces above and below.

END OF SECTION

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## SECTION -16180

## SAFETY SWITCHES, CIRCUIT BREAKERS &amp; FUSES

## PART 1 - GENERAL

## 1.01 RELATED WORK SPECIFIED ELSEWHERE:

Panelboards - Section 16160

## Applicable Documents:

NEMA AB-1 - Molded Case Circuit Breakers  
NEMA IC-1 - Industrial Control  
F.S. W-S-865c - Enclosed Switches  
F.S. W-C-375a - Circuit Breakers  
U.L.-198 - Fuses  
NEMA FU-1 - Fuses

## 1.02 SUBMITTALS:

Submit Shop Drawings for review including catalog cuts showing sizes, types and characteristics of all products.

## PART 2 - PRODUCTS

## 2.01 SAFETY SWITCHES/CIRCUIT BREAKER DISCONNECTS:

- A. Safety switches shall conform to Federal Specifications W-S-865c, heavy duty type HD, fusible or non-fusible, with the poles, ampere, voltage and horsepower ratings indicated and shall have solid neutrals and Class R clips. Lugs shall be U.L. listed for copper-aluminum.
- B. Enclosures for safety switches shall be NEMA-1, general purpose, except that switches indicated (WP) weatherproof, shall be NEMA-3R unless marked NEMA-4. Provide hubs as required for NEMA-3R enclosures with suitable gaskets and bonding means.
- C. Switches and disconnects shall be as manufactured by Square 'D', General Electric, Siemens, or Eaton.
- D. Circuit breaker disconnects may be used in lieu of safety switches providing they comply with the safety switch requirements and are applied within their ratings and a schedule is submitted for approval.

## 2.02 CIRCUIT BREAKERS, MOLDED CASE:

- A. Circuit breakers shall conform to Fed. Spec. W-C-375a and NEMA Standard AB-1 unless indicated otherwise. Circuit breakers shall be of the ampere rating, voltage rating, number of poles and class or interrupting capacity (I.C.) as indicated. Interrupting ratings are given in root mean square (RMS), symmetrical amperes based on NEMA test procedures. Lugs and terminals shall be U.L. listed for copper-aluminum. Accessories shall be 120 volt.

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- B. Each circuit breaker shall have a trip unit for each pole with elements providing inverse time delay under overload conditions and instantaneous magnetic trip for short circuit protection unless indicated as non automatic. Trip elements shall operate a common trip bar to open all elements.

## 2.03 FUSES:

- A. Provide rejection fuses for all fusible equipment regardless of which section has furnished such equipment.
- B. Fuses shall be of the ratings shown on the drawings, U.L. listed and shall be Bussman Manufacturing Co., Gould-Shawmut Company, CEFCO or approved equal.
- C. All fuses shall be current limiting and have an interrupting capacity of at least 200,000 amperes RMS symmetrical.
- D. The time-current characteristics and ratings shall be such that positive selective coordination is assured.
- E. Fuses, 600 amperes and lower, where applied to general feeder and branch circuit protection, shall conform to U.L. Class RK-1 standards and be Bussmann Type LPN-RK-SP LPS-RK-SP, "Low Peak". Gould-Shawmut dual element "Amp-Trap."
- F. Fuses, where required for circuit breaker protection shall conform to U.L. Class RK-1 standards and be Bussmann Type LPN-RK-SP or LPS-RK-SP "Low Peak", or Gould-Shawmut Class RK1 "Amp-Trap."
- G. Coordination and current limitations or the protection of each part of the electrical system must be designed around the type and class and manufacturer selected for that type and class.

## PART 3 - EXECUTION

## 3.01 INSTALLATION:

- A. Mount grouped switches, disconnects and controls on backboards or unistrut. Provide labels on or in all fusible equipment indicating the type and size replacement fuse required.
- B. Generally, mount switches and disconnects between 4' and 5' A.F.F., readily accessible.

## 3.02 FUSES:

- A. Install all fuses as required where indicated on the drawings and where required by the National Electrical Code, special attention shall be given to air conditioning equipment.
- B. Provide 10% spares (minimum of three) of each size and type of fuses furnished. Spare fuses shall be placed in a wall mounted cabinet equal to: Bussmann SFC which shall be located in the switchgear room.

END OF SECTION

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## SECTION 16195

## ELECTRICAL IDENTIFICATION

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.02 SUMMARY

- A. Section includes equipment identification labels.

## 1.03 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.

## 1.04 QUALITY ASSURANCE

- A. Comply with ANSI A13.1.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

## 1.05 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.

## PART 2 - PRODUCTS

## 2.01 UNDERGROUND-LINE WARNING TAPE

- A. Tape
  - 1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical, controls and I&C raceways.

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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 Z 535.5.
  2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, LOW VOLTAGE.
  3. Inscriptions for Orange-Colored Tapes: I&C CABLE, OPTICAL FIBER CABLE.
- 2.02 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.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- A. Verify identification 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 services 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. Underground-Line Warning Tape – During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

#### 3.02 IDENTIFICATION SCHEDULE

- A. Locations of Underground Lines – Identify with underground-line warning tape for electrical, controls and I&C wiring and optical fiber cable.
- B. 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 requiring labels include power, lighting, control, and I&C unless equipment is provided with its own identification.
1. Labeling Instructions

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- a. Indoor Equipment – Self-adhesive, 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. Utilize white lettering on black background.
  - b. Outdoor Equipment: Self-adhesive, 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. Utilize white lettering on black background.
2. Equipment to Be Labeled
- a. Enclosures and electrical cabinets
  - b. Motor Control Centers
  - c. Enclosed switches
  - d. Variable Frequency Drives
  - e. Monitoring and control equipment

END OF SECTION

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## SECTION 16450

## GROUNDING

## PART 1 - GENERAL

## 1.01 SCOPE

This Section includes basic materials and methods for all Division 16 and related electrical work.

## 1.02 APPLICABLE REQUIREMENTS

NEC Article 250

## PART 2 - PRODUCTS

## 2.01 GROUND RODS

Ground rods shall be a minimum of 5/8" diameter by 20' length & copper-clad, unless otherwise specified. Grounding accessories shall be as manufactured by Burndy, Erico or Thompson.

## PART 3 - EXECUTION

## 3.01 INSTALLATION

- A. End to end fixtures shall be continuously bonded. Grounding contact of receptacles shall be connected to a solidly grounded conduit system or to a system grounding conductor (not the system neutral) by a stranded copper wire not smaller than 12 AWG or shall be grounded in some other approved manner.
- B. Bond all metal parts. Make equipment and bus connections with suitable lugs or clamps. Cadweld all wire-to-ground rod joints. Cadweld all wire-to-wire joints size 1/0 AWG and over.
- C. Bond all conduits stubbing under switchboards, transformers and similar locations using bonding bushings. Bond each conduit separately.
- D. Provide a bonding wire from grounding bushings on all conduit terminated at panels, boxes, wireways, etc.
- E. Provide a bond wire in all flexible metal conduits and connect to the boxes at each end in an approved manner.
- F. Use PVC for sleeving grounding conductors, except that where sleeves are subject to extreme injury use rigid metal conduit bonded at both ends.
- G. Ground all separately derived sources such as transformers to adjacent cold water pipe or building steel in accordance with NEC.
- H. Grounding of all equipment should be accomplished with lugs equal to T & B "Locktite" one bolt hole tongue #31003 or equal.

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- I. All conduit to Service entrance equipment and Transfer Switch along with Load Center shall have Grounding Bushing on all conduit and ground to box, cabinet, etc. This will give an added protection in grounding all the electrical systems.

END OF SECTION

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## SECTION 16511

## PARKING LOT LIGHTING

## PART 1 - GENERAL

## 1.01 SUMMARY

- A. This Section includes the following:
- B. Exterior luminaires, lamps, and drivers.

## 1.02 SUBMITTALS

- A. Product Data: For each type of luminaire, arranged in order of luminaire designation. Include data on features, accessories, finishes.
- B. Shop Drawings: Show details of nonstandard or custom luminaires. Indicate dimensions, weights, methods of field assembly, components, features, and accessories.
- C. Field quality-control test reports.

## 1.03 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

## 2.01 MANUFACTURERS

- A. In Luminaire Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
  - 1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturer specified to match existing equipment.

## 2.02 LIGHTING FIXTURES AND COMPONENTS, GENERAL REQUIREMENTS

- A. LED Fixtures: Dark-Sky compliant, full cutoff optics, color temperature, driver current, number of LEDs, power rating
- B. Metal Parts: Free of burrs and sharp corners and edges.

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- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

2.03 GLASS: ANNEALED CRYSTAL GLASS, UNLESS OTHERWISE INDICATED.

### PART 3 - EXECUTION

#### 3.01 INSTALLATION

- A. Comply with NFPA 70 for minimum fixture supports.
- B. Connect wiring according to manufacturer's recommendations.

END OF SECTION

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## SECTION 16520

## EXTERIOR ATHLETIC LIGHTING - HID

## PART 1 - GENERAL

## 1.01 SUMMARY

- A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
- B. The purpose of these specifications is to define the performance and design standards for Mills Pond Park in the City of Fort Lauderdale. The manufacturer/contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.
- C. The sports lighting will be for the following venues:
  - 1. Multipurpose Field A - 360' by 210'
  - 2. Multipurpose Field B - 300' by 174'
  - 3. Multipurpose Field C - 300' by 180'
- D. The primary goals of this sports lighting project are:
  - 1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for a period of 25 years.
  - 2. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated.
  - 3. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 25-year life cycle. All communication and monitoring costs for 25-year period shall be included in the bid.
  - 4. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to the players and spectators.

## 1.02 LIGHTING PERFORMANCE

- A. Performance Requirements: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-01, Page 5, Maintained Average Illuminance and shall be guaranteed for the full warranty period. Hours of usage shall comply with the following:

Area of Lighting	Annual Usage Hours Per Field	25 Year Usage Hours
Multipurpose Fields	600	15,000

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- B. **Mounting Heights:** To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be 70 Feet. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum of 10 degrees below horizontal. Poles S1, S2, S3, and S4 must be designed appropriate to climb either steps / cables and / or platforms.
- C. **Lighting Methodology:** There are two methods that will be considered for calculation of the lighting designs for this project. The approved Lighting Method #1, automated timed power adjustments, as described in C.1 utilizes methodology that adjusts light levels through a series of programmed adjustments. The alternate Lighting Method #2, continuous depreciating light, as described in C.2 uses continuous lamp lumen depreciation which is recovered by relamping and cleaning lenses of the luminaires. Computer models shall reflect initial design lumens, end of life design lumens, recoverable light loss factor (RLLF), and the Coefficient Utilization (CU) for the design. Both methods must be at or above target illumination levels throughout the 25 years of the contract/warranty provided by the manufacturer. A +/- 10% design/testing allowance is not permitted in the design logic.
1. **Lighting Method #1: Automated Timed Power Adjustments:**
- The lighting system shall use automated timed power adjustments to achieve a lumen maintenance control strategy as described in the IESNA Lighting Handbook 10th Edition, Lighting Controls Section page 16-8: "Lumen maintenance involves adjusting lamp output over time to maintain constant light output as lamps age and dirt accumulation reduces luminaire output. With lumen maintenance control, either lamps are dimmed when new, or the lamp's current is increased as the system ages."
  - Manufacturers bidding an automated timed power adjustment system must provide an independent test report certifying the system meets the lumen maintenance control strategy above and verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience. If report is not provided at least 10 days prior to bid opening, the manufacturer shall provide the initial and maintained designs called for in this specification under Lighting Method #2: Alternate Manufacturers, section 1.2.C.2.
  - Project References:** Manufacturers bidding any form of Automated Timed Power Adjustment light system must provide a minimum of 10 project references within the state of FL that have been completed within the last 12 months utilizing this exact technology. Manufacturer will include project name, project city, and if requested, contact name and contact phone number for each reference.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Multipurpose Field A	30 Footcandles	3:0:1.0	84	30' x 30'
Multipurpose Field B	30 Footcandles	3:0:1.0	50	30' x 30'

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Multipurpose Field C	30 Footcandles	3.0:1.0	60	30' x 30'
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## 2. Lighting Method #2 – Continuous Depreciating Light

- a. The lighting system shall use continuous lamp lumen depreciation which is recovered by relamping and cleaning lenses of the luminaires. Manufacturer shall provide computer models for initial illumination level and target illumination levels on the field over 25 years. The specified maximum Recoverable Light Loss Factor (RLLF) of .69 and maintenance/group relamping schedule shall be provided in accordance with recommendations in the Leukos Abstract Volume 6, Number 3, January 2010, page 183-201: "Light Loss Factors for Sports Lighting", and presented at the 2009 IESNA Annual Conference.

Multipurpose Fields: 1500w Luminaire RLLF Requirements

Lamp Replacement Interval (hours)	Recoverable Light Loss Factor (RLLF)
2100	.69

- b. Independent Test Report: If lamp replacement interval is greater than 3,000 hours for 1500 watt lamps, manufacturer shall supply an independent test report with lumen depreciation over proposed lamp life, initial lumens, and end of life lumens.
- c. Based on anticipated hours of usage - 600 hours per year, Method #2 systems would require a minimum of 7 group lamp replacements over the 25 years.

Area of Lighting	25 Year Usage Hours	25 Year Group Relamps Required
Multipurpose Fields	15,000	7

Area of Lighting	Average Initial Illumination Levels	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Multipurpose Field A	43.5 FC	30 Footcandles	3:0:1.0	84	30' x 30'
Multipurpose Field B	43.5 FC	30 Footcandles	3:0:1.0	50	30' x 30'
Multipurpose Field C	43.5 FC	30 Footcandles	3.0:1.0	60	30' x 30'

- d. Revised Electrical Distribution: Manufacturer shall provide revised electrical distribution plans to include changes to service entrance, panel, and wire sizing if increased power is required which exceeds specified design loads.

## 1.03 ENVIRONMENTAL LIGHT CONTROL

- A. Spill Light Control: All fixtures shall utilize maximum spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. Horizontal optic fixtures are not allowed. High output lamps (over 162,000 lumens) are not allowed.

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## B. Spill Light Control - South Field (Field C):

Maximum initial horizontal footcandles at the property line shall not exceed 0.2 Footcandles to the East and Maximum vertical footcandles at the property line shall not exceed 0.8 Footcandles to the East. Footcandle readings shall be taken at 30-foot intervals along the specified line. Illumination level shall be measured in accordance with the IESNA LM-5-04 at the first 100 hours of operation.

## C. Photometric reports must be provided to demonstrate the capability of achieving the following specified performance. Reports shall be certified by a qualified independent testing laboratory with a minimum of five years experience or by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. ITL reports will remain confidential and be returned to the manufacturer after the bid is awarded.

## D. Upper Beam Definition

No fixture shall exceed the candlepower at the specified degrees above the center of the beam in the vertical plane as specified in the following table.

NEMA Classification of Vertical Beam	Candela	Degrees Above the Center of the Beam in the Vertical Plane
4	10,000	15.0 degrees

If a manufacturer's photometric report indicates that they cannot meet this criteria, they may increase mounting heights (see below) to maintain the same impact for playability, spectator comfort and impact on the adjoining properties. If a manufacturer's photometric report indicates that they can achieve 10,000 candela at an angle below 15 degrees they may decrease mounting heights using the formula below, providing aiming angles abide by I.E.S. good lighting practices

This mounting height increase/decrease will be calculated by referencing the fixture photometric report and determining the angle above or below vertical that the fixture achieves a candela reading less than or equal to 10,000 candela. Pole heights will be increased/decreased 3.25' for every one degree above 15 degrees needed to achieve a candela reading of 10,000. For example: If 10,000 candela is achieved at 17 degrees above vertical, a minimum mounting height of 76.5' (2.0 degrees x 3.25') would be required for the poles.

## 1.04 LIFE CYCLE COSTS

Manufacturer shall submit 25-year life cycle cost calculation as outlined in the required submittal information.

Lamp replacement schedule per charts below:

Lighting Method 1 Lamp Replacement	Lighting Method 2 Lamp Replacement
1500 Watts - 5,000 hour intervals	1500 Watts - 2,100 hour intervals

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## PART 2 - PRODUCT

## 2.01 SPORTS LIGHTING SYSTEM CONSTRUCTION

- A. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled, aimed, wired and tested.
- B. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel of 18-8 grade or better, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153 and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the crossarms, pole, or electrical components enclosure.
- C. System Description: Lighting system shall consist of the following:
  - 1. Galvanized steel poles and crossarm assembly. Alternate: Concrete pole with a minimum of 8,000 psi and installed with concrete backfill will be an acceptable alternative provided building code, wind speed and foundation designs per specifications are adhered to.
  - 2. Non-approved pole technology:
    - a. Square static cast concrete poles will not be accepted.
    - b. Direct bury steel poles which utilize the extended portion of the steel shaft for their foundation will not be accepted due to potential for internal and external corrosive reaction to the soils and long term performance concerns.
  - 3. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 12-24 hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation is located a minimum of 18 inches above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied unless shorter cure time approved by structural engineer of record.
  - 4. All luminaires shall be constructed with a die-cast aluminum housing or external hail shroud to protect the luminaire reflector system.
  - 5. Manufacturer will remote all ballasts and supporting electrical equipment in aluminum enclosures mounted approximately 10 feet above grade. The enclosures shall be touch-safe and include ballast, capacitor and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure. Integral ballast fixtures will not be accepted.
  - 6. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

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7. All luminaires, visors, and crossarm assemblies shall withstand 150 mph winds and maintain luminaire aiming alignment
  8. Control cabinet to provide remote on-off control and monitoring of the lighting system. Cabinet shall be constructed of aluminum and be rated NEMA Type 4. Communication method shall be provided by manufacturer. Cabinet shall contain custom configured contactor modules for 30, 60, and 100 amps, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.
  9. Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A. If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780. The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.
- D. Safety: All system components shall be UL listed for the appropriate application.

## 2.02 ELECTRICAL

- A. Electric Power Requirements for the Sports Lighting Equipment:
1. Electric power: 480 Volt, 3-Phase - North and 480 Volt 3-Phase - South
  2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.
- B. Energy Consumption: The average kW consumption for the field lighting system shall be 86 kW.
- C. Revised Electrical Distribution: Manufacturer shall provide, at their cost, revised electrical distribution plans to include changes to service entrance, panel, and wire sizing if using Lighting Method 2.

## 2.03 STRUCTURAL PARAMETERS

- A. Wind Loads: Wind loads shall be based on the 2014 Florida Building Code. Wind loads to be calculated using ASCE 7-10, an ultimate design wind speed of 170 MPH, High Velocity Hurricane Zone, and exposure category Exposure C.
- B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2010 ASCE Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-4).
- C. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report.
- D. Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 3 material as defined by 2014 FBC Table 1819.6.
- E. Foundation Drawings: Project specific foundation drawings stamped by a registered engineer in the state where the project is located are required. The foundation drawings

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must list the moment, shear (horizontal) force, and axial (vertical) force at ground level for each pole. These drawings must be submitted at time of bid to allow for accurate pricing.

## 2.04 CONTROL SYSTEM

- A. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute "early off" commands by phone. Scheduling tool shall be capable of setting curfew limits.

Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

- B. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).
- C. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of lamp outages, control operation and service scheduling including relamping operations completed and scheduled. Mobile application will be provided suitable for IOS, Android and Blackberry devices.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

1. Cumulative hours: shall be tracked to show the total hours used by the facility
  2. Current lamp hours: shall be tracked separately to reflect the amount of hours on the current set of lamps being used, so relamping can be scheduled accurately.
  3. Report hours saved by using early off and push buttons by users.
- D. Communication Costs: Manufacturer shall include communication costs for operating the controls and monitoring system for a period of 25 years.
- E. Contractor shall provide the appropriate contactors to merge the existing field lighting with the new field lighting on the South Field including contactors for the parking. These contactors will include the above remote lighting control system.

## 2.05 LED SECURITY LIGHTING

- A. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, driver and other enclosures shall be factory assembled, aimed, wired and tested.
- B. Component Description:



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1. Security Lighting must be attached to the sports lighting poles:  
S1, S2, S5, S6, S9, and S10
  2. LED fixture rated for 10,000 hours of use
  3. 10 year warranty including all maintenance costs
  4. All fixtures shall be directed towards the field.
- C. Energy Consumption: Max kW for proposed system shall not exceed 0.87

### PART 3 - EXECUTION

#### 3.01 SOIL QUALITY CONTROL

- A. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:
1. Providing engineered foundation embedment design by a registered engineer in the State of FL for soils other than specified soil conditions;
  2. Additional materials required to achieve alternate foundation;
  3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

#### 3.02 DELIVERY TIMING

Delivery Timing Equipment On-Site: The equipment must be on-site 4 to 6 weeks from receipt of approved submittals and receipt of complete order information.

#### 3.03 FIELD QUALITY CONTROL

- A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04. For Lighting Method 1, Timed Power Adjustment systems, light levels must be measured and exceed the specified target levels. For Lighting Method 2, light levels must be measured and meet the specified initial light levels.
- B. Field Light Level Accountability
1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 25 Years.
  2. Manufacturer/Contractor shall provide to the owner as part of the bid package a new light meter that will be utilized both for initial light level testing and annual testing of the system. Initial light test certification at project completion shall be conducted by a third party State of FL Electrical Engineer (P.E.). Light meter specification shall be Gossen Mavlux 5032B or 5032C and shall be new and calibrated at time of delivery.
  3. The contractor/manufacturer shall be responsible for an additional inspection one year from the date of commissioning of the lighting system and will utilize the owner's light meter in the presence of the owner.

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4. The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.
- C. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including illumination levels, uniformity ratios, and maximum energy consumption do not conform to the requirements of the performance specifications and submitted information, the manufacturer shall be liable to any or all of the following:
  1. Manufacturer shall at his expense provide and install any necessary additional luminaires to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.
  2. Manufacturer shall minimize the Owner's additional long term luminaire maintenance and energy consumption costs created by the additional luminaires by reimbursing the Owner the amount of \$1,000.00 (one thousand dollars) for each additional luminaire required.
  3. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specifications

#### 3.04 25-YEAR WARRANTY

- A. Each manufacturer shall supply a signed warranty covering the entire system for 25 years OR for the maximum hours of coverage based on the estimated annual usage, whichever occurs first. Warranty shall guarantee light levels will not fall below target maintained levels. A +/- 10% design/testing allowance will not be allowed. Warranty shall also cover: lamp replacements, system energy consumption, monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations.
- B. Group lamp replacements for Method 1 systems (Time Powered Adjustment) must occur at end of useful life of lamp as stated by manufacturer. Group lamp replacements for Method 2 systems (Continuous Depreciating Light) must relamp every 2100 hours.
- C. Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and lamp outage for 25 years from the date of equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.

#### PART 4 - DESIGN APPROVAL

##### 4.01 PRE-BID SUBMITTAL REQUIREMENTS

- A. Design Approval: The owner / engineer will review pre-bid submittals per section 4.0.B from all the manufacturers to ensure compliance to the specification 10 days prior to bid. If the design meets the design requirements of the specifications, a letter and/or addendum will be issued to the manufacturer indicating approval for the specific design submitted.

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- B. Listed Manufacturers:
1. Method 1: Time Powered Adjustment Technology - Musco's Green Generation Lighting® sports lighting system is the listed "Lighting Method 1" product.
  2. Method 2: Continuous Depreciating Light – "Lighting Method 2" product.
- C. All listed manufacturers shall submit the information at the end of this section at least 10 days prior to bid. An addendum will be issued prior to bid; listing approved lighting manufacturers and the design method to be used.
- D. Bidders are required to bid only products that have been approved by this specification or addendum by the owner or owner's representative. Bids received that do not utilize an approved system/design, will be rejected.

**REQUIRED SUBMITTAL INFORMATION FOR ALL MANUFACTURERS 10 DAYS PRIOR TO BID**

*All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements. Complete the Yes/No column to indicate compliance (Y) or noncompliance (N) for each item. Submit checklist below with submittal.*

Submitting as: ☐ Lighting Method 1 ☐ Lighting Method 2

Yes/ No	Tab	Item	Description
	A	Letter/ Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
	B	Equipment Layout	Drawing(s) showing field layouts with pole locations
	C	On Field Lighting Design	Lighting design drawing(s) showing: <ol style="list-style-type: none"> <li>a. Field Name, date, file number, prepared by</li> <li>b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x &amp; y), Illuminance levels at grid spacing specified</li> <li>c. Pole height, number of fixtures per pole, as well as luminaire information including wattage, lumens and optics</li> <li>d. Height of light test meter above field surface.</li> <li>e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance (CV), coefficient of utilization (CU) uniformity gradient; number of luminaires, total kilowatts, average tilt factor; light loss factor.</li> <li>f. Manufacturer's using Lighting Method 2 shall provide both initial and maintained light scans using a maximum recoverable right loss factor (RLLF) as specified in section 1.2.C.2 and shall be shown on lighting design.</li> </ol>

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	D	Off Field Lighting Design	Lighting design drawing showing initial spill light levels along the boundary line (defined on bid drawings) in footcandles. Light levels shall be taken at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank of lights.
	E	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed to not fall below target levels for warranty period.
	F	Structural Calculations	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of FL, if required by owner.
	G	Control & Monitoring System	Manufacturer of the control and monitoring system shall provide written definition and schematics for automated control system to include monitoring. They will also provide ten (10) references currently using proposed system in the state of FL.
	H	Electrical Distribution Plans	Manufacturer using Lighting Method 2 must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of FL.
	I	Warranty	Provide written warranty information including all terms and conditions. Provide (10) references of customers currently under specified warranty in the state of FL.
	J	Independent Testing Report	<ol style="list-style-type: none"> <li>a. Lighting Method 1 is to provide an independent test report certifying the system meets the lumen maintenance control strategy defined in Section 1.2.C.1.a, verifying the field performance of the system for the duration of the useful life of the lamp based on lamp replacement hours. Report shall be signed by a licensed professional engineer with outdoor lighting experience.</li> <li>b. If Manufacturer using Lighting Method 2 desires to provide a recoverable light loss factor other than specified in section 1.2.C.2, Independent field test report from licensed professional engineer will be required to substantiate the ability to maintain light levels in accordance with section 1.7-A of the specification. Both initial and maintained light scans must still be provided. Independent Engineer conducting the report must have no affiliation with the manufacturer and report must be based on actual testing data. Testing must be done on the system as a whole, not on individual components.</li> </ol>
	K	Project References	Manufacturer to provide a list of 10 projects where the technology and specific fixture proposed for this project has been installed in the state of FL. Reference list will include project name, project city, installation date, and if requested, contact name and contact phone number. Manufacturer bidding Lighting Method 2 must supply independent test report if lamp life relamping projection is greater than 3000 hours.
	L	Product Information	Complete bill of material and current brochures/cut sheets for all product being provided.

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	M	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted.
	N	Life-cycle Cost Calculation	Document life-cycle cost calculations as defined in the specification. Identify energy costs for operating the luminaires. Maintenance cost for the system including spot lamp replacement and group relamping costs must be included in the warranty. All costs should be based on 25 Years.

END OF SECTION

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## SECTION 16530

## EXTERIOR ATHLETIC LIGHTING - LED

## PART 1 - SPORTS LIGHTING

## 1.01 SUMMARY

- A. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.
- B. The purpose is to define the performance and design standards for the project using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.
- C. The sports lighting will be for the following fields:
1. Multipurpose Field A - 360' by 210'
  2. Multipurpose Field B - 300' by 174'
- D. The primary goals of this sports lighting project are:
1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed for a period of 10 years. Environmental Light Control: It is the primary goal of this project to minimize spill light and glare in the adjacent neighborhoods.
  3. Life-cycle Cost: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated, and the fields shall be proactively monitored to detect luminaire outages over a 10-year life cycle. To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system.
  4. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Field(s) should be proactively monitored to detect luminaire outages over a year life cycle.

## 1.02 LIGHTING PERFORMANCE

- A. Illumination Levels and Design Factors: The illumination target levels specified shall be based on guaranteeing light levels for 10 years or 10,000 hours, whichever comes first. Light levels shall not drop below specified targeted lighting levels during the 10,000 operating hours. Appropriate light loss factors shall be applied and submitted for the basis of design.
- B. Horizontal illumination levels shall be based at any point on a parallel plane 36 inches above the playing surface, unless otherwise indicated. Lighting calculations shall be placed on a grid as shown in the specification. Light level requirements will be as follows:

Area of Lighting	Average	Maximum to	Grid Points	Grid Spacing
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	Maintained Light Levels	minimum Uniformity Levels		
Multipurpose Field A	30 Footcandles	3:0:1.0	84	30' x 30'
Multipurpose Field B	30 Footcandles	3:0:1.0	50	30' x 30'

1. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, the pole mounting heights for the playing field surface shall be 70' or higher. Poles S1, S2, S3, and S4 must be designed appropriately to climb either with steps / cables and / or platforms.

### 1.03 ENVIRONMENTAL LIGHT CONTROL

- A. Spill and Glare Control: Fixtures shall have external visors to control spill light and reduce glare. Mounting heights for fixtures shall be 70 feet or higher.
- B. Maximum vertical spill light values shall not exceed 0.15 footcandles, 150' from the edge of the field.
- C. Maximum candela spill light values shall not exceed 10,000, 150' from the edge of the field. Photometric summaries shall be provided with the lighting designs with calculated candela values at 150' from the edge of the field.

Footcandle readings shall be taken at 30-foot intervals. Meter shall be oriented with the photocell pointed at the brightest source of light coming from the luminaires.

- D. To ensure proper aiming angles for reduced glare and to provide better playability, mounting heights shall be such that there are zero lumens between 80° and 90° above Nadir. Compliance of all lighting designs shall be confirmed through the use of an aiming summary and photometric data provided by the lighting manufacturer. A minimum of 70 foot mounting height is required.
- E. The first page of a photometric report showing horizontal and vertical axial candlepower shall be provided for each type of luminaire. This data must come from a NVLAP certified lab.

### 1.04 LIFE-CYCLE COSTS

- A. Energy Consumption: The average kW consumption for the field lighting system shall be 46 or less.
- B. Preventative and Spot Maintenance: Manufacturer shall provide all preventative and spot maintenance, including parts and labor for 10 years from the date of equipment shipment. Individual lamp outages shall be repaired when the usage of any field is materially impacted. Owner agrees to check fuses in the event of a luminaire outage.
- C. Remote Monitoring System: System shall monitor lighting performance, including on/off status, hours of usage and lamp outages. If luminaire outages that affect playability are detected, manufacturer shall contact owner so that maintenance can be proactively scheduled. The controller shall determine switch position (Manual or Auto) and contactor status (open or closed).
- D. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible

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to allow a range of privileges such as full scheduling capabilities for all fields, to only having permission to execute "early off" commands by phone. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

E. Management Tools: Manufacturer shall provide a web-based database of actual field usage and provide reports by facility and user group.

Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.

1. Cumulative hours: shall be tracked to show the total hours used by the facility
2. Current lamp hours: shall be tracked separately to reflect the amount of hours on the current set of lamps being used, so relamping can be scheduled accurately

F. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring systems for a period of 10 years.

#### 1.05 WARRANTY AND GUARANTEE

A. 10-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 10 years from the date of shipment or 10,000 hours, whichever comes first. Warranty shall guarantee specified light levels, system energy consumption, monitoring, maintenance and control services, spill light control, and structural integrity. Manufacturer shall maintain specifically funded financial reserves to assure fulfillment of the warranty for the full term. Warranty may exclude fuses, storm damage, vandalism, abuse and unauthorized repairs or alterations. All service to be performed on-site by factory authorized technicians and shall include parts and labor.

#### 1.06 DELIVERY TIMING

A. Equipment On-Site: The equipment must be on-site 8-10 weeks from receipt of approved submittals and receipt of complete order information.

#### 1.07 PRE-BID SUBMITTAL REQUIREMENTS

A. Approved Product: Musco's Lighting® LED sports lighting system is the approved base bid product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.

B. Design Approval: The owner / engineer will review pre-bid shop drawings from the manufacturers to ensure compliance to the specification. If the design meets the design requirements of the specifications, a letter will be issued to the manufacturer indicating approval for the specific design submitted.

### PART 2 - PRODUCT

#### 2.01 LIGHTING SYSTEM CONSTRUCTION

A. System Description: Lighting system shall consist of the following:

1. Galvanized steel poles and crossarm assembly
2. Pre-stressed concrete base embedded in concrete backfill allowed to cure for 24

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## Project No. 12060

hours before pole stress is applied. Alternate may be an anchor bolt foundation designed such that the steel pole and any exposed steel portion of the foundation is located a minimum of 18 inches above final grade. The concrete for anchor bolt foundations shall be allowed to cure for a minimum of 28 days before the pole stress is applied, unless structural engineer of record allows shorter cure time. Static concrete poles are not allowed.

3. LED Lamp Technology Sports Lighting Fixtures. Minimum of 10,000-hour life where required light levels do not fall below target maintained illuminance levels, instant on/off capabilities.
  4. Fixtures must include thermal management and come with a 10-year full coverage warranty including parts and labor.
  5. Minimum of 5,700 Color Temp and 75+ CRI.
  6. Fixture Operating Temperature Range of -30 Degrees C to 55 Degrees C. Maximum Junction Temperature for the diodes of 80 degrees C.
  7. Electronic Driver with an efficiency of 95% or greater. Maximum starting inrush of 7 amps at 25 degrees C.
  8. Secondary Wiring: Manufacturer shall supply all necessary wiring to connect the fixture to the driver enclosure. Wiring shall be protected with either a jacketed cord or conduit.
  9. 10. Remote electrical enclosure at the base of the pole (approximately 10' above grade) for all drivers and associated electrical components.
  10. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, ballast and other enclosures shall be factory assembled aimed, wired and tested.
  11. Durability: The lighting system, including all mounting brackets, shall be powder coat painted for protection. All mounting brackets are to be made of steel construction. Only stainless steel or zinc plated steel hardware is allowed.
  12. Safety: All system components shall be UL Listed for the appropriate application.
- B. Electric Power Requirements for the Sports Lighting Equipment.
1. Electric Power: 480 volt, 3-phase
  2. Maximum total voltage drop: Voltage drop to the remote enclosure shall not exceed three (3) percent of the rated voltage.
- C. Lightning Protection: Manufacturer shall provide integrated lightning grounding via concrete encased electrode grounding system as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.

## 2.02 STRUCTURAL PARAMETERS

- A. Wind Loads: Wind loads shall be based on the 2014 Florida Building Code. Wind loads to be calculated using ASCE 7-10, a design wind speed of 170 mph, High Velocity Hurricane Zone, exposure category C and wind importance factor of 1.
- B. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2009 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-5).

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C. Foundation Design: The foundation design shall be based on soil parameters as outlined in the geotechnical report.

## 2.03 LED SECURITY LIGHTING

A. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, driver and other enclosures shall be factory assembled, aimed, wired and tested.

B. Component Description:

1. Security Lighting must be attached to the sports lighting poles defined below:  
S1, S2, S5, S6, S7, and S8
2. LED fixture rated for 10,000 hours of use
3. 10 year warranty including all maintenance costs
4. All fixtures shall be directed towards the field.

C. Energy Consumption: Max kW for proposed system shall not exceed 0.87

## PART 3 - EXECUTION

### 3.01 SOIL QUALITY CONTROL

A. It shall be the Contractor's responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner's approval / payment for additional costs associated with:

1. Providing engineered foundation embedment design by a registered engineer in the State of FL for soils other than specified soil conditions;
2. Additional materials required to achieve alternate foundation;
3. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

### 3.02 FIELD QUALITY CONTROL

A. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

B. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including footcandles, uniformity ratios, and maximum kilowatt consumptions are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be liable to any or all of the following:

1. Manufacturer shall at his expense provide and install any necessary additional luminaires to meet the minimum lighting standards. The Manufacturer shall also either replace the existing poles to meet the new wind load (EPA) requirements or verify by certification by a licensed structural engineer that the existing poles will withstand the additional wind load.

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2. Manufacturer shall minimize the Owner's additional long-term luminaire maintenance and energy consumption costs created by the additional luminaires by reimbursing the Owner the amount of \$1,000.00 (one thousand dollars) for each additional luminaire required.
3. Manufacturer shall remove the entire unacceptable lighting system and install a new lighting system to meet the specifications.

#### REQUIRED SUBMITTAL INFORMATION FOR ALTERNATE SYSTEM

##### Design Submittal Data Checklist and Certification for Alternate System Bids

*All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements*

Tab	Item	Description
A	Letter/ Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
B	Equipment Layout	Drawing(s) showing field layouts with pole locations.
C	On Field Lighting Design	Lighting design drawing(s) showing: <ol style="list-style-type: none"> <li>a. Field Name, date, file number, prepared by, and other pertinent data.</li> <li>b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x &amp; y), Illuminance levels at grid spacing specified.</li> <li>c. Pole height, # of luminaires per pole, as well as luminaire information including wattage, lumens and optics.</li> <li>d. Height of light test meter above field surface.</li> <li>e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in footcandles (fc); uniformity including maximum to minimum ratio, coefficient of variance and uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor.</li> <li>f. Spill scans at the designated property line showing both maximum vertical footcandles and calculated candela values to meet specifications.</li> <li>g. Alternate manufacturers shall provide light scans meeting target illumination levels in section 1.2.</li> </ol>
E	Life-cycle Cost Calculation	Document life-cycle cost calculations as defined in the specification. Identify energy costs for operating the luminaires, maintenance cost for the system including spot lamp replacement. All costs should be based on 10 Years.
F	Photometric Report	Provide photometric report for a typical luminaire used showing candela tabulations as defined by IESNA Publication LM-35-02. Photometric data shall be certified by laboratory with current National Voluntary Laboratory Accreditation Program or an independent testing facility with over 5 years experience.
G	Aiming Summary	Document showing each luminaire's aiming angle and the poles on which the luminaries are mounted. Each aiming point shall identify the type of luminaire.
H	Aiming Report	Provide test report showing aiming alignment can be maintained to 150 mph winds.
I	Structural Calculations	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of FL.
J	Control & Monitoring	Manufacturer shall provide written definition and schematics for automated control system to include monitoring. They will also provide examples of system reporting

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	System	and access for numbers for personal contact to operate the system.
K	Electrical Distribution Plans	If bidding an alternate system, manufacturer must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of New York.
L	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed per specification for 10 years.
M	Warranty	Provide written warranty information including all terms and conditions.
N	Project References	Manufacturer to provide a list of projects where the technology proposed for this project has been installed in the state of FL or GA.
O	Product Information	Complete set of product brochures for all components, including a complete parts list and UL Listings.
P	Delivery	Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information.
Q	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted.

END OF SECTION

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# APPENDIX A

**REPORT OF  
GEOTECHNICAL EXPLORATION**

**MILLS POND PARK  
LACROSSE AND SOCCER FIELDS - TASKS 1 & 6  
2201 NW 9<sup>TH</sup> AVENUE  
FORT LAUDERDALE, FLORIDA**

**FOR**

**CALVIN, GIORDANO & ASSOCIATES, INC.  
1800 ELLER DRIVE  
SUITE 600  
FORT LAUDERDALE, FLORIDA 33316**

**PREPARED BY**

**NUTTING ENGINEERS OF FLORIDA, INC.  
1310 NEPTUNE DRIVE  
BOYNTON BEACH, FLORIDA 33426**

**ORDER NO. 11036.64**

**SEPTEMBER 2015**

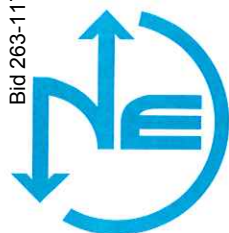


*Geotechnical & Construction Materials  
Engineering, Testing & Inspection  
Environmental Services*

*Offices throughout the state of Florida*

[www.nuttingengineers.com](http://www.nuttingengineers.com) [info@nuttingengineers.com](mailto:info@nuttingengineers.com)

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Engineers**  
of Florida Inc. | Established 1967  
*Your Project is Our Commitment*

Geotechnical and Construction Materials | Engineering, Testing and Inspections | Environmental Services

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Broward 954-941-8700  
St. Lucie 772-408-1050  
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[www.nuttingengineers.com](http://www.nuttingengineers.com)

September 11, 2015

Mr. Michael D. Conner  
Calvin Giordano and Associates, Inc.  
1800 Eller Drive, Suite 600  
Fort Lauderdale, Florida 33316  
Phone: 954-921-7781 Fax: 954-921-8807

Subject: Report of Geotechnical Exploration  
**Mills Pond Park**  
**Proposed Lacrosse and Soccer Fields - Tasks 1 & 6**  
2201 NW 9<sup>th</sup> Avenue  
Fort Lauderdale, Florida

Dear Mr. Conner:

Nutting Engineers of Florida, Inc. (NE), has performed a Geotechnical Exploration for the proposed new fields at the above referenced site in Fort Lauderdale, Florida. This exploration was performed in accordance with the verbal authorization to proceed provided by Calvin Giordano and Associates, Inc. dated August 21, 2015. This study was performed to develop information regarding existing subsurface conditions at specific test locations. This information which along with proposed construction information provided was used to develop opinions regarding the development for the proposed sports field. This report presents our findings and recommendations based upon the information examined at the time of this evaluation.

### PROJECT INFORMATION

We understand that plans include the development of two locations for new soccer and/or lacrosse fields at the site. The one location is at the north end of the park, due north of the ball fields and will consist of the conversion of a single field into two new fields. The second location is southwest of the ball fields and is currently vacant land which will house one new field. Along with the fields associated lighting and drainage structures will be constructed. We were provided plans indicating the area of the proposed construction.



Based on current site elevations and review of plans provided to our office, we estimate that existing grades are approximately at final elevations; however, the final elevations shall be determined by a civil engineer, or other qualified party.

NE should be notified in writing by the client of any changes in the proposed construction along with a request to amend our analysis and/or recommendations within.

## **GENERAL SUBSURFACE CONDITIONS**

### **Soil Survey Maps**

As part of the geotechnical exploration, we have reviewed available Natural Resources Conservation Service (NRCS) online soil survey map for Broward County. The USDA online NRCS mapping provides qualitative information about potential general shallow soil conditions in the project vicinity.

This information was derived from approximately 6 ft. deep manual auger borings, aerial photo and surface feature interpretation at some point in the past. The NRCS data may or may not reflect actual current site conditions. As indicated in the online Soil Survey Mapping at the time the survey was conducted, one main soil descriptions may exist within the subject property. The soil type is outlined below. We note that the soil survey listed below were typically penetrated to a depth of approximately six feet.

#### Basinger Fine Sand

A review of the United States Soil Conservation map of Broward County indicates that at the time the survey was conducted, Basinger fine sand was located in the area of the site. This is a nearly level, deep, poorly drained, sandy soil in broad sloughs and flats. Included in mapping are small areas of Immokalee fine sand, Pompano fine sand, and Margate fine sand. We note that the maximum depth of the survey is approximately 6 feet.

### **Subsurface Exploration**

Nutting Engineers of Florida, Inc. was requested to perform five Standard Penetration Test (SPT) borings (ASTM D-1586) to depths of twenty feet below land surface in the general locations of the new fields, along with four SPT test borings to depths of six feet in areas of roadways or sidewalks as determined by your office. The locations of the test borings are indicated on the boring location plan presented in the Appendix of this report. The boring locations were identified in the field using approximate methods; namely, a measuring wheel and available surface controls. As such the soil boring locations should be considered to be approximate.

In addition, two 'Usual Open-Hole' exfiltration tests were performed, at locations established by the project civil engineer, in accordance with South Florida Water Management District specifications. The exfiltration tests were completed to depths of six feet.

For purposes of dry retention pond purposes, we performed one Double Ring Infiltration test (ASTM D-3385-09) as requested by your office and the project civil engineer.

### **Test Boring Results**

In general, the soil boring locations revealed a surface layer of loose to medium dense brown to dark brown sand or brown sand and limestone fragments in the upper two feet, underlain by medium dense to loose gray to brown sand to a depth of twenty feet, the maximum depth explored. Please see the enclosed soil classification sheet in the Appendix of this report for additional important information regarding these descriptions, the field evaluation and other related information.

Note: Substantially different subsurface conditions may exist at other areas of the site. Buried debris may or may not be identified or adequately delineated by soil borings. Test pit excavation can provide more insight into such conditions and rock lithology if present. Such conditions may be revealed during site development activities (e.g. proof rolling, utility & foundation excavation activities) or other related activities. Should additional assurance be desired by the client, further subsurface investigation could be performed.

### **Exfiltration Results**

Two 'Usual Open-Hole' exfiltration tests were performed in accordance with South Florida Water Management District (SFWMD) specifications to depths of six feet below the existing ground surface. The tests were performed in order to determine the hydraulic conductivity of the in situ subsurface soils to evaluate drainage requirements for the project. The hydraulic conductivity values were determined to range from  $1.02 \times 10^{-4}$  to  $1.39 \times 10^{-4}$  cubic feet per second, per square foot, per foot of head. Detailed soil descriptions and flow rates are presented in the Appendix.

### **Infiltration Test Results**

One Double Ring Infiltration Test (ASTM D-3385-09) was performed in the requested area. The test was performed for a period of 4.0 hours. The results of the test indicate that the steady state infiltration rate at the test location was approximately 6.00 inches per hour. Detailed flow rates and soil descriptions are presented in the appendix.



## Groundwater Information

The immediate groundwater level was measured at the boring locations at the time of drilling. The groundwater level was encountered at approximately three to four feet below the existing ground surface at the time of drilling.

The immediate depth to groundwater measurements presented in this report may not provide a reliable indication of stabilized or more long term depth to groundwater at this site. Water table elevations can vary dramatically with time through rainfall, droughts, storm events, flood control activities, nearby surface water bodies, tidal activity, pumping and many other factors. For these reasons, this immediate depth to water data **should not** be relied upon alone for project design considerations.

## ANALYSIS AND GENERALIZED RECOMMENDATIONS

### Proposed Sports Fields

As indicated within the test borings performed in the proposed sport field areas, the trace root may limit drainage; however overall soils appear suitable for field development. The project civil engineer should evaluate this condition to determine if additional site preparation for drainage considerations may be needed. We also note that the amount of compaction and fill specifications may be modified depending upon the desired relative hardness of the soil for the playing field area. It is recommended that additional discussions be held with all interested parties in order further discuss possible options and clarify any questions.

### Proposed Light Poles

In order to provide design parameters for the proposed light pole foundations, the values in the table below may be used for design. The table is based on visual classification, empirical relationships and our experience with similar soil conditions. If more exact values are needed, specific tests would need to be performed.

We understand that the foundation for the proposed poles will be designed by others. The decision as to which type of foundation will be best for this project will depend on the structural loading conditions and costs. We recommend that discussions be held with us, the structural engineer, owner, specialty contractor, and other interested parties to provide input concerning the best alternative for this portion of the project.

**TABLE OF GENERAL SOIL PARAMETERS**

SOIL DESCRIPTION	SOIL UNIT WEIGHT (PCF)		ANGLE OF INTERNAL FRICTION (DEGREES)	EARTH PRESSURE COEFFICIENT	
	SATURATED	SUB-MERGED		ACTIVE (Ka)	PASSIVE (Kp)
Very Loose Sand (N=0-4)	110	48	28	0.36	2.8
Loose Sand (N=5-10)	115	53	30	0.33	3
Medium Dense to Dense Sand (N=11-30)	120	58	32	0.31	3.25

**Proposed Sidewalks/Roadway (if needed)**

The test borings performed along the path of the roadway suggests that the existing site soils appear suitable for development of a new asphaltic concrete roadway or concrete sidewalks. It is possible that new limerock, shellrock, or other granular material will need to be imported in order to develop the sidewalk or asphalt pavement sections (base and subbase course). Appropriate testing of the existing base course section must be performed to determine its suitability for the new pavement sections. It does not appear that the natural ground water level should have an impact on the roadway pavement. Wet season water levels could be slightly higher than we encountered in our study. Please review our discussions of groundwater in the Groundwater Information section of this report.

The project Civil Engineer should review our findings in order to provide final pavement section specifications for the proposed roadway construction.



## **Proposed Bleachers or Other Structures**

The borings performed for this project revealed that the upper ten feet of the soil profile is in a loose state. In order to prepare the site for the proposed bleachers or other structures, an intense surficial compaction program needs to be implemented. Once the site is successfully prepared in accordance with the recommendations presented in this report, the site may be developed with the proposed bleachers, concession and restroom buildings using a shallow foundation system designed for an allowable soil bearing pressure of 2,500 pounds per square foot. Once plans are finalized for the proposed construction, a copy should be provided to Nutting Engineers for review to determine whether additional details or changes to our recommendations are warranted. All work should be completed in accordance with applicable building codes, other regulations as appropriate, and good standard local practice.

We recommend a minimum width of 16 inches for continuous footings and 24 inches for individual footings, even though the soil bearing pressure may not be fully developed in all cases. We recommend that the bottom of footings be at least 12 inches below the lowest adjacent finished grade.

Depending on the proposed structure, it is our opinion that the floor slab system may be constructed as a slab on grade. We recommend that a vapor barrier be placed between the soil and concrete. We also recommend that the reinforcing steel mesh be placed at the approximate center of the slab for tensile support.

## **Settlement Analysis**

We performed a settlement evaluation based upon a hypothetical improved soil profile following completion of the compaction using a moderately sized vibratory compactor for the construction. This method should improve the soils to provide an allowable bearing capacity of 2,500 pounds per square foot. It was estimated that upon proper completion, long-term total settlements should be on the order of less than approximately one inch. Differential settlements should be approximately one-half of the total settlement. Distortions that occur along wall footings should not be more than 1 in 500. Most of this settlement should occur upon the application of the dead load during construction.

## **Site Preparation**

The surficial organic soils, debris from the clearing operations, remnants of the existing construction, and any unsuitable soils as determined by the Geotechnical Engineer will need to be completely removed within the construction area and to a lateral distance of at least 5 feet beyond the footprint limits and potentially further based upon depth. A Nutting Engineer's representative should be present to observe that the stripping operations are performed as we have discussed herein.

Upon approval by the geotechnical engineer, the stripped surface (no fill added at this time) should then be thoroughly soaked with water and compacted with at least 20 overlapping passes of a vibratory compactor having a minimum dynamic force of 5 to 10 tons operated no faster than at a slow walking pace. The roller coverage's should be equally divided into two perpendicular directions. The compaction operations must be observed by a representative of Nutting Engineers.

In addition, the surface should also be compacted until a density equivalent to at least 98 percent of the modified Proctor maximum dry density (ASTM D-1557) is achieved to a depth of at least 12 inches below the compacted surface.

Any structural fill needed to bring the site to construction grade may then be placed in lifts not exceeding twelve inches in loose thickness. Each lift should be thoroughly compacted until densities equivalent to at least 98 percent of the Modified Proctor maximum dry density are uniformly obtained. Fill should consist of granular soil, with less than 10% passing the No. 200 sieve, free of rubble, organics (5% or less) clay, debris and other unsuitable material.

The fill should have ASTM designation (D-2487) of GP, GW, SP, or SW, with a maximum particle size of no more than 3 inches or as otherwise approved by the geotechnical engineer.

Following site and building pad construction as discussed above, the foundation area should be excavated and the footings formed.

The bottom of foundation excavations should be compacted after excavation to develop a minimum density requirement of 98 percent of the maximum modified Proctor dry density, for a minimum depth of one (1) foot below the bottom of the footing depth, as determined by field density compaction tests. The floor slab area should also be compacted in the same manner.

If conditions are encountered which are not consistent with the findings presented in this report, or if proposed construction is moved from the location studied, this office shall be notified immediately so that the condition or change can be evaluated and appropriate action taken.

### GENERAL INFORMATION

Our client for this geotechnical evaluation was:

Mr. Michael Conner  
Calvin Giordano and Associates, Inc.  
1800 Eller Drive, Suite 600  
Fort Lauderdale, FL 33316





The contents of this report are for the exclusive use of the client and the client's design team for this specific project exclusively. Information conveyed in this report shall not be used or relied upon by other parties or for other projects without the expressed written consent of Nutting Engineers of Florida, Inc. This report discusses geotechnical considerations for this site based upon observed conditions and our understanding of proposed construction for foundation support. Environmental issues including (but not limited to), soil and/or groundwater contamination are beyond our scope of service for this project. As such, this report should not be used or relied upon for evaluation of environmental issues.

Nutting Engineers of Florida, Inc. shall bear no liability for the implementation of recommended inspection and testing services as described in this report if implemented by others. Nutting has no ability to verify the completeness, accuracy or proper technique of such procedures if performed by others.

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements.

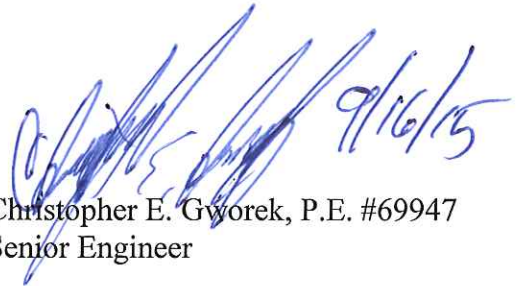
The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been presented after being prepared in accordance with general accepted professional practice in the field of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

We appreciate the opportunity to provide these services for you. If we can be of any further assistance, or if you need additional information, please feel free to contact us.

Sincerely,  
**NUTTING ENGINEERS OF FLORIDA, INC.**



Richard C. Wohlfarth, P.E.  
Director of Engineering

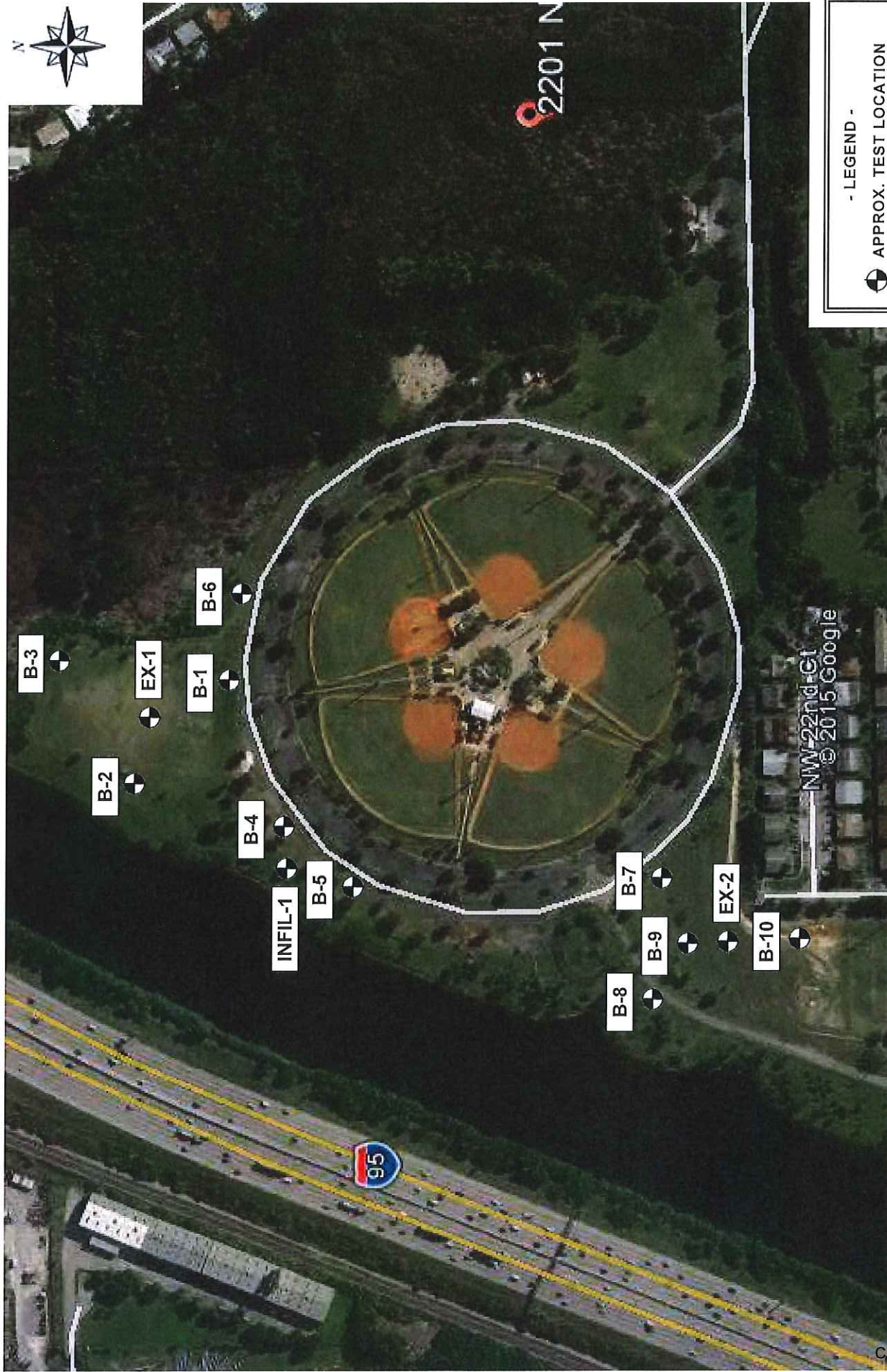



Christopher E. Gworek, P.E. #69947  
Senior Engineer

Appendix:     Boring Location Plan  
                    Test Boring Results  
                    Exfiltration Test Results  
                    Infiltration Test Results  
                    Limitations of Liability  
                    Soil Classification Criteria

REP CALGIO MILLS POND SOCCER FIELDS AND LIGHTS FLL CEG





 NUTTING ENGINEERS OF FLORIDA, INC. ESTABLISHED 1967	Calvin Giordano & Associates, Inc. <b>Lacrosse and Soccer Fields—Task 1 &amp; 6</b> Mills Pond Park, 2201 NW 9th Avenue Fort Lauderdale, Florida PROJECT NO. 11036.64	APPROXIMATE TEST LOCATION PLAN	GEOTECHNICAL EXPLORATION  FIG. 1
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1310 Neptune Drive  
Boynton Beach, FL, 33426  
Telephone: 561-736-4900  
Fax: 561-737-9975

# **BORING NUMBER B-1**

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ▽ AT TIME OF DRILLING 3.2 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 8/10/15

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						<div> <div>PL</div> <div>MC</div> <div>LL</div> </div>			
						<div> <div>20</div> <div>40</div> <div>60</div> <div>80</div> </div>			
						<div> <div>FINES CONTENT (%)</div> <div>20</div> <div>40</div> <div>60</div> <div>80</div> </div>			
0		Black to dk. brown fine SAND, trace limestone fragments	SS 1	2-4-10-7	14	▲			
		Dk. brown to gray fine SAND	SS 2	6-9-7-5	16	▲			
5	▽		SS 3	5-7-8-6	15	▲			
		Brown fine SAND	SS 4	2-2-3-4	5	▲			
			SS 5	3-2-3-3	5	▲			
10									
		Gray to brown fine SAND	SS 6	3-4-5	9	▲			
15									
			SS 7	4-4-5	9	▲			
20		Bottom of hole at 20.0 feet.							



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# BORING NUMBER B-10

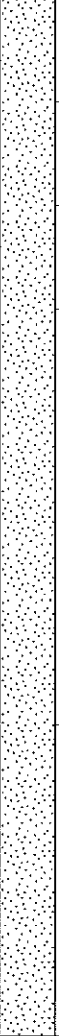
PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 3.4 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 9/10/15

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL      MC      LL			
						20	40	60	80
□ FINES CONTENT (%) □						20	40	60	80
0		Gray to brown fine SAND, some limestone fragments	SS 1	2-2-8-9	10	▲			
		Lt. gray fine SAND	SS 2	8-10-10-8	20		▲		
		Reddish brown fine SAND	SS 3	6-4-4-4	8	▲			
5		Brown fine SAND	SS 4	3-3-4-4	7	▲			
			SS 5	3-5-8-10	13		▲		
10									
	Lt. gray and lt. brown fine SAND	SS 6	4-4-6	10	▲				
15									
		SS 7	5-7-7	14		▲			
20		Bottom of hole at 20.0 feet.							

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CAM 16-1143

EXHIBIT 3



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# BORING NUMBER B-2

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ✓ AT TIME OF DRILLING 3.6 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 9/10/15

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL MC LL 20 40 60 80			
						<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/> 20 40 60 80			
0		Dk. brown to black fine SAND	SS 1	1-2-2-3	4	▲			
		▽ Lt. brown fine SAND	SS 2	3-6-7-12	13		▲		
5		Brown fine SAND	SS 3	6-6-7-5	13		▲		
			SS 4	3-3-3-4	6	▲			
		Lt. brown fine SAND	SS 5	3-3-3-4	6	▲			
10									
		Gray fine SAND	SS 6	3-5-6	11		▲		
15									
		Reddish brown fine SAND	SS 7	3-3-4	7	▲			
20		Bottom of hole at 20.0 feet.							



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# **BORING NUMBER B-3**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 11036.64

PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields

PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15

COMPLETED 8/27/15

SURFACE ELEVATION REFERENCE Approx. @ Road Crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY Serco

CHECKED BY C. Gworek

▽ AT TIME OF DRILLING 3.0 ft

APPROXIMATE LOCATION OF BORING As located on site plan

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 8.GPJ GINT US.GDT 9/10/15

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						□ FINES CONTENT (%) □			
						20	40	60	80
0		Black to dk. brown fine SAND	SS 1	1-2-2-3	4	▲			
	▽	Brown to gray fine SAND	SS 2	3-4-6-6	10	▲			
5		Lt. gray fine SAND	SS 3	5-5-4-5	9	▲			
			SS 4	3-3-3-4	6	▲			
		Lt. brown fine SAND	SS 5	3-4-3-4	7	▲			
10									
		Gray fine SAND	SS 6	4-4-5	9	▲			
15									
			SS 7	3-5-5	10	▲			
20		Bottom of hole at 20.0 feet.							

CAM 16-1143

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# BORING NUMBER B-4

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 3.0 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						<div> <div>PL</div> <div>MC</div> <div>LL</div> </div>			
						20	40	60	80
						<div> <input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/> </div>			
						20	40	60	80
0		Dk. gray to dk. brown fine SAND, trace root	SS 1	2-3-3-6	6	▲			
		Lt. gray fine SAND	SS 2	5-7-8-8	15		▲		
5		Brown fine SAND, trace root	SS 3	4-4-2-4	6	▲			
		Bottom of hole at 6.0 feet.							

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 9/10/15



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# BORING NUMBER B-5

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 2.9 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						□ FINES CONTENT (%) □			
						20	40	60	80
0		Dk. gray to dk. brown fine SAND	SS 1	1-1-3-5	4	▲			
	▽	Lt. gray fine SAND	SS 2	8-11-12-15	23		▲		
5		Gray to brown fine SAND, trace root	SS 3	7-13-15-16	28			▲	
		Bottom of hole at 6.0 feet.							



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# BORING NUMBER B-6

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 3.5 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL MC LL			
						20	40	60	80
0		Black fine SAND, trace root	SS 1	1-1-1-2	2	▲			
		Black to dk. brown fine SAND	SS 2	2-3-5-6	8	▲			
5		Lt. gray fine SAND, trace root	SS 3	4-3-3-2	6	▲			
		Bottom of hole at 6.0 feet.							

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 9/10/15



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# BORING NUMBER B-7

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc. PROJECT NUMBER 11036.64  
PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 3.4 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						□ FINES CONTENT (%) □			
						20	40	60	80
0		Brown to black fine SAND, some limestone fragments	SS 1	5-8-6-5	14		▲		
		Lt. gray fine SAND	SS 2	6-7-5-6	12		▲		
5		Reddish brown fine SAND	SS 3	4-4-4-4	8		▲		
		Bottom of hole at 6.0 feet.							

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US SGT 9/10/15





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# **BORING NUMBER B-8**

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 3.2 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL MC LL 			
						<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/> 20 40 60 80			
0		Dk. brown to brown fine SAND, some limestone fragments	SS 1	6-8-8-9	16		▲		
		Lt. gray fine SAND	SS 2	9-10-10-11	20		▲		
5		Brown fine SAND	SS 3	9-7-8-7	15		▲		
		Bottom of hole at 6.0 feet.							

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US GDT 9/10/15



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# **BORING NUMBER B-9**

PAGE 1 OF 1

PROJECT NUMBER 11036.64  
CLIENT Calvin Giordano & Associates, Inc. PROJECT NAME Mills Pond Park Lacrosse & Soccer Fields  
PROJECT LOCATION 2201 NW 9th Avenue, Fort Lauderdale, Florida

DATE STARTED 8/27/15 COMPLETED 8/27/15 SURFACE ELEVATION REFERENCE Approx. @ Road Crown  
DRILLING METHOD Standard Penetration Boring GROUND WATER LEVELS:  
LOGGED BY Serco CHECKED BY C. Gworek ▽ AT TIME OF DRILLING 3.5 ft  
APPROXIMATE LOCATION OF BORING As located on site plan

City of Fort Lauderdale

TEST NUTTING BOREHOLE 1-11036.64 CALVIN GIORDANO & ASSOCIATES - MILLS POND PARK LACROSSE & SOCCER FIELDS TASK 1 AND 6.GPJ GINT US.GDT 9/10/15

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL      MC      LL 20    40    60    80			
						□ FINES CONTENT (%) □			
						20	40	60	80
0		Dk. brown fine SAND, trace limestone fragments	SS 1	1-4-14-12	18		▲		
		Lt. gray fine SAND	SS 2	10-10-9-7	19		▲		
5	▽	Brown fine SAND	SS 3	4-3-3-2	6	▲			
		Lt. brown fine SAND	SS 4	2-3-5-6	8	▲			
			SS 5	3-5-7-5	12		▲		
10									
		Lt. gray fine SAND	SS 6	4-4-5	9	▲			
15									
			SS 7	6-7-7	14		▲		
20		Bottom of hole at 20.0 feet.							



## Report of Exfiltration Test

Client: Calvin Giordano & Associates, Inc. Order No.: 11036.64  
 Project: Mills Pond Park Lacrosse & Soccer Fields - Task 1 & 6 Report No.: 1  
 Location: 2201 NW 9th Avenue, Fort Lauderdale, FL Date: 8/27/2015  
 Test: Usual Open Hole Exfiltration Test  
 Surface Elevation: Approx. @ Road Crown Water Table from Ground Surface: 4'  
 Casing Diameter: 6"  
 Tube Depth: 6'

EXFIL NO. 1		One Minute Increments	Pump Rate in Gal/Min
Sample Location: Approx. as shown on location plan  Material Description: 0-6' Gray to brown fine SAND		1	1.3
		2	1.3
		3	1.2
		4	1.2
		5	1.2
		6	1.2
		7	1.2
		8	1.1
		9	1.1
		10	1.1

K value =  $1.02 \times 10^{-4}$  cfs/ft<sup>2</sup>ft.head

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## Report of Exfiltration Test

Client: Calvin Giordano & Associates, Inc. Order No.: 11036.64  
Project: Mills Pond Park Lacrosse & Soccer Fields - Task 1 & 6 Report No.: 2  
Location: 2201 NW 9th Avenue, Fort Lauderdale, FL Date: 8/27/2015  
Test: Usual Open Hole Exfiltration Test  
Surface Elevation: Approx. @ Road Crown Water Table from Ground Surface: 3.5'  
Casing Diameter: 6"  
Tube Depth: 6'

EXFIL NO. 2		One Minute Increments	Pump Rate in Gal/Min
Sample Location: Material Description: 0-6' Gray to brown fine SAND	Approx. as shown on location plan	1	1.7
		2	1.7
		3	1.6
		4	1.6
		5	1.5
		6	1.5
		7	1.4
		8	1.3
		9	1.3
		10	1.3

K value =  $1.39 \times 10^{-4}$  cfs/ft<sup>2</sup>ft.head

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## DOUBLE RING INFILTROMETER TEST - ASTM D3385

**CLIENT:** Calvin Giordano and Associates, Inc.  
**TEST NO.: 1** **TEST DATE:** 8/27/2015 **WEATHER:** Sunny 92 Deg F  
**PROJECT:** Mills Pond Park **DRILLER:** Serco Drilling  
2201 NW 9th Avenue, Ft. Lauderdale, FL

**SOIL DESCRIPTION:** 0 - 8" Brown to Dark Brown SAND

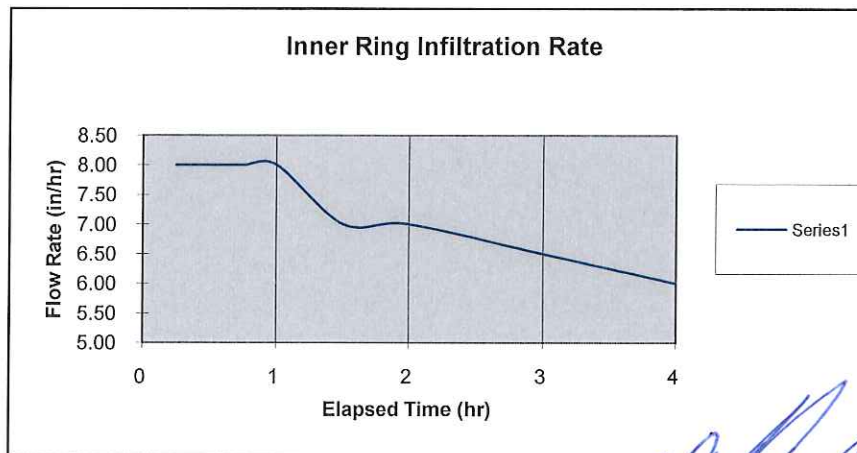
**NOTE: TEST PERFORMED AT APPROXIMATELY 2" to 3" FEET BELOW GRADE.**  
**GROUNDWATER DEPTH:** Not Measured USING 12" & 24" DIAMETER RINGS

**AREA:** INNER RING: 113.1 IN<sup>2</sup> (729.7 CM<sup>2</sup>)  
ANNULAR RING: 339.3 IN<sup>2</sup> (2189.2 CM<sup>2</sup>)

Testing was performed according to procedures specified in ASTM D3385-09. Liquid used consisted of water with an approximate pH of 7.0.  
As ASTM procedure recommends, data from inner ring was used to determine infiltration rate.

ELAPSED TIME (HR)	QUANTITY OF WATER INNER(in <sup>3</sup> )	RATE INNER (IN/HR)	QUANTITY OF WATER ANNULAR(in <sup>3</sup> )	RATE ANNULAR (IN/HR)
0.25	226	8.00	679	8.00
0.5	226	8.00	679	8.00
0.75	226	8.00	679	8.00
1	226	8.00	679	8.00
1.5	396	7.00	1188	7.00
2	396	7.00	1188	7.00
3	735	6.50	2205	6.50
4	679	6.00	2036	6.00

STEADY STATE INFILTRATION RATE = 6.00 INCH/HOUR\*



\* As noted in Sec. 11.1 Precision and Bias of ASTM D3385-09 the recorded infiltration rate should be considered only as an index value

INFIL CAL GIO MILLS POND PARK FLL INFIL CEG

Christopher E. Gworek, P.E. #69947  
Senior Engineer



## LIMITATIONS OF LIABILITY

### WARRANTY

We warrant that the services performed by Nutting Engineers of Florida, Inc. are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession in our area currently practicing under similar conditions at the time our services were performed. ***No other warranties, expressed or implied, are made.*** While the services of Nutting Engineers of Florida, Inc. are a valuable and integral part of the design and construction teams, we do not warrant, guarantee or insure the quality, completeness, or satisfactory performance of designs, construction plans, specifications we have not prepared, nor the ultimate performance of building site materials or assembly/construction.

### SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test borings; test pits are sometimes employed. The method of determining the boring location and the surface elevation at the boring is noted in the report. This information is represented in the soil boring logs and/or a drawing. The location and elevation of the borings should be considered accurate only to the degree inherent with the method used and may be approximate.

The soil boring log includes sampling information, description of the materials recovered, approximate depths of boundaries between soil and rock strata as encountered and immediate depth to water data. The log represents conditions recorded specifically at the location where and when the boring was made. Site conditions may vary through time as will subsurface conditions. The boundaries between different soil strata as encountered are indicated at specific depths; however, these depths are in fact approximate and dependent upon the frequency of sampling, nature and consistency of the respective strata. Substantial variation between soil borings may commonly exist in subsurface conditions. Water level readings are made at the time and under conditions stated on the boring logs. Water levels change with time, precipitation, canal level, local well drawdown and other factors. Water level data provided on soil boring logs shall not be relied upon for groundwater based design or construction considerations.

### LABORATORY AND FIELD TESTS

Tests are performed in *general* accordance with specific ASTM Standards unless otherwise indicated. All criteria included in a given ASTM Standard are not always required and performed. Each test boring report indicates the measurements and data developed at each specific test location.

### ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it shall not be utilized to determine the cost of construction nor to stand alone as a construction specification. Contractors shall verify subsurface conditions as may be appropriate prior to undertaking subsurface work.

Report recommendations are based primarily on data from test borings made at the locations shown on the test boring reports. Soil variations commonly exist between boring locations. Such variations may not become evident until construction. Test pits sometimes provide valuable supplemental information that derived from soil borings. If variations are then noted, the geotechnical engineer shall be contacted in writing immediately so that field conditions can be examined and recommendations revised if necessary.

The geotechnical report states our understanding as to the location, dimensions and structural features proposed for the site. ***Any significant changes of the site improvements or site conditions must be communicated in writing to the geotechnical engineer immediately*** so that the geotechnical analysis, conclusions, and recommendations can be reviewed and appropriately adjusted as necessary.

### CONSTRUCTION OBSERVATION

Construction observation and testing is an important element of geotechnical services. The geotechnical engineer's field representative (G.E.F.R.) is the "owner's representative" observing the work of the contractor, performing tests and reporting data from such tests and observations. ***The geotechnical engineer's field representative does not direct the contractor's construction means, methods, operations or personnel.*** The G.E.F.R. does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. The G.E.F.R. is responsible for his/her safety, but has no responsibility for the safety of other personnel at the site. The G.E.F.R. is an important member of a team whose responsibility is to observe and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications. The enclosed report may be relied upon solely by the named client.

# SOIL AND ROCK CLASSIFICATION CRITERIA

## SAND/SILT

N-VALUE (bpf)	RELATIVE DENSITY
0 – 4	Very Loose
5 – 10	Loose
11 – 29	Medium
30 – 49	Dense
>50	Very dense
100	Refusal

## CLAY/SILTY CLAY

N-VALUE (bpf)	UNCONFINED COMP. STRENGTH (tsf)	CONSISTENCY
<2	<0.25	v. Soft
2 – 4	0.25 – 0.50	Soft
5 – 8	0.50 – 1.00	Medium
9 – 15	1.00 – 2.00	Soft
16 – 30	2.00 – 4.00	v. Stiff
>30	>4.00	Hard

## ROCK

N-VALUE (bpf)	RELATIVE HARDNESS	ROCK CHARACTERISTICS
$N \geq 100$	Hard to v. hard	Local rock formations vary in hardness from soft to very hard within short vertical and horizontal distances and often contain vertical solution holes of 3 to 36 inch diameter to varying depths and horizontal solution features. Rock may be brittle to split spoon impact, but more resistant to excavation.
$25 \leq N \leq 100$	Medium hard to hard	
$5 \leq N \leq 25$	Soft to medium hard	

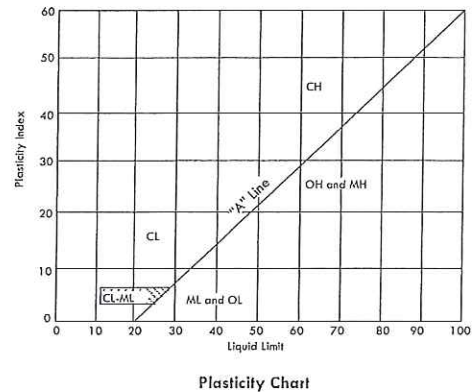
## PARTICLE SIZE

Boulder	>12 in.
Cobble	3 to 12 in.
Gravel	4.76 mm to 3 in.
Sand	0.074 mm to 4.76 mm
Silt	0.005 mm to 0.074 mm
Clay	<0.005 mm

## DESCRIPTION MODIFIERS

0 – 5%	Slight trace
6 – 10%	Trace
11 – 20%	Little
21 – 35%	Some
>35%	And

Major Divisions	Group Symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly graded gravels, gravel-sand mixtures, little or no fines
		GW* d u	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
		SM* d u	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
		<p>Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:</p> <p>Less than five percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent.....borderline cases requiring dual systems**</p>	
		$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
		Not meeting all gradation requirements for GW	
		Atterberg limits below "A" line or P.I. less than 4 Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.	
		Atterberg limits above "A" line with P.I. greater than 7 $C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3	
		Not meeting all gradation requirements for SW	
		Atterberg limits below "A" line or P.I. less than 4 Limits plotting in hatched zone with P.I. between 4 and 7 are borderline cases requiring use of dual system.	
		Atterberg limits above "A" line with P.I. more than 7	
Fine-grained soils (More than half of material is smaller than No. 200 sieve size)	Silt and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
	Silt and clays (Liquid limit greater than 50)	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays or high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
	Highly organic soils	PT	Peat and other highly organic soils



# APPENDIX B



**REPORT OF  
GEOTECHNICAL EXPLORATION**

**PROPOSED LIGHT STANDARDS AND RETAINING WALL  
MILLS POND SOCCER AND LACROSSE FIELDS  
2201 NW 9TH AVE.  
FORT LAUDERDALE, FLORIDA 33311**

**FOR**

**CALVIN GIORDANO & ASSOCIATES, INC.  
1800 ELLER DRIVE, SUITE 600  
FORT LAUDERDALE, FLORIDA 33316**

**PREPARED BY**

**NUTTING ENGINEERS OF FLORIDA, INC.  
2051 NW 112<sup>TH</sup> AVE, SUITE 126  
MIAMI, FLORIDA 33172**

**PROJECT NO. : 101.133**

**MARCH 2016**

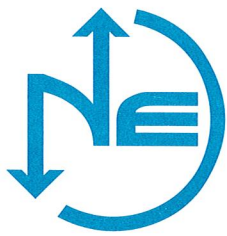


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*Offices throughout the state of Florida*

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CAM 16-1143  
EXHIBIT 3  
Page 461 of 808



# Nutting Engineers

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Fax: 305-824-8827  
Broward 954-941-8700  
Palm Beach 561-736-4900  
St. Lucie 772-408-1050  
[www.nuttingengineers.com](http://www.nuttingengineers.com)

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March 2, 2016

Mr. Michael D. Conner, RLA, ASLA  
Calvin Giordano & Associates, Inc.  
1800 Eller Drive, Suite 600  
Fort Lauderdale, Florida 33316  
Phone: (954) 921-7781  
Cell: (943) 266-6469  
Email: [mconner@cgasolutions.com](mailto:mconner@cgasolutions.com)

Re: Report of Geotechnical Exploration  
**Proposed Light Standards and Retaining Wall**  
Mills Pond Soccer and Lacrosse Fields  
2201 NW 9<sup>th</sup> Ave.  
Fort Lauderdale, Florida 33311

Dear Mr. Conner:

Nutting Engineers of Florida, Inc. has performed a geotechnical exploration for the proposed construction in Fort Lauderdale, Florida. The purpose of this exploration was to obtain information concerning the site and subsurface conditions at specific locations in order to evaluate the existing soils with respect to support of the planned development. This report presents our findings and recommendations based upon the information examined at the time of this evaluation.

## PROJECT INFORMATION

We understand that plans for this project include the construction of new soccer and lacrosse fields, parking areas, and associated light standards. Additionally, a four foot high retaining wall will be constructed along the east side of the northern soccer fields at the referenced site.

NE should be notified in writing by the client of any changes in the proposed construction, i.e. change in the number of stories, along with a request to amend our foundation analysis and/or recommendations within this report as appropriate.

## OFFICES

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## GENERAL SUBSURFACE CONDITIONS

### Subsurface Soil Exploration

In order to explore the subsurface conditions at the site, eight (8) Standard Penetration Test (SPT) borings (ASTM D-1586) were performed to a depth of twenty feet below the existing ground surface. Two proposed test boring locations were inaccessible and therefore were not completed.

The locations of the tests are indicated on the attached Test Boring Location Plan. The individual test boring reports are presented in the Appendix of this report. The test borings were established in the field using approximate methods; namely, a measuring tape and available surface controls.

### Test Boring Results

In general, the test borings revealed topsoil to depths of approximately four inches underlain with very loose to loose fine sand with some limestone fragments to depths of approximately two to three feet. Beneath this layer, the borings encountered loose to medium dense fine sand to a depth of twenty feet, the maximum depth explored. It should be noted that soft clay and limestone fragments were observed at boring location B-7 at depths of approximately two to four feet below grade.

A detailed description of the soil/rock interlayering is given on the test boring logs in the Appendix.

Note: Substantially different subsurface conditions may exist at alternate locations. Buried debris may or may not be identified or adequately delineated by soil borings. Such conditions may be revealed during site development activities (e.g. proof rolling, utility and foundation excavation activities) or other related activities. Should additional assurance be desired by the client, further subsurface investigation could be performed.

### Groundwater Table Observation

The groundwater level was measured at the test boring locations at the time of drilling and it was encountered at approximately three to four feet below the existing ground surface. Fluctuation in the observed groundwater levels should be expected due to rainfall variations, seasonal climatic changes, construction activity and other site-specific factors.

The immediate depth to groundwater measurements presented in this report may not provide a reliable indication of stabilized or longer term depth to groundwater at this site. Water table elevations can vary dramatically with time through rainfall, droughts, storm events, flood control activities, nearby surface water bodies, tidal activity, pumping and many other factors. For these reasons, this immediate depth to water data should not be relied upon alone for project design considerations.





Further information regarding stabilized groundwater elevations at the site could be developed upon specific request. Additional evaluation might include monitoring of piezometers, survey of the project area for evidence of current groundwater elevation influences such as well fields, obvious construction dewatering, tidal activity, flood control canals and other surface water bodies.

### ANALYSIS AND RECOMMENDATIONS

As discussed above, the soil borings performed for this project generally revealed loose to medium dense sand throughout the explored depths. Once the site has been prepared in accordance with our recommendations presented in this report, the proposed retaining wall and lightly loaded lighting elements may be supported on a shallow foundation system using an allowable soil bearing pressure of **2,000 pounds per square foot**.

We recommend that the bottom of footings be at least 12 inches below the lowest adjacent finished grade. The foundations should be constructed in accordance with the local building codes and good standard practice.

#### Retaining Wall

The retaining wall should be designed to resist earth pressures from granular backfill, surcharge loads and unbalanced hydrostatic forces. The wall should be designed to sustain water with a pressure head at the appropriate design flood elevation. Slabs or other load carrying element loads must be included in the design of the walls.

Backfill behind retaining wall should be approved sand fill and should be placed in loose lifts not exceeding 12 inches in thickness and should be compacted to minimum dry density between 92 and 95 percent of the maximum modified Proctor dry density. Overcompaction in these areas should be avoided.

#### Typical Soil Parameters for Retained Fill

SOIL TYPE	SOIL UNIT WEIGHT (PCF)		ANGLE OF INTERNAL FRICTION (DEGREES)	EARTH PRESSURE COEFFICIENTS		
	SATURATED	SUB-MERGED		ACTIVE (Ka)	PASSIVE (Kp)	AT REST (Ko)
Medium Dense SAND	120	58	30	0.33	3.00	0.5

We note that the typical values in the table are based on anticipated fill materials and if more exact values are needed, specific laboratory testing should be performed. Also, appropriate factors of safety should be applied by the design engineer depending on the application. We are available to assist in the design process if needed.



## Soil Parameters for Large Light Standard Foundation Design

We note that within the soil profile some very hard limestone pockets may be encountered, which may not be indicated within the test borings. The foundation contractor should be advised of this potential condition and provide the proper equipment for the foundation installation.

The values in the accompanying table may be used for design. The table is based on visual classification, empirical relationships and our experience with similar soil conditions. If more exact values are needed, specific tests should be performed.

SOIL TYPE	SOIL UNIT WEIGHT (PCF)		ANGLE OF INTERNAL FRICTION (DEGREES)	EARTH PRESSURE COEFFICIENTS <sup>1</sup>	
	SATURATED	SUB-MERGED		ACTIVE (Ka)	PASSIVE (Kp)
Loose Fine SAND	105	43	30	3.00	0.33
Loose Fine SAND, and Limestone Fragments	115	53	33	3.4	0.29
Medium Dense Fine SAND	120	58	30	3.00	0.33

<sup>1</sup>Appropriate Factors of Safety should be used in the foundation design.

We understand that light standards are typically supported on a caisson. We note that other methods of construction are available for construction. The decision as to which type of foundation will be best for this project will depend on the structural loading conditions and costs. We recommend that discussions be held with us, the structural engineer, owner, specialty contractor, and other interested parties to provide input concerning the best alternative for this project

## GENERAL INFORMATION

Our client for this geotechnical evaluation was:

Calvin Giordano & Associates, Inc.  
1800 Eller Drive, Suite 600  
Fort Lauderdale, Florida 33316

The contents of this report are for the exclusive use of the client, the client's design & construction team and governmental authorities for this specific project exclusively. Information conveyed in this report shall not be used or relied upon by other parties or for other projects without the expressed written consent of NE. This report discusses geotechnical considerations for this site based upon observed conditions and our understanding of proposed construction for





foundation support. Environmental issues including (but not limited to), soil and/or groundwater contamination, methane are beyond our scope of service for this project. As such, this report shall not be used or relied upon for evaluation of environmental issues.

Prior to initiating compaction operations, we recommend that representative samples of the structural fill material to be used and acceptable in-place soils be collected and tested to determine their compaction and classification characteristics. The maximum dry density, optimum moisture content, gradation and plasticity characteristics should be determined. These tests are needed for compaction quality control of the structural fill and existing soils, and to determine if the fill material is acceptable.

If conditions are encountered which are not consistent with the findings presented in this report, or if proposed construction is moved from the location investigated, this office shall be notified in writing immediately so that the condition or change can be evaluated and appropriate action taken.

The vibratory compaction equipment may cause vibrations that could be felt by persons within nearby buildings and could potentially induce structural settlements. Additionally, preexisting settlements may exist within these structures that could be construed to have been caused or worsened by the proposed vibratory compaction after the fact. Pre- and post conditions surveys of these structures along with the vibration monitoring during vibratory compaction could be performed to better evaluate this concern. The contractor should exercise due care during the performance of the vibratory compaction work with due consideration of potential impacts on existing structures. If potential vibrations and impacts are not considered tolerable, then alternate foundation modification techniques should be considered and the Geotechnical Engineer notified in writing immediately.

NE shall bear no liability for the implementation of recommended inspection and testing services as described in this report if implemented by others. NE has no ability to verify the completeness, accuracy or proper technique of such procedures if performed by others.

Excavations of five feet or more in depth should be sloped or shored in accordance with OSHA and State of Florida requirements.

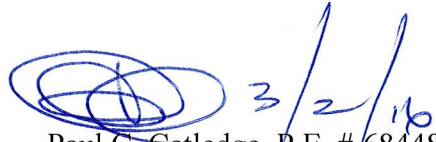
The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein, have been presented after being prepared in accordance with general accepted professional practice in the field of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.



We appreciate the opportunity to provide these services for you and look forward to completing this and other projects with you. If we can be of any further assistance with the design or construction services, or if you need additional information, please feel free to contact us at your convenience.

Sincerely,  
NUTTING ENGINEERS OF FLORIDA, INC.

  
Adrian Ramirez  
Engineer Intern

  
Paul C. Catledge, P.E. # 68448  
Senior Engineer

Attachments: Boring Location Plan  
Test Boring Logs  
Soil Classification Criteria  
Limitations of Liability







FIGURE 1

NOT TO SCALE

APPROXIMATE  
TEST LOCATIONS

PROPOSED LIGHT STANDARDS & RETAINING WALL  
MILLS POND SOCCER AND LACROSSE FIELDS  
FORT LAUDERDALE, FLORIDA







1310 Neptune Drive  
Boynton Beach FL 33426  
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Fax: 561-737-9975

City of Fort Lauderdale

BORING NUMBER B-1

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards Mills Pond Soccer and Lacrosse Fields

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

☒ AT TIME OF DRILLING 4.0 ft ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>			
						20	40	60	80
0		Gray fine SAND, some limestone fragments	AU 1						
		Lt. tan fine SAND	AU 2						
5		Brown fine SAND	SS 3	18-18-19-20	37				
			SS 4	7-8-9-11	17				
			SS 5	6-6-9-12	15				
10			SS 6	9-11-12-16	23				
15			SS 7	8-11-15	26				
		Lt. tan fine SAND							
20			SS 8	7-8-9	17				
		Bottom of hole at 20.0 feet.							

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**BORING NUMBER B-2**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards-Mills Pond Soccer and Lacrosse Fields

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16 SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek ☒ AT TIME OF DRILLING 4.0 ft

APPROXIMATE LOCATION OF BORING As located on site plan

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US GDT 2/22/16

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
0						20	40	60	80
		Gray fine SAND, some limestone fragments	AU 1						
		Lt. tan fine SAND	AU 2						
5		Brown fine SAND	SS 3	6-6-6-7	12				
			SS 4	4-6-7-9	13				
			SS 5	4-5-6-7	11				
10			SS 6	6-7-8-9	15				
			SS 7	7-7-8	15				
15		Lt. tan fine SAND	SS 8	6-8-10	18				
20		Bottom of hole at 20.0 feet.							

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EXHIBIT 3

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City of Fort Lauderdale

**BORING NUMBER B-3**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards Mills Pond Soccer and Lacrosse Fields

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

☒ AT TIME OF DRILLING 3.5 ft

APPROXIMATE LOCATION OF BORING As located on site plan

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US GDT 2/22/16

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						□ FINES CONTENT (%) □			
						20	40	60	80
0		Gray fine SAND	AU 1						
		Dk. gray fine SAND, trace organic	AU 2						
		<input checked="" type="checkbox"/> Lt. tan fine SAND							
5			SS 3	10-12-14-15	26				
			SS 4	9-11-11-12	22				
		Brown fine SAND	SS 5	7-9-10-12	19				
10			SS 6	9-11-12-14	23				
			SS 7	7-8-10	18				
15									
		Lt. tan fine SAND							
			SS 8	7-7-8	15				
20									
		Bottom of hole at 20.0 feet.							

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City of Fort Lauderdale

BORING NUMBER B-4

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards Mills Pond Soccer and Lacrosse Field

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

☒ AT TIME OF DRILLING 3.5 ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
0						20	40	60	80
		Gray fine SAND, some limestone fragments	AU 1						
		Lt. tan fine SAND	AU 2						
5		Brown fine SAND	SS 3	4-4-4-5	8				
			SS 4	3-4-5-6	9				
10			SS 5	4-5-7-8	12				
15			SS 7	5-7-7	14				
		Lt. tan fine SAND							
20			SS 8	7-8-10	18				
		Bottom of hole at 20.0 feet.							

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**BORING NUMBER B-5**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards-Mills Pond Soccer and Lacrosse Field

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

☒ AT TIME OF DRILLING 3.2 ft ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
						20	40	60	80
						□ FINES CONTENT (%) □			
						20	40	60	80
0		TOPSOIL							
		Gray fine SAND	AU 1						
			AU 2						
5		Gray fine SILTY SAND and LIMESTONE FRAGMENTS	SS 3	7-10-7-10	17		▲		
		Tan fine SAND	SS 4	7-10-16-20	26			▲	
			SS 5	10-12-10-11	22			▲	
10			SS 6	4-4-4-3	8	▲			
15			SS 7	1-2-2-3	4	▲			
20			SS 8	6-8-17-18	25			▲	
		Bottom of hole at 20.0 feet.							

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US GDT 3/2/16

CAM 10-1143

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**BORING NUMBER B-6**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards Mills Pond Soccer and Lacrosse Field

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

▽ AT TIME OF DRILLING 3.2 ft ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲
						10 20 30 40
						PL MC LL 20 40 60 80
0						□ FINES CONTENT (%) □ 20 40 60 80
		TOPSOIL	AU 1			
		Gray fine SAND				
		Brown fine SAND				
		Gray fine SAND	AU 2			
5			SS 3	4-3-4-6	7	▲
		Tan fine SAND	SS 4	7-10-11-9	21	▲
			SS 5	4-5-6-5	11	▲
10			SS 6	1-1-3-6	4	▲
			SS 7	5-8-20-18	28	▲
15						
			SS 8	7-10-20-17	30	▲
20		Bottom of hole at 20.0 feet.				

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US GDT 2/22/16

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**BORING NUMBER B-7**

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards-Mills Pond Soccer and Lacrosse Field

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16

SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

☒ AT TIME OF DRILLING 3.2 ft ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲			
						10	20	30	40
						PL	MC	LL	
0		TOPSOIL				20	40	60	80
		Gray fine SAND	AU 1						
		Clay and LIMESTONE FRAGMENTS	AU 2						
5		Gray fine SAND	SS 3	4-7-8-10	15		▲		
		Tan fine SAND	SS 4	7-10-9-7	19		▲		
		Tan fine SAND, trace root	SS 5	2-2-2-1	4	▲			
10		Tan fine SAND	SS 6	1-1-3-3	4	▲			
			SS 7	4-4-8-9	12		▲		
15									
			SS 8	7-8-16-17	24			▲	
20		Bottom of hole at 20.0 feet.							

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US GDT 2/22/16

CAM 16-1143

**Disclaimer** Nutting Engineers of Florida, Inc. accepts no liability for the consequences of the independent interpretation of drilling logs by others.

8/31/2016 2:18 PM

EXHIBIT 3  
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1310 Neptune Drive  
Boynton Beach Fl. 33426  
Telephone: 561-736-4900  
Fax: 561-737-9975

City of Fort Lauderdale

# BORING NUMBER B-8

PAGE 1 OF 1

CLIENT Calvin Giordano & Associates, Inc.

PROJECT NUMBER 101.133

PROJECT NAME Light Standards Mills Pond Soccer and Lacrosse Field

PROJECT LOCATION Fort Lauderdale, FL

DATE STARTED 2/15/16 COMPLETED 2/15/16 SURFACE ELEVATION REFERENCE Same as road crown

DRILLING METHOD Standard Penetration Boring

GROUND WATER LEVELS:

LOGGED BY D. Tyson CHECKED BY C. Gworek

▽ AT TIME OF DRILLING 3.2 ft ft

APPROXIMATE LOCATION OF BORING As located on site plan

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	Blows	N-Value	▲ SPT N VALUE ▲
						10 20 30 40
						PL MC LL
0						20 40 60 80
		TOPSOIL	AU 1			
		Gray fine SAND				
		Tan fine SAND				
		Gray fine SAND	AU 2			
5		Tan fine SAND	SS 3	10-11-15-13	26	
			SS 4	6-11-10-6	21	
			SS 5	10-12-9-11	21	
10			SS 6	5-6-4-5	10	
			SS 7	4-7-12-15	19	
15						
			SS 8	6-9-16-18	25	
20		Bottom of hole at 20.0 feet.				

TEST NUTTING BOREHOLE 2-101.133 CALVIN GIORDANO & ASSOCIATES, INC. - LIGHT STANDARDS-MILLS POND AND LACROSSE FIELDS GPJ GINT US.GDT 2/22/16

GAM 16-1143



**SAND/SILT**

N-VALUE (bpf)	RELATIVE DENSITY
0 – 4	Very Loose
5 – 10	Loose
11 – 29	Medium
30 – 49	Dense
>50	Very dense
100	Refusal

**CLAY/SILTY CLAY**

N-VALUE (bpf)	UNCONFINED COMP. STRENGTH (tsf)	CONSISTENCY
<2	<0.25	v. Soft
2 – 4	0.25 – 0.50	Soft
5 – 8	0.50 – 1.00	Medium
9 – 15	1.00 – 2.00	Soft
16 – 30	2.00 – 4.00	v. Stiff
>30	>4.00	Hard

**ROCK**

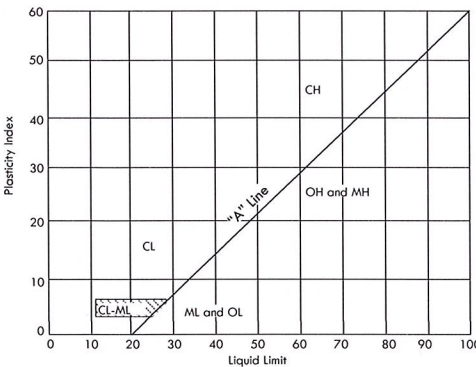
N-VALUE (bpf)	RELATIVE HARDNESS	ROCK CHARACTERISTICS
N ≥ 100	Hard to v. hard	Local rock formations vary in hardness from soft to very hard within short vertical and horizontal distances and often contain vertical solution holes of 3 to 36 inch diameter to varying depths and horizontal solution features. Rock may be brittle to split spoon impact, but more resistant to excavation.
25 ≤ N ≤ 100	Medium hard to hard	
5 ≤ N ≤ 25	Soft to medium hard	

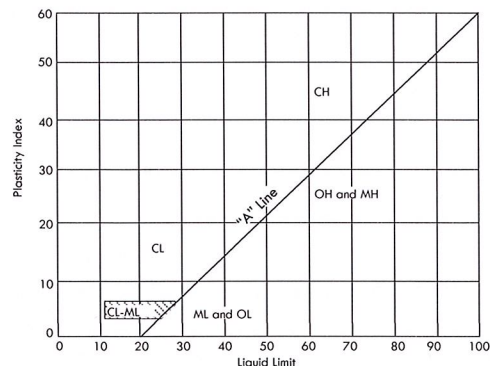
**PARTICLE SIZE**

Boulder	>12 in.
Cobble	3 to 12 in.
Gravel	4.76 mm to 3 in.
Sand	0.074 mm to 4.76 mm
Silt	0.005 mm to 0.074 mm
Clay	<0.005 mm

**DESCRIPTION MODIFIERS**

0 – 5%	Slight trace
6 – 10%	Trace
11 – 20%	Little
21 – 35%	Some
>35%	And

Major Divisions			Group Symbols	Typical names	Laboratory classification criteria			
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3			
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW			
		Gravels with fines (Appreciable amount of fines)	GW*	d u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are <i>borderline</i> cases requiring use of dual symbols.	
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7			
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_z = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3			
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW			
Sands with fines (Appreciable amount of fines)		SM*	d u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are <i>borderline</i> cases requiring use of dual system.		
		SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. more than 7				
Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:  Less than five percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent..... <i>borderline</i> cases requiring dual systems**								
							Plasticity Chart	



Plasticity Chart

## LIMITATIONS OF LIABILITY

### WARRANTY

We warrant that the services performed by Nutting Engineers of Florida, Inc. are conducted in a manner consistent with that level of care and skill ordinarily exercised by members of the profession in our area currently practicing under similar conditions at the time our services were performed. **No other warranties, expressed or implied, are made.** While the services of Nutting Engineers of Florida, Inc. are a valuable and integral part of the design and construction teams, we do not warrant, guarantee or insure the quality, completeness, or satisfactory performance of designs, construction plans, specifications we have not prepared, nor the ultimate performance of building site materials or assembly/construction.

### SUBSURFACE EXPLORATION

Subsurface exploration is normally accomplished by test borings; test pits are sometimes employed. The method of determining the boring location and the surface elevation at the boring is noted in the report. This information is represented in the soil boring logs and/or a drawing. The location and elevation of the borings should be considered accurate only to the degree inherent with the method used and may be approximate.

The soil boring log includes sampling information, description of the materials recovered, approximate depths of boundaries between soil and rock strata as encountered and immediate depth to water data. The log represents conditions recorded specifically at the location where and when the boring was made. Site conditions may vary through time as will subsurface conditions. The boundaries between different soil strata as encountered are indicated at specific depths; however, these depths are in fact approximate and dependent upon the frequency of sampling, nature and consistency of the respective strata. Substantial variation between soil borings may commonly exist in subsurface conditions. Water level readings are made at the time and under conditions stated on the boring logs. Water levels change with time, precipitation, canal level, local well drawdown and other factors. Water level data provided on soil boring logs shall not be relied upon for groundwater based design or construction considerations.

### LABORATORY AND FIELD TESTS

Tests are performed in *general* accordance with specific ASTM Standards unless otherwise indicated. All criteria included in a given ASTM Standard are not always required and performed. Each test boring report indicates the measurements and data developed at each specific test location.

### ANALYSIS AND RECOMMENDATIONS

The geotechnical report is prepared primarily to aid in the design of site work and structural foundations. Although the information in the report is expected to be sufficient for these purposes, it shall not be utilized to determine the cost of construction nor to stand alone as a construction specification. Contractors shall verify subsurface conditions as may be appropriate prior to undertaking subsurface work.

Report recommendations are based primarily on data from test borings made at the locations shown on the test boring reports. Soil variations commonly exist between boring locations. Such variations may not become evident until construction. Test pits sometimes provide valuable supplemental information that derived from soil borings. If variations are then noted, the geotechnical engineer shall be contacted in writing immediately so that field conditions can be examined and recommendations revised if necessary.

The geotechnical report states our understanding as to the location, dimensions and structural features proposed for the site. **Any significant changes of the site improvements or site conditions must be communicated in writing to the geotechnical engineer immediately** so that the geotechnical analysis, conclusions, and recommendations can be reviewed and appropriately adjusted as necessary.

### CONSTRUCTION OBSERVATION

Construction observation and testing is an important element of geotechnical services. The geotechnical engineer's field representative (G.E.F.R.) is the "owner's representative" observing the work of the contractor, performing tests and reporting data from such tests and observations. **The geotechnical engineer's field representative does not direct the contractor's construction means, methods, operations or personnel.** The G.E.F.R. does not interfere with the relationship between the owner and the contractor and, except as an observer, does not become a substitute owner on site. The G.E.F.R. is responsible for his/her safety, but has no responsibility for the safety of other personnel at the site. The G.E.F.R. is an important member of a team whose responsibility is to observe and test the work being done and report to the owner whether that work is being carried out in general conformance with the plans and specifications. The enclosed report may be relied upon solely by the named client.



# APPENDIX C





Environmental Protection and Growth Management Department

**ENVIRONMENTAL LICENSING and BUILDING PERMITTING DIVISION**

**Environmental Engineering and Licensing Section**

1 North University Drive, Suite 201, Plantation, Florida 33324 • 954-519-1483 • FAX 954-519-1412

***Via U.S. Mail***

November 10, 2015

Mills Pond Park  
c/o Annalise Mannix, Senior Project Manager  
100 N. Andrews Ave.  
Fort Lauderdale, FL 33301

**Re: Wetland Jurisdictional Determination – Mills Pond Park Soccer Fields  
2201 NW 9<sup>th</sup> Ave, Fort Lauderdale, Florida  
Part of Folio No. 494228280010  
File No. WD1511-005**

Dear Applicant:

The referenced site, outlined in black on the attached aerial photograph, was visited by staff from the Aquatic and Wetland Resources Program of the Broward County Environmental Protection & Growth Management Department (Department) on Friday, October 23, 2015. During that visit, it was determined that, at this time, there are **no County jurisdictional wetlands** on the site (as shown).

Based upon present conditions within the site, filling within the existing uplands **will not require** a license from this Department. However, other activities such as excavation of a lake or canal, regulated under Article XI of the Natural Resource Protection Code, may require Department approval. The applicant is encouraged to contact the Department at the earliest opportunity to determine if, and what type of a license may be required prior to undertaking activities which may affect the existing surface water system. Additionally, this letter does not constitute a waiver of review by the Planning and Environmental Regulation Division's Environmental Review Approval Program prior to initiating surface disturbing activities.

This determination was made according to the Natural Resource Protection Code definition of ***Regulated Aquatic and Wetland Resources*** and Section 27-334(e) which utilizes the State approved wetland delineation methodology outlined in chapter 62-340 F.A.C. and ratified by the State Legislature pursuant to Section 373.421 Florida Statutes. In the event of a conflict with a formal delineation conducted by the Florida Department of Environmental Protection or the South Florida Water Management District pursuant to 62-340 F.A.C. the determination of said Agency will be the controlling delineation. This determination is valid for a period of no more than two (2) years from the date of this letter. The issuance of this letter is a **final agency determination**. A person with a substantial interest may file a petition to request review of, or to intervene in a review of, a final administrative determination, subject to the provisions of Section 27-14, Broward County Code of Ordinances.

Please be advised that this determination is specific to Broward County's Natural Resource Protection Code and is conducted pursuant to the State-approved delineation methodology. The identified wetland area may also be jurisdictional to other Federal and/or State regulatory agencies [i.e. US Army Corps of Engineers (USACOE), and South Florida Water Management District (SFWMD) or Florida Department of Environmental Protection (FDEP)] and additional approval[s] may be necessary. For more information you may contact the local regulatory office[s] for each entity via the contact information below:

USACOE via email at [SAJ-RD-S@usace.army.mil](mailto:SAJ-RD-S@usace.army.mil) or telephone at (561) 472-3504,  
FDEP via email at [Southeast.District@dep.state.fl.us](mailto:Southeast.District@dep.state.fl.us) or telephone at (561) 681-6600  
SFWMD via email at [bconmy@sfwmd.org](mailto:bconmy@sfwmd.org) or telephone at (561) 682-6736

Please feel free to contact me by e-mail at [Lsunderland@broward.org](mailto:Lsunderland@broward.org) or by phone at (954) 519-1454 if you have any questions.

Sincerely,

*Linda Sunderland, NRS IV*

Environmental Licensing and Building Permitting Division

Enc: Aerial map of area (2 pages)

cc: Patrick Murphy, CGA, Inc. (via e-mail at [PMurphy@cgasolutions.com](mailto:PMurphy@cgasolutions.com))  
Jennifer K. Smith, FDEP (via e-mail at [Jennifer.K.Smith@dep.state.fl.us](mailto:Jennifer.K.Smith@dep.state.fl.us))  
Barb Conmy, SFWMD (via e-mail [bconmy@sfwmd.gov](mailto:bconmy@sfwmd.gov))  
USACOE (via e-mail [Broward.County-SP@usace.army.mil](mailto:Broward.County-SP@usace.army.mil))



☐ PROJECT SITE

Area included in Broward County  
wetland determination

--- WETLAND JURISDICTIONAL DETERMINATION LINE



Calvin, Giordano & Associates, Inc.  
EXCEPTIONAL SOLUTIONS™

**Mills Pond Park**  
15-7678  
Fort Lauderdale, Florida

CAM 16-1143  
AERIAL-PLAN VIEW EXHIBIT 3

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SHEET

1

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LEGEND



PROJECT SITE



WETLAND JURISDICTIONAL DETERMINATION LINE



Calvin, Giordano & Associates, Inc.  
EXCEPTIONAL SOLUTIONS™

**Mills Pond Park**  
15-7678  
Fort Lauderdale, Florida

**AERIAL-PLAN VIEW EXHIBIT**

CAM 16-1143  
EXHIBIT 3

SHEET

**1**



# APPENDIX D





Environmental Protection and Growth Management Department  
**ENVIRONMENTAL LICENSING and BUILDING PERMITTING DIVISION**  
1 North University Drive, Suite 201-A • Plantation, FL 33324  
PHONE • 954-519-1483 Fax • 954-519-1412

April 29, 2016

City of Fort Lauderdale  
Attention: Troy Balint, Environmental Program Coordinator  
949 NW 38th Street  
Fort Lauderdale, FL 33309

RE: Mills Pond Park Soccer Fields  
City of Fort Lauderdale, S/T/R (28-49-42)

This is to notify you of the Environmental Protection and Growth Management Department's (EPGMD) action concerning your application received 01/22/2016. The application has been reviewed for compliance with the

**ERP Review - GRANTED**

EPGMD has the authority to review the project for compliance with the provisions of Chapter 373, Part IV, Florida Statutes pursuant to an agreement between EPGMD, DEP and the SFWMD. The agreement is outlined in a document entitled "DELEGATION AGREEMENT AMONG THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT, AND BROWARD COUNTY."

Based on the information submitted, Environmental Resource Permit No. 06-00813-S was issued on 04/29/2016.

Should you object to the conditions of the Environmental Resource Permit, please refer to the attached "Notice of Rights" which addresses the procedures to be followed if you desire a public hearing or other review of the proposed action. Please contact this office if you have any questions concerning this matter. If we do not hear from you in accordance with the attached "Notice of Rights", we will assume you concur with the action taken by EPGMD.

**Broward County Surface Water Management Review - GRANTED**

EPGMD has reviewed the project for compliance with the Surface Water Management requirements of Chapter 27, Article V Sec. 27-191 through 27-202 of the Broward County Code.

Based on the information submitted, Surface Water Management License No. SWM1999-001-3 was issued on 04/29/2016. The above named licensee is hereby authorized to perform the work or operate the facility shown on the approved drawing(s), plans, documents and specifications, as submitted by licensee, and made a part hereof.

Please be advised that no Certificate of Occupancy can be issued on this project until released, in writing, by all EPGMD divisions as required. Such release will be pending approval of any engineering certifications required by specific condition No. 15.

The above referenced approvals will remain in effect subject to the following:

1. Not receiving a filed request for a Chapter 120, Florida Statutes administrative hearing;
2. the attached SFWMD General Conditions;
3. the attached SFWMD Special Conditions;
4. the attached Broward County General Conditions;
5. the attached Broward County Specific Conditions;
6. the attached 9 exhibits.

Issuance of the above referenced Broward County license(s) constitutes a final agency determination. A person with a substantial interest may file a petition to request review of or to intervene in a review of a final administrative determination, subject to the provisions of Section 27-14, Broward County Code of Ordinance.

## CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a "Notice of Rights" has been mailed to the Permittee (and the persons listed in the attached distribution list) on 04/29/2016, in accordance with Section 120.60 (3), Florida Statutes.

By: \_\_\_\_\_

  
Ashley Resta, P.E.

Surface Water Management Program

Enclosed are the following:

- ☒ executed staff report;
- ☒ set(s) of stamped and approved plans;
- ☒ Notice of Rights; and
- ☒ Inspection Guidelines Brochure.



Broward County Board of County Commissioners  
**Environmental Licensing and Building Permitting Division**

Surface Water Management Program

# “What to Expect When We Are Inspecting Surface Water Management Systems”

A guideline for **engineers, contractors, and licensees** of surface water management systems when applying for the release of Certificate(s) of Occupancy.

The intent of this document is to establish some guidelines to achieve compliance with the Code while maximizing customer service needs to licensees and their agents and the local building departments by facilitating the Certificate(s) of Occupancy (CO) release procedure for building projects. It is also the intent of this document to encourage licensees and their agents and the local building departments to not put our inspection staff on the “critical path”. ***We recognize that the local building departments must adhere to the requirements of the Florida Building Code and the requirements of Article I of the Broward County Natural Resource Protection Code.***

The Environmental Licensing and Building Permitting Division (ELBPD) - Surface Water Management Licensing program has the responsibility of reviewing designs, licensing, and inspecting surface water management systems within portions of Broward County under the provisions of the Broward County Natural Resource Protection Code, Chapter 27, Section 27-191 through Section 27-201. This includes enforcement for the purpose of protecting our natural resources. This document contains specific information about the ELBPD’s surface water management inspection procedures, review of record/as-built drawings, and time required to complete the procedure successfully. Please be advised this document may be included with the approved license and may be modified on an as-needed basis.

***The following certification package must be submitted at least two (2) weeks prior to the anticipated date of occupancy; exceptions may be made on a case by case basis.***

***Note: Item 1 is not applicable to plans stamped as General Licenses (GL##-###). Items 2 & 3 may apply to GL if plans are stamped for construction certification.***

1. Final Record/As-built Drawings (hard copy and electronic) of the site, lake/canal slopes, control structure(s) or overflow structure(s) (where applicable), and Finished Floor Elevation(s); etc.
2. Signed and sealed letter from a Florida-Registered Professional Engineer certifying all components of the surface water management system were constructed in substantial conformance with the approved plans; and
3. When requesting a partial certification include a \$100 partial certification fee (fees are subject to change). The certifying engineer must indicate that a substantial amount of the water management system has been constructed to serve the partial phase to satisfy the water quality and water quantity requirements of the Code and exactly which lots/buildings are requested for release.

Staff will perform an inspection on a first-come first-served basis of the above items. A successful submittal of the required items will prevent unwanted delays in the inspection and CO release processes.

***What we look for During the Record/As-Built Drawing Review and During the Inspection***

1. The engineer's letter must contain the appropriate certification language. The suggested wording is located in the Code and in the specific conditions of the license. The letter must be signed and sealed. It is imperative that the engineer of record describe any minor modifications to the system that were made during the construction of the project. However, substantial modifications must have received prior approval by the Surface Water Licensing Program.
2. The as-built/record drawing must document the Finished Floor Elevation(s) showing substantial conformance with approved plans.
3. In addition to rim, manhole, and pipe invert elevations, the plans should contain a sufficient amount of survey information to show that the site grades and perimeter grades were constructed in substantial conformance with the approved plans.
4. If part of the approved system, lake and canal slope as-built plans should contain a substantial number of cross sections (a minimum of 1 section per 50 linear feet is preferred) to show compliance with the Department's slope criteria. The staff reserves the right to require additional slope cross sections as necessary as well as slope regrading. Surface area calculations at the control elevation should be submitted for lakes.
5. Control structure or overflow structure information must show all (as-built) dimensions and elevations.
6. All catch basin and manhole structures must have appropriate mudwork to prevent seepage that could lead to structure/asphalt failures and subsequent turbidity violations.
7. All catch basins, manholes, and pipes must be relatively free of sediment and debris and must be accessible to staff. Arrangements should be made with staff for inspecting basins that are covered with fabric materials for sediment control purposes. Fabric must be removed by the licensee or other appropriate personnel prior to the inspection.
8. Lake, canal, swale, dry detention/retention area slopes must be stabilized through appropriate measures, i.e., no evidence of erosion or sedimentation should be encountered during the inspection. Arrangements should be made with staff with regards to timeliness of sodding or seeding slopes and bottoms of dry detention/retention areas.
9. All baffle mechanisms must be made water tight at all contact surfaces of basin walls by a durable gasket device.

***Successful compliance with the above items will insure a timely release of the Certificate(s) of Occupancy from division staff.***

Upon completion of the field inspection, arrangements with inspection staff will be made to correct all observed field deficiencies. With your cooperation, the Operation Letter will be released upon correction of all field deficiencies.

**Environmental Licensing and Building Permitting Division**

Surface Water Management Program

1 North University Drive, Suite 201-A • Plantation, Florida 33324

Phone 954-519-1483 FAX 954-519-1412

## **NOTICE OF RIGHTS**

As required by Sections 120.569(1), and 120.60(3), Fla. Stat., following is notice of the opportunities which may be available for administrative hearing or judicial review when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Not all the legal proceedings detailed below may be an applicable or appropriate remedy. You may wish to consult an attorney regarding your legal rights.

### **RIGHT TO REQUEST ADMINISTRATIVE HEARING**

A person whose substantial interests are or may be affected by the Broward County Environmental Protection and Growth Management Department's (EPGMD, formerly known as Department of Planning and Environmental Protection or DPEP) action under the "Delegation Agreement Among the Florida Department of Environmental Protection, The South Florida Water Management District and Broward County" has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Fla. Stat. Persons seeking a hearing on an EPGMD decision which does or may determine their substantial interests shall file a petition for hearing with the EPGMD Environmental Compliance Administrator, within 21 days of receipt of written notice of the decision, unless the following shorter time period applies: within 14 days of service of an Administrative Order pursuant to Subsection 373.119(1), Fla. Stat. "Receipt of written notice of agency decision" means receipt of either written notice through mail, or electronic mail, or posting that the EPGMD has or intends to take final agency action, or publication of notice that the EPGMD has or intends to take final agency action. Any person who receives written notice of an EPGMD decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

### **Filing Instructions**

The Petition must be filed with the EPGMD Enforcement Administration Section's Environmental Compliance Administrator. Filings with the Environmental Compliance Administrator may be made by mail, hand-delivery or facsimile. **Filings by facsimile will not be accepted after October 1, 2014.** A petition for administrative hearing is deemed filed upon receipt during normal business hours by the Environmental Compliance Administrator, at the Broward County government offices in Plantation, Florida. Any document received by the EPGMD Enforcement Administration after 5:00 p.m. shall be filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Environmental Compliance Administrator, Enforcement Administration Section, 1 N University Drive, Suite 307, Plantation, FL 33324.
- Filings by hand-delivery must be delivered to the EPGMD Enforcement Administration Section. **Delivery of a petition to the Broward County security desk does not constitute filing. To ensure proper filing, it will be necessary to request the Broward County security officer to contact the Environmental Compliance Administrator's office.** An employee of the Environmental Compliance Administrator's office will receive and file the petition.
- Filings by e-mail must be transmitted to the EPGMD Enforcement Administration Section at **epdhotline@broward.org**. The filing date for a document transmitted by electronic mail shall be the date the EPGMD Enforcement Administration Section receives the complete document. A party who files a document by e-mail shall (1) represent that the original physically signed document will be retained by that party for the duration of the proceeding and of any subsequent appeal or subsequent proceeding in that cause and that the party shall produce it upon the request of other parties; and (2) be responsible for any delay, disruption, or interruption of the electronic signals and accepts the full risk that the document may not be properly filed.

**Initiation of an Administrative Hearing**

Pursuant to Rules 28-106.201 and 28-106.301, Fla. Admin. Code, initiation of an administrative hearing shall be made by written petition to the EPGMD in legible form and on 8 and 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, EPGMD file number or any other EPGMD identification number, if known.
2. The name, address and telephone number of the petitioner and petitioner's representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the EPGMD's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the EPGMD's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the EPGMD's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the EPGMD to take with respect to the EPGMD's proposed action.

A person may file a request for an extension of time for filing a petition. The EPGMD may, for good cause, grant the request. Requests for extension of time must be filed with the EPGMD prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and that the EPGMD and any other parties agree to or oppose the extension. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

If the EPGMD takes action with substantially different impacts on water resources from the notice of intended agency decision, the persons who may be substantially affected shall have an additional point of entry pursuant to Rule 28-106.111, Fla. Admin. Code, unless otherwise provided by law.

**Mediation**

The procedures for pursuing mediation are set forth in Section 120.573, Fla. Stat., and Rules 28-106.111 and 28-106.401-.405, Fla. Admin. Code. The EPGMD is not proposing mediation for this agency action under Section 120.573, Fla. Stat., at this time.

**RIGHT TO SEEK JUDICIAL REVIEW**

Pursuant to Sections 120.60(3) and 120.68, Fla. Stat., a party who is adversely affected by final EPGMD action may seek judicial review of the EPGMD's final decision by filing a notice of appeal pursuant to Florida Rule of Appellate Procedure 9.110 in the Fourth District Court of Appeal or in the appellate district where a party resides and filing a second copy of the notice with the Environmental Compliance Administrator within 30 days of rendering of the final EPGMD action.

Rev. 10/01/14

**SFWMD General Conditions**

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.
2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the Agency staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.
3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), which are both incorporated by reference in subparagraph 62-330.050(9)(b)5, F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.
4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the Agency a fully executed Form 62-330.350(1), 'Construction Commencement Notice,' indicating the expected start and completion dates. A copy of this form may be obtained from the Agency, as described in subsection 62-330.010(5), F.A.C. If available, an Agency website that fulfills this notification requirement may be used in lieu of the form.
5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.
6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
  - a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex - 'Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit' [Form 62-330.310(3)]; or
  - b. For all other activities - 'As-Built Certification and Request for Conversion to Operational Phase' [Form 62-330.310(1)].
  - c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.
7. If the final operation and maintenance entity is a third party:
  - a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as- built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.
  - b. Within 30 days of submittal of the as- built certification, the permittee shall submit 'Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity' [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.
8. The permittee shall notify the Agency in writing of changes required by any other regulatory agency that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.

9. This permit does not:
  - a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;
  - b. Convey to the permittee or create in the permittee any interest in real property;
  - c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
  - d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.
10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.
11. The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.
12. The permittee shall notify the Agency in writing:
  - a. Immediately if any previously submitted information is discovered to be inaccurate; and
  - b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.
13. Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.
14. If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.
15. 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 Rule 62-330.201, F.A.C., provides otherwise.
16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.
17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the Agency will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.
18. Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.



**SFWMD Special Conditions**

1. The permittee shall be responsible for the correction of any erosion, shoaling or water quality problems that result from the construction or operation of the surface water management system.
2. Measures shall be taken during construction to insure that sedimentation and/or turbidity problems are not created in the receiving water.
3. The District reserves the right to require that additional water quality treatment methods be incorporated into the drainage system if such measures are shown to be necessary.
4. Facilities other than those stated herein shall not be constructed without an approved modification of this permit.
5. The conditions outlined in the Broward County Specific Conditions section, except where language specifically relates to Broward County Code, are incorporated into these SFWMD Special Conditions.
6. A stable, permanent and accessible elevation reference shall be established on or within one hundred (100) feet of all permitted discharge structures no later than the submission of the certification report. The location of the elevation reference must be noted on or with the certification report.
7. Operation of the surface water management system shall be the responsibility of permittee.
8. All terms, conditions, and exhibits previously stipulated by SFWMD Permit # 06-00813-S will apply to this license unless specifically modified.
9. This permit expires on 4/29/2021.
10. If prehistoric or historic artifacts such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, the permitted project should cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The Permittee or other designee should contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section at 850-245-6333 or 800-847-7278, as well as the appropriate permitting agency office. Project activities should not resume without verbal and/or written authorization from the Division of Historical Resources.

In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with section 872.05, Florida Statutes.

**Broward County General Conditions**

1. The terms, conditions, requirements, limitations and restrictions set forth herein are accepted by the licensee and must be completed by the licensee and are enforceable by the Environmental Protection and Growth Management Department (EPGMD) pursuant to Chapter 27 of the Broward County Code of Ordinances. The EPGMD will review this license periodically and may revoke or suspend the license, and initiate administrative and/or judicial action for any violation of the conditions by the licensee, its agents, employees, servants or representatives.
2. This license is valid only for the specific uses set forth in the license application and any deviation from the approved uses may constitute grounds for revocation, suspension, and/or enforcement action by the EPGMD.
3. In the event the licensee is temporarily unable to comply with any of the conditions of the license or with this chapter, the licensee shall notify the EPGMD within eight (8) hours or as stated in the specific section of this chapter. Within three (3) working days of the event, the licensee shall submit a written report to EPGMD that describes the incident, its cause, the measures being taken to correct the problem and prevent its reoccurrence, the owner's intention regarding the repair, replacement and reconstruction of destroyed facilities and a schedule of events leading toward operation with the license condition.
4. The issuance of this license does not convey any vested rights or exclusive privileges, nor does it authorize any injury to public or private property or any invasion of personal rights, or any violations of federal, state or local laws or regulations.
5. This license must be available for inspection on licensee's premises during the entire life of the license.
6. By accepting this license, the licensee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this licensed facility or activity, that are submitted to the EPGMD, may be used by the EPGMD as evidence in any enforcement proceeding arising under Chapter 27 of the Broward County Code of Ordinances, except where such use is prohibited by Section 403.111, Florida Statutes.
7. The licensee agrees to comply with Chapter 27 of the Broward County Code of Ordinances, and shall comply with all provisions of the most current version of this chapter, as amended.
8. Any new owner or operator of a licensed facility shall apply by letter for a transfer of license within thirty (30) days after sale or legal transfer. The transferor shall remain liable for performance in accordance with the license until the transferee applies for and is granted a transfer of license. The transferee shall be liable for any violation of Chapter 27 that results from the transferee's activities. The transferee shall comply with the transferor's original license conditions when the transferee has failed to obtain its own license.
9. The licensee, by acceptance of this license, specifically agrees to allow access and shall allow access to the licensed source, activity or facility at times by EPGMD personnel for the purposes of inspection and testing to determine compliance with this license and Chapter 27 of the Broward County Code of Ordinances.
10. This license does not constitute a waiver or approval of any other license, approval, or regulatory requirement by this or any other governmental agency that may be required.
11. Enforcement of the terms and provisions of this license shall be at the reasonable discretion of EPGMD, and any forbearance on behalf of EPGMD to exercise its rights hereunder in the event of any breach by the licensee, shall not be deemed or construed to be a waiver of EPGMD's rights hereunder.

**Broward County Specific  
Conditions**

1. The licensee shall allow authorized personnel of the Environmental Licensing and Building Permitting Division (ELBPD), municipality or local water control district to conduct such inspections at reasonable hours, as are necessary to determine compliance with the requirements of the license and the approved plans and specifications.
2. The responsible entity shall agree to maintain the operating efficiency of the water management works. Except in cases where the responsible entity is a governmental agency, the agreement shall further require that if the water management works is not adequately maintained, the County may undertake the required work and bill all associated costs to the responsible entity. If the payment for such obligations is not satisfied within 30 days, said obligation shall become a lien against the property associated with the water management works. Where ownership of the water management works is separate from property ownership, the ELBPD shall require these agreements to be recorded.
3. The licensee shall prosecute the work authorized in a manner so as to minimize any adverse impact of the works on fish, wildlife, natural environmental values, and water quality. The licensee shall institute necessary measures during the construction period, including fill compaction of any fill material placed around newly installed structures, to reduce erosion, turbidity, nutrient loading and sedimentation in the receiving waters. Any erosion, shoaling or deleterious discharges due to permitted actions will be corrected promptly at no expense to the County.
4. The licensee shall comply with all applicable local land use and subdivision regulations and other local requirements. In addition, the licensee shall obtain all necessary Federal, State, local and special district authorizations prior to the start of any construction alteration of works authorized by this license.
5. Offsite discharges during construction and development shall be made only through the facilities authorized by this license. Water discharged from the project shall be through structures having a mechanism for regulating upstream water stages. Stages may be subject to operating schedules satisfactory to the appropriate regulatory agency.
6. The licensee shall hold and save the County harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, operation, maintenance or use of any facility authorized by the license.
7. The license does not convey property rights nor any rights or privileges other than those specified therein.
8. No construction authorized by the license shall commence until a responsible entity acceptable to the ELBPD has been established and has agreed to operate and maintain the efficiency of the system. The entity must be provided with sufficient ownership so that it has control over all water management facilities authorized therein. Upon receipt of written evidence of the satisfaction of this condition, the ELBPD will issue authorization to commence the construction.
9. No beautification, or erection of any structure that will prohibit or limit access of maintenance equipment or vehicles in the right-of-way or easements will be allowed.
10. Any license which grants any entity the permission to place a structure on property which is owned by Broward County or upon which Broward County has an easement shall be construed to create a revocable license for that structure to remain on the property. Broward County may require removal of such a structure at no cost to the County.
11. The area under license will be maintained in a safe and operating condition at all times. Equipment will be promptly removed from the right-of-way or easement and the right-of-way or easement will be restored to its original or better condition within a reasonable time on termination of the authorized use.

12. The ELBPD will be notified, as required in the license or as indicated on the approved plans, to coordinate and schedule inspections.

13. The operation or construction will be in accordance with the approved details and plans submitted with the application. Any modification must be submitted to the ELBPD in writing and receive prior approval.

14. Monitoring may be required for sites with high pollutant generating potential, such as industrial sites, Class I and II solid waste disposal sites, and projects discharging to areas identified in Section 27-200 (b) (1) (o). Such monitoring will be under the cognizance of the ELBPD.

15. Upon completion of the construction of a surface water management system or phase thereof licensed by the ELBPD, it is a requirement of the issuance of the license, and hence transfer of operation and maintenance responsibility, that a Florida Registered Professional Engineer certify that the surface water management system was indeed constructed as licensed. Certified record drawings shall accompany the certification. Suggested wording for this is as follows:

I HEREBY CERTIFY TO THE CONSTRUCTION COMPLETION OF ALL THE COMPONENTS OF THE SURFACE WATER MANAGEMENT FACILITIES FOR THE ABOVE REFERENCES PROJECT AND THAT THEY HAVE BEEN CONSTRUCTED IN SUBSTANTIAL CONFORMANCE WITH THE PLANS AND SPECIFICATIONS APPROVED BY THE BROWARD COUNTY ELBPD, AND HEREBY AFFIX MY SEAL THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
(SEAL)

16. Water management areas shall be legally reserved to the operation entity and for that purpose by dedication on the plat, deed restrictions, easements, etc., so that subsequent owners or others may not remove such areas from their intended use. Management areas, including maintenance easements, shall be connected to a public road or other location from which operation and maintenance access is legally and physically available.

17. The licensee shall notify the ELBPD in writing within twenty-four (24) hours of the start, finish, suspension, and/or abandonment of any construction or alteration of works authorized by this license.

18. A prorated share of surface water management retention/detention areas, sufficient to provide the required flood protection and water quality treatment, must be provided prior to occupancy of any building or residence.

19. The operation license shall be valid for a specific period of time not to exceed five (5) years from the date the license is transferred to the operation phase. The operation license shall be renewed in accordance with Section 27 - 198 (d) (2) of the Article.

20. The ELBPD reserves the right to require additional water quality treatment methods be incorporated into the drainage system if such measures are shown to be necessary.

21. This permit does not constitute the approval required by Section 27-353(i), Broward County Code, to conduct dewatering operations at or within one-quarter mile radius of a contaminated site. Please contact the Pollution Prevention Division at (954) 519-1260 for further information.

22. The licensee shall keep a log of the operation and maintenance schedule for all components of the surface water management system.

23. The surface water management system must be inspected by the Surface Water Management Section to verify compliance with Specific Condition No. 15 of the license. In accordance with the Broward County Natural Resource Protection Code, Article I, Sec. 27-66 (f), the County agency or municipal agency charged with issuing a certificate of occupancy (CO) shall not issue a CO until notified of the Broward County ELBPD approval. Partial certifications will be handled in accordance with Specific Condition No. 18.

24. The licensee is advised that he/she is required to submit a Storm Water Notice of Intent (NOI) application at least 48 hours prior to the commencement of construction to the Florida Department of Environmental Protection, NPDES Stormwater Notices Center, MS #3585 at 2600 Blair Stone Road - Tallahassee, Florida 32399-2400.

25. All special conditions, exhibits and other materials previously stipulated by license number SWM1999-001-0 and permit number 06-00813-S remain in effect unless otherwise revised and shall apply to this modification.



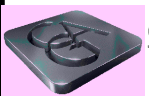
N.T.S

LEGEND



PROJECT SITE

Exhibit 1



Calvin, Giordano & Associates, Inc.  
EXCEPTIONAL SOLUTIONS™

**Mills Pond Park**  
15-7678  
Fort Lauderdale, Florida

**LOCATION MAP**

CAM 16-1143  
EXHIBIT 3

SHEET

**1**



**STAFF REPORT**

**Project Name:** Mills Pond Park Soccer Fields

**Permit Number:** 06-00813-S      **License Number:** SWM1999-001-3

**Application Number:** 160201-27      **Concurrent Application:** L2016-019

**Application Type:** Environmental Resource Modification

**Location:** Broward County      **Section-Township-Range:** 28-49-42

**Permittee's Name:** City of Fort Lauderdale

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**Project Area:** 10.59 acres      **Drainage Area:** 103.21 acres

**Project Land Use:** Recreational

**Drainage Basin:** C-13

**Receiving Body:** On-site Retention

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**Purpose:**

The modification of SFWMD Permit # 06-00813-S and Broward County Surface Water Management License No. SWM1999-001-0 for the construction and operation of a surface water management system to serve a proposed 10.59 acre recreational soccer fields within Mills Pond Park.

**Project Evaluation:****Project Site Description:**

The site is presently partially developed and is located at the northwest corner of the intersection of NW 19 St and NW 15 Ave in Fort Lauderdale.

**Proposed Project Design:**

The proposed construction within the 10.59 acres site area will include 5.27 acres of soccer field areas, 2.20 acres of impervious parking/sidewalk areas and the proposed drainage system. A system of inlets and culverts will direct the storm runoff to total of 2,967 LF of exfiltration trench (2,019 LF of 4.82'H x 5'W in the north soccer field area and 948 LF of 4.57'H x 5'W in the south soccer field area) for water quality treatment and storm runoff attenuation prior to discharging into the existing master system of the Park.

The applicant's consultant has demonstrated through plans and calculations that proposed project meets the permitted requirements of SFWMD Permit # 06-00813-S and Broward County License SWM1999-001-0.

**Control Elevation:**

Control Elevation = 0.93 ft, NAVD      WSWT Control Elevation = 0.93 ft, NAVD  
Method of Determination = BC Avg. Wet Season Water Table Map

**Project Background:**

This license does not supercede any previous licenses.

**Water Quality Design:**

Water quality treatment will be provided in the proposed exfiltration trench system for 2.5 inches times the percent impervious over the 2.36 acres of field areas.

<u>Basin Name</u>	<u>Treatment Type</u>	<u>Treatment Method</u>	<u>Volume Required</u>	<u>Volume Provided</u>
Mills Pond Park Soccer Field	Treatment	Exfiltration Trench	1.09 ac-ft	1.3 ac-ft
			Total: 1.3 ac-ft	

**Environmental Summary:**

No wetland areas were identified within the project area and no wetland impacts are anticipated from the development of this parcel. Therefore, no wetland mitigation requirements have been included in the permit for this project. The proposed activities have been evaluated for potential secondary and cumulative impacts and to determine if the project is contrary to the public interest. Based upon the proposed project design, EPGMD has determined that the project will not cause adverse secondary or cumulative impacts to the water resources and is not contrary to the public interest.



**Special Concerns:**

**Operating Entity:** City of Fort Lauderdale  
Attention: Troy Balint, Environmental Program Coordinator  
949 NW 38th Street  
Fort Lauderdale, FL 33309

**Waste Water System/Supplier:** G.T. Lohmeyer

**STAFF RECOMMENDATION:**

South Florida Water Management District and Broward County rules have been adhered to and an Individual Permit should be granted.

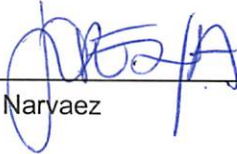
**06-00813-S; SWM1999-001-3; STAFF REVIEW:****Surface Water Management Program:**  
\_\_\_\_\_  
Johana Narvaez  
\_\_\_\_\_  
Ashley Resta, P.E.**Aquatic and Wetland Resources Program:**  
\_\_\_\_\_  
Linda Sunderland, Manager

Exhibit 2D