

**CITY OF WILDWOOD**  
**Millennium Park - Phase 1 & 2**

**PROJECT MANUAL**  
**September 2023**



**Prepared By**



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Sanford, Florida 32771  
Phone: 407.322.6841

**CPH Job No. W12803**

**SECTION 00005**  
**CERTIFICATIONS PAGE**


This Project Manual has been prepared by:

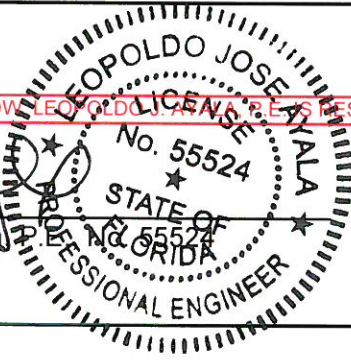
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This Project Manual is certified by:

Civil Engineer

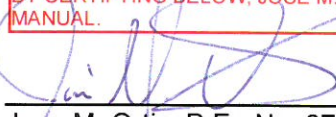
BY CERTIFYING BELOW, LEOPOLDO JOSE AYALA, P.E. IS RESPONSIBLE FOR DIVISIONS 1 & 2 OF THIS PROJECT MANUAL.

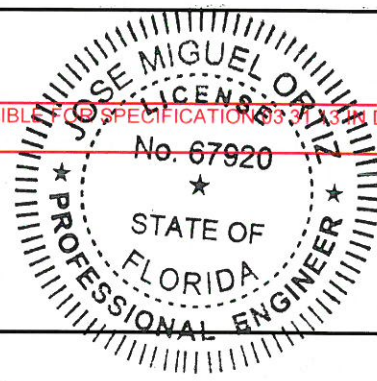
  
Leopoldo J. Ayala, P.E.  
DATE: 06/26/2023



Structural Engineer


BY CERTIFYING BELOW, JOSE M. ORTIZ, P.E. IS RESPONSIBLE FOR SPECIFICATION 03 41 13.4 DIVISION 3 OF THIS PROJECT MANUAL.

  
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DATE: 06/26/2023



Architect


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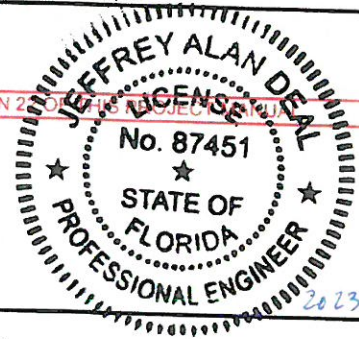
  
John M. Lenti, AIA, No. AR100548  
DATE: 06/26/2023



Mechanical Engineer


BY CERTIFYING BELOW, JEFFERY A. DEAL, P.E. IS RESPONSIBLE FOR DIVISION 26 OF THIS PROJECT MANUAL.

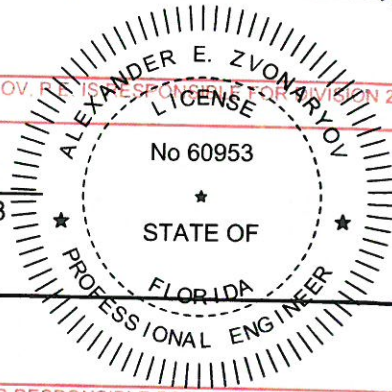
  
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DATE: 06/26/2023



Electrical Engineer


BY CERTIFYING BELOW, ALEXANDER E. ZVONARYOV, P.E. IS RESPONSIBLE FOR DIVISION 26 OF THIS PROJECT MANUAL.

  
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DATE: 06/26/2023



Landscape Architect

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James K. Winter, PLA , LA0000911  
DATE: 06/26/2023



The appendices to this Project Manual may contain information prepared by other professionals, bearing the name, address, and logo of the professional. CPH, LLC is not responsible for items prepared by other professionals, and these items are not covered under the above registered professionals' signature and seal.

END OF SECTION

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A201	EXTERIOR ELEVATIONS
A301	BUILDING SECTIONS
A522	DETAILS – EXTERIOR
FP000	FP000 FIRE PROTECTION LEGEND



<b>SHEET NO.</b>	<b>SHEET TITLE</b>
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**END OF SECTION**

## SECTION 00100

### INVITATION FOR BIDS

Advertisement For Bids – Millennium Park – Phase 1 & 2  
Published on DEMANDSTAR.COM on 09/11/2023.

PUBLIC NOTICE is hereby given by the City of Wildwood, a municipal corporation existing under the laws of the State of Florida. The City invites interested, licensed and qualified firms to submit competitive sealed proposals in response to the Invitation for Bids for the Millennium Park – Phase 1 & 2 as outlined in the bidding documents. Bidding documents are available by accessing the City of Wildwood DemandStar website (DEMANDSTAR.COM). Sealed responses shall be submitted to the City of Wildwood Office of the City Clerk, 100 N. Main Street, Wildwood, FL 34785, no later than September 28, 2023 at 11:30 A.M. local time. All questions shall be submitted to bids@cphcorp.com no later than September 21, 2023 at 5:00 p.m. Local Time.

M/WBEs are encouraged to participate in the bidding for this project. Bids will be immediately opened after the bid due date and time and read aloud in the Commission Conference Room 124 at the same address.

This Project consists of the construction of over 2,600-ft of new access roads and turn lane, three new parking lots (11,000 SY (+/-)), two new softball fields, two new soccer fields, new tennis courts, basketball courts (under a 17,710 SF pre-engineered roof), racquetball courts, concrete sidewalk, asphalt trail, electrical and plumbing for the new fields and courts, new water main, sanitary sewer, storm sewer, landscaping, site furnishings, and irrigation.

The City of Wildwood has no obligation to open or otherwise consider bids delivered after the date and time indicated above. Please note that transmittal of the Bid and required Bid submittals via facsimile or e-mail or other means other than in a sealed envelope will not be opened or considered. Any uncertainty regarding the time a Bid is received will be resolved against the Bidder.

Persons with disabilities needing assistance to participate in any of these proceedings should contact the City Clerk's office at [jbarnes@wildwood-fl.gov](mailto:jbarnes@wildwood-fl.gov) forty-eight (48) hours in advance of the meeting.

Electronic copies (PDF format) of solicitation packages including specifications, terms, conditions, general instructions and bid submission documents are now available and may be obtained from DEMANDSTAR.COM. Questions about obtaining Bid Documents can be submitted via e-mail to Thomas Rigwood (trigwood@wildwood-fl.gov) with the City of Wildwood. Questions or requests shall include the name, business name, address, telephone number, and e-mail address of the requesting party and shall reference Millennium Park Phase 1 & 2 in the subject line. Each request shall indicate whether the requesting party is a general contractor, subcontractor, manufacturer, or supplier. DEMANDSTAR.COM will maintain a list of registered holders of solicitation packages. Only registered holders of the solicitation package will be notified of addenda or question response uploads.

Each BID shall be submitted in duplicate originals in one sealed envelope with the name and

address of the Bidder and the bid date and time on the outside along with the following information: "BID FOR MILLENNIUM PARK - PHASE 1 & 2".

All questions regarding the project shall be submitted in writing via e-mail to CPH, LLC, Attention: Millennium Park – Phase 1 & 2, to [bids@cphcorp.com](mailto:bids@cphcorp.com). Questions received later than Monday, September 21, 2023 at 5:00 p.m. Local Time will not be answered.

The City reserves the right to accept or reject any or all bids in whole or in part with or without cause, to waive technicalities, or to accept the bid(s) which, in its judgment, best serves the interest of the City.

**END OF SECTION**

## SECTION 00200

### INSTRUCTIONS TO BIDDER

#### PART 1 GENERAL

##### 1.01 Bidding Documents

- A. Bidding Documents include the Invitation for Bids, Instructions to Bidders, Bid Form, other sample bidding and contract forms, and the proposed Contract Documents, including any Addenda issued prior to receipt of bids.
- B. Bidding Documents may be obtained in compliance with the Invitation for Bids. No partial sets of the Bidding Documents will be issued. Complete sets of Bidding Documents shall be used in preparing bids. Neither the Owner nor the Engineer will assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

##### 1.02 Bidder Questions

Any Bidder who is in doubt as to the true meaning of any part of the Bidding Documents, or finds a discrepancy or omission therein, may submit to the Engineer a written request for an interpretation or correction. The person submitting the request shall be responsible for its delivery to the Engineer at least ten (10) days prior to the bid opening date. Any interpretation, correction or change of the Bidding Documents will be made by Addendum. Interpretations, corrections or changes made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections and changes.

##### 1.03 Addenda

Addenda will be mailed or otherwise delivered to all plan holders who received a complete set of Bidding Documents from the Engineer. All Addenda issued during the time of bidding shall form a part of the Contract Documents, shall be covered in the Bid, and shall become a part of the Contract. Receipt of each Addendum shall be acknowledged in the Bid Form; failure to do so may subject the Bidder to disqualification. It shall be the Bidder's responsibility to ensure that they have received all Addenda prior to bid. The Owner or Engineer shall not be responsible for non-receipt or untimely receipt of Addenda due to acts of the delivering agency or any other source.

##### 1.04 Examination of Documents and Inspection of Site

Before submitting a Bid, Bidders shall carefully examine the Bidding Documents and inspect the project site to fully inform themselves of all existing conditions and limitations. Each Bidder, by submitting his Bid, represents that he has so examined the Bidding Documents and inspected the site, that he understands the provisions of the Bidding Documents and that he has familiarized himself with the local conditions under which the work is to be performed. Bidders will not be given extra payment or contract time for conditions, which could have been determined by such examinations.



### **1.05 Bidder's Interest in More Than One Bid**

No person, firm, or corporation shall be allowed to make, file, or have an interest in more than one Bid for the same work, unless Alternates are called for. A person, firm, or corporation who has submitted a sub-bid to a Bidder or who has quoted prices on materials to a Bidder is not hereby disqualified from submitting a sub-bid or quoting prices to other Bidders, or from bidding as a prime contractor.

### **1.06 Certificates and Licenses**

Bidders must be properly licensed to perform the Contract Work. Proper licensing shall be as defined by Florida Statutes and the license shall be issued by the Florida Dept. of Business and Professional Regulation Construction Industry Licensing Board.

### **1.07 Public Entity Crimes - Denial or Revocation of Right to Transact Business With a Public Entity**

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, proposal, or reply on a contract to provide any goods or services to a public entity; may not submit a bid, proposal, or reply on a contract with a public entity for the construction or repair of a public building or public work; may not submit bids, proposals, or replies on leases of real property to a public entity; may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in Florida Statutes (FS) 287.017 for CATEGORY TWO (\$35,000) for a period of 36 months following the date of being placed on the convicted vendor list.

### **1.08 Florida Trench Safety Act**

Bidders must comply with the Florida Trench Safety Act (FS 553.60-553.64), by completing and submitting with the sealed bid the Trench Safety Statement Form, a copy of which is included as part of these Contract Documents.

### **1.09 Rejection of Bidders Under Litigation**

The Owner reserves the right to reject the Bid of any Bidder who is behind, as determined by the Owner or Engineer, on the completion schedule for any existing contracts; who has failed to properly progress work on any construction contract with any governmental agency within the past five (5) years; who is currently under litigation with the Owner; who is in litigation with any governmental agency within the past five (5) years; who is involved in any dispute resolution procedure with any governmental agency within the past five (5) years; who has previously defaulted on a contract with any governmental agency within the past five (5) years; or who has previously failed to satisfy all requirements related to life safety including, but not limited to, the maintenance of traffic provisions on existing or previous agreements with any governmental agency within the past five (5) years.

### **1.10 Debarred or Suspended Bidders**

The Bidder certifies, by submission of its Proposal (Bid), that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in contracting with any federal department or agency. The Owner reserves the right to reject any bid from a debarred or suspended Bidder or from a Bidder whose principals are debarred or suspended.

### **1.11 Material Prices Used in the Bid**

- A. Due to the current and/or potential volatile nature of material prices and inability of material suppliers to hold prices, Bidders are required to submit (with the Bid) material price quotes used in the Bid for any pay item(s) for which the Contractor anticipates a rapid material price change between the date of the Bid and when the material is anticipated to be ordered. Without restriction to any other provision/specification herein, only Bid prices for which the described price quotes having been properly submitted with the Bid may be considered for price adjustment, in accordance with the provisions in the Supplementary Conditions (Change of Contract Price Associated with Material Price Increases).
- B. The material price quotes shall include the name and address of the Supplier, the contact name and phone no. of the Supplier representative who prepared the quote, the name and address of the Bidder, the project name, and shall include a list of materials and prices including a material description, units of measure, quantity, unit cost, and total cost. The date of the material price quote shall be within ten (10) calendar days of the Bid Due Date.

### **1.12 Form of Bid**

- A. Each Bid shall be submitted on the Bid Form included as one of the Bidding Documents. The Bidder is not permitted to make changes in the Bid Form provided. The Bidder shall fill in spaces on the Bid Form by typewriter, computer, or manually in ink. When a Bidder submits a Bid and fills in information, which is then changed, each change must be initialed by the person signing the Bid.
- B. The Bidder must fill in all unit prices, total prices, and total amounts. Each Unit Price will be deemed to include an amount considered by Contractor to be adequate to cover all costs, including manpower, labor, equipment, materials, supplemental and administrative costs, and profit.
- C. Where so indicated by the makeup of the Bid Form, amounts shall be expressed in both words and figures, and in case of discrepancy between the two, the amount in words shall govern.
- D. The Bid Form shall be completely filled out including the Bidder information; acknowledgement of receipt of all Addenda; the Bid Amount including Unit Prices and Total Prices for all Items including all alternate items; the completed Bidder Submittal checklist; and the bid properly signed and dated by the person or persons legally authorized to bind the Bidder to a Contract. A Bid by a

corporation shall further give the State of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current Power of Attorney attached certifying agent's authority to bind Bidder. A bid submitted by a partnership shall be signed in the name of the firm by one or more of the partners.

- E. No conditional Bids will be accepted. Alternate Bids will not be considered unless called for. Oral proposals or modifications will not be considered. The Owner reserves the right to reject a bid that is unbalanced.
- F. All submitted bid packages including alternate bid items become the property of the Owner.

### **1.13 Bid Security**

- A. Provide a bid security in the form of a certified check or bid bond. Bid security shall be payable without condition to the Owner, as a guaranty that the Bidder, if awarded the Contract, will promptly execute the Agreement in accordance with the Bidding Documents, and will furnish all bonds and insurance as required. If Bid Bond is provided it shall be provided using the form included in section 00420 and shall be provided by a surety company authorized to do business in the State of Florida. The amount of the Bid Security shall be as follows:
  - 1. Construction Projects where the Maximum Bid Price is \$60,000 or greater: Bid Security shall be in an amount equal to at least 5% of the Maximum Bid Price (Base Bid Plus Alternates).
  - 2. Construction Projects where the Maximum Bid Price is less than \$60,000: Bid Security shall be in an amount equal to at least 10% of the Maximum Bid Price (Base Bid Plus Alternates).
- B. If for any reason the Bidder withdraws his Bid after Bid Opening or fails to execute an Agreement or to provide the specified bonds, insurance, and insurance certification, such Bidder shall be in default. The defaulting Bidder and his surety shall pay to the Owner all costs incurred by the Owner for procuring the performance of the work required by the Bidding Documents which exceed the amount of his Bid, including engineering and legal costs, not to exceed the amount of the bid security.
- C. The Bid Security of all except the three (3) apparent lowest Bidders will be returned within 21 days after the canvass of Bids.

### **1.14 Submission of Bids**

- A. Submit two duplicate originals of the Bid, Bid Security, and all other documents required to be submitted with the Bid. Enclose in a single sealed opaque envelope, addressed to the party receiving the Bids. Label on the outside of the envelope the Project name, project number (if applicable), and the Bidder's name and address. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "Bid Enclosed" on the face thereof.

- B. Bids shall be delivered to the designated location prior to the time and date for receipt of Bids indicated in the Invitation for Bids or any extension thereof made by Addendum. Bids received after the time and date for receipt of Bids will be returned unopened to the person or firm submitting the Bid.
- C. The Bidder shall assume full responsibility for timely delivery of his Bid to the designated location.

#### **1.15 Modification and Withdrawal of Bids**

- A. Bids may not be modified after submittal; however, they may be withdrawn at any time prior to the Bid Opening time and date.
- B. Withdrawal requests shall be made in writing and must be received by the Owner before the time and date stated or as addended for the Bid Opening. Properly withdrawn Bids will be returned unopened to the person or firm submitting the Bid.
- C. A Bidder who withdraws his Bid may submit a new Bid in the same manner as specified under "Submission of Bids".
- D. If a Contract is not awarded within 90 calendar days after opening of Bids, a Bidder may file a written request with the Owner for the return of his Bid.

#### **1.16 Basis of Award**

- A. The Owner reserves the right to accept or reject any or all bids in whole or in part with or without cause, to waive technicalities, or to accept the bid(s) which, in its judgment, best serves the interest of the Owner.
- B. Except in cases where the Owner exercises the right to reject all Bids, the Contract will be awarded by the Owner, as soon as practicable after Opening of Bids, to the responsive, responsible Bidder who has submitted the lower individual or combination Bid.
- C. The lowest Bid will be determined by comparison of the "Total Base Bid" stipulated on the Bid Form, plus any combination of Additive or Deductive Alternate Bid Items of the Owner's choosing. If the stated "Total Base Bid" conflicts with the sum of the Total Prices on the Bid Schedule, then the sum of the Total Prices prevails. The Total Price for each item is the stated unit price times the quantity.

#### **1.17 Responsiveness Requirements**

- A. All Bidders are required to be responsive. Failure to meet any of the responsiveness requirements set forth herein may result in the Bidder being judged non-responsive.



- B. To be judged responsive, the Bidder shall execute, and return the following forms and required information with the Bid:

<b>Section</b>	<b>Form / Information</b>
00410	Proposal (Bid Form) Including Acknowledgment of All Issued Addenda
---	Bid Security in Accordance with the Instructions to Bidder
---	Bidder Completed W-9 Form
---	Bidder Officer Signatory Authorization Information
00430	Trench Safety Form
00432	Non Collusion Affidavit
00434	Conflict of Interest Affidavit
00436	Florida Statutes on Public Entity Crimes Affidavit
00438	Compliance With the Public Records Law Affidavit
00440	Bidder Information and Affidavit
00450	Certification Of Non-Segregated Facilities Form
00452	Disputes Disclosure Form
00454	Drug Free Workplace Form
00455	Certification Regarding Non-Scrutinized Companies
00456	Unauthorized (Illegal) Alien Workers Affidavit
00458	E-Verify Compliance Form
00460	Americans With Disabilities Act Affidavit
00462	Equal Employment Opportunity Certification
00463	Certification Regarding Debarment
00465	Schedule of Proposed Subcontractors
---	Copies of Licenses Issued by the State of Florida Dept. of Business and Professional Regulation Construction Industry Licensing Board
---	Material price quotes used in the Bid for any pay item(s) for which the Contractor anticipates a rapid material price change between the date of the Bid and when the material is anticipated to be ordered

- C. If the Invitation to Bids requires attendance at a mandatory Pre-Bid meeting, then Bids submitted from Bidders who do not attend the mandatory Pre-Bid meeting will be judged non-responsive; unless providentially hindered as to such required attendance due to provable circumstances beyond the control of the Bidder whereupon mandatory attendance may be waived at the sole discretion of the Owner.

### **1.18 Responsibility Requirements**

- A. All Bidders are required to be responsible. Failure to meet any of the responsibility requirements set forth herein may result in the Bidder being judged non-responsible. Bids from non-responsible bidders may be accepted or rejected at the discretion of the Owner.
- B. To be judged responsible, the Bidder shall meet the following standards:

1. The Bidder shall be properly licensed and shall have a satisfactory record of integrity, judgment, and performance as a corporation (including its shareholders and officers), partnership, or as a sole proprietorship, including in particular, any prior performance upon contracts from the State and the Owner.
2. The Bidder shall have at least three (3) years of experience as a prime contractor.
3. The Bidder shall have performed as a prime contractor on at least three (3) projects of similar type and size as the proposed contract work.
4. The Bidder shall be able to comply with the required completion schedule for the project.
5. The Bidder shall have adequate financial resources to perform the work, and shall have an adequate financial management system and audit procedure which provides efficient and effective accountability and control of all property, funds, and assets. The Bidder shall be able to demonstrate this in accordance with the requirements described herein.
6. The Bidder shall conform with the civil rights, equal employment opportunity and labor law requirements of the Bid Documents.

#### **1.19 Bidder Evaluation Submittal Requirements**

- A. Within 7 calendar days after being notified of being the apparent lowest, responsive Bidder, the Bidder shall submit the following information to the Owner or Engineer for evaluation to determine compliance with the responsibility requirements. The following information may also be required to be submitted by the second and third low bidders within 7 calendar days, if notified by the Owner or Engineer.
  1. Resumes of key personnel, especially those personnel proposed for work on this Project.
  2. Provide a list of equipment and quantities currently owned or under lease to the Bidder and available for the work.
  3. List of personnel, by name and title, contemplated to perform the work.
  4. Provide financial information in accordance with the following:
    - a. For projects where the total base bid is \$600,000.00 or less, provide a current Compilation Statement of the Bidder, prepared by a Certified Public Accountant (CPA).
    - b. For projects where the total base bid is \$600,000.01 up to \$10,000,000.00, provide a current Percentage of Completion Review of the Bidder, prepared by a CPA.
    - c. For projects where the total base bid is \$10,000,000.01 or higher, provide a current audited financial statement of the Bidder, prepared by a CPA, including a certification that the financial status of the company has not materially changed since the audit.
    - d. The financial information shall reflect the most current fiscal year, and in no case no more than 16 months old.
  5. Provide a list of equipment and quantities currently owned or under lease to the Bidder and available for the work.

6. As required by the Owner, submit fully executed copies of the following forms:
  - a) Financial Information Form - Section 00462
  - b) Insurance Certification - Section 00620

- B. The Owner reserves the right to waive submittal of any or all of the above informational requirements of the Bidder.

#### **1.20 Award of Contract**

If the contract is to be awarded, the Owner or its agent will deliver to the successful low bidder a Notice of Award and Agreement form within ninety (90) days after the day of the bid opening. The successful low bidder shall sign and return the Agreement and required bonds and insurance within fourteen (14) days of receipt of the Notice of Award.

#### **1.21 Bonds and Insurance**

- A. Upon award of the contract, the Bidder, simultaneously with the execution of the Agreement, shall furnish certificates of insurance, insurance certification, performance bond, and payment bond. The forms of the bonds and insurance certification, including bonding amounts and duration and insurance coverage required are included in the Bidding Documents.
- B. The successful Bidder shall, before commencing the work, record said Payment and Performance Bond in the public records of the County where the improvement is located in accordance with FS 255.05.

#### **1.22 Waiver**

Each Bidder agrees to waive any claims it has or may have against the Owner, Engineer, and their respective officers, employees, agents, designees, successors, legal representatives or assigns, arising out of or in connection with the administration, evaluation, recommendation, rejection or award of any bid.

#### **PART 2 PRODUCTS - Not Used**

#### **PART 3 EXECUTION - Not Used**

**END OF SECTION**

**SECTION 00320**  
**GEOTECHNICAL DATA**

**PART 1 GENERAL**

**1.01 Description**

- A. The following geotechnical report(s) were prepared for the Owner, copies of which are contained in the Appendix to these technical specifications:
  - 1. Millennium Park – Phase 1 & 2 - Pavement and Stormwater Management System, prepared by Universal Engineering Sciences (UES), Project No. 0230.2200011.0000, Report No. 1937594, dated March 9, 2022
  - 2. Millennium Park – Phase 1 & 2 - Phase II, prepared by Universal Engineering Sciences (UES), Project No. 0230.2200116.0000, Report No. 1975132, dated September 15, 2022
  
- B. The Contractor shall examine the project area and make any site soils and subsurface investigations deemed necessary in order to achieve satisfactory completion and acceptance of this Contract.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

**SECTION 00410**

**PROPOSAL (BID FORM)**

**PART 1 GENERAL**

**1.01 Description**

The following Bid, for the Millennium Park – Phase 1 & 2, is hereby made to the City of Wildwood  
\_\_\_\_\_, hereafter called the Owner. This Bid is submitted by (1) \_\_\_\_\_

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

*(1) Name, address, and telephone number of Bidder*

**1.02 The Undersigned:**

A. Acknowledges receipt of:

1. Project Manual and Drawings identified within the Project Manual.

2. Addenda:	Number	_____	Dated	_____
	Number	_____	Dated	_____
	Number	_____	Dated	_____
	Number	_____	Dated	_____
	Number	_____	Dated	_____
	Number	_____	Dated	_____

B. Has examined the site and all Bidding Documents and understands that in submitting his Bid, he waives all right to plead any misunderstanding regarding the same.

C. Agrees:

1. To hold this Bid open for 90 calendar days after the bid opening date.
2. To accept the provisions of the Instructions to Bidders regarding disposition of Bid Security.
3. To enter into and execute a contract with the Owner, if awarded on the basis of this Bid, and to furnish a Performance Bond and a Labor and Material Payment Bond in accordance with the Instructions to Bidders.
4. To accomplish the Work in accordance with the Contract Documents.

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

**PROPOSAL (BID FORM)**

5. To begin Work after the issuance of a Notice to Proceed, unless otherwise provided, and substantially complete the Work within 730 calendar days of the date of the Notice to Proceed.
6. To accept the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

### 1.03 Bid Schedule

The Bidder hereby agrees to perform all Work as required by the Contract Documents for the following Unit Prices. All Work required to be performed by the Contract Documents is to be included within the following Pay Items, inclusive of furnishing all manpower, equipment, materials and performance of all operations relative to construction of the Project. Work for which there is not a Pay Item will be considered incidental to the Contract and no additional compensation will be allowed.

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
<b>A. GENERAL</b>					
A-1	Bonds and Insurance	LS	1		
A-2	Mobilization	LS	1		
	Preconstruction				
A-3	Topographic Surveying	LS	1		
A-4	Record Drawings	LS	1		
	Demobilization, Cleanup, Project Closeout (Incl. Material and Workmanship Bond)				
A-5		LS	1		
A-6	Preconstruction Video	LS	1		
	Temporary Traffic Control - Millennium Park				
A-7		LS	1		
	Temporary Traffic Control - Powell Rd.				
A-8		LS	1		
	Erosion and Sediment Control				
A-9		LS	1		
A-10	Silt Fence	LF	10450		
A-11	Clearing and Grubbing	LS	1		
	Demolition - Existing Driveway Aprons, Crushed Asphalt Parking Area, Concrete Pad at New Racquetball Court, Misc. Portions of Dirt Trail				
A-12		LS	1		
<b>B. EARTHWORK, ROADS, PARKING LOTS, AND STORMWATER</b>					

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-2

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
B-1	Regular Excavation (ACAD Measurement Based on LIDAR Data and Proposed Elevations and 25% Increase to ACAD Measurement)	CY	27865.0		
B-2	Embankment (Fill Placement) ACAD Measurement Based on LIDAR Data and Proposed Elevations and 25% Increase to ACAD Measurement)	CY	26061.3		
B-3	Borrow Material (Allowance)	CY	10000		
B-4	Allowance - Additional Earthwork (If Needed)	LS	1		
B-5	8" Stabilized Subgrade or 4" Crushed Concrete Subgrade (Furnish and Install) (Trail, Cart Path)	SY	11176		
B-6	12" Stabilized Subgrade or 6" Crushed Concrete Subgrade (Furnish and Install) (Road, Turn Lane, Parking Lots, Turnaround Area)	SY	21824		
B-7	6" Limerock Base or 6" Crushed Concrete Base (Furnish and Install) (Road, Parking Lots, Trail, Cart Path)	SY	19734		
B-8	10" Limerock Base or 10" Crushed Concrete Base (Furnish and Install) (Turn Lane)	SY	563		
B-9	Asphalt Surface Course, Type SP 9.5 (1") (Furnish and Install) (Trail, Cart Path)	TN	426		
B-10	Asphalt Surface Course, Type SP 12.5 (1.5") (Furnish and Install) (Road, Turn Lane, Parking Lots)	TN	1599		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-3

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
B-11	Asphalt Friction Course, Type SP 12.5 (1.5") (Traffic C) (PG 76-22) (Furnish and Install) (Turn Lane)	TN	46		
B-12	Ditch Bottom Inlet Type C (P-Bottom) (<10') (Furnish and Install)	EA	14		
B-13	Ditch Bottom Inlet Type C (P-Bottom With Sump) (<10') (Furnish and Install)	EA	1		
B-14	Ditch Bottom Inlet Type C (J-Bottom) (<10') (Furnish and Install)	EA	1		
B-15	Ditch Bottom Inlet Type D (P-Bottom) (<10') (Furnish and Install)	EA	1		
B-16	Ditch Bottom Inlet Type D (J-Bottom) (<10') (Furnish and Install)	EA	3		
B-17	Ditch Bottom Inlet Type D (J-Bottom With Sump) (<10') (Furnish and Install)	EA	2		
B-18	Type P-8 Manhole (<10') (Furnish and Install)	EA	4		
B-19	Type J-8 Manhole (<10') (Furnish and Install)	EA	3		
B-20	Nyoplast or Equal Drain Basin (8") (<10') (Furnish and Install)	EA	3		
B-21	Nyoplast or Equal Drain Basin (10") (<10') (Furnish and Install)	EA	6		
B-22	Nyoplast or Equal Drain Basin (12") (<10') (Furnish and Install)	EA	2		
B-23	Nyoplast or Equal Drain Basin (15") (<10') (Furnish and Install)	EA	2		
B-24	Nyoplast or Equal Drain Basin (24") (<10') (Furnish and Install)	EA	1		
B-25	Concrete Mitered End Section (12") (Furnish and Install)	EA	1		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-4



ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
B-26	Concrete Mitered End Section (18") (Furnish and Install)	EA	4		
B-27	Concrete Mitered End Section (24") (Furnish and Install)	EA	2		
B-28	Concrete Mitered End Section (30") (Furnish and Install)	EA	1		
B-29	Concrete Mitered End Section (36") (Furnish and Install)	EA	1		
B-30	Concrete Mitered End Section (12"x18") (Furnish and Install)	EA	2		
B-31	Concrete Mitered End Section (19"x30") (Furnish and Install)	EA	4		
B-32	8" Storm Sewer (Corrugated HDPE) (Furnish and Install)	LF	141		
B-33	10" Storm Sewer (Corrugated HDPE) (Furnish and Install)	LF	614		
B-34	12" Storm Sewer (Corrugated HDPE) (Furnish and Install)	LF	303		
B-35	15" Storm Sewer (Corrugated HDPE) (Furnish and Install)	LF	649		
B-36	18" Storm Sewer (RCP) (Furnish and Install)	LF	1745		
B-37	24" Storm Sewer (RCP) (Furnish and Install)	LF	614		
B-38	30" Storm Sewer (RCP) (Furnish and Install)	LF	145		
B-39	36" Storm Sewer (RCP) (Furnish and Install)	LF	496		
B-40	12"x18" Storm Sewer (ERCP) (Furnish and Install)	LF	46		
B-41	19"x30" Storm Sewer (ERCP) (Furnish and Install)	LF	154		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-5

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
B-42	Underdrain Type II (12" PVC, Aggregate, Filter Fabric) (Furnish and Install)	LF	698		
B-43	Underdrain Header Pipe (12" PVC) (Furnish and Install)	LF	397		
B-44	Underdrain Cleanouts (Furnish and Install)	EA	26		
B-45	Concrete Curb and Gutter, Type 'F' (Furnish and Install)	LF	422		
B-46	Concrete Valley Gutter (Furnish and Install)	LF	391		
B-47	Standard Concrete Sidewalk (Including Ramps and Warning Mats), Bench, and Trash Receptacle Concrete Pads (4") (Furnish and Install)	SY	70		
B-48	Concrete Sidewalk (4" With Thickened Edge) (Furnish and Install)	SY	485		
B-49	Misc. Concrete Pads (6") (Furnish and Install)	SY	417		
B-50	Standard Concrete (6") (Furnish and Install) (Trail Crossing at Access Rd)	SY	236		
B-51	Heavy Duty Concrete (7") (Furnish and Install) (Food Truck Parking Area and Driveway and Concession Building and Restroom Concrete)	SY	2326		
B-52	Concrete Rip Rap (At Pond Bottom At MES)	SY	134		
B-53	Wheel Stops	EA	239		
B-54	Three Rail Wood Fence (4 ft) (Furnish and Install) (Along Powell Rd.)	LF	485		
B-55	Tennis Court Construction (Sub-base, Base, Concrete, Painting, Striping)	LS	1		
B-56	Street Signs and Posts (Furnish and Install)	EA	27		
B-57	Wayfinding Signage	LS	1		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-6

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
B-58	Painted Pavement Markings (4" White at Parking Stalls) (Furnish and Install)	LF	4338		
B-59	Painted Pavement Markings (6" Blue at ADA Parking Stalls) (Furnish and Install)	LF	216		
B-60	Painted Pavement Markings (6" White at ADA Parking Stalls) (Furnish and Install)	LF	264		
B-61	ADA Parking Aisle Striping and Handicap Symbol (Painted) (Furnish and Install)	EA	6		
B-62	Thermoplastic, Std, White, Solid 12"	LF	101		
B-63	Thermoplastic, Std, White, Solid, 24"	LF	206		
B-64	Thermoplastic, Standard, White, Arrow	EA	11		
B-65	Thermoplastic, Std-Op, Yellow, Solid, 12"	LF	393		
B-66	Thermoplastic, Std-Op, Yellow, Solid, 6"	LF	1200		
<b>C. WATER AND SEWER CONSTRUCTION</b>					
C-1	Remove Existing Inactive 6" Force Main	LF	505		
C-2	Remove Existing 12" Water Main	LF	1011		
C-3	Remove Existing 8" Sanitary Sewer	LF	819		
C-4	Remove Existing Sanitary Sewer Manhole	EA	2		
C-5	1" Water Service Line (Open Cut or Dir. Drill) (PE) (Furnish and Install)	LF	218		
C-6	4" Water Main (Open Cut) (DI) (Restrained) (Furnish and Install)	LF	180		
C-7	8" Water Main (Open Cut) (PVC) (Unrestrained) (Furnish and Install)	LF	151		
C-8	8" Water Main (Open Cut) (PVC) (Restrained) (Furnish and Install)	LF	216		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-7

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
C-9	12" Water Main (Open Cut) (PVC) (Unrestrained) (Furnish and Install)	LF	848		
C-10	12" Water Main (Open Cut) (PVC) (Restrained) (Furnish and Install)	LF	627		
C-11	4" D.I. Bends (45, 90) (Water Main) (Furnish and Install)	EA	6		
C-12	8" D.I. Bends (45, 90) (Water Main) (Furnish and Install)	EA	5		
C-13	12" D.I. Bends (11.25, 22.5, 45, 90) (Water Main) (Furnish and Install)	EA	7		
C-14	12" D.I. Tee (12"x4", 12"x6") (Water Main) (Furnish and Install)	EA	3		
C-15	12" D.I. Wye / Tee (12"x12") (Water Main) (Furnish and Install)	EA	2		
C-16	8" D.I. Plug / Cap (Water Main) (Furnish and Install)	EA	1		
C-17	12" D.I. Plug / Cap (Water Main) (Furnish and Install)	EA	3		
C-18	Temporary Jumper Connection (Furnish and Install, Remove)	EA	1		
C-19	12" x 1" Service Saddle and Corp. Stop (Furnish and Install)	EA	2		
C-20	8" x 8" Tapping Sleeve and Valve (Furnish and Install)	EA	1		
C-21	12" x 12" Tapping Sleeve and Valve (Furnish and Install)	EA	2		
C-22	Close Valves, Connect to Existing 12" Water Main	EA	1		
C-23	1" Gate Valve	EA	2		
C-24	Fire Hydrant Assembly (Furnish and Install)	EA	2		
C-25	Blowoff Assembly (Furnish and Install)	EA	2		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-8

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
C-26	Fire Department Connection (4") (Furnish and Install)	EA	1		
C-27	Line Stop Assembly, 12" (Furnish and Install) (If Needed)	EA	2		
C-28	Install Thrust Collar, Cut and Cap Existing 12" Water Main	EA	2		
C-29	Bypass Pumping (Sanitary Sewer)	LS	1		
C-30	8" Sanitary Sewer Line (Open Cut) (PVC) (Furnish and Install)	LF	1703		
C-31	Sanitary Sewer Manhole (Furnish and Install)	EA	7		
C-32	Connect to Existing Sanitary Sewer Manhole	EA	2		
C-33	4" Backflow Preventer Assembly	EA	1		
<b>D. HARDSCAPE, LANDSCAPE, AND IRRIGATION</b>					
D-1	Sports Fields Amenities (Base Set, Home Plate, Pitchers Rubber, Dugout Bench, Foul Poles, Batting Cage, Fence Cap, Pickleball Net Posts and Net, Goal Posts, Net Backstop System) (Furnish and Install)	LS	1		
D-2	Chain Link Fence - Softball Fields (Vinyl Coated Black) (With Fence Cap) (6-ft) (Furnish and Install)	LF	2120		
D-3	Chain Link Fence With Windscreen (Vinyl Coated Black) (10-ft) (Furnish and Install)	LF	488		
D-4	Black Netting Backstop (25' Ht) (Furnish and Install)	LF	400		
D-5	Pedestrian Chain Link Fence Gate (Vinyl Coated Black) (3-ft Opening, 6-Ft) (Furnish and Install)	EA	4		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-9

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
D-6	Double Swing Chain Link Fence Gate (Vinyl Coated Black) (12-ft Opening, 6-Ft) (Furnish and Install)	EA	2		
D-7	Bahia Sod for Disturbed Areas	SY	63221		
D-8	Tennis Court Chain Link Fence Gate With Windscreen (Vinyl Coated Black) (4-ft Opening, 10-Ft) (Furnish and Install)	EA	1		
D-9	Litter Receptacle With Dome Lid	EA	19		
D-10	Bench	EA	27		
D-11	Drake' Chinese Elm 2.5" Cal., 10' Min. Ht., 4' Min. Sprd.	EA	42		
D-12	Dahoon Holly 2" Cal., 8' Min. Ht., 4' Min., Sprd	EA	25		
D-13	Red Maple 3" Cal., 10' Min. Ht., 5' Min. Sprd	EA	21		
D-14	Muskogee Crape Myrtle 8' Min. Ht., 4' Min. Sprd.	EA	37		
D-15	Cathedral Oak 6" Cal., 20' Min. Ht., 10' Min. Sprd.	EA	26		
D-16	Live Oak 3" Cal., 12' Min. Ht., 6' Min. Sprd.	EA	50		
D-17	Twilight Crape Myrtle 8' Min. Ht., 4' Min. Sprd.	EA	41		
D-18	Dynamite Crape Myrtle, 8' Min. Ht., 4' Min. Sprd.	EA	22		
D-19	Black Diamond Crape 8' Min. Ht., 4' Min. Sprd.	EA	3		
D-20	Natchez Crape Myrtle 8' Min. Ht., 4' Min. Sprd.	EA	24		
D-21	Cabbage Palm 16' - 26' Ct., Vary Heights, 32 Slick Trunks, 15' O.C. Where Clustered	EA	32		
D-22	Silver Palmetto, 1 Gal., Full, 24" O.C.	EA	96		
D-23	Cord Grass, 1 Gal., Full, 24" O.C.	EA	692		
D-24	Swamp Sunflower, 1 Gal., Full, 24" O.C.	EA	76		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-10

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
D-25	Soft Rush, 1 Gal., Full, 24" O.C.	EA	217		
D-26	Pickerelweed, 1 Gal., Full, 24" O.C.	EA	388		
D-27	Bermuda 419 Grass (Baseball Fields and Soccer Field)	SY	47413		
D-28	Baseball Infield Clay	SY	19537		
D-29	Irrigation	LS	1		
D-30	Seed and Mulch	SY	3394		
<b>E. ARCHITECTURAL, FIRE PROTECTION, PLUMBING</b>					
E-1	Basketball Court Pre-Engineered Roof and Columns (Furnish and Install)	LS	1		
E-2	Basketball Hoop Structures and Hoops (Furnish and Install)	LS	1		
E-3	Basketball Court Furnishings (Bleachers, Benches, Tables, Water Fountains) (Furnish and Install)	LS	1		
E-4	Basketball Court Floor and Foundation Including Column Footers (Furnish and Install)	LS	1		
E-5	Riser Room Outside Basketball Courts (Furnish and Install)	LS	1		
E-6	Basketball Courts Fire Protection System (Furnish and Install)	LS	1		
E-7	Basketball Courts Plumbing (Water and Sewer) (Furnish and Install)	LS	1		
E-8	Racquetball Court Block Walls, Door, Beams, Roof, and Foundation (Furnish and Install)	LS	1		
E-9	Racquetball Court Floor (Furnish and Install)	LS	1		
<b>F. ELECTRICAL</b>					

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-11

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
F-1	Electrical Panels and Field Lighting Cabinet, Service Rack, Power Rack (Furnish and Install)	LS	1		
F-2	Misc. Electrical Including Conduit, Wire, and Appurtenances (Furnish and Install)	LS	1		
F-3	Transformer - Coordinate With Duke Energy (Duke Energy to Install Transformer, Pad, Conduits, Pedestal and Appurtenances)	LS	1		
F-4	Parking Lot Lights - Coordinate With Duke Energy (Duke Energy to furnish and install parking lot lights including poles, fixtures, foundation, connecting conduits, wires etc.)	LS	1		
F-5	Street Lights - Coordinate With Duke Energy (Duke Energy to furnish and install parking poles, fixtures, foundation, connecting conduits, wires Etc.)	LS	1		
F-6	Community Center Area Lights - Coordinate with Duke Energy - Duke Energy to furnish and install new fixtures (the new fixtures are to match those proposed with the internal roadway network).	LS	1		
F-7	Single point connection for concession stand, fed from panel lpc-2,4. Verify exact location with owner for power source to enter the Concession stand. Provide 120/208v, 3 ph, 125a load center and coordinate load Locations with the City.	LS	1		

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-12



ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
F-8	Furnish and install 20a, weather proof gfci receptacle in each Dugout. Coordinate with the City on the exact location. Receptacles to be Fed out of panel lpc, (ckt-1).	LS	1		
F-9	Basketball Court Electrical and Lighting, Control Boxes, Etc. (Furnish and Install)	LS	1		
F-10	Tennis Court Electrical and Lighting Control Boxes, Etc. (Furnish and Install)	LS	1		
<b>TOTAL BASE BID</b>					<b>\$</b>

**1.04 Alternate Bid Items - Ribbon Curb and Wood Fence**

ITEM NO.	DESCRIPTION	UNITS	QUANTITY	UNIT PRICE	TOTAL PRICE
ALT-1	Concrete Ribbon Curb	LF	6050		
ALT-2	Three Rail Wood Fence (4 ft) (Furnish and Install) (Onsite Between the Grass Parking area and the new Trail)	LF	564		
<b>TOTAL ALTERNATE BID</b>					<b>\$</b>

Millennium Park – Phase 1 & 2  
NAME OF BIDDER: \_\_\_\_\_

PROPOSAL (BID FORM)

00410-13

**1.05 Miscellaneous Requirements and Affirmations**

- A. Proposals (Bids) must be on the Bid Form.
- B. The Bidder acknowledges the receipt, execution, and return of the following forms and required information with the Bid (the Bidder is to fill out the far right column in the below Table):

<b>Section</b>	<b>Form / Information</b>	<b>Submitted by Bidder with Bid (Y/N)</b>
00410	Proposal (Bid Form) Including Acknowledgment of All Issued Addenda	
---	Bid Security in Accordance with the Instructions to Bidder	
---	Bidder Completed W-9 Form	
---	Bidder Officer Signatory Authorization Information	
00430	Trench Safety Form	
00432	Non Collusion Affidavit	
00434	Conflict of Interest Affidavit	
00436	Florida Statutes on Public Entity Crimes Affidavit	
00438	Compliance With the Public Records Law Affidavit	
00440	Bidder Information and Affidavit	
00450	Certification Of Non-Segregated Facilities Form	
00452	Disputes Disclosure Form	
00454	Drug Free Workplace Form	
00455	Certification Regarding Non-Scrutinized Companies	
00456	Unauthorized (Illegal) Alien Workers Affidavit	
00458	E-Verify Compliance Form	
00460	Americans With Disabilities Act Affidavit	
00462	Equal Employment Opportunity Certification	
00463	Certification Regarding Debarment	
00465	Schedule of Proposed Subcontractors	
---	Copies of Licenses Issued by the State of Florida Dept. of Business and Professional Regulation Construction Industry Licensing Board	
---	Material price quotes used in the Bid for any pay item(s) for which the Contractor anticipates a rapid material price change between the date of the Bid and when the material is anticipated to be ordered	

Millennium Park – Phase 1 & 2  
 NAME OF BIDDER: \_\_\_\_\_

**PROPOSAL (BID FORM)**

**00410-14**

**1.06** RESPECTFULLY SUBMITTED, signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_  
\_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
By (Signature) Date

\_\_\_\_\_  
Printed Name and Title

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
City State Zip Code

(CORPORATE SEAL)

\_\_\_\_\_  
Telephone No. Facsimile No.

\_\_\_\_\_  
E-Mail Address

ATTEST:

\_\_\_\_\_  
By (Signature) Date

\_\_\_\_\_  
Printed Name and Title

**END OF SECTION**

**SECTION 00420**

**BID BOND FORM**

**KNOW ALL MEN BY THESE PRESENT**, that we, the undersigned, (1) \_\_\_\_\_, as Principal, and (2) \_\_\_\_\_, as Surety, are hereby and firmly bound unto (3) \_\_\_\_\_, as Owner, in the penal sum of (4) \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

The condition of the above obligation is such that whereas the Principal has submitted to (3) \_\_\_\_\_ a certain Bid for (5) \_\_\_\_\_, attached hereto and hereby made a part hereof.

- 1) *Bidder*
- 2) *Surety*
- 3) *Owner*
- 4) *Amount of Bond as Required in the Instructions to Bidders*
- 5) *Name of Project as Shown in Invitation for Bids*

**NOW, THEREFORE,**

- A. If said Bidder shall be in rejected, or in the alternate,
- B. If said Bid shall be accepted and the Principal shall execute and deliver the Agreement (properly completed in accordance with the Bidding Documents), and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby give waive notice of any such extension.

**IN WITNESS WHEREOF**, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
Principal

\_\_\_\_\_  
By (Principal Officer)

\_\_\_\_\_  
By (Signature of Officer)

\_\_\_\_\_  
Typed Name and Title

\_\_\_\_\_  
Typed Name and Title

(CORPORATE SEAL)

\_\_\_\_\_  
Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Surety

\_\_\_\_\_  
By

By: \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Typed Name and Title

\_\_\_\_\_  
Typed Name and Title

(SEAL)

\_\_\_\_\_  
Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Telephone No.      Facsimile No.

**END OF SECTION**

**SECTION 00430**

**TRENCH SAFETY FORM**

Bidder acknowledges that included in the various items of the proposal contained on the Bid Form are costs for complying with the Florida Trench Safety Act (FS 553.60-553.64). The Bidder further identifies the cost of compliance with the applicable trench safety standards for the project as follows (Bidder to attach additional sheets as necessary to identify all costs):

	<b>Trench Safety Measure (Description)</b>	<b>Units of Measure (LF, SF, SY)</b>	<b>Unit Quantity</b>	<b>Unit Cost</b>	<b>Extended Cost</b>
A					
B					
C					
D					
E					
F					
<b>TOTAL</b>					<b>\$</b>

The total cost shown herein is already included in the various items on the Bid Form and is not additional to the pricing shown on the Bid Form.

Bidder, by signature below, assures that the contractor performing trench excavating will comply with the applicable Trench Safety Standards.

Submitted, signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Bidder

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name and Title

ATTEST:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

(SEAL)

**END OF SECTION**

**SECTION 00432**

**NON COLLUSION AFFIDAVIT**

The undersigned, by signing this document hereby certifies that the company named below hereby is or does:

1. States that the entity named below and the individual signing this document has submitted the attached bid or proposal:
2. He is fully informed respecting the preparation and contents of the attached proposal and of all pertinent circumstances respecting such proposal;
3. Said bid or proposal is genuine and is not a collusive or sham bid or proposal;
4. Neither the said bidder or proposer nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other bidder, proposer, firm or person to submit a collusive or sham bid or proposal in connection with the Contract for which the attached bid or proposal has been submitted or to refrain from bidding or proposing in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communications or conference with any other bidder, proposer, firm or person to fix the price or prices in the attached bid or proposal or of any other bidder or proposer, or to fix any overhead, profit or cost element of the bid or proposal price or the bid or proposal price of any other bidder or proposer, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract.
5. The price or prices quoted in the attached bid or proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the bidder or proposer or any of its agents, representatives, owners, employees, or parties in interest, including the individual signing this document.

---

Bidder

---

Signature of Authorized Representative (Affiant) Date

---

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida                      Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**



**SECTION 00434**

**CONFLICT OF INTEREST AFFIDAVIT**

**Project Name:** Millennium Park – Phase 1 & 2

**Bid No.:** \_\_\_\_\_

The Affiant identified below deposes and states that:

1. The below named Bidder is submitting a Bid to the Owner for the project named above.
2. The Affiant has made diligent inquiry and provides the information contained in this Affidavit based upon his own knowledge.
3. The Affiant states that only one submittal for the above project is being submitted and that the below named Bidder has no financial interest in other entities submitting proposals for the same project.
4. Neither the Affiant nor the below named Bidder has directly or indirectly entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in connection with the Bidder's submittal for the above project. This statement restricts the discussion of pricing data until the completion of negotiations and execution of the Agreement for this project
5. Neither the Bidder nor its affiliates, nor any one associated with them, is presently suspended or otherwise ineligible from participating in contract lettings by any local, state, or federal agency.
6. Neither the Bidder, nor its affiliates, nor any one associated with them have any potential conflict of interest due to any other clients, contracts, or property interests for this project.
7. I certify that no member of the Bidder's ownership, management, or staff has a vested interest in any aspect of the Owner.
8. I certify that no member of the Bidder's ownership or management is presently applying for an employee position with the Owner or actively seeking an elected position with the Owner (where the Owner is a governmental agency).
9. In the event that a conflict of interest is identified in the provision of services, I, on behalf of the below named Bidder, will immediately notify the Owner in writing.

\_\_\_\_\_  
Bidder

\_\_\_\_\_  
Signature of Authorized Representative (Affiant)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida

\_\_\_\_\_  
Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00436**

**FLORIDA STATUTES ON PUBLIC ENTITY CRIMES AFFIDAVIT**

**Project Name:** Millennium Park – Phase 1 & 2

**Bid No.:** \_\_\_\_\_

The Affiant identified below attests to the following:

1. I understand that a “public entity crime” as defined in Section 287.133(1)(g), Florida Statutes, means a violation of any State or Federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
2. I understand that “convicted” or “conviction” as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crimes, with or without an adjudication of guilt, in any Federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.
3. I understand that an “affiliate” as defined in Section 287.133(1)(a), Florida Statutes, means: A predecessor or successor of a person convicted of a public entity crime: or an entity under the control of any natural person who is active in the management of the entity and how has been convicted of a public entity crime. The term “affiliate” includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one (1) person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm’s length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding thirty-six (36) months shall be considered an affiliate.
4. I understand that a “person” as defined in Section 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term “person” includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

5. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Note: indicate which of the below statements apply)

\_\_\_\_\_ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor the affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agent who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members or agents who are active in management of the entity, or an affiliate of the entity, has been charged with and convicted of a public entity crime subsequent to July 1, 1989. However, there has been a subsequent proceeding before an Administrative Law Jury of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Administrative Law Jury determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (You must attach a copy of the final order.)

I understand that the submission of this form to the Owner and is for the Owner only and, that this form is valid through December 31, of the calendar year in which it is filed. I also understand that i am required to inform the Owner prior to entering in to a contract in excess of the threshold amount provided in section 287.017, Florida Statutes, for category two of any change in the information contained in this form.

\_\_\_\_\_  
Bidder FEIN No.

\_\_\_\_\_  
Signature of Authorized Representative (Affiant) Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida

\_\_\_\_\_  
Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00438**

**COMPLIANCE WITH THE PUBLIC RECORDS LAW AFFIDAVIT**

Upon award recommendation or 30 days after opening, it is understood that all submittals to governmental entities shall become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes, and Section 24(a), Article 1 of the Constitution of the State of Florida, and other controlling law (collectively the "Public Records Laws"). If the Owner rejects all replies submitted in response to a competitive solicitation and provides notice of its intent to reissue the solicitation, the replies remain exempt from disclosure until the Owner provides a notice of intent to award or withdraws the reissued solicitation. If no award is made, responses are not exempt for longer than 12 months after the initial notice rejecting all responses.

Proposers/Bidders must invoke the exemptions to disclosure provided by law as applicable to the response to the solicitation, must identify the data or other materials to be protected, and must state the reasons why such exclusion from public disclosure is necessary. The submission of a proposal authorizes release of the Proposer's/Bidder's credit data to the Owner.

If a Proposer/Bidder submits information exempt from public disclosure, the Proposer/Bidder must specifically and in detail identify with specificity which pages/paragraphs of their bid/proposal package are exempt from the Public Records Laws, identifying the specific exemption under the Public Records Laws that applies to each. The protected information must be submitted to the Owner in a separate envelope marked accordingly.

By submitting a response to this solicitation, the Proposer/Bidder agrees to defend, indemnify and hold the City harmless in the event the Owner litigates the public records status of the Proposer's/Bidder's documents. This provision obligates the Proposer/Bidder to pay the full legal costs of the Owner including, but not limited to, attorneys fees, court costs, and any and all other charges, regardless of what level of trial or appeal.

---

Bidder

---

Signature of Authorized Representative (Affiant) Date

---

Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida                      Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00440**

**BIDDER INFORMATION AND AFFIDAVIT**

State the true, exact, correct and complete name of the company, partnership, corporation, trade or fictitious name under which the Bidder does business and the address of the place of business.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address of Bidder

\_\_\_\_\_  
Phone No. of Bidder

\_\_\_\_\_  
Fax No. of Bidder

\_\_\_\_\_  
Bidder E-Mail Address

The Bidder is (check one of the following):

- ( ) An Individual
- ( ) A Partnership
- ( ) A Corporation

Principal Office Address: \_\_\_\_\_

1. Officer Information and Key Personnel: Each Bidder must ensure that the officer information provided below is in accordance with the Bidder's corporate registration supplied to the Secretary of State. The Bidder must provide with its bid submittal the necessary information to verify the individual signing the bid and or any contract document has been authorized to bind the corporation. For example, provide either: A copy of the Articles of Incorporation listing the approved signatories of the corporation; A letter from the President listing the members of staff that are authorized signatories for the company; or A copy of a corporate resolution listing the members of staff as authorized signatories for the company.

President's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_



Vice President's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Secretary's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Treasurer's Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Project Manager's  
Name: \_\_\_\_\_

Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_

Project Superintendent's  
Name:

---

Address:

---

Phone No.:

---

E-Mail Address:

---

2. How many years has the Bidder been in business as a Contractor under its present name?
  
3. Under what other former names has the Bidder operated?
  
4. How many years of experience in construction work has the Bidder had as a Prime Contractor?
  
5. List below information concerning projects the Bidder has completed in the last five (5) years as a Prime Contractor for the type of Work required for this project (attach additional sheets as necessary). It is noted that the experience claimed here must be associated with the Bidder named above. The Owner reserves the right to require additional information and to conduct any investigation deemed necessary to evaluate the Bidder.

Name of Project \_\_\_\_\_

Name of Owner \_\_\_\_\_

Owner Reference Contact  
Name \_\_\_\_\_

E-Mail Address and Phone No. \_\_\_\_\_

Start and Completion Dates \_\_\_\_\_

Construction Contract Amount \_\_\_\_\_

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm  
Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

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

Name of Project \_\_\_\_\_

Name of Owner \_\_\_\_\_

Owner Reference Contact  
Name \_\_\_\_\_

E-Mail Address and Phone No. \_\_\_\_\_

Start and Completion Dates \_\_\_\_\_

Construction Contract Amount \_\_\_\_\_

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm  
Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

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

Name of Project \_\_\_\_\_

Name of Owner \_\_\_\_\_

Owner Reference Contact  
Name \_\_\_\_\_

E-Mail Address and Phone No. \_\_\_\_\_

Start and Completion Dates \_\_\_\_\_

Construction Contract Amount \_\_\_\_\_

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

---

---

---

Name of Project \_\_\_\_\_

Name of Owner \_\_\_\_\_

Owner Reference Contact Name \_\_\_\_\_

E-Mail Address and Phone No. \_\_\_\_\_

Start and Completion Dates \_\_\_\_\_

Construction Contract Amount \_\_\_\_\_

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

---

---

---

Name of Project \_\_\_\_\_

Name of Owner \_\_\_\_\_

Owner Reference Contact Name \_\_\_\_\_

E-Mail Address and Phone No. \_\_\_\_\_

Start and Completion Dates \_\_\_\_\_

Construction Contract Amount \_\_\_\_\_

Major Construction Items Such as Pipeline Length and Diameters and Type (Water Main, Storm Sewer, etc.); Lift Station Size (No. of Pumps and Hp):

---

---

---

6. Has the Bidder ever failed to complete any work awarded to it? If so, state when, where and why (attach additional sheets as necessary).
  
7. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? If so, state name of individual, name of other organization, and reason therefore (attach additional sheets as necessary).
  
8. State the names, addresses and the type of business of all firms that are partially or wholly owned by the Bidder (attach additional sheets as necessary):
  
9. What is the Bidder's bonding capacity?
  
10. What amount of the Bidder's bonding capacity has been used as of the date of this bid?
  
11. State the name of the Surety Company which will be providing the Performance and Payment Bond, and name and address of the Agent:
  
12. Has the Bidder been in disputes or litigations in the last five (5) years over construction projects which are completed or still pending for completion? If so, describe the nature of the disputes or litigations and state the Owner's Name, Address, Telephone, and amount of disputes or litigations (attach additional sheets as necessary).

The Bidder acknowledges and understands that the information contained in response to this qualifications form shall be relied upon by the Owner in awarding the contract and such information is warranted by Bidder to be true. The discovery of any omission or misstatement that materially affects the Bidder's qualifications to perform under the contract shall cause the Owner to reject the bid or proposal, and if after the award to cancel and terminate the award and/or contract.

Provided along with this document is completed IRS form W-9 and information on authorized signatories for the Bidder.

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Signature of Authorized Representative (Affiant) Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00450**

**CERTIFICATION OF NON-SEGREGATED FACILITIES FORM**

The Bidder certifies that no segregated facilities are maintained and will not be maintained during the execution of this contract at any of its establishments.

The Bidder further certifies that none of its employees are permitted to perform their services at any location under the Bidder's control during the life of this contract where segregated facilities are maintained.

The Bidder certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.

As used in this certification, the term "segregated facilities" means any waiting rooms, work area, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color or national origin, because of habit, local custom, or otherwise.

The Bidder agrees that (except where it has obtained identical certification from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontract exceeding \$10,000 and that it will retain such certifications in its files.

---

Name of Bidder

---

Signature of Authorized Representative

Date

---

Printed or Typed Name and Title of Authorized Representative

**END OF SECTION**

**SECTION 00452**

**DISPUTES DISCLOSURE FORM**

Answer the following questions by answering "YES" or "NO". If you answer "YES", please explain in the space provided, please add a page(s) if additional space is needed.

1. Has your firm, or any of its officers, received a reprimand of any nature or been suspended by the Department of Professional Regulation or any other regulatory agency or professional association within the last five (5) years? \_\_\_\_\_ (Y/N)
  
2. Has your firm, or any member of your firm, been declared in default, terminated or removed from a contract or job related to the services your firm provides in the regular course of business within the last five (5) years? \_\_\_\_\_ (Y/N)
  
3. Has your firm had filed against it or filed any requests for equitable adjustment, contract claims or litigation in the past five (5) years that is related to the services your firm provides in the regular course of business? \_\_\_\_\_ (Y/N) Note: If yes, the explanation must state the nature of the request for equitable adjustment, contract claim or litigation, a brief description of the case, the outcome or status of suit and the monetary amounts or extended contract time involved.

I hereby certify that all statements made are true and agree and understand that any misstatement or misrepresentation or falsification of facts shall be cause for forfeiture of rights for further consideration of the project identified.

\_\_\_\_\_  
Firm

\_\_\_\_\_  
Signature of Authorized Representative Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative

**END OF SECTION**



**SECTION 00454**

**DRUG FREE WORKPLACE FORM**

The undersigned, in accordance with Florida Statute 287.087 hereby certifies that the company named below does:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and Employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
3. Give each employee engaged in providing the commodities or contractual services that are proposed a copy of the statement specified in item 1.
4. In the statement specified in item 1, notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

---

Bidder / Contractor

---

Signature of Authorized Representative

---

Date

---

Printed or Typed Name and Title of Authorized Representative

**END OF SECTION**

**SECTION 00455**

**CERTIFICATION REGARDING NON-SCRUTINIZED COMPANIES**

A company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of any amount if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to Section 215.4725, Florida Statutes, or is engaged in a boycott of Israel.

Section 287.135, Florida Statutes, prohibits local governments from contracting with companies, for goods or services of One Million and 00/100 Dollars (\$1,000,000.00) or more that are on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to s. 215.473; or is engaged in business operations in Cuba or Syria.

As the person authorized to sign on behalf of the Bidder, I hereby certify that the company identified below in the section entitled "Bidder/Contractor Name" is not listed on the Scrutinized Companies that Boycott Israel List, is not engaged in any boycott of Israel, is not listed on the Scrutinized Companies with Activities in Sudan List, is not listed on the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, and is not engaged in business operations in Cuba or Syria. I understand that pursuant to section 287.135, Florida Statutes, the submission of a false certification may subject the successful Bidder to termination of the awarded Agreement, civil penalties, attorney's fees, and/or costs.

By the signature(s) below, I/we, the undersigned, as authorized signatory to commit the firm, certify that the information as provided in this certification, is truthful and correct at the time of submission.

---

Name of Bidder / Contractor Name FEIN

---

Mailing Address

---

Phone No. Fax No. E-Mail Address

---

Signature of Authorized Representative Date

---

Printed or Typed Name and Title of Authorized Representative

**END OF SECTION**

**SECTION 00456**

**UNAUTHORIZED (ILLEGAL) ALIEN WORKERS AFFIDAVIT**

The Owner will not intentionally award publicly-funded contracts to any Contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324a(e) Section 274A(e) of the Immigration and Nationality Act (INA). The Owner shall consider the employment by the Contractor of unauthorized aliens, a violation of Section 274A(e) of the INA. Such violation by the Contractor of the employment provisions contained in Section 274A(e) of the INA shall be grounds for immediate termination of this Agreement by the Owner.

The Affiant identified below deposes and states that:

1. The below identified Contractor does not and will not during the performance of any contract resulting from the solicitation identified below employ illegal alien workers or otherwise violate the provisions of the federal Immigration Reform and Control Act of 1986.
2. Upon request of the Owner, it will provide copies of Immigration Form I-9 for each person associated with the above named company who has been or is present at the designated jobsite associated with any work or project resulting from this solicitation.

\_\_\_\_\_  
Bidder / Contractor

\_\_\_\_\_  
Signature of Authorized Representative (Affiant) Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00458**

**E-VERIFY COMPLIANCE AFFIDAVIT**

**Project Name:** \_\_\_\_\_

**Bid No.:** \_\_\_\_\_

The Affiant identified below attests to the following:

1. That the Contractor is currently in compliance with and throughout the term of the above identified project and will remain in compliance with Executive Order 11-02, issued by the Office of the Governor, State of Florida, requiring the use of the Department of Homeland Security’s Status Verification (“E-Verify”) System to ensure that all employees of the Contract and the Contractor’s subcontractors performing work under the above-listed Contract are legally permitted to work in the United States.
2. Each Contractor that performs work under the Project referenced above shall provide the Owner a copy of the “Edit Company Profile” screen indicating enrollment in the E-Verify Program.
3. The Contractor will register and participate in the work status verification for all newly hired employees of the contractor and for all subcontractors performing work on the above-listed Contract.
4. The Contractor agrees to maintain records of its compliance with the verification requirements as outlined in this Affidavit and, upon request of the any Authority having jurisdiction over the Project, including, but not limited to, the State of Florida, agrees to provide a copy of each such verification to that Authority.
5. That all persons assigned by the Contractor or its subcontractors to perform work under the above identified project will meet the employment eligibility requirements as established by the Federal Government and the government of the State of Florida.
6. That the Contractor understands and agrees that its failure to comply with the verification requirements as set forth herein or its failure to ensure that all employees and subcontracts performing work under the above identified project are legally authorized to work in the United States and the State of Florida constitute a breach of contract for which the Owner may immediately terminate the Contract without notice and without penalty. Contractor further understands and agrees that in the event of such termination, the Contractor shall be liable to the Owner for any costs incurred by the Owner as a result of the Contractor’s breach.
7. That for the purposes of this Affidavit, the following definitions apply:

“Employee” – Any person who is hired to perform work in the State of Florida.



**SECTION 00460**

**AMERICANS WITH DISABILITIES ACT AFFIDAVIT**

By executing this Certification, the undersigned Contractor certifies that the information herein contained is true and correct and that none of the information supplied was for the purpose of defrauding the Owner.

The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The Contractor agrees to comply with the rules, regulations and relevant orders issued pursuant to the Americans with Disabilities Act (ADA), 42 USC s. 12101 et seq. It is understood that in no event shall the Owner be held liable for the actions or omissions of the Contractor or any other party or parties to the Agreement for failure to comply with the ADA. The Contractor agrees to hold harmless and indemnify the Owner, its agents, officers or employees from any and all claims, demands, debts, liabilities or causes of action of every kind or character, whether in law or equity, resulting from the Contractor's acts or omissions in connection with the ADA.

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Signature of Authorized Representative (Affiant) Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00462**

**EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION**

**Project Name:** Millennium Park – Phase 1 & 2

**Bid No.:** \_\_\_\_\_

**Note:** This certification is required by 41 *Code of Federal Regulations* Section 60-1.7(b) and is applicable to all federal or state assisted construction contracts and subcontracts with a price exceeding \$10,000; this certification is to be included in all federal assisted construction contracts and subcontracts with a price exceeding \$10,000 and in all solicitations for such contracts and subcontracts.] See 2 *Code of Federal Regulations*. Part 200, Appendix II(C). The use of the term “Contractor” herein shall mean the Prime Contractors or Subcontractor executing this document.

The Bidder hereby agrees that it will incorporate or cause to be incorporate into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 *Code of Federal Regulations* Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrow on the credit of the federal government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any federal program involving such grant, contract, loan, insurance or guarantee, or any application or modification thereof approved by the Federal Government for a grant, contract, loan, insurance, or guarantee under which the Contractor itself participates in the construction work.

During the performance of the contract, the Bidder (Contractor) agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure the applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin. Such action shall include, but not limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
2. The Bidder / Contractor will, in all solicitation or advertisement for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.
3. The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other

employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

4. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
5. The Contractor will comply with all provisions of Executive Order Numbers 11246 of September 24, 1965, and of the rules, regulations and relevant orders of the Secretary of Labor.
6. The Contractor will furnish all information and reports required by the Executive Order Number 11246 of September 24, 1965, and by rules, regulations and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by representative of the City of Sanford and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
7. In the event of the Contractor's noncompliance with the nondiscrimination clauses of the contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contract or federally assisted construction contracts in accordance with procedures authorized in Executive Order Numbers 11246 of September 24, 1965, and such other sanctions may imposed and remedies invoked as provided in the Executive Order Numbers 11246 of September 24, 1965, or by rule, regulations or order of the Secretary of Labor, or as otherwise provided by law.
8. The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order/work order (by whatever name) unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order Number 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order/work order (by whatever name) as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States. The Contractor further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, that if the Contractor so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract. The Contractor agrees that it will assist



and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance. The Contractor further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order Number 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the cited Executive Orders and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of Executive Order Number 1246 of September 24, 1965.

In addition, the Bidder / Contractor agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the Contractor under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such Contractor; and refer the case to the Department of Justice for appropriate legal proceedings.

\_\_\_\_\_  
 Bidder (Prospective Construction Contractor) Employer Identification Number

\_\_\_\_\_  
 Signature of Authorized Representative (Affiant) Date

\_\_\_\_\_  
 Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA  
 COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
 Signature of Notary Public - State of Florida Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00463**

**CERTIFICATION REGARDING DEBARMENT**

**Project Name:** Millennium Park – Phase 1 & 2

**Bid No.:** \_\_\_\_\_

The Bidder certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in contracting with any federal department or agency. The City reserves the right to reject any bid from a debarred or suspended Bidder or from a Bidder whose principals are debarred or suspended.

Where the Bidder is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

The Bidder also certifies that it and its principals and the Bidder's subcontractors and their principals:

1. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction; violation of federal or state anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
2. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph 11.3.1 of this certification; and
3. Have not within a three-year period preceding this proposal had one or more public transactions (federal, state or local) terminated for cause or default. Where the Bidder is unable to certify to any of the above, such owner shall attach an explanation to this proposal.

The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the federal government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

The Bidder shall incorporate the foregoing requirements 1 through 3 in all subcontracts.

\_\_\_\_\_  
Bidder (Prospective Construction Contractor)

\_\_\_\_\_  
Employer Identification Number

\_\_\_\_\_  
Signature of Authorized Representative (Affiant)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed or Typed Name and Title of Authorized Representative (Affiant)

STATE OF FLORIDA

COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida

\_\_\_\_\_  
Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

**SECTION 00465**

**SCHEDULE OF PROPOSED SUBCONTRACTORS**

**Project Name:** Millennium Park – Phase 1 & 2

**Bid No.:** \_\_\_\_\_

Does the Bidder propose to use Subcontractors on the above identified Project (Y/N): \_\_\_\_\_

If the Bidder proposes to use Subcontractors, provide information on each Subcontractor (attach additional sheets as necessary):

Subcontractor Name \_\_\_\_\_

Subcontractor Address \_\_\_\_\_

Subcontractor Contact Name \_\_\_\_\_

Contact Phone No. \_\_\_\_\_

Contact E-Mail Address \_\_\_\_\_

Proposed Subcontract Work \_\_\_\_\_

Approximate Dollar Value of Work \_\_\_\_\_

Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

Subcontractor Name \_\_\_\_\_

Subcontractor Address \_\_\_\_\_

Subcontractor Contact Name \_\_\_\_\_

Contact Phone No. \_\_\_\_\_

Contact E-Mail Address \_\_\_\_\_

Proposed Subcontract Work \_\_\_\_\_

Approximate Dollar Value of Work \_\_\_\_\_

Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

Subcontractor Name \_\_\_\_\_  
Subcontractor Address \_\_\_\_\_  
Subcontractor Contact Name \_\_\_\_\_  
Contact Phone No. \_\_\_\_\_  
Contact E-Mail Address \_\_\_\_\_  
Proposed Subcontract Work \_\_\_\_\_  
Approximate Dollar Value of Work \_\_\_\_\_  
Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

Subcontractor Name \_\_\_\_\_  
Subcontractor Address \_\_\_\_\_  
Subcontractor Contact Name \_\_\_\_\_  
Contact Phone No. \_\_\_\_\_  
Contact E-Mail Address \_\_\_\_\_  
Proposed Subcontract Work \_\_\_\_\_  
Approximate Dollar Value of Work \_\_\_\_\_  
Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

Subcontractor Name \_\_\_\_\_  
Subcontractor Address \_\_\_\_\_  
Subcontractor Contact Name \_\_\_\_\_  
Contact Phone No. \_\_\_\_\_  
Contact E-Mail Address \_\_\_\_\_  
Proposed Subcontract Work \_\_\_\_\_  
Approximate Dollar Value of Work \_\_\_\_\_  
Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

Subcontractor Name \_\_\_\_\_  
Subcontractor Address \_\_\_\_\_  
Subcontractor Contact Name \_\_\_\_\_  
Contact Phone No. \_\_\_\_\_  
Contact E-Mail Address \_\_\_\_\_  
Proposed Subcontract Work \_\_\_\_\_  
Approximate Dollar Value of Work \_\_\_\_\_  
Is Subcontractor MBE/WBE (Y/N)? \_\_\_\_\_

\_\_\_\_\_  
Name of Bidder

\_\_\_\_\_  
Address City State Zip Code

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Printed Name and Title

**END OF SECTION**

**SECTION 00510**

**NOTICE OF AWARD FORM**

To:

**Project Name and Bid No.:** \_\_\_\_\_

The OWNER has considered the BID submitted by you, dated \_\_\_\_\_ for the above described WORK in response to the Invitation for Bids and Bidding Documents.

You are hereby notified that your BID has been accepted for BID items in the amount of \$\_\_\_\_\_.

You are required by the Instructions to Bidder to execute the Agreement and furnish the required CONTRACTOR's Performance Bond, Payment Bond, and certificates of insurance within fourteen (14) calendar days from the date of this Notice to you. If you fail to execute said Agreement and to furnish said Bonds and insurance within fourteen (14) calendar days from receipt of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER's acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

OWNER:

\_\_\_\_\_  
(Name of OWNER)

\_\_\_\_\_  
By (Signature)

\_\_\_\_\_  
(Printed Name and Title)

**ACCEPTANCE OF NOTICE**

Receipt and acceptance of the above NOTICE OF AWARD is hereby acknowledged by \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_.

\_\_\_\_\_  
By

\_\_\_\_\_  
Printed Name and Title

**END OF SECTION**

**SECTION 00520**

**AGREEMENT FORM**

**PART 1 GENERAL**

**1.01 THIS AGREEMENT**, made this \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between the City of Wildwood, hereinafter called the Owner, and \_\_\_\_\_, whose principal and local address is \_\_\_\_\_, hereinafter called the Contractor.

**1.02 The Owner and Contractor Agree as follows:**

A. Contract Documents

The Contract Documents include the Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid, Notice to Proceed, the Bonds, the General Conditions, the Supplementary Conditions, the Specifications listed in the Index to the Project Manual, any technical specifications as incorporated by the Project Manual; the Drawings as listed in the Project Manual, all Written Amendments, Change Orders, Work Change Directives, Field Orders, and Engineer's written interpretations and clarifications issued on or after the Effective Date of this Agreement. These form the Contract and all are as fully a part of the Contract as if attached to this Agreement or repeated herein.

B. Scope of Work

The Contractor shall perform all Work required by the Contract Documents for the construction of the Millennium Park – Phase 1 & 2.

C. Contract Time

The Contractor shall begin Work after the issuance of a written Notice to Proceed from Owner and shall substantially complete the Work within the Contract Time identified in Paragraphs 1.02.C.5 of the Bid Form, which is 730 calendar days. The Work shall be finally complete, ready for Final Payment in accordance with the General Conditions, within 45 calendar days from the actual date of substantial completion.

D. Liquidated Damages

OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not substantially complete within the time specified in Paragraph C above, plus any extensions thereof allowed in accordance with the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal arbitration proceeding the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER \$1,000.00 for each calendar



day that expires after the time specified in Paragraph C for substantial completion until the Work is substantially complete. It is agreed that if this Work is not Finally completed in accordance with the Contract Documents, the CONTRACTOR shall pay the OWNER as liquidated damages for delay, and not as penalty, one-fourth (¼) of the rate set forth above.

E. Contract Price

Unit Price Contract

The Owner will pay the Contractor in current funds for the performance of the Work, subject to additions and deductions by Change Order and subject to the Measurement and Payment Provisions, and subject to actual constructed quantities; the Total Contract Price of \_\_\_\_\_ Dollars (\$\_\_\_\_\_). Payments will be made to the Contractor on the basis of the Schedule of Unit Prices included as a part of his Bid, which shall be as fully a part of the Contract as if attached or repeated herein.

F. Payment Procedures

1. Application for Payment: CONTRACTOR shall submit Applications for Payment in accordance with Article 14.02 of Section 00700 - General Conditions, Section 00800 - Supplementary Conditions 14.02.A.1 and 14.02.A.2, and Section 00625 - Application for Payment.
2. Final Payment: Upon Final Inspection and Final Completion and acceptance of the Work in accordance with Articles 14.06 and 14.07 of Section 00700 - General Conditions, OWNER shall pay the remainder of the contract price as provided in the General Conditions.

G. Retainage

Retainage for this Project is 5%.

H. Architect / Engineer

The Project has been designed by CPH, LLC, referred to in the documents as the Architect / Engineer / A/E (all three terms can be used interchangeably and refer to CPH, LLC, regardless of which term is used).

I. Mandatory Compliance with Chapter 119, Florida Statutes, and Public Records Requests. In order to comply with Section 119.0701, Florida Statutes, public records laws, the CONTRACTOR must:

1. Keep and maintain public records that ordinarily and necessarily would be required by the CITY in order to perform the service.
2. 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, or as otherwise provided by law.

3. Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law.
4. 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 the 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.
5. If the CONTRACTOR does not comply with a public records request, the CITY shall enforce the contract provisions in accordance with this Agreement.
6. Failure by the CONTRACTOR to grant such public access and comply with public records requests shall be grounds for immediate unilateral cancellation of this Agreement by the CITY. the CONTRACTOR shall promptly provide the CITY with a copy of any request to inspect or copy public records in possession of the CONTRACTOR and shall promptly provide the CITY with a copy of the CONTRACTOR's response to each such request.
7. The CONTRACTOR shall note the following:

**IF THE CONTRACTOR/VENDOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S (VENDOR'S) DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 352-330-1330, SUSAN PATTERSON, CITY CLERK, CITY OF WILDWOOD, 100 N. MAIN STREET WILDWOOD, FL 34785, SPATTERSON@WILDWOOD-FL.GOV.**

**IN WITNESS WHEREOF**, the parties hereto have executed this Agreement the day and year first above written.

CONTRACTOR:

\_\_\_\_\_  
Name of Firm

\_\_\_\_\_  
By (Signature)

(SEAL)

\_\_\_\_\_  
Printed Name and Title

ATTEST:

\_\_\_\_\_  
By (Signature)

\_\_\_\_\_  
Printed Name and Title

OWNER:

\_\_\_\_\_  
Name of Owner

\_\_\_\_\_  
By (Signature)

(SEAL)

\_\_\_\_\_  
Printed Name and Title

ATTEST:

\_\_\_\_\_  
By (Signature)

\_\_\_\_\_  
Printed Name and Title

**END OF SECTION**

**SECTION 00530**

**NOTICE TO PROCEED FORM**

To:

**Notice to Proceed Date:** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

**Bid No.:** \_\_\_\_\_

You are hereby notified to commence Work in accordance with the Agreement dated \_\_\_\_\_. This Notice authorizes the Contractor to commence construction on the above Notice to Proceed Date and, in accordance with the Agreement, all Work shall be substantially complete within \_\_\_\_\_ calendar days of the date of this Notice to Proceed. Therefore, the Date of Substantial Completion is \_\_\_\_\_. Per the Agreement, all Work shall be finally substantially complete within \_\_\_\_\_ calendar days of the date of substantial completion. Therefore, the Date of Final completion is \_\_\_\_\_.

ISSUED BY: \_\_\_\_\_  
(Name of Owner)

\_\_\_\_\_  
By (Signature)

\_\_\_\_\_  
(Printed Name and Title)

**ACCEPTANCE OF NOTICE**

Receipt and acceptance of the above Notice To Proceed is hereby acknowledged by \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
By

\_\_\_\_\_  
Printed Name and Title

**END OF SECTION**

**SECTION 00605**

**PERFORMANCE BOND**  
(100% of Contract Price)

**Project Name:** Millennium Park Phase 1 & 2

**Contract No.:** \_\_\_\_\_

**Contractor**

**Surety**

Name:	_____	_____
Address:	_____	_____
Phone No.:	_____	_____

**Owner**

Name: City of Wildwood

Address: 100 N. Main Street, Wildwood, FL 34785

Phone No.: (352) 330-1330

KNOW ALL MEN BY THESE PRESENTS that

The above named Contractor, as Principal, and the above named Surety, as SURETY, are held and firmly bound unto the Owner in the full and just sum of \$ \_\_\_\_\_, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The Project is located at: 1300 Huey St., Wildwood, FL 34785

General description of the Work: The Work consists of the construction of over 2,600-ft of new access roads and turn lane, three new parking lots (11,000 SY (+/-), two new softball fields, two new soccer fields, new tennis courts, basketball courts (under a 17,710 SF pre-engineered roof), racquetball courts, concrete sidewalk, asphalt trail, electrical and plumbing for the new fields and courts, new water main, sanitary sewer, storm sewer, landscaping, site furnishings, and irrigation.

**WHEREAS**, the Contractor has by written Agreement dated \_\_\_\_\_, 20 \_\_\_\_\_, entered into a Contract with the Owner for Contract No. \_\_\_\_\_, for the project entitled \_\_\_\_\_, with conditions and \_\_\_\_\_

provisions as are further described in the aforementioned Agreement, which Agreement is by reference made a part hereof for the purpose of explaining this bond.

**NOW, THEREFORE**, the condition of this obligation is such that if Principal:

Promptly and faithfully performs its duties, all the covenants, terms, conditions, and agreements of said Contract including, but not limited to the insurance provisions, guaranty period and the warranty provisions, in the time and manner prescribed in the Contract, and

Pays Owner all, losses, damages, delay damages (liquidated or actual), expenses, costs and attorneys' fees, including costs and attorney's fees on appeal that Owner sustains resulting directly or indirectly from any breach or default by Principal under the Contract, then this bond is void; otherwise it shall remain in full force and effect.

1. Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the SURETY shall promptly remedy the default or shall promptly:
  - A. Complete the Contract in accordance with its terms and conditions; or
  - B. Expeditiously obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by SURETY of the lowest responsible qualified bidder, award a contract; or, if the Owner elects, upon determination by the Owner and the SURETY jointly of the lowest responsible bidder, to have the SURETY arrange for a contract between such bidder and Owner, and for the SURETY to make available as Work progresses sufficient funds to pay the cost of completion less the balance of the Contract price (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph). The term "balance of the Contract price," as used in this Bond, shall mean the total amount payable by Owner to Contractor under the Contract and any approved change orders thereto, less the amount properly paid by Owner to Contractor. The SURETY shall pay Owner all remaining losses, delay and disruption damages, expenses, costs, and statutory attorney's fees, including appellate proceedings, that Owner sustains because of a default by Contractor under the Contract.
2. Any changes in or under the Contract Documents (which include the Plans, Drawings, and Specifications) and compliance or noncompliance with any formalities connected with the Contract or the changes therein shall not affect SURETY's obligations under this Bond and SURETY hereby waives notice of any such changes.
3. The SURETY's monetary obligations to the Owner shall not be reduced by legal fees and costs incurred by the SURETY arising out of Contractor's default.
4. The SURETY, for value received, hereby stipulates and agrees that its obligations hereunder shall be direct and immediate and not conditional or contingent upon Owner's pursuit of its remedies against Principal, shall remain in full force and effect notwithstanding (i) amendments or modifications to the Contract entered into by Owner and Principal without

the SURETY's knowledge or consent (ii) waivers of compliance with terms of the Contract granted by Owner to Principal without the SURETY's knowledge or consent, or (iii) the discharge of Principal from its obligations under the Contract as a result of any proceeding initiated under the Bankruptcy Code of 1978, as the same may be amended, or any similar state or federal law, or any limitation of the liability of Principal or its estate as a result of any such proceeding.

5. The Surety shall indemnify and hold the Owner harmless from any and all claims and damages, arising from the Contractor's default under the Contract including, but not limited to, contractual damages, expenses, costs, injury, negligent default, or intentional default, patent infringement and actual damages in accordance with the Contract.
6. In the event that the SURETY fails to fulfill its obligations under this Performance Bond, then the SURETY shall indemnify and hold the Owner harmless from any and all loss, damage, cost and expense, including reasonable attorneys' fees and costs for all trial and appellate proceedings, resulting from the SURETY's failure to fulfill its obligations hereunder. This paragraph shall survive the termination or cancellation of this Performance Bond.
7. The Contractor shall save the Owner harmless from any and all damages, expenses and costs which may arise by virtue of any defects in said work or materials within a period of two (2) years from the date of Final Completion of the Project.
8. This Performance Bond is intended to comply with the requirements of Section 255.05, Florida Statutes, as amended, and additionally, to provide contract rights more expansive than as required by statute.

**IN WITNESS WHEREOF**, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

*ATTEST:*

**PRINCIPAL/CONTRACTOR**

\_\_\_\_\_  
By: Secretary

\_\_\_\_\_  
PRINCIPAL / CONTRACTOR

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
By: CONTRACTOR Signatory Authority

(CORPORATE SEAL)

\_\_\_\_\_  
Typed or Printed Name and Title

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
Telephone No.

\_\_\_\_\_  
Facsimile No.

Millennium Park – Phase 1 & 2

**PERFORMANCE BOND**  
**(100% of Contract Price)**

**00605-3**

\_\_\_\_\_  
Typed or Printed Name

ATTEST:

SURETY

\_\_\_\_\_  
(SURETY) Secretary

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
Typed or Printed Name

By: \_\_\_\_\_

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Telephone No.      Facsimile No.

**NOTE:** Date of this Performance Bond must not be prior to date of the Agreement. If CONTRACTOR is a joint venture, all ventures shall execute this Performance Bond. If CONTRACTOR is a Partnership, all partners shall execute this Performance Bond.

**IMPORTANT:** Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by Owner.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of surety companies must list their name, address, and telephone number on all Bonds.**

**END OF SECTION**



**SECTION 00610**

**PAYMENT BOND**

(100% of Contract Price)

**Project Name:** Millennium Park Phase 1 & 2

**Contract No.:** \_\_\_\_\_

	<b>Contractor</b>	<b>Surety</b>
Name:	_____	_____
Address:	_____	_____
Phone No.:	_____	_____

**Owner**

Name: City of Wildwood

Address: 100 N. Main Street, Wildwood, FL 34785

Phone No.: (352) 330-1330

KNOW ALL MEN BY THESE PRESENTS that

The above named Contractor, as Principal, and the above named Surety, as SURETY, are held and firmly bound unto the Owner in the full and just sum of \$ \_\_\_\_\_, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The Project is located at: 1300 Huey St., Wildwood, FL 34785

General description of the Work: The Work consists of the construction of over 2,600-ft of new access roads and turn lane, three new parking lots (11,000 SY (+/-), two new softball fields, two new soccer fields, new tennis courts, basketball courts (under a 17,710 SF pre-engineered roof), racquetball courts, concrete sidewalk, asphalt trail, electrical and plumbing for the new fields and courts, new water main, sanitary sewer, storm sewer, landscaping, site furnishings, and irrigation.

**WHEREAS**, the Contractor has by written Agreement dated \_\_\_\_\_, 20\_\_\_\_, entered into a Contract with the Owner for Contract No. \_\_\_\_\_, for the project entitled

\_\_\_\_\_ , with conditions and provisions as are further described in the aforementioned Agreement, which Agreement is by reference made a part hereof for the purpose of explaining this bond.

**NOW, THEREFORE**, the condition of this obligation is such that if Principal shall promptly make payments to all claimants as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, Materials, or supplies, used directly or indirectly by Principal in the prosecution of the Work provided for in the Agreement, then this obligation shall be void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:

1. This Payment Bond is furnished for the purpose of complying with the requirements of Section 255.05, Florida Statutes, as same may be amended.
2. Any action instituted by a claimant under this Bond for payment must be in accordance with the notice and time limitation provisions in Sections 255.05(2) and 255.05(10), Florida Statutes.
3. This Payment Bond is conditioned that Contractor shall promptly make payments to all persons defined in Section 713.01, Florida Statutes, whose claims derive from the prosecution of the Work provided for in the Contract.
4. Pursuant to Section 255.05, Florida Statutes, a claimant, except a laborer, who is not in privity with the Contractor shall, before commencing or not later than forty-five (45) days after commencing to furnish labor, services, or materials for the prosecution of the Work, serve the contractor with a written notice that he or she intends to look to the Bond for protection. A claimant who is not in privity with the Contractor and who has not received payment for furnishing his or her labor, services, or materials shall serve a written notice of nonpayment on the Contractor and on the SURETY. The notice of nonpayment shall be under oath and served during the progress of the Work or thereafter but may not be served earlier than forty-five (45) days after the first furnishing of labor, services, or materials by the claimant or later than ninety (90) days after the final furnishing of the labor, services, or materials by the claimant or, with respect to rental equipment, later than ninety (90) days after the date that the rental equipment was last on the job site available for use.
5. The time periods for service of a notice of nonpayment or for bringing an action against a Contractor or a Surety shall be measured from the last day of furnishing labor, services, or materials by the claimant and may not be measured by other standards, such as the issuance of a certificate of occupancy or the issuance of a certificate of substantial completion.
6. An action, except an action for recovery of retainage, must be instituted against the Contractor or the SURETY on the payment bond within one (1) year after the performance of the labor or completion of delivery of the materials or supplies. An action for recovery of retainage must be instituted against the Contractor or the SURETY within one (1) year after the performance of the labor or completion of delivery of the materials or supplies.

7. The claimant shall have a cause of action against the Contractor and SURETY for the amount due him or her, including unpaid finance charges due under the claimant's contract. Such action may not involve the Owner in any expense.
8. Any changes in or under the Contract or Contract Documents and compliance or non-compliance with any formalities connected with the Contract or the changes therein shall not affect SURETY's obligations under this Payment Bond and SURETY hereby waives notice of any such changes. Further, Principal and SURETY acknowledge that the sum of this Payment Bond shall increase or decrease in accordance with the Change Orders (unilateral or directive change orders and bilateral change orders) or other modifications to the Contract or Contract Documents. This Payment Bond shall not cover any components or materials directly purchased and paid for by the Owner.
9. The Performance Bond and this Payment Bond and the covered amounts of each are separate and distinct from each other. This Payment Bond shall be construed as a statutory Payment Bond under Section 255.05, Florida Statutes, and not as a common law bond.

**IN WITNESS WHEREOF**, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

*ATTEST:*

**PRINCIPAL/CONTRACTOR**

\_\_\_\_\_  
PRINCIPAL / CONTRACTOR

\_\_\_\_\_  
By: Secretary

\_\_\_\_\_  
By: CONTRACTOR Signatory Authority

\_\_\_\_\_  
Typed or Printed Name of Secretary

\_\_\_\_\_  
Typed or Printed Name and Title

(CORPORATE SEAL)

\_\_\_\_\_  
Address

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Telephone No.          Facsimile No.

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
Typed or Printed Name

ATTEST:

SURETY

\_\_\_\_\_  
(SURETY) Secretary

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
Typed or Printed Name

By: \_\_\_\_\_

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Telephone No.      Facsimile No.

**NOTE:** Date of this Payment Bond must not be prior to date of the Agreement. If CONTRACTOR is a joint venture, all ventures shall execute this Payment Bond. If CONTRACTOR is a Partnership, all partners shall execute this Payment Bond.

**IMPORTANT:** Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by Owner.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of surety companies must list their name, address, and telephone number on all Bonds.**

**END OF SECTION**

**SECTION 00615**

**MATERIAL AND WORKMANSHIP BOND**  
(10% of Contract Price)

**KNOW ALL MEN BY THESE PRESENTS** that:

\_\_\_\_\_

(Name of CONTRACTOR)

\_\_\_\_\_

(Address of CONTRACTOR)

CONTRACTOR's Telephone Number: \_\_\_\_\_

a \_\_\_\_\_

(Corporation, Partnership, or Individual)

hereinafter called "Principal", and \_\_\_\_\_

(Name of Surety)

\_\_\_\_\_

(Address of Surety)

Surety's Telephone Number: \_\_\_\_\_

hereinafter called "Surety", are held and firmly bound unto the OWNER \_\_\_\_\_

\_\_\_\_\_, hereinafter called "OWNER", in the sum of ten percent (10%) of the Contract Price as adjusted under the Contract Documents. The Final Contract Price is \$ \_\_\_\_\_

\_\_\_\_\_, therefore Principal and Surety are held and firmly bound unto OWNER the sum of \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Agreement with OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof for the construction of: \_\_\_\_\_

Principal is obligated to protect the OWNER against any defects resulting from faulty Materials or Workmanship of said improvements for a period of two (2) years from the date of Final Completion under the Contract Documents, which is \_\_\_\_\_.

The conditions of this obligation are such that if Principal shall promptly and faithfully protect the OWNER against any Defects resulting from faulty Materials and Workmanship of the aforesaid

improvements for a period of two (2) years from the date of Final Completion, then this obligation shall be null and void, otherwise it shall remain in full force and effect.

The OWNER shall notify the Principal in writing of any Defect for which the Principal is responsible and shall specify in said notice a reasonable period of time within which Principal shall have to correct said Defect.

The Surety unconditionally covenants and agrees that if the Principal fails to perform, within the time specified, the Surety, upon thirty (30) days written notice from OWNER, or its authorized agent or officer, of the failure to perform will correct such Defect or Defects and pay the cost thereof, including, but not limited to engineering, legal and contingent cost. Should the Surety fail or refuse to correct said Defects, the OWNER, in view of the public interest, health, safety, welfare and factors involved, shall have the right to resort to any and all legal remedies against the Principal and Surety and either, both at law and in equity, including specifically, specific performance to which the Principal and Surety unconditionally agree.

The Principal and Surety further jointly and severally agree that the OWNER at its option, shall have the right to correct said Defects resulting from faulty Materials or Workmanship, or, pursuant to public advertisement and receipt of Bids, cause to be corrected any Defects or said Defects in case the Principal shall fail or refuse to do so, and in the event the OWNER should exercise and give effect to such right, the Principal and the Surety shall jointly and severally hereunder reimburse the OWNER the total cost thereof, including, but not limited to, engineering, legal and contingent cost, together with any damages either direct or consequent which may be sustained on account of the failure of the Principal to correct said defects.

***(Signature Pages Follow)***

**IN WITNESS WHEREOF**, this instrument is executed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

*ATTEST:*

**PRINCIPAL/CONTRACTOR**

\_\_\_\_\_  
By: Secretary

\_\_\_\_\_  
By: CONTRACTOR Signatory Authority

\_\_\_\_\_  
Typed Name of Secretary

\_\_\_\_\_  
Typed Name and Title

(CORPORATE SEAL)

\_\_\_\_\_  
Address

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Typed Name

\_\_\_\_\_  
Telephone No.      Facsimile No.

\_\_\_\_\_  
(Witness to CONTRACTOR)

\_\_\_\_\_  
Typed Name

***(Surety Signature Page Follows)***

ATTEST:

SURETY

\_\_\_\_\_  
(SURETY) Secretary

\_\_\_\_\_  
SURETY

\_\_\_\_\_  
Typed or Printed Name

By: \_\_\_\_\_

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Address

\_\_\_\_\_  
Witness as to SURETY

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
Typed or Printed Name

\_\_\_\_\_  
Telephone No.      Facsimile No.

**NOTE:** Date of the Bond must not be prior to date of Agreement. If CONTRACTOR is a joint venture, all ventures shall execute the Bond. If CONTRACTOR is a Partnership, all partners shall execute the Bond.

**IMPORTANT:** Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the State of Florida, unless otherwise specifically approved in writing by OWNER.

All bonds shall be originals and issued or countersigned by a local producing agent who is authorized to operate in the State of Florida. Attorneys-in-fact who sign Bid Bonds or Performance/Payment Bonds must file with such bond a certified copy of their Power of Attorney to sign such Bond. **Agents of Surety companies must list their name, address, and telephone number on all Bonds.**

**END OF SECTION**



**SECTION 00617**

**CONSENT OF SURETY TO FINAL PAYMENT**

WE, \_\_\_\_\_, having heretofore executed Performance and Payment Bonds No. \_\_\_\_\_ for the Project known as \_\_\_\_\_, in the amount of \$ \_\_\_\_\_\* hereby agree that \_\_\_\_\_, hereinafter referred to as OWNER may make full payment of the final estimate, including the retained percentage, to the CONTRACTOR, \_\_\_\_\_. The Surety concurs that full payment to the CONTRACTOR is appropriate and the Surety expressly releases the OWNER from all liability to Surety resulting from full payment to CONTRACTOR. It is fully understood that the granting of the right to the OWNER to make payment of the final estimate to said CONTRACTOR and/or his assigns, shall in no way relieve this surety company of its obligations under its bond, as set forth in the specifications, contract and bond pertaining to the above project.

*\* = Dollar Value of Issued Performance and Payment Bonds*

IN WITNESS WHEREOF, the \_\_\_\_\_ has caused this instrument to be executed on its behalf by its \_\_\_\_\_ and its duly authorized attorney in fact, and its corporate seal to be hereunto affixed, all on this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Attorney-in-Fact

(Power of Attorney must be attached if executed by Attorney in Fact)

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida

\_\_\_\_\_  
Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**END OF SECTION**

## SECTION 00620

### INSURANCE REQUIREMENTS

**Project Name:** Millennium Park – Phase 1 & 2

**Owner:** City of Wildwood

**Owner Address / Phone No.:** 100 N. Main Street, Wildwood, FL 34785

**Engineer:** CPH, LLC

**Engineer Address / Phone No.:** 500 West Fulton St., Sanford, FL 32771 Ph. 407-322-6841

The following insurance requirements are required to be met, in addition to requirements defined in Sections 00700 (General Conditions) and 00800 (Supplementary Conditions). Any conflict between the requirements contained in this section and any other section, it is hereby noted that the requirements of this section as amended shall prevail.

1. The successful Bidder will be required to provide, to the Owner and the Engineer, prior to commencing any work, a Certificate of Insurance which verifies coverage in compliance with the requirements outlined in Sections 00700 (General Conditions) and 00800 (Supplementary Conditions) and as indicated herein. Any Work initiated without completion of this requirement shall be unauthorized and the Owner and Engineer will not be responsible.
2. The required insurance policies shall be endorsed to provide primary and non-contributory coverage to the Owner and all of the Additional Insureds in relation to any and all other liability insurance and shall not contain co-insurance provisions.
3. All policies are to provide a Waiver of Subrogation endorsement in favor of the Owner and all of the Additional Insureds.
4. All policies, except for professional liability policies and workers compensation policies are to be endorsed to include the Owner and the Engineer as Additional Insured. The Owner and Engineer shall be Certificate Holders.
5. Builder's Risk ("All Risk") insurance is required for all projects that include above grade construction, installation of structures, pipeline installation, and for all projects where the Contractor proposes to be paid for stored material.
6. In the event that the insurance coverage expires prior to the completion of the project, a renewal certificate shall be issued 30 days prior to said expiration date.
7. All limits are per occurrence and must include Bodily Injury and Property Damage.
8. All policies must be written on occurrence form, not on claims made form.
9. Self insured retentions shall not be allowed on any liability coverage.

10. In the notification of cancellation: The Owner and the Engineer shall be endorsed onto the policy as a cancellation notice recipient. Should any of the policies be cancelled before the expiration date thereof, notice shall be delivered to the Owner in accordance with the policy provisions.
11. All insurers must have an A.M. Best rating of at least A-VII.
12. It is the responsibility of the Contractor to responsible to ensure that all Subcontractors retained by the Prime Contractor shall provide coverage as defined herein before and after and are the responsibility of said Prime Contractor in all respects.
13. All certificates of insurance, notices, etc. must be provided to the above addresses.

**END OF SECTION**

**SECTION 00625**

**APPLICATION FOR PAYMENT**

**Project Name:** \_\_\_\_\_

**Bid No.:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

**Payment Request No.:** \_\_\_\_\_

**Period Ending Date:** \_\_\_\_\_

**STATEMENT OF WORK**

1.	Original Contract Price	
2.	Net Change Order	
3.	Current Contract Price	
4.	Total Completed and Stored to Date	
5.	Amount Retained	
6.	Total Earned Less Retainage (Line 4 Minus Line 5)	
7.	Previous Payments Approved	
8.	Amount Due This Payment (Line 6 Minus Line 7)	
9.	Balance to Finish, Less Retainage (Line 3 Minus Line 4)	

**CONTRACTOR'S AFFIDAVIT**

The undersigned Contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of Work performed under the Agreement referred to above have been applied by the Contractor to discharge in full all obligations of the Contractor incurred in connection with Work covered by prior Application for Payment under said Agreement, being Applications for Payment numbered 1 through \_\_\_\_\_ inclusive; and, (2) all Work, materials and equipment incorporated in said Project or otherwise listed in or covered by this Application for Payment are free and clear of all liens, claims, security interests and encumbrances; (3) all previous progress payments have been applied by the Contractor to pay in full (less retainage) all amounts owed to its Subcontractors, Suppliers, Materialmen and Equipment Suppliers; and (4) all items and amounts shown for payment and all information provided on the Subcontractor and Supplier Listing which is included in this Application for Payment are true and correct; and (5) all Work has been completed in full accordance with the terms and conditions of the Agreement between the Owner and Contractor dated \_\_\_\_\_ and the Work is not defective.

CONTRACTOR: \_\_\_\_\_

(SEAL)

By \_\_\_\_\_  
(Signature of Authorized Representative)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name and Title

STATE OF FLORIDA  
COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of \_\_\_ physical presence or \_\_\_ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by \_\_\_\_\_ as \_\_\_\_\_ for \_\_\_\_\_, whose name is subscribed to this instrument, who personally swore or affirmed that he/she is authorized to execute this document and thereby bind the Corporation / LLC.

*(In the last three blanks fill in the name of the Officer acknowledging this document, title of Officer / Manager, and name of the Corporation or LLC)*

\_\_\_\_\_  
Signature of Notary Public - State of Florida                      Print, Type, or Stamp Commissioned Name of Notary Public

Personally Known \_\_\_\_\_ OR Produced Identification \_\_\_\_\_

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

**SUBCONTRACTOR AND SUPPLIER LISTING**

The following is a list of Subcontractors and Suppliers who have performed Work or provided Materials, Supplies, or Equipment during time period represented by this Application and the dollar amount of the work applied for (add to the table as necessary to provide a complete list).

NAME	ADDRESS	AMOUNT

**PAYMENT OF THE AMOUNT REQUESTED ABOVE IS RECOMMENDED FOR APPROVAL:**

\_\_\_\_\_  
By

\_\_\_\_\_  
Date

\_\_\_\_\_  
By

\_\_\_\_\_  
Date

## **REQUIRED ATTACHMENTS**

### Monthly Application For Payment:

1. Updated Project Schedule
2. Waivers and Releases Of Lien Upon Progress Payment or Consent of Surety for Progress Payment

### Final Application For Payment (Submitted With or Prior to the Final Application for Payment):

1. Consent of Surety to Final Payment
2. Completed Material and Workmanship Bond
3. Certificate of Final Completion
4. Manufacturer operation and maintenance instructions
5. Manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee
6. All required Record Drawings
7. All required directional bore logs
8. Stormwater NPDES Notice of Termination (If Required)

**END OF SECTION**

**SECTION 00626**

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

Project Name: \_\_\_\_\_

Bid No.: \_\_\_\_\_

Owner: \_\_\_\_\_

Contractor: \_\_\_\_\_

Agreement Date: \_\_\_\_\_

This Certificate of Substantial Completion applies to all work under the Contract Documents or the following specified parts thereof if construction is phased by contract: \_\_\_\_\_

ISSUED TO:

Contractor:

\_\_\_\_\_

The work to which this Certificate applies has been inspected by authorized representatives of Contractor, Engineer, and Owner and that Work is hereby declared to be substantially completed in accordance with the Contract Documents on:

\_\_\_\_\_  
Date of Substantial Completion

A list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete and warrant all the Work in accordance with the Contract Documents. All items on the list shall be completed or corrected by Contractor within \_\_\_ days of the above date of Substantial Completion.

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligations to complete the Work in accordance with the Contract Documents.

Executed by Engineer on \_\_\_\_\_  
Date

Engineer: CPH, LLC

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name and Title)

Executed by Owner on \_\_\_\_\_  
Date

Owner: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name and Title)

Contractor accepts this Certificate of Substantial Completion on \_\_\_\_\_  
Date

Contractor: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name and Title)

**END OF SECTION**



**SECTION 00627**

**CERTIFICATE OF FINAL COMPLETION**

Project Name: \_\_\_\_\_

Bid No.: \_\_\_\_\_

Owner: \_\_\_\_\_

Contractor: \_\_\_\_\_

Agreement Date: \_\_\_\_\_

This Certificate of Final Completion applies to all work under the Contract Documents or the following specified parts thereof if construction is phased by contract: \_\_\_\_\_

ISSUED TO:

Contractor:

\_\_\_\_\_

The work to which this Certificate applies has been inspected by authorized representatives of Contractor, Engineer, and Owner and that Work is hereby declared to be finally complete in accordance with the Contract Documents on:

\_\_\_\_\_ Date of Final Completion

This Certificate constitutes an acceptance of Work except any and all latent defects, warranty work, maintenance, and other post Final Completion obligations of the Contractor under the Contract Documents.

Executed by Engineer on \_\_\_\_\_ Date

Engineer: CPH, LLC \_\_\_\_\_

By: \_\_\_\_\_ (Signature)

\_\_\_\_\_ (Printed Name and Title)

Contractor accepts this Certificate of Final Completion on \_\_\_\_\_  
Date

Contractor: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name and Title)

Accepted by Owner on \_\_\_\_\_  
Date

Owner: \_\_\_\_\_

By: \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Printed Name and Title)

**END OF SECTION**

 **AIA** Document A201<sup>®</sup> – 2017**General Conditions of the Contract for Construction****for the following PROJECT:***(Name and location or address)*

Millennium Park Ph 1 & 2  
1300 Huey St.  
Wildwood, Florida 34785

**THE OWNER:***(Name, legal status and address)*

City of Wildwood  
100 North Main Street  
Wildwood, Florida 34785

**THE ARCHITECT:***(Name, legal status and address)*

CPH, LLC  
500 West Fulton Street  
Sanford, Florida 32771

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- 1 GENERAL PROVISIONS**
- 2 OWNER**
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- 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**
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- 12 UNCOVERING AND CORRECTION OF WORK**
- 13 MISCELLANEOUS PROVISIONS**
- 14 TERMINATION OR SUSPENSION OF THE CONTRACT**

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503<sup>™</sup>, Guide for Supplementary Conditions.

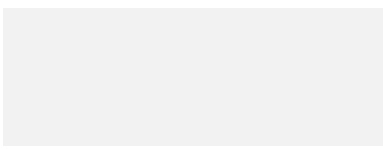
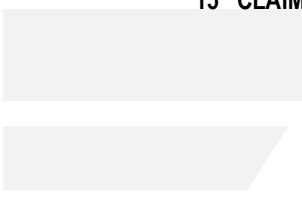
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15 CLAIMS AND DISPUTES



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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

#### **§ 1.1.2 The Contract**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

#### **§ 1.1.3 The Work**

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### **§ 1.1.4 The Project**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

#### **§ 1.1.5 The Drawings**

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

#### **§ 1.1.6 The Specifications**

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

#### **§ 1.1.7 Instruments of Service**

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

#### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

### **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent

consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

**§ 1.2.1.1** The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

**§ 1.2.2** Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

**§ 1.2.3** Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

### **§ 1.3 Capitalization**

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

### **§ 1.4 Interpretation**

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### **§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service**

**§ 1.5.1** The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

**§ 1.5.2** The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

### **§ 1.6 Notice**

**§ 1.6.1** Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

**§ 1.6.2** Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

### **§ 1.7 Digital Data Use and Transmission**

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### **§ 1.8 Building Information Models Use and Reliance**

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

**§ 2.1.2** The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

**§ 2.2.3** After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

**§ 2.2.4** Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

### **§ 2.3 Information and Services Required of the Owner**

**§ 2.3.1** Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements,

assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

**§ 2.3.2** The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

**§ 2.3.3** If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

**§ 2.3.4** The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

**§ 2.3.5** The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

**§ 2.3.6** Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

#### **§ 2.4 Owner's Right to Stop the Work**

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

#### **§ 2.5 Owner's Right to Carry Out the Work**

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

### **ARTICLE 3 CONTRACTOR**

#### **§ 3.1 General**

**§ 3.1.1** The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

**§ 3.1.2** The Contractor shall perform the Work in accordance with the Contract Documents.

**§ 3.1.3** The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

**§ 3.2.1** Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

**§ 3.2.2** Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

**§ 3.2.3** The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

**§ 3.3.2** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.



**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

**§ 3.4.3** The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

### **§ 3.5 Warranty**

**§ 3.5.1** The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

### **§ 3.6 Taxes**

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

**§ 3.7.2** The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

**§ 3.7.3** If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

### **§ 3.7.4 Concealed or Unknown Conditions**

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

### § 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

### § 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

### § 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the

Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

**§ 3.10.3** The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

**§ 3.11 Documents and Samples at the Site**

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

**§ 3.12 Shop Drawings, Product Data and Samples**

**§ 3.12.1** Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

**§ 3.12.2** Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

**§ 3.12.3** Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

**§ 3.12.4** Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

**§ 3.12.5** The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

**§ 3.12.6** By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

**§ 3.12.7** The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

**§ 3.12.8** The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

**§ 3.12.9** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

### **§ 3.13 Use of Site**

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

### **§ 3.14 Cutting and Patching**

**§ 3.14.1** The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

**§ 3.14.2** The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

**§ 3.15.1** The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

### **§ 3.16 Access to Work**

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

### **§ 3.17 Royalties, Patents and Copyrights**

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

### **§ 3.18 Indemnification**

**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

**§ 3.18.2** In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

**§ 4.1.1** The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

**§ 4.1.2** Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

### **§ 4.2 Administration of the Contract**

**§ 4.2.1** The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

**§ 4.2.2** The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

**§ 4.2.3** On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the

Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

#### **§ 4.2.4 Communications**

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

**§ 4.2.5** Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

**§ 4.2.6** The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

**§ 4.2.7** The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

**§ 4.2.8** The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

**§ 4.2.9** The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

**§ 4.2.10** If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

**§ 4.2.11** The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

**§ 4.2.12** Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

### **§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work**

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

### **§ 5.3 Subcontractual Relations**

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor,

prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

#### **§ 5.4 Contingent Assignment of Subcontracts**

**§ 5.4.1** Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

**§ 5.4.2** Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

**§ 5.4.3** Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

### **ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS**

#### **§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts**

**§ 6.1.1** The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

**§ 6.1.2** When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

**§ 6.1.3** The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

**§ 6.1.4** Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

#### **§ 6.2 Mutual Responsibility**

**§ 6.2.1** The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

**§ 6.2.2** If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work,



promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

**§ 6.2.3** The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

**§ 6.2.4** The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

**§ 6.2.5** The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

### **§ 6.3 Owner's Right to Clean Up**

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

## **ARTICLE 7 CHANGES IN THE WORK**

### **§ 7.1 General**

**§ 7.1.1** Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

**§ 7.1.2** A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

**§ 7.1.3** Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

### **§ 7.2 Change Orders**

**§ 7.2.1** A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

### **§ 7.3 Construction Change Directives**

**§ 7.3.1** A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

**§ 7.3.2** A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

**§ 7.3.3** If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

**§ 7.3.4** If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

**§ 7.3.5** If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

**§ 7.3.6** Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

**§ 7.3.7** A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

**§ 7.3.8** The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

**§ 7.3.9** Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

**§ 7.3.10** When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

#### **§ 7.4 Minor Changes in the Work**

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will

affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

## **ARTICLE 8 TIME**

### **§ 8.1 Definitions**

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

### **§ 8.2 Progress and Completion**

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

### **§ 8.3 Delays and Extensions of Time**

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

## **ARTICLE 9 PAYMENTS AND COMPLETION**

### **§ 9.1 Contract Sum**

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### **§ 9.2 Schedule of Values**

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and

unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

### **§ 9.3 Applications for Payment**

**§ 9.3.1** At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

**§ 9.3.1.1** As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

**§ 9.3.1.2** Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

**§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

**§ 9.3.3** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

### **§ 9.4 Certificates for Payment**

**§ 9.4.1** The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

**§ 9.4.2** The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

### **§ 9.5 Decisions to Withhold Certification**

**§ 9.5.1** The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

**§ 9.5.2** When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

**§ 9.5.3** When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

**§ 9.5.4** If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

### **§ 9.6 Progress Payments**

**§ 9.6.1** After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

**§ 9.6.2** The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

**§ 9.6.3** The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

**§ 9.6.4** The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

**§ 9.6.5** The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

**§ 9.6.6** A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

**§ 9.6.7** Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

**§ 9.6.8** Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

### **§ 9.7 Failure of Payment**

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

### **§ 9.8 Substantial Completion**

**§ 9.8.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

**§ 9.8.2** When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**§ 9.8.3** Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

**§ 9.8.4** When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

**§ 9.8.5** The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

### **§ 9.9 Partial Occupancy or Use**

**§ 9.9.1** The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

**§ 9.9.2** Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**§ 9.9.3** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

### **§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

**§ 9.10.3** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

**§ 9.10.4** The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

**§ 9.10.5** Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## **ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

### **§ 10.1 Safety Precautions and Programs**

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

### **§ 10.2 Safety of Persons and Property**

**§ 10.2.1** The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

**§ 10.2.2** The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

**§ 10.2.3** The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

**§ 10.2.4** When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

**§ 10.2.5** The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

**§ 10.2.6** The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

**§ 10.2.7** The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.



### **§ 10.2.8 Injury or Damage to Person or Property**

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

### **§ 10.3 Hazardous Materials and Substances**

**§ 10.3.1** The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

**§ 10.3.2** Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

**§ 10.3.3** To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

**§ 10.3.4** The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

**§ 10.3.5** The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

**§ 10.3.6** If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

### **§ 10.4 Emergencies**

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

## **ARTICLE 11 INSURANCE AND BONDS**

### **§ 11.1 Contractor's Insurance and Bonds**

**§ 11.1.1** The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

**§ 11.1.2** The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

**§ 11.1.3** Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

**§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

### **§ 11.2 Owner's Insurance**

**§ 11.2.1** The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

**§ 11.2.2 Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

**§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

### **§ 11.3 Waivers of Subrogation**

**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

### **§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

### **§ 11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

## **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

**§ 12.1.2** If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to

the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

## **§ 12.2 Correction of Work**

### **§ 12.2.1 Before Substantial Completion**

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

### **§ 12.2.2 After Substantial Completion**

**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

**§ 12.2.2.2** The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

**§ 12.2.2.3** The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

**§ 12.2.3** The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

**§ 12.2.4** The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

**§ 12.2.5** Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

## **§ 12.3 Acceptance of Nonconforming Work**

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

## **§ 13.2 Successors and Assigns**

**§ 13.2.1** The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

## **§ 13.3 Rights and Remedies**

**§ 13.3.1** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**§ 13.3.2** No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

## **§ 13.4 Tests and Inspections**

**§ 13.4.1** Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

**§ 13.4.2** If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

**§ 13.4.3** If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

**§ 13.4.4** Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

**§ 13.4.5** If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

**§ 13.4.6** Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

## **§ 13.5 Interest**

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

## **ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT**

### **§ 14.1 Termination by the Contractor**

**§ 14.1.1** The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

**§ 14.1.2** The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

**§ 14.1.3** If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

**§ 14.1.4** If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

### **§ 14.2 Termination by the Owner for Cause**

**§ 14.2.1** The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

**§ 14.2.2** When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

**§ 14.2.3** When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

**§ 14.2.4** If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance,

the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

#### **§ 14.3 Suspension by the Owner for Convenience**

**§ 14.3.1** The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

**§ 14.3.2** The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

#### **§ 14.4 Termination by the Owner for Convenience**

**§ 14.4.1** The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

**§ 14.4.2** Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

**§ 14.4.3** In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

### **ARTICLE 15 CLAIMS AND DISPUTES**

#### **§ 15.1 Claims**

##### **§ 15.1.1 Definition**

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

##### **§ 15.1.2 Time Limits on Claims**

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

##### **§ 15.1.3 Notice of Claims**

**§ 15.1.3.1** Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

#### § 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

#### § 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

#### § 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

#### § 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### § 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the



Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

**§ 15.2.3** In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

**§ 15.2.4** If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

**§ 15.2.5** The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

**§ 15.2.6** Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

**§ 15.2.6.1** Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

**§ 15.2.7** In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

**§ 15.2.8** If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### **§ 15.3 Mediation**

**§ 15.3.1** Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

**§ 15.3.2** The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

**§ 15.3.3** Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

#### § 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

#### § 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

# **Additions and Deletions Report for** **AIA® Document A201® – 2017**

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 09:02:06 ET on 06/08/2023.

## **PAGE 1**

Millennium Park Ph 1 & 2  
1300 Huey St.  
Wildwood, Florida 34785

...

City of Wildwood  
100 North Main Street  
Wildwood, Florida 34785

...

CPH, LLC  
500 West Fulton Street  
Sanford, Florida 32771

## **Certification of Document's Authenticity**

**AIA® Document D401™ – 2003**

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 09:02:06 ET on 06/08/2023 under Order No. 4104241937 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ - 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.

\_\_\_\_\_  
*(Signed)*

\_\_\_\_\_  
*(Title)*

\_\_\_\_\_  
*(Dated)*

## SECTION 00800

### SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the “General Conditions of the Contract for Construction”, AIA Document A201 – 2017. All provisions of the General Conditions, which are not so amended or supplemented in these Supplementary Conditions remain in full force and effect.

#### Notice to Proceed

At the Owner’s discretion, a Notice to Proceed may be given at any time within thirty days after the effective date of the Agreement. The Contract Time will commence at the time specified in such notice.

#### CITY ANNUAL JULY 4<sup>TH</sup> EVENT CONSTRUCTION SCHEDULE

The Contractor acknowledges awareness of the Owner’s annual July 4<sup>th</sup> celebration event and the associated impacts on the construction schedule and mobilization, as described below. The construction schedule, submitted by the Contractor promptly after being awarded the Contract, shall detail the portion of work which is to be completed by the end of June of each year in the construction timeline. The Owner reserves the right to request changes to the schedule to better accommodate the onsite holiday event which occurs every July. Prior to June 30<sup>th</sup> of each year, the Contractor shall halt construction activities, relocate all materials and equipment to pre-determined staging and/or storage areas selected by the Owner, ensure all accessible areas onsite are safe for admission of the general public, and clear all construction debris, trash, or waste material from the project site. If materials or equipment will remain onsite in areas designated by the Owner for the purpose of provisional staging/storage, public access to these areas shall be restricted with temporary construction fencing. The Contractor shall ensure site conditions in unrestricted areas do not present a safety concern for public access.

The Contractor is expected to vacate the project site for the duration of the holiday event. The Contractor shall coordinate with the Owner at the start of June for specifics and scheduling. Any demobilization, remobilization, and logistical costs associated with this break in construction activity shall be included in the mobilization cost of the bid. Questions regarding scheduling and details of this event shall be submitted in writing to CPH, LLC, Attention: Wildwood City Hall Annex Exterior Renovation, to [bids@cphcorp.com](mailto:bids@cphcorp.com). Questions received later than Monday, July 31, 2023 at 5:00p.m. local time will not be answered.

#### Before Starting Construction

Add the following to Article 3.2.1 of the General Conditions:

3.2.1.1 By commencing work, the Contractor shall be deemed to have accepted the condition of the site as being in suitable, satisfactory and acceptable condition to perform its work on the Project.

### Substitutes and "Or Equals"

Add the following to Article 3.4.2:

3.4.2.1 Contractor's application for use of substitute materials, equipment, or specific means, methods, technique, or procedure of construction, including reasonable time for Architect to review the substitution and redesign, if required, shall not be considered as an acceptable basis for Contractor not meeting the substantial completion date, nor as a basis for a time extension of the Contract Time.

### Contractor's General Warranty and Guarantee

Add the following to Article 3.5 of the General Conditions:

3.5.3 The Contractor warrants and guarantees to the Owner and the Architect that all work, labor, materials, equipment and services furnished and performed will be done in a good and workmanlike manner and will be of the highest quality, free from defects and in accordance with the Contract Documents. Each application for payment submitted by the Contractor to the Owner shall be deemed to constitute a confirmation, restatement, and reaffirmation by the Contractor of the foregoing warranty and guarantee, with respect to all work, labor materials, equipment and services performed and furnished for the Project through the date of such application.

### Subsurface Conditions

Add the following to Article 3.7.4 of the General Conditions:

3.7.4.1 The Contractor acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered, including all exploratory work done on behalf of the Owner on the site or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available by the Owner.

### Labor; Working Hours

1. Regular Working Hours are defined as 7:00 a.m. to 4:00 p.m., Monday through Friday. Work requiring inspection by the Owner or Architect is to be scheduled for 9:00 a.m. to 4:00 p.m., Monday through Thursday and 9:00 a.m. to 12:00 noon on Fridays upon a minimum of two full business days advance notice for inspections.
2. Requests to work during other than normal working hours must be submitted to the Architect at least 48 hours in advance of the period proposed for such overtime work and shall set forth the proposed schedule for overtime work to give Architect ample time to arrange for his personnel to be at the site of the work.
3. All water for testing, flushing, and construction shall be furnished by the Contractor. It may be available by connecting to the Owner's (or Utility's) water system at a point approved

by the Owner and Utility. The Owner (or Utility) shall charge the Contractor for water used in performing the above functions in accordance with the Owner's (or Utility's) established rate schedule. There shall be installed in each and every connection to the Owner's (or Utility's) potable water supply a reduced pressure zone backflow preventer meeting the requirements of AWWA C511. Contractor shall be required to meter all water used.

### Services, Materials and Equipment

Provisions of the Contract Documents relating to all materials and equipment and how they are to be applied, installed, connected, erected, used, cleaned, and conditioned does not assign the Architect, or any of the Architect's consultants, agents, or employees, any duty or authority to supervise or direct the furnishing or Performance of Work or any duty or responsibility contrary to the provisions of the General Conditions.

### Limitation on Use of Site and Other Areas

Add the following to Article 3.13 of the General Conditions:

3.13.1 Where the Contractor hauls Materials or Equipment to the Project over roads and bridges on the state park road system, state highway system, county road system, or city street system and such use causes damage, it shall immediately, at its expense, repair such road or bridge to as good a condition as before the hauling began.

### Execution of Change Orders

Add the following to Article 7.3.10 of the General Conditions:

7.3.10.1 Change Orders shall constitute a full accord and satisfaction of all costs of whatever nature, direct or indirect, arising from or related to the change, including, without limitation, impact on unchanged base contract work.

### Delays

Add the following to Article 8.3.1 of the General Conditions:

8.3.1.1 Contractor's entitlement to an equitable adjustment of its Contract Price hereunder shall be for its direct, jobsite costs only. In no event shall it be entitled to recovery of indirect, offsite, or home office costs allegedly arising from or related to delays.

8.3.1.2 Neither the Architect or Owner are liable to Contractor or its surety, or any of Contractor's Subcontractors or Suppliers for damages caused by delays within the control of or reasonably anticipatable by Contractor or delays beyond control of Owner or Contractor such as fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner.

### Payments and Completion

Add the following to Article 9.1 of the General Conditions

*Change of Contract Price Associated with Material Price Increases:* The Contractor is responsible for mitigating the effect of material price increases. Therefore, the Contractor is to submit shop drawings and order material as soon as possible (shop drawings shall be prepared and submitted as soon as the Contract has been executed) After the shop drawings and submittals have been reviewed and approved and the Contractor orders the materials, if the material costs have increased more than 10% in comparison to the material price quotes submitted with the Bid, and the Contractor is requesting compensation, the Contractor will be required to submit new material price quotes. If the material costs have increased more than 10%, a change order will be issued on the material cost increase (the cost for labor, equipment, and other associated construction costs will not be allowed to also increase). In the unlikely event that material costs decrease, a deductive change order for the material cost decrease is required. Should the Contractor fail to submit with the bid a material price quote and the material price subsequently increases, the Owner is not required to pay for the material price increase

Add the following to Article 9.2 of the General Conditions

#### *9.2.1 Unit Price Work:*

The Owner reserves the right to alter the Drawings, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed to accord with such changes, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. When changes result in changes in quantities of Work to be performed, the Contractor will accept payment according to Contract Unit Prices that appear in the original Contract. Owner or Contractor may make a Claim for an adjustment in the Contract Price if:

1. If the total cost of a particular item of Unit Price Work amounts to 10% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Proposal or Agreement; and
2. If there is no corresponding adjustment with respect to any other item of Work; and
3. If Contractor believes that it has incurred additional expense as a result thereof; or
4. If Owner believes that the quantity variation entitles it to an adjustment in the unit price, either Owner or Contractor may make a claim for an adjustment in the Contract Price

#### *9.3 Application for Payments*

Add the following to Article 9.3 of the General Conditions:

9.3.4 Without limitation, the Contractor shall assume all risk of loss and be solely responsible for all stored Materials and Equipment on-site, off-site stored in bonded warehouses including, but not limited to, stored Materials paid under prior Applications for Payment. In no event shall the quantity of Material and Equipment submitted for payment be in excess of the actual final installed quantity. Owner may deduct from the final Application for Payment amounts paid Contractor for Material and Equipment not finally installed in the Work.



9.3.5 Each Application for Payment shall include an affidavit of Contractor, in the form of the "Partial Release of Lien", stating that the Contractor releases a part of its lien, and quit claims all liens, lien rights, claims or demands of every kind to the Owner on the part released. In lieu of providing a Release of Lien, the Contractor may provide from the Surety a consent of progress payment. The amount released shall be for the amount of Work completed through previous applications for payment.

#### 9.4 *Certificates of Payment*

Add the following to Article 9.4 of the General Conditions:

9.4.3 Owner may refuse to make payment under the following conditions: The Work for which payment is requested cannot be verified; or Claims or Liens have been filed or there is reasonable evidence indicating the probable filing thereof; or there has been unsatisfactory prosecution of the Work, including failure to clean up as required by the Contract Documents; or due to persistent failure of the Contractor to cooperate with other contractors on the Project and persistent failure of the Contractor to carry out the Work in accordance with the Contract Documents; or there are liquidated damages payable by the Contractor; or there has been a violation of, or failure to comply with, the provisions of the Contract Documents.

#### Safety and Protection

Add the following to Article 10.1 of the General Conditions:

10.1.1 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 the certificate of final completion has been executed by the Owner, Architect, and Contractor.

#### Bonds

Add the following to Article 11.1 of the General Conditions:

The Contractor shall provide a Performance Bond and Payment Bond using the forms contained in the Project Manual. At the completion of the project, the Contractor shall provide a Material and Workmanship Bond using the bond form contained in the Project Manual.

#### Insurance

Delete Article 11.2.1 in its entirety. The Owner is not required to provide Liability or Property Insurance for the Project in addition to its existing insurance policies.

1. Unless otherwise provided in these Supplementary Conditions, Contractor shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by law). This insurance shall include the interests of Owner, Contractor and Subcontractors in the Work, shall insure against perils of fire and extended coverage, shall include 'all risk' insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or

replacement of any insured property (including fees and charges of Architects, architects, attorneys and other professionals). If not covered under the 'all risk' insurance or otherwise provided in these Supplementary Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by Contractor shall contain a provision that the coverage afforded will not be canceled or materially changed until at least thirty days' prior written notice has been given to the Owner. The Contractor shall maintain such policies of insurance continuously from the date specified in the Notice to Proceed until the Initiation of Operation.

2. Contractor shall purchase and maintain such boiler and machinery insurance or additional property insurance as required which will include the interests of Owner, Contractor, subcontractors, and Architect in the Work, all of whom shall be listed as insured or additional insured parties.
3. The form of policy for the property insurance provided by the Contractor shall be completed value. If the Owner is damaged by the failure of the Contractor to maintain such insurance, then the Contractor shall bear all reasonable costs properly attributable thereto.

#### Limitations on Architect's Authority and Responsibilities

1. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved", or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review, or judgment of the Architect as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents unless there is a specific statement indicating otherwise. The use of any such term or adjective shall not be effective to assign to the Architect any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of the General Conditions.
2. The Architect's recommendation for any payment, including final payment, shall not mean that Architect is responsible for Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident hereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of Contractor to perform or furnish work in accordance with the Contract Documents.

#### Tests and Inspections

Add the following to Article 13.4.1 of the General Conditions:

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

## Waiver of Claims

Add the following to Article 15.1.7 of the General Conditions:

15.1.7.1 The Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by the Architect, nor the issuance of a certificate of Substantial Completion, nor any payment by the Owner to the Contractor under the Contract Documents, nor any use or occupancy of the Work or any part thereof by the Owner, nor any act of acceptance by the Owner nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor the issuance of a notice of acceptability by the Architect, nor any correction of defective work by the Owner will constitute an acceptance of Work not in accordance with the Contract Documents or a release of the Contractor's obligation to perform the Work in accordance with the Contract Documents.

## Dispute Resolution

Delete Articles 15.3.1, 15.3.2, 15.3.3, and 15.3.4 of the General Conditions in their entirety and replace them with the following new Articles:

15.3.1 The chosen method for dispute resolution for this project is mediation. Mediation pursuant to this Article shall be treated as compromise and settlement negotiations for purposes of the Florida Rules and Evidence.

15.3.2 The parties shall endeavor to settle the dispute by mediation. The proceeding will be conducted in accordance with the then current Center For Public Resources ("CPR") Model Procedure for Mediation of Business Disputes, with the following exceptions:

- A. If the parties have not agreed within ten (10) days of the request for mediation on the selection of a mediator willing to serve, the CPR, upon the request of either party, shall appoint a member of the CPR Panels of Neutrals as the mediator, and
- B. Efforts to reach a settlement will continue until the conclusion of the proceeding, which is deemed to occur when: (a) a written settlement is reached, or (b) the mediator concludes and informs the parties in writing that further efforts would not be useful, or (c) the parties agree in writing that an impasse has been reached. Neither party may withdraw before the conclusion of the proceeding.

15.3.3 The parties regard the aforesaid obligation to mediate as essential provision of this Agreement and one that is legally binding on them. In case of a violation of such obligation by either party, the other may bring an action to seek enforcement of such obligation in any court of law having jurisdiction thereof.

15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the project is located, unless another location is mutually agreed upon. If the dispute has not been resolved by mediation as provided herein within one hundred twenty (120) days of the initiation of such mediation procedure, either party may initiate litigation upon ten (10) days' written notice to the other party.

15.3.5 All applicable statutes of limitation and defenses based upon the passage of time shall be tolled while the procedures specified in this Section are pending. The parties will take such action, if any, required to effectuate such tolling.

15.3.6 Litigation arising out of or related to this contract shall be governed by the laws of Florida and adjudicated in the courts of the County within which the project is located.

#### Arbitration

Delete Article 15.4 of the General Conditions in its entirety

#### Mutual Waiver of Consequential Damages and Waiver of Jury Trial

Add the following new Article 15.4 to the General Conditions

#### 15.4 Waiver of Consequential Damages and Waiver of Jury Trial

15.4.1 Except to the extent of liquidated damages payable by Contractor under this Agreement and the express third party claim indemnification obligations of the parties hereunder, in no event shall either Owner or Contractor be liable to the other party under any legal theory whatsoever for consequential, incidental, punitive or exemplary damages of any nature whatsoever.

15.4.2 The parties hereby expressly agree that all disputes, claims, and counterclaims relating to this Agreement and the project shall be litigated, adjudicated, or otherwise resolved without a jury. The parties expressly, voluntarily, and unequivocally waive any right they may have to a jury trial in connection with all disputes, claims, and counterclaims relating to this Agreement and the project.

**END OF SECTION**

**SECTION 00945**

**WORK CHANGE DIRECTIVE FORM**

**Work Directive No.:** \_\_\_\_\_

**Name of Project:** \_\_\_\_\_

**Agreement Date:** \_\_\_\_\_

**Owner:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

**Description of Change:**

**Reason for Change:**

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

**Method of Determining the Change in Contract Price**

- \_\_\_\_\_ Time and Materials
- \_\_\_\_\_ Unit Prices
- \_\_\_\_\_ Cost Plus Fixed Fee
- \_\_\_\_\_ Other

Estimated change in Contract Price = \$\_\_\_\_\_. If the change involves an additional increase, estimated amount is not to be exceeded without further authorization.

**Method of Determining the Change in Contract Time**

\_\_\_\_\_ Contractor's Records  
\_\_\_\_\_ Engineer's Records  
\_\_\_\_\_ As Specified Below  
\_\_\_\_\_ Other

Estimated change in Contract Time = \_\_\_\_\_ days. If the change involves an additional increase, estimated time is not to be exceeded without further authorization.

Recommended By:

\_\_\_\_\_  
CPH, Inc.

\_\_\_\_\_  
Date

Executed By:

\_\_\_\_\_  
Owner's Authorized Representative

\_\_\_\_\_  
Date

\_\_\_\_\_  
Contractor's Authorized Representative

\_\_\_\_\_  
Date

**END OF SECTION**

**SECTION 00950**  
**CHANGE ORDER FORM**

**Change Order No.** \_\_\_\_\_

**Project Name:** \_\_\_\_\_

**Bid No.:** \_\_\_\_\_

**Owner:** \_\_\_\_\_

**Contractor:** \_\_\_\_\_

**Agreement Date:** \_\_\_\_\_

This Change Order is necessary to cover changes in the Work to be performed under the Agreement. The Agreement, General Conditions, Supplementary Conditions, and Technical Specifications contained in the Project Manual apply to and govern all Work under this Change Order.W

**THE FOLLOWING CHANGES ARE MADE TO THE CONTRACT DOCUMENTS:**

1. Original Contract Price	\$	_____
2. Current Contract Price (Adjusted by Previous Change Orders)	\$	_____
3. Total Proposed Change in Contract Price	\$	_____
4. New Contract Price (Item 2 + Item 3)	\$	_____
5. Original Contract Time (Notice to Proceed to Substantial Completion)		_____ Days
6. Current Contract Time (Adjusted by Previous Change Orders)		_____ Days
7. Current Subst. Completion Date (Adjusted by Previous Change Orders)		_____
8. Total Proposed Change in Contract Time		_____ Days
9. New Contract Time (Item 6 + Item 8)		_____ Days
10. New Contract Substantial Completion Date (Item 7 + Item 8)		_____
11. Current Final Completion Date (Adjusted by Previous Change Orders)		_____
12. Current Contract Time From Substantial Completion to Final Completion		_____ Days
13. Total Proposed Change in Contract Time Subst. to Final Completion		_____ Days
14. New Contract Time to Subst. Final Completion (Item 12 + Item 13)		_____ Days
15. New Contract Final Completion Date (Item 10 + Item 14)		_____

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**CHANGES ORDERED**

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**ITEM 1**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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**ITEM 2**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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**ITEM 3**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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**ITEM 4**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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**ITEM 5**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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**ITEM 6**

Description of Change:

Reason for Change:

Change in Contract Price:     \$

Change in Contract Time:     Days

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CHANGE ORDER SUMMARY			
No.	Description	Change in Contract Price	Change in Contract Time
<b>TOTAL</b>		<b>\$</b>	<b>Days</b>

**WAIVER** This Change Order constitutes full and mutual accord and satisfaction for the adjustment of the Contract Price and Contract Time as a result of increases or decreases in cost and time of performance caused directly and indirectly from the change. Acceptance of this Waiver constitutes an agreement between OWNER and CONTRACTOR that the Change Order represents an equitable adjustment to the Agreement and that CONTRACTOR shall waive all rights to file a Contract Claim or claim of any nature on this Change Order. Execution of this Change Order shall constitute CONTRACTOR's complete acceptance and satisfaction that it is entitled to no more costs or time (direct, indirect, impact, etc.) pursuant to this Change Order.

**APPROVAL AND CHANGE ORDER AUTHORIZATION**

**ACKNOWLEDGMENTS**

The aforementioned change, and work affected thereby, is subject to all provisions of the original Agreement and specifically changed by this Change Order; and

It is expressly understood and agreed that the approval of the Change Order shall have no effect on the original Agreement other than matters expressly provided herein.

WITNESS to CONTRACTOR:

_____	_____ Contractor
_____	_____ Printed Name and Title of Officer
_____	_____ By (Signature)
_____	_____ Date  (Corporate Seal)

ATTEST:

_____	_____ Owner
(Signature)	_____ Printed Name and Title
_____	_____ By (Signature)
_____	_____ Date
(Seal)	_____

**END OF SECTION**

**SECTION 01110**  
**SUMMARY OF WORK**

**PART 1 GENERAL**

**1.01 Section Includes**

Summary of work, other contracts, work sequence, operation of existing facilities, use of premises, Owner furnished products, coordination, cutting and patching

**1.02 Summary of Work**

- A. The Project consists of the construction of over 2,600-ft of new access roads and turn lane, three new parking lots (11,000 SY (+/-)), one food truck parking area, two new softball fields, two new soccer fields, new tennis courts, new basketball courts (under a 17,710 SF pre-engineered roof), racquetball courts, concrete sidewalk, asphalt trail, electrical and plumbing for the new fields and courts, new water main, sanitary sewer, storm sewer, stormwater ponds, landscaping, site furnishings, and irrigation.
- B. Furnish all materials, equipment, tools, and labor which is reasonably and properly inferable and necessary for the proper completion of the Work, whether specifically indicated in the Contract Documents or not.
- C. Reference Section 01410 - Regulatory Requirements and Permits concerning permits secured by the Owner and permits to be secured by the Contractor. Other licenses or permits for construction facilities of a temporary nature that are necessary for the prosecution of the work shall be secured and paid for by the Contractor.
- D. Repair, replace, or otherwise settle with the Owner, if damage to property or existing facilities occurs, including damage to pavements, utilities, lawns, structures, etc.
- E. Construct the Project under a single unit price contract.

**1.03 Work Under Other Contracts**

- A. The Owner will hire contractor(s) to install the following Owner furnished items:
  - 1. Prefabricated restroom and concession building
  - 2. Soccer Goals
  - 3. Food Truck Area Tables and Seating
  - 4. Softball, Soccer, and Football Bleachers
  - 5. Playground Equipment
  - 6. Field striping

- B. This work by others will not start until the infrastructure (site concrete, electrical, water, sewer, and access roads have been installed and are available to use). The Contractor and Owner will meet to document the condition of the constructed infrastructure before allowing construction by others to commence (the Contractor will not be responsible for damage to completed work caused by other contractors hired by the Owner).

#### **1.04 Work Sequence**

- A. It is anticipated that the site plan approval / building approval may not be in hand when the construction contract is executed; however, the Contractor will be able to start on the following work:
  - 1. Clearing and grubbing
  - 2. Earthwork including stormwater ponds
  - 3. Storm sewer construction (including pipe, manholes, and inlets)
  - 4. Water Distribution System construction (including water main and hydrants)
  - 5. Sanitary sewer construction (including pipe and manholes)
  - 6. Construct the access road from Huey St. and the new parking lot that will be constructed south of the existing softball fields in order for the City to be able to use these areas for the July 4th 2024 holiday.
  - 7. Sequence demolition of the parking area and access driveway that serve the existing soccer fields on the east side of the site at Powell Rd. to take place after the new parking lot adjacent to Pond 4 and the access road to the new Pond 4 parking lot has been constructed.

#### **1.05 Operation of Existing Facilities**

- A. The public shall be able to access the following existing facilities at the site:
  - 1. Existing softball fields and tee ball fields at the west side of the site (the access to these fields can be via S. St. Clair St.)
  - 2. Existing soccer fields at the east side of the site.
- B. For the July 4th holiday in 2024, the public needs to be able to use the new access road from Huey St. and the new parking lot that will be constructed south of the existing softball fields. Provide temporary barricades and fencing as needed to protect the public from active construction areas and provide a temporary turn around and signs to guide users of the parking lot to and from Huey St.

#### **1.06 Contractor Use of Premises**

Confine operations at the site to areas permitted by applicable laws, ordinances, permits, and by the Contract Documents. Do not unreasonably encumber the site with materials or equipment. Do not load structures with weight that will endanger the structure. The Contractor shall assume full responsibility for protection and safekeeping of products stored on the job site.

### **1.07 Owner Furnished Products**

Owner furnished products will be installed by others. There are no Owner furnished products that are to be installed by the Contractor.

### **1.08 Coordination**

- A. The Contractor shall be fully responsible for the coordination of his work and the work of his employees, subcontractors, and suppliers and to assure compliance with schedules.
- B. The coordination requirements of this Section are in addition to the requirements of Section 00700, General Conditions, and 00800, Supplementary Conditions.
- C. It is the Contractor's responsibility to coordinate with all the utilities regarding locates, testing, or relocations.

### **1.09 Cutting and Patching**

- A. The Contractor shall, at no additional expense to the Owner, perform cutting and patching necessary to the completion of the Project. Perform cutting and patching in a manner to prevent damage to the structure or previously completed work.
- B. Refinish surfaces as necessary to provide an even finish.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## SECTION 01270

### MEASUREMENT AND PAYMENT

#### PART 1 GENERAL

##### 1.01 Description

- A. Payment for all Work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials, and performance of all operations relative to construction of this project, will be made under Pay Items listed herein. Work for which there is not a Pay Item will be considered incidental to the Contract and no additional compensation will be allowed.
- B. The Owner reserves the right to alter the Drawings, modify incidental work as may be necessary, and increase or decrease quantities of work to be performed to accord with such changes, including deduction or cancellation of any one or more of the Pay Items. Changes in the work shall not be considered as a waiver of any conditions of the Contract nor invalidate any provisions thereof. When changes result in changes in quantities of Work to be performed, the Contractor will accept payment according to Contract Unit Prices that appear in the original Contract.
- C. Quantities necessary to complete the work as shown on the Drawings or as specified herein shall govern over those shown in the Proposal. The Contractor shall take no advantage of any apparent error or omission in the Drawings or Specifications, and the Engineer shall be permitted to make corrections and interpretations as may be deemed necessary for fulfillment of the intent of the Contract Documents.
- D. The Engineer will make measurements and determinations as necessary to classify the work within pay items and determine the quantities for pay purposes; such decisions will be final after 3 days if the Contractor does not submit a written notice as defined in the following paragraph.
- E. If the Contractor differs with the Engineer's classification of the Pay Items or determination of quantities of the Pay Items, he must notify the Engineer in writing within 3 days of the time that the Contractor is informed of the Engineer's decision. Otherwise the Owner will not consider any such difference as a claim for payment.
- F. Failure on the part of the Contractor to construct any item to plan or authorized dimensions within the specification tolerances shall result in: reconstruction to acceptable tolerances at no additional cost to the Owner; acceptance at no pay; or, acceptance at reduced final pay quantity or reduced unit price, all at the discretion of the Engineer.
- G. Work shall not be considered complete until all testing has been satisfactorily completed and the item of work has demonstrated compliance with plans and specifications.

- H. A preliminary monthly application for payment shall be submitted to the Owner/Engineer for review five (5) days prior to the submittal for approval of the Contractor's monthly payment request.
- I. Where FDOT pay item numbers are shown on the bid form, they generally follow FDOT pay item number formatting; however, they are only provided in order to use them for pay application purposes. FDOT pay item descriptions do not apply; utilize the descriptions on the bid form and within this section to determine the work associated with each pay item.

## **PART 2 PAY ITEMS**

### **2.01 Bonds and Insurance**

- A. Work Includes
  - Procuring bonds and insurance for the project including the performance bond and payment bond.
- B. Unit of measurement is lump sum.
- C. Payment of this item shall be after satisfactory certificates of insurance and the bonds have been provided.

### **2.02 Mobilization**

- A. Work Includes
  - Preparatory work and operations in mobilizing for beginning Work on the Project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies and incidentals to the project site, plus permits, and fees. Also included are temporary utilities/facilities, staging and storage areas, survey and layout, project signs, safety equipment and all other items not specifically identified under other bid items which are necessary for the construction, and compliance with administrative and regulatory requirements. Also included are any investigations the Contractor deems necessary to determine the horizontal and vertical elevations of existing utilities that will be connected to, crossed, or otherwise be located in the vicinity of the proposed construction. In the event sidewalk or pavement is impacted in order to conduct these investigations, the cost of traffic control and restoration is to be included in this item.
- B. Unit of measurement is lump sum, based on mobilization to the job site and upon starting the utility location / verification work. Payment of this item shall be up to 25% per month for the first four months once mobilization and utility verification work has started. The Owner is the sole determiner of the percentage of payment to be made.

### **2.03 Preconstruction Topographic Surveying**



A. Work Includes

Conducting the preconstruction surveying of portions of the overall site in order to document existing elevations across the site. Includes providing ACAD files to the Owner.

B. Unit of measurement is lump sum.

**2.04 Record Drawings**

A. Work Includes

Submittal of preliminary and final Record Drawings.

B. Unit of measurement is lump sum, based on record drawings provided for various portions of the Work (for example partial record drawings needed for water main and sanitary sewer clearance). Payment will not be made until satisfactory partial and final record drawings have been provided. The Owner is the sole determiner of the percentage of payment to be made under this item based on its estimate of the percentage of the overall record drawings that have been completed.

**2.05 Demobilization, Cleanup, Project Closeout (Incl. Material and Workmanship Bond)**

A. Work Includes

The movement of personnel, equipment, surplus materials from the project site, final site cleanup, cleanup and restoration of staging and storage areas, providing required closeout documents such as completion certificates, the material and workmanship bond, and manufacturer operation and maintenance instructions.

B. Unit of measurement is lump sum.

**2.06 Preconstruction Video**

A. Work Includes

Preconstruction documentation via digital recording plus digital color photographs necessary to pick up detail not easily visible or apparent on the DVD.

B. Unit of measurement is lump sum.

**2.07 Temporary Traffic Control**

A. Work Includes

The construction and maintenance of any necessary detour facilities; the providing of necessary facilities for access to residences and businesses along the project; the furnishing, installation and maintenance of traffic control and safety devices

during construction; daily inspections of the traffic control devices (including nighttime inspections); replacement of all equipment and devices found not to be conforming with approved standards during the inspection; sidewalk closures; the control of dust, and any other special requirements for safe and expeditious movement of traffic as may be called for on the plans. The term “Temporary Traffic Control” (also referred to as “Maintenance of Traffic”) shall include all such facilities, devices, and operation as are required for the safety and convenience of the public as well as for minimizing public nuisance; all as required by the FDOT, the Engineer and the Owner. This work shall also consist of the removal of existing pavement markings necessary in order to implement traffic control, temporary signs, and the removal or relocation of existing signs in order to implement traffic control. This item also includes any adjustments necessary to the traffic control devices under emergency conditions and temporary fencing, signs, and barricades as needed to facilitate the public’s use of a portion of the site for the July 4 holiday in 2024.

- B. Unit of measurement is lump sum, based on temporary traffic control provided for the various areas listed on the bid form as needed for construction, investigation of existing utilities, and grouting / taking out of service existing water mains. Payment of this item shall be made based on the Owner’s estimation of the percentage of work completed.

**2.08 Erosion and Sediment Control**

- A. Work Includes

Preparation and implementation of stormwater pollution prevention control plan, including monitoring, inspecting, and reporting, providing erosion and sediment control measures, preparing and filing EPA NPDES NOI and NOT forms, and providing required contractor certifications. Also includes hay bales, filter bags, and filter fabric as needed for supplemental inlet protection and to supplement silt fence, including replacement and maintenance needed during construction. Includes silt fence where needed to supplement the silt fence shown at Ft. Mellon Park. In the event temporary staging and storage areas are used, any required erosion and sediment control measures are to be included in this item.

- B. Unit of measurement is lump sum.
- C. Payment of this item shall be made under the following schedule:

<b>Payment Application No.</b>	<b>Allowable Percent of the Lump Sum Price to be Paid Per Application for Payment</b>
1	20
2-6	10
7 -12	5

**2.09 Silt Fence**

- A. Work Includes

Furnishing and installing silt fence including fence reinstallation, replacement, or other repairs and maintenance needed throughout construction, removal of silt fence at the completion of construction, restoration.

- B. Unit of measurement is linear feet.
- C. Single payment will be made only, based on linear footage initially installed at the park. There will not be additional payment for fence that is installed more than once at a location as needed for reinstallations, replacement, or repairs.

## **2.10 Clearing and Grubbing**

- A. Work Includes  
Clearing, grubbing, disposal of debris.
- B. Unit of measurement is lump sum, based on the Owner's determination of the percent complete.

## **2.11 Demolition**

- A. Work Includes  
Removal and disposal of existing concrete pads, parking areas, driveway aprons.
- B. Unit of measurement is lump sum

## **2.12 Regular Excavation (ACAD Measurement Based on LIDAR Data and Proposed Elevations and 25% Increase to ACAD Measurement)**

- A. Work Includes  
Survey, layout, excavation (including surface stripping as necessary). Also includes any examination(s) of the soils within these limits that the Contractor deems necessary to familiarize themselves with the conditions of the soils (depth, extent, character) and assess the conditions under which the Contract Work is to be performed. Includes disposal of unsuitable material or surplus excavated material. Also includes any examination(s) of the soils within these limits that the Contractor deems necessary to familiarize themselves with the conditions of the soils (depth, extent, character) and assess the conditions under which the Contract Work is to be performed.
- B. Unit of measurement is cubic yards, measured in place. The quantity will be based on the quantity on the bid form which is an ACAD measurement. Where payment for excavation is to be paid for on a cubic yard basis for the item of excavation, the basis is the required preconstruction topographic survey and constructed improvements, measured in ACAD Civil 3D. The Engineer will generate the cut and fill reports and provide the reports and ACAD files to the Contractor for its

review (the intent is to share information and be an open process). The measurement will include only material actually removed below the original ground line, within the lines and grades indicated in the Plans or directed by the Engineer. The original ground line used in the computations will be as determined prior to excavation, and no allowance will be made for subsidence of material below the surface of the original ground.

**2.13 Embankment (Fill Placement) ACAD Measurement Based on LIDAR Data and Proposed Elevations and 25% Increase to ACAD Measurement)**

A. Work Includes

Survey, layout, furnishing and installing suitable material as necessary for the construction. Work also includes grading, compaction, and testing of suitable fill material. Includes compaction and testing of all fill placement and disposal of unsuitable material or surplus excavated material. Also includes finish grading (to uniform smooth surface, positive drainage), filling depressions, dressing with suitable topsoil as required, compaction and testing.

B. Unit of measurement is cubic yards, measured in place.

**2.14 Borrow Material (Allowance)**

A. Work Includes

Borrow excavation shall consist of locating and obtaining suitable material from offsite borrow sources, subject to the approval of the Engineer. Borrow material includes approved material required for the construction of embankment or for other portions of the work in excess of the quantity of usable material available from required excavations. Work includes offsite borrow material excavation, transport to the project of approved borrow material, and utilization, placement, compaction, and testing required for the construction of embankment and replacement of unsuitable material or for other portions of the work where there is not available onsite from required excavations. Also includes any examination(s) of the soils within these limits that the Contractor deems necessary to familiarize themselves with the conditions of the soils (depth, extent, character) and assess the conditions under which the contract work is to be performed.

B. Unit of measurement is cubic yards, truck measure, based on delivery tickets.

C. Payment will be made at the contract unit price per cubic yard of borrow material based on delivery tickets provided by the Contractor and documented at time of delivery by the Owner's representative. Delivery tickets provided that were not confirmed at the time of delivery by the Owner's representative may be rejected at the Owner's discretion and considered invalid, in which case the material associated with the undocumented delivery ticket will be considered to be material that was not delivered to the project and used for the construction and ineligible for payment.

## **2.15 Allowance - Additional Earthwork (If Needed)**

### **A. Work Includes**

Excavation (including surface stripping as necessary) and fill placement of all suitable materials necessary for the construction. Also includes any examination(s) of the soils within these limits that the Contractor deems necessary to familiarize themselves with the conditions of the soils (depth, extent, character) and assess the conditions under which the Contract Work is to be performed. Includes compaction and testing of all fill placement and disposal of unsuitable material or surplus excavated material.

### **B. Unit of measurement is cubic yards, measured in place, at the completion of earthwork activities, including compaction.**

## **2.16 Stabilized Subgrade or Crushed Concrete Subgrade**

### **A. Work Includes**

Survey, layout, furnishing and installing, grading, mixing, and compacting stabilized subgrade material. The amount and nature of the stabilizing material to be added shall be determined by the Contractor.

### **B. Unit of measurement is square yards.**

### **C. Whenever coring or other data indicates that the sub-base thickness is less than called for on the Plans (thicknesses required by the plans shall be considered to be minimum thicknesses), or does not otherwise meet the Specifications, the Contractor will correct the deficiency by replacing the full thickness for a length extending 50' from each end of the deficient area. The Contractor will receive no compensation for any sub-base so removed, for work in removing such sub-base, and will be paid only for accepted sub-base within the allowable limit. Sub-base in excess of the thickness called for on the Plans will be allowed to remain in place and no extra compensation paid to the Contractor, provided the excess thickness does not cause unsatisfactory conditions and is compatible with the adjacent work.**

## **2.17 Limerock Base or Crushed Concrete Base**

### **A. Work Includes**

Survey, layout, furnishing and installing, grading, and compacting the base course material.

### **B. Unit of measurement is square yards.**

### **C. Whenever coring or other data indicates that the base is less than called for on the Plans (thicknesses required by the plans shall be considered to be minimum thicknesses), or does not otherwise meet the Specifications, the Contractor will correct the deficiency by replacing the full thickness for a length extending 50' from**

each end of the deficient area. The Contractor will receive no compensation for any base so removed, for work in removing such base, and will be paid only for accepted pavement within the allowable limit. Base in excess of the thickness called for on the Plans will be allowed to remain in place and no extra compensation paid to the Contractor, provided the excess thickness does not cause unsatisfactory conditions and is compatible with the adjacent work.

#### **2.18 Type SP Structural Course / Surface Course (SP-12.5, SP-9.5)**

A. Work Includes

Survey, layout, furnishing and installing, grading of asphalt concrete pavement and testing.

B. Unit of measurement is square yards.

C. Whenever coring or other data indicates that the pavement thickness is less than called for on the Plans (thicknesses required by the plans shall be considered to be minimum thicknesses), or does not otherwise meet the Specifications, the Contractor will correct the deficiency by replacing the full thickness for a length extending 50' from each end of the deficient area, or when permitted by the Engineer, by overlaying. The Contractor will receive no compensation for any pavement so removed, for work in removing such pavement, and will be paid only for accepted pavement within the allowable limit. Pavement in excess of the thickness called for on the Plans will be allowed to remain in place and no extra compensation paid to the Contractor, provided the excess thickness does not cause unsatisfactory conditions and is compatible with the adjacent work.

#### **2.19 Asphalt Friction Course, Type SP 12.5**

A. Work Includes

Survey, layout, furnishing and installing, compaction, rolling, leveling, finishing, testing.

B. Unit of measurement is square yards.

#### **2.20 Storm Inlets**

A. Work Includes

Survey, layout, excavation, dewatering, furnishing and installing precast inlet base, inlet top, accessories, connections, interior and exterior coatings, backfilling, compaction, and testing.

B. Unit of measurement is each.

#### **2.21 Storm Manholes**

A. Work Includes

Survey, layout, excavation, dewatering, furnishing and installing precast manhole, accessories, connections, interior and exterior coatings, backfilling, compaction, and testing.

B. Unit of measurement is each.

**2.22 Storm Sewer Pipe**

A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing pipe, wrapping pipe joints with filter fabric, disposal of unsuitable or excess material, backfill, replacement of existing structures such as signs or fences encountered, compaction, testing (including leakage tests).

B. Unit of measurement is linear feet.

**2.23 Mitered End Sections**

A. Work Includes

Forming, furnishing and installing, curing, reinforcement, bar grates (if required on plans).

B. Unit of measurement is each.

**2.24 Underdrain Type II (12" Pipe) (Furnish and Install)**

A. Work Includes

Survey, layout, excavation, dewatering, furnishing and installing underdrain pipe, coarse aggregate filter material, wrapping the trench with filter fabric, disposal of unsuitable or excess material, backfill, compaction, replacement of existing structures such as signs or fences encountered, testing.

B. Unit of measurement is linear feet.

**2.25 Underdrain Cleanouts**

A. Work Includes

Survey, layout, excavation, dewatering, installation of cleanout wye, riser pipe and cap, connections to the underdrain, backfill, compaction, installing cleanout cap and collar.

B. Unit of measurement is each.

**2.26 Underdrain Header Pipe (Furnish and Install)**

A. Work Includes

Survey, layout, excavation, dewatering, furnishing and installing pipe, disposal of unsuitable or excess material, backfill, compaction, replacement of existing structures such as signs or fences encountered, testing.

B. Unit of measurement is linear feet.

**2.27 Concrete Curb and Gutter Type 'F'**

A. Work Includes

Forming, furnishing and installing, curing, sawcutting joints, testing.

B. Unit of measurement is linear feet.

**2.28 Concrete Valley Gutter**

A. Work Includes

Forming, furnishing and installing, curing, sawcutting joints, testing.

B. Unit of measurement is linear feet.

**2.29 Standard Concrete Sidewalk (Including Ramps and Warning Mats), Bench, and Trash Receptacle Concrete Pads (4") (Furnish and Install)**

A. Work Includes

Grading, compaction, forming, furnishing and installing, placing, finishing and curing new concrete sidewalk (including ramps and detectable warning surfaces at ramps), miscellaneous concrete pads, sawcutting joints.

B. Unit of measurement is square yards.

**2.30 Concrete Sidewalk (4" Thick Thickened Edge) (Furnish and Install)**

A. Work Includes

Survey, layout, forming, furnishing, installing, finishing and curing new concrete sidewalk including the thickened edge, sawcutting joints.

B. Unit of measurement is square yards.

**2.31 Concrete Pads / Driveway / Heavy Duty Concrete (Furnish and Install)**

A. Work Includes



Grading, compaction, forming, furnishing and installing, placing, finishing and curing new concrete driveway, sawcutting joints. Includes expansion joint material where installed adjacent to existing driveway.

B. Unit of measurement is square yards.

### **2.32 Concrete Riprap**

A. Work Includes

Subgrade preparation, furnishing and installing material, compacting.

B. Unit of measurement is cubic yards.

### **2.33 Wheel Stops**

A. Work Includes

Furnishing and installing wheel stops at new parking spaces.

B. Unit of measurement is each.

### **2.34 Chain Link Fence**

A. Work Includes

Survey, layout, furnishing and installing corner posts, end posts, pull posts, line posts, rails, chain link fabric, tension wire, tie wire, barb wire attachment, connection to existing fence, concrete bases for posts.

B. Unit of Measurement is linear feet.

### **2.35 Double Swing Gate**

A. Work Includes

Furnishing and installing posts, rails, cane bolts and cane bolt anchor bases, chain link fence fabric, barb wire attachment, concrete bases for posts.

B. Unit of Measurement is each.

### **2.36 Sodding**

A. Work Includes

Soil preparation, furnishing and installing sod, sanding joints, fertilizing, watering, and mowing.

- B. Unit of measurement is square yards. The quantity of sodding shown on the Bid Form is generally based on grassing the areas of construction. Should the Contractor disturb more areas for its convenience (construction access and stockpiling), then the Contractor shall restore (including grassing) these areas at no additional cost to the Owner.

### **2.37 Landscaping**

- A. Work Includes

Soil preparation, bedding, furnishing and installing plants, mulch, staking (where required), watering, fertilizing, maintenance.

- B. Unit of measurement is each. Payment will be made in accordance with the type of trees, shrubs, and ground cover as indicated on the Bid Form.

### **2.38 Irrigation**

- A. Work Includes

Connection to water source, connection to electrical, furnishing and installing main line, tubing, irrigation heads, controllers, valves, accessories, testing.

- B. Unit of measurement is lump sum.

### **2.39 Signs (Furnish and Install)**

- A. Work Includes

Furnishing and installing sign plates, posts, accessories, and foundations.

- B. Unit of measurement is each.

### **2.40 Pavement Markings (Striping)**

- A. Work Includes

Furnishing and installing temporary and permanent thermoplastic pavement marking installation in areas where new paving occurs. New markings to tie to existing markings.

- B. Unit of measurement is linear feet.

### **2.41 Pavement Markings (Arrows and Messages)**

- A. Work Includes

Furnishing and installing temporary and permanent thermoplastic pavement marking installation in areas where new paving occurs.

- B. Unit of measurement is each (per each arrow or message).

**2.42 Painted Pavement Markings (4" White at Parking Stalls)**

- A. Work Includes

Furnishing and installing new painted pavement markings at parking areas. Where applicable, new markings are to tie to existing markings.

- B. Unit of measurement is linear feet.

**2.43 Handicap Parking Stall Striping (Painted) (Aisle Striping and Handicap Symbol) (Furnish and Install)**

- A. Work Includes

Furnishing and installing pavement markings and symbols at the new handicap parking stalls and aisles between the stalls.

- B. Unit of measurement is each (per parking stall).

**2.44 Remove Existing Main (Water Main, Force Main, Sanitary Sewer)**

- A. Work Includes

Dewatering, excavation, isolating the existing main, cutting and removing the existing pipeline, plugging ends of connecting pipeline, disposal of pipeline contents, pipe, fittings, and accessories, backfilling, compaction, and restoration.

- B. Unit of measurement is linear feet.

**2.45 Remove Existing Manhole**

- A. Work Includes

Excavation, dewatering, disconnecting pipelines, removal and disposal of existing structure and accessories, restoration.

- B. Unit of measurement is each.

**2.46 1" Water Service Line (Open Cut) (PE) (Furnish and Install)**

- A. Work Includes

Survey, layout, dewatering, furnishing service line piping, excavation, fittings, accessories, connection to service saddle, connection to curb stop, backfilling, compaction, restoration after completion of operations, disinfection, and testing.

- B. Unit of measurement is linear feet.

**2.47 Water Main (Open Cut) (PVC) (Unrestrained) (Furnish and Install)**

- A. Work Includes

Survey, layout, dewatering, sheeting, shoring, bracing, excavation, furnishing and installing pipeline, identification and warning tape, locate wire, disposal of unsuitable or excess material, suitable backfill, compaction, replacement of existing structures such as signs or fences encountered, connections, disinfection, bacteriological and leakage testing.

- B. Unit of measurement is linear feet.

**2.48 Water Main (Open Cut) (PVC) (Restrained)**

- A. Work Includes

Survey, layout, dewatering, sheeting, shoring, bracing, excavation, furnishing and installing pipeline, identification and warning tape, locate wire, thrust restraint at joints, disposal of unsuitable or excess material, suitable backfill, compaction, replacement of existing structures such as signs or fences encountered, connections, disinfection, bacteriological and leakage testing.

- B. Unit of measurement is linear feet.

**2.49 Ductile Iron Bends, Tees, Wyes, Reducers, Plugs, Caps (Water Main) (Furnish and Install)**

- A. Work Includes

Survey, layout, dewatering, clearing, excavation, furnishing and installing ductile iron fittings, thrust restraint, identification and warning tape, backfill, compaction, finish grading, disinfection, bacteriological and leakage testing.

- B. Unit of measurement is each based on the type of ductile iron fitting and size as shown on the Bid Form.

**2.50 Temporary Jumper Connection**

- A. Work Includes

Excavation, dewatering, furnishing and installing fittings, pressure gauges, double check backflow preventer assembly, meter, corporation stops, service saddles, connection to existing water main, accessories, removal and restoration after construction, backfill, compaction.

- B. Unit of measurement is each.

### **2.51 Service Saddle and Corporation Stop**

A. Work Includes

Dewatering, excavation, tapping existing or new main, furnishing and installing fitting, corporation stop, locate wire, disinfection, backfilling, compacting, and restoration.

B. Unit of measurement is each.

### **2.52 Tapping Sleeve and Valve**

A. Work Includes

Survey, layout, dewatering, clearing, excavation, furnishing and installing tapping sleeve, valve and valve box, tapping of main line, thrust restraint, disinfection (at water main), backfill, compaction, finish grading, and testing.

B. Unit of measurement is each.

### **2.53 Close Valve, Cut and Connect to Existing Water Main**

A. Work Includes

Dewatering, excavation, closing existing valve, cutting and connecting to the existing main, disinfection, backfilling, compaction, and restoration.

B. Unit of measurement is each.

### **2.54 Gate Valve**

A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing valve and valve box, accessories, thrust restraint, backfill, compaction, testing.

B. Unit of measurement is each.

### **2.55 Fire Hydrant Assembly**

A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing fitting, valve and box, hydrant, concrete shear pad, and blue reflective pavement marker at hydrant, painting of hydrant, bedding rock, backfill, accessories, thrust restraint, backfill, compaction, testing.

B. Unit of measurement is each.

## **2.56 Blowoff Assembly**

### A. Work Includes

Dewatering, excavation, furnishing and installing polyethylene tubing, fittings, blowoff valve, accessories, meter box, meter box foundation, backfilling, compaction, thrust restraint, disinfection, testing.

### B. Unit of measurement is each.

## **2.57 Fire Department Connection**

### A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing fitting, riser pipe, and connection assembly, bedding rock, backfill, accessories, thrust restraint, compaction, testing.

### B. Unit of measurement is each.

## **2.58 Line Stop Assembly**

### A. Work Includes

Survey, layout, dewatering, excavation, pipe boring, furnishing and installing temporary valves or plugs, recovery of the temporary valves and plugs, and sealing of the bore hole with a permanent plug, backfill, compaction, testing.

### B. Unit of measurement is each.

## **2.59 Cut and Cap Existing Water Main (Restrained Cap / Thrust Collar)**

### A. Work Includes

Isolate active main, dewatering, excavation, cutting of pipe and disposal of pipe contents, capping the existing pipeline, furnishing and installing thrust restraint including concrete thrust collar and tie rods, disinfection, dechlorination, bacteriological and leakage testing, backfill, compaction, and restoration.

### B. Unit of measurement is each.

## **2.60 Bypass Pumping**

### A. Work Includes

Furnishing and installing suction and discharge lines, temporary plugs, and accessories as needed to divert sanitary sewer flows around work areas, with

discharge to City approved manholes or lift stations, removal of equipment and restoring normal flow.

- B. Unit of measurement is lump sum.

#### **2.61 Sanitary Sewer Pipe**

- A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing pipeline, disposal of unsuitable or excess material, suitable backfill, compaction, pipeline identification and warning tape, connections to structures, replacement of existing structures such as signs or fences encountered, testing.

- B. Unit of measurement is linear feet.

#### **2.62 Sanitary Sewer Manhole**

- A. Work Includes

Survey, layout, dewatering, excavation, furnishing and installing precast manhole, connections, backfilling, compaction, manhole invert concrete bench, interior and exterior coatings, and testing.

- B. Unit of measurement is each.

#### **2.63 Connect to Existing Sanitary Sewer Manhole**

- A. Work Includes

Survey, layout, dewatering, excavation, coring existing manhole, installing water tight collar and connector, reconstruction of interior bench at manhole invert, grouting, accessories, backfilling, restoration, testing.

- B. Unit of measurement is each.

#### **2.64 Bench**

- A. Work Includes

Furnishing and installing new benches on the new concrete pads per manufacturer's requirements, including mounting hardware and accessories.

- B. Unit of measurement is each. Note: payment for the concrete pads shall be paid for under the separate pay item (item 2.22) called "Concrete Sidewalk (4" Thick Plus Thickened Edge), Bench and Trash Receptacle Pads, and Mailbox Pads (4" Thick) (Furnish and Install)".

## **2.65 Trash Receptacle**

### **A. Work Includes**

Furnishing and installing trash receptacle on the new concrete pads per manufacturer's requirements, including mounting hardware and accessories per manufacturer's requirements.

### **B. Unit of measurement is each. Note: payment for the concrete pads shall be paid for under the separate pay item (item 2.22) called "Concrete Sidewalk (4" Thick Plus Thickened Edge), Bench and Trash Receptacle Pads, and Mailbox Pads (4" Thick) (Furnish and Install)".**

## **PART 3 EXECUTION - Not Used**

**END OF SECTION**



## SECTION 01310

### ADMINISTRATIVE REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 Section Includes

Meetings, construction progress documentation, submittals.

##### 1.02 Related Sections

- A. Section 01770 - Contract Closeout
- B. Section 01780 - Record Drawings

##### 1.03 Preconstruction Meeting

The Owner will schedule a preconstruction meeting prior to beginning the Work to review shop drawing procedures, submittal requirements, and construction administration requirements (project coordination and communication). The Contractor shall bring to the preconstruction meeting the proposed construction schedule, which will be reviewed with the Owner during the meeting.

##### 1.04 Definitions

- A. Shop Drawings - Shop drawings are original drawings, prepared by the Contractor, a subcontractor, supplier, or distributor, which illustrate some portion of the Work; showing fabrication, layout, setting, or erection details. Shop drawings shall be prepared by a qualified detailer and shall be identified by reference to sheet and detail numbers on the Contract Drawings
- B. Product Data - Product data are manufacturer's standard schematic drawings and manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data. Catalog sheets, brochures, etc., shall be clearly marked to identify pertinent materials, products, or models.
- C. Samples - Samples are physical examples to illustrate materials, equipment, or workmanship and to establish standards by which work is to be evaluated.

##### 1.05 Submittal Requirements

- A. Prior to submission, thoroughly check shop drawings, product data, and samples for completeness and for compliance with the Contract Documents. Verify all field measurements, quantities, dimensions, specified performance criteria, fabrication, shipping, handling, storage, assembly, installation, and safety requirements.

- B. Coordinate the submittals with the requirements for other related work.
- C. Notify the Engineer, in writing at the time of submission, of deviations in submittals from the requirements of the Contract Documents. The Contractor's responsibility for deviations in submittals from the requirements of the Contract Documents is not relieved by the Engineer's review of submittals, unless the Engineer gives written acceptance of specific deviations.
- D. Submit electronic copies (PDF format) of each shop drawing and product data.
- E. Where a specific product manufacturer and model number is listed in individual specification sections and is proposed by the Contractor to be used, full submittal of product data is not required. In this case, submit in letter format the name of the product, manufacturer, model number, specification section, and name of project. Certify the identified product is proposed to be used in the project.
- F. Shop drawings, product data, and samples shall be accompanied by a letter of transmittal referring to the name of the project and to the specification page number and/or Drawing number for identification of each item. Submittals for each type of work shall be numbered consecutively, and the numbering system shall be retained throughout all revisions.
- G. Submittals shall bear the Contractor's stamp of approval certifying that they have been checked and indicate appropriate specification section and/or drawing location. Submittals without the Contractor's initialed or signed certification stamp and submittals which, in the Engineer's opinion, are incomplete, contain numerous errors or have not been properly checked, will be returned unchecked by the Engineer for resubmission.
- H. Begin no work which requires submittals until return of submittals with Engineer stamp and printed name or signature indicating the submittal has been approved.

#### **1.06 Engineer Review of Submittals**

- A. Engineer's review and approval of submittals will not extend to means, methods, techniques, sequences, procedures of construction or to safety precautions.
- B. The review and approval of a separate item will not indicate approval of the assembly in which the item functions. Engineer's review and approval of submittals shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents.
- C. The Engineer will review submittals with reasonable promptness. The Engineer's review of submittals shall not be construed as a complete check and shall not relieve the Contractor from responsibility for complete compliance with the Contract requirements.

- D. No corrections, changes, or deviations indicated on submittals reviewed by the Engineer shall be considered as a change order.
- E. Where review of submittals is required by the Owner or other agencies, the Engineer will forward the appropriate submittal(s) to these parties after Engineer review. Once review of all parties is complete, the submittal(s) will be returned to the Contractor reflecting the review of all parties
- F. If the submittal is not satisfactory, one copy of the submitted item will be retained by the Engineer and all other copies returned to the Contractor for appropriate action.
- G. In the event a third submittal is required, due to previous submittals of incomplete or incorrect data or not in compliance with the Contract Documents, the Contractor will be charged one-half of the cost incurred by the Engineer for the review of the third submittal. The Contractor shall bear the total cost incurred by the Engineer for all subsequent reviews. The Engineer costs charged to the Contractor will be at the cost plus rate generally charged by the Engineer and will be deducted by the Owner from payments due to the Contractor.
- H. Distribution of copies of acceptable submittals will be as mutually determined by the Contractor, Owner, and Engineer during or following the preconstruction conference.

#### **1.07 Progress Meetings**

- A. The frequency of progress meetings shall be determined during the preconstruction meeting. As a minimum, progress meetings shall be held once per month during construction.
- B. The Contractor and Owner shall attend the progress meetings.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## SECTION 01315

### PRECONSTRUCTION VIDEO

#### PART 1 GENERAL

##### 1.01 Description

- A. Provide continuous color audio and video recording along the entire length of all proposed work areas prior to construction to serve as a record of pre-construction conditions.
- B. Supplement audio and video recording with digital color photos for areas which require details not ascertainable on the recorded video.

##### 1.02 Definitions

Construction Area = All areas used for construction of the proposed improvements, temporary construction, stockpile areas, staging and storage areas, and entry and exit points used by equipment, delivery vehicles, service vehicles, and other vehicles used for transport of labor, equipment, and materials to the job site.

##### 1.03 Qualifications

The preconstruction audio-video recording shall be of professional quality that will clearly log an accurate visual description of existing conditions. Any portion of the digital recording that is determined by the Owner to be not acceptable in the documentation of the existing condition shall be re-recorded at no additional cost to the Owner.

#### PART 2 PRODUCTS

##### 2.01 General

- A. The digital recording equipment shall capture existing conditions as an individual movie file (.MP4, .MPG, .WMV, .MOV or approved equal). The files shall be saved in digital format on a portable USB hard/flash drive or approved equal. The files shall be able to be played back on any Windows compatible computer.
- B. The video shall be recorded in real time and the date and time of the recording shall be displayed on the video.
- C. The video file names shall be referenced in the recording report generated in PDF format. The report shall identify locations of where the video was recorded and the time location on the video at each recording location.

## **PART 3 EXECUTION**

### **3.01 General**

- A. The recordings shall contain coverage of all surface features located within the construction area and extend outward a minimum of 30-ft outside the construction area plus all off-road access routes used to reach the construction area. The recording shall include all surface conditions supported by appropriate audio description.
- B. The surface features documented in the recordings shall include, but not be limited to, all driveways, sidewalk, curb, gutter, buildings, walls, storage sheds, swales, culverts, headwalls, landscaping, trees, shrubbery, pull boxes, valve boxes, concrete pads, power poles, guy wires, mailboxes, and fences.
- C. The recordings shall also document the existence or nonexistence of any faults, fractures, or defects, and existing man-made material such as debris, construction stockpiles, trash, and fuel containers.
- D. Each video recording shall be a simultaneous recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the feature being shown in the video portion of the recording. The audio recording also shall be free from any conversations between the camera operator and any other production technicians.
- E. Each video shall have a log of that video's contents. The log shall describe the various segments of coverage contained on that video in terms of the names of streets or easements, coverage beginning and end, and directions of coverage.

### **3.02 Recording Schedule**

- A. The recording shall be performed prior to the placement of any construction materials or equipment on the proposed construction site. Coordinate the scheduling of the preconstruction video recording with the Owner.
- B. The Contractor shall coordinate the video recording with the construction schedule so that those portions of the construction that will be completed first will be recorded first.
- C. Off road access routes to and from the construction area shall be recorded prior to mobilizing to work areas.
- D. The Contractor shall deliver the video recordings to the Owner upon their completion.

### **3.03 Visibility**

All recordings shall be performed during times of good visibility. No recording shall be done during periods of significant precipitation, mist, or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subject, and to produce bright, sharp video recordings of those subjects. No recording shall be performed when more than 10% of the area to be recorded contains debris or obstructions unless otherwise authorized by the Owner.

### **3.04 Continuity of Coverage**

- A. In order to increase the continuity of the coverage, the coverage shall consist of a single, continuous, unedited recording which begins at one end of a particular construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized, interrelated sequence of recordings at various positions along that proposed construction area.
- B. The average rate of travel during a particular segment of coverage (e.g., coverage of one side of the street) shall be directly proportional to the number, size, and value of the surface features within that construction area's zone of influence.

### **3.05 Camera Height and Stability**

When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall not be more than 10 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause any unsteady picture.

### **3.06 Camera Control**

Camera pan, tilt, zoom-in, and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during video playback.

### **3.07 Viewer Orientation Techniques**

The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of all visible house and building addresses shall be utilized. In easements where the proposed construction location will not be readily apparent in the recorded video, highly visible yellow flags shall be placed in such a fashion as to clearly indicate the proposed centerline of construction.

### **3.08 Areas to be Video Recorded**

- A. When video recording on private property, the Contractor shall give the Owner sufficient prior notice of such entry so that property owners may be advised of, and their permission obtained for, the Work.

- B. All video recording shall be done during regular business hours, unless otherwise specified by the property owner or the Owner. The Contractor shall enter and leave property in a professional and orderly, workmanlike manner.

**END OF SECTION**

## SECTION 01320

### PROJECT COMPLETION SCHEDULE

#### PART 1 GENERAL

##### 1.01 Section Includes

Project completion scheduling

##### 1.02 Submittals

- A. Prior to construction, prepare a schedule showing all major activities needed to complete project. Include major material and equipment order and delivery times. Submit to Owner no later than the date of the preconstruction conference.
- B. Schedule to utilize Critical Path Method formatted by establishing a precedence diagram which is time scaled. Include on schedule activity start dates, stop dates, and duration; critical path; float; delivery schedules. Include submittal dates and durations for components with extended lead times in schedule.
- C. Include on the schedule a minimum float of 1 day every 3 weeks during construction.
- D. Project substantial and final completion dates shown on schedule shall be same as or earlier than the contractual dates.

#### PART 2 PRODUCTS - Not Used

#### PART 3 EXECUTION

##### 3.01 Monitoring and Updating of Schedule

- A. Float shown on the schedule belongs to the project.
- B. Progress data shall be accumulated to update the schedule on a monthly basis, prior to submittal of the application for payment. Progress data shall include:
  - 1. Activities started
  - 2. Activities completed.
  - 3. Predicted activity starts
  - 4. Predicted activity completions
  - 5. Changes in original duration for specific activities
  - 6. Changes in activity sequences
  - 7. Percent complete on activities
- C. Update of schedule to include effect of the progress projected for the next two (2) reporting periods.

**END OF SECTION**



**SECTION 01410**

**REGULATORY REQUIREMENTS AND PERMITS**

**PART 1 GENERAL**

**1.01 Section Includes**

Regulatory requirements, project permits

**1.02 Requirements of Regulatory Agencies**

- A. All piping installed within the right-of-way of any city, county, state, or federal highway or railroad shall be in accordance with a permit to construct issued by the controlling agency and obtained by the Owner. In no case shall an open trench be constructed within a railroad right-of-way unless otherwise indicated.
- B. Whenever the Drawings and Specifications conflict with the requirements of the permit, then the requirements of the permit shall govern and the cost of abiding by the provisions of the permit shall be considered incidental to the Contract.
- C. All electrical apparatus and wiring pertaining to a piece of equipment or an appliance furnished and installed under this Contract shall comply with the National Electrical Code and shall be listed by Underwriters Laboratories or bear the approval of a recognized Testing Laboratory approved by the Engineer.
- D. All construction projects 1 or more acres in size that discharge to offsite areas are required to abide by the provisions of the National Pollution Discharge Elimination System (NPDES) General Permit.

**1.03 Project Permits**

- A. The following permits have been obtained for the construction of the project, and are contained in the Appendix of the Project Manual:
  - 1. Southwest Florida Water Management District App I.D. / Permit No. 863525 / 43024404.003, dated April 1, 2023.
  - 2. Florida Department of Environmental Protection Water Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
  - 3. Florida Department of Environmental Protection Sewer Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
  - 4. Sumter County Right-of-way Utilization Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
  - 5. Sumter County Driveway Permit No. \_\_\_\_\_, dated \_\_\_\_\_.

- B. Prior to construction, the Contractor shall apply for the following permits for the Project construction:

Permit Type	Permitting Agency	Permit Fee to be Paid By Contractor (Y/N)
Coverage Under the NPDES Generic Permit For Stormwater Discharge from Large and Small Construction Activities	FDEP	Yes
Dewatering	SWFMWD	Yes
Building Permit (Including Permits for all Subcontractor Work such as Electrical, structures, retaining walls, etc.)	Sumter County	Yes
Right-of-Way Utilization Permit	Sumter County	
Driveway Permit	Sumter County	

Signed and sealed construction plans will be provided to the Contractor for its use in applying for the above permits. The Contractor is to coordinate with each permitting agency in order to determine the number of sets of signed and sealed construction plans that are required and the required sheet size (full size 22"x34" or half size 11"x17").

- C. The Contractor shall review and become familiar with all permits for the Project, complete with all conditions, attachments, exhibits and permit modifications. A copy of all permits for the Project shall be maintained by the Contractor at the project site, and shall be available for review upon request.
- D. The Contractor shall be fully responsible to abide by all provisions of the permits. The Contractor is responsible for the selection, implementation and operation of all measures required by the permits, including the maintenance of said measures as necessary during construction. No additional compensation will be allowed for any work associated with permit requirements.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## SECTION 01415

### STORMWATER POLLUTION PREVENTION / NPDES REQUIREMENTS

#### PART 1 GENERAL

##### 1.01 Section Includes

Stormwater Pollution Prevention Plan requirements and recommendations under the NPDES program for construction projects located in Florida.

##### 1.02 Purpose

The purpose of this section is to outline minimum requirements for stormwater pollution prevention as required under the NPDES program. There may be more stringent local government or Owner requirements for Erosion and Sediment Control, which would be located in the Specifications or on the Drawings. The more stringent requirement governs.

##### 1.03 Related Sections

- A. Section 01410 - Regulatory Requirements and Permits
- B. Section 02370 - Erosion and Sediment Control

##### 1.04 Abbreviations

- A. NPDES - National Pollution Discharge Elimination System
- B. SWPPP - Stormwater Pollution Prevention Plan
- C. NOI - Notice of Intent
- D. NOT - Notice of Termination

##### 1.05 Definitions

The term "NPDES Generic Permit" means the State of Florida Department of Environmental Protection (FDEP) Generic Permit For Stormwater Discharge from Large and Small Construction Activities. The NPDES Generic Permit is also known as the NPDES) Construction Generic Permit (CGP).

##### 1.06 Construction Projects Requiring Compliance with NPDES Generic Permit

- A. All projects 1 or more acres in size that discharge to offsite areas.
- B. Smaller projects that are in the same construction corridor as larger construction projects where the larger project is 1 or more acre in size and is required to comply

with the NPDES Generic Permit. In this case, even if the smaller project is less than 1 acre in size, the smaller project must comply with the NPDES Generic Permit.

### **1.07 General Requirements**

- A. Construction of this project is required to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Generic Permit for Stormwater Discharge from Small and Large Construction Activities.
- B. In order to meet NPDES requirements, the Contractor is responsible for preparing a Stormwater Pollution Prevention Plan (SWPPP), implementing, inspecting, maintaining, and reporting on all elements of the SWPPP, completing and submitting the required Notice of Intent (NOI) and Notice of Termination (NOT) forms as the Operator, and paying all associated fees. Copies of the NPDES Generic Permit, NOI, and NOT forms, and permit application fee information are available for download at [dep.state.fl.us/water/stormwater/npdes/](http://dep.state.fl.us/water/stormwater/npdes/)
- C. The SWPPP shall list all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working. All contractors and subcontractors identified in the SWPPP must sign a copy of the certification statement contained at the end of this specification section before conducting any construction activities at the site. The certifications must have the name and title of the person signing the certification; the name, address, and telephone number of the contracting firm; and the signature date. These statements must be maintained in the SWPPP file on site.
- D. The SWPPP shall describe and ensure the implementation of best management practices which will be used to reduce the pollutants in stormwater discharge associated with construction activity and to assure compliance with the terms and conditions of the NPDES Generic Permit. The erosion and sediment control measures shown on these Drawings are the minimum required and are to be installed prior to construction. The Contractor is responsible for complying with all applicable rules, regulations and water quality standards and may need to install additional controls to meet these requirements.

### **1.08 SWPPP Implementation and Submittal Requirements**

- A. The SWPPP shall be completed prior to submittal of the NOI and shall include the elements necessary to comply with the NPDES Generic Permit for construction activities administered by the FDEP and shall also include all local governing agency and Owner requirements. There may be more stringent local government or Owner requirements for Erosion and Sediment Control, which would be located in the Specifications or elsewhere on these Drawings.
- B. The Contractor must file the NOI with FDEP and the Owner at least two (2) business days prior to the start of construction. The Contractor shall also submit

a copy of the NOI to the MS4 operator for all projects that discharge stormwater associated with construction activity to a municipal separate stormwater system (MS4). A copy of the NOI and a description of the project must be posted in a prominent place for public viewing at the construction site.

- C. The SWPPP must be implemented at the start of construction. A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during working hours and kept in the permanent project records for at least three years following submission of the NOT.
- D. Final Stabilization means that all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover (evenly distributed, without large bare areas) with a density of at least 70% for all unpaved areas and areas not covered by permanent structures has been established or equivalent permanent stabilization measures (such as geotextiles) have been employed. Once construction is completed and final stabilization has been achieved, the Contractor must file the NOT to FDEP, the Owner, and the MS4 operator within 14 days.

#### **1.09 Inspections**

- A. It is the responsibility of the Contractor to assure the adequacy of site pollutant discharge controls. Between the time the SWPPP is implemented and final site stabilization is achieved, all disturbed areas and pollutant controls must be inspected at least once every seven calendar days and within 24 hours following a rainfall of 0.5 inches or greater. The inspections are to be conducted by the Contractor's qualified designated representative.
- B. All inspections shall be documented in an inspection report that summarizes the scope of the inspection, the names and qualifications of personnel making the inspection; the date of the inspection; rainfall data; major observations relating to the implementation of the SWPPP, and actions taken in order to ensure compliance with NPDES requirements and the SWPPP. Such reports shall identify any incidents of non-compliance and actions taken to bring the project into compliance. Where a report does not identify any incidents of non-compliance, the report shall contain a certification that the facility is in compliance with the NPDES requirements and the SWPPP. Each inspection report shall be signed and certified by each qualified inspector.

#### **1.10 Updating and Modifying the SWPPP**

- A. Based on inspection results, any modifications necessary to increase effectiveness of the SWPPP to an acceptable level must be made within seven calendar days of the inspection.
- B. The SWPPP must be updated each time there are significant modifications to the pollutant prevention system or a change of contractors working on the project who

disturbs site soil. For construction activities where the operator changes, the new operator shall file an NOI for coverage under this permit at least two (2) days before assuming control of the project and the previous operator shall file an NOT to terminate permit coverage in accordance with the NPDES Generic Permit. Amendments to the plan shall be prepared, signed, dated, and kept as attachments to the original SWPPP.

### 1.11 Minimum SWPPP Provisions

- A. The following list contains the items that must be included in the SWPPP. The SWPPP must clearly identify the contractor(s) or subcontractor(s) that will implement each item.
1. Stormwater Team: Identify the personnel (by name or position) that are part of the stormwater team responsible for implementing the SWPPP, including the qualified inspector. List their individual responsibilities in developing or implementing the SWPPP.
  2. Contractors /Subcontractors: List all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working. All listed contractors and subcontractors must sign the certification contained at the end of this specification section.
  3. Site/Construction Activities Description:
    - a. Describe the nature of the construction activity.
    - b. Describe the intended sequence and time table of major activities that will disturb soils.
    - c. Include the scheduled starting and ending date for each major activity such as land clearing, grubbing, grading, cut and fill, dewatering operations, installation of erosion and sediment controls, installation of stormwater management systems, paving, final or temporary stabilization of exposed soil, and removal of construction equipment and vehicles.
    - d. Estimate the total area of the site and the total area that is expected to be disturbed by excavation, grading, or other construction activity.
    - e. Include existing data on soil types and the quality of any existing discharge from the site.
  4. For each proposed discharge point provide the following:
    - a. Latitude and Longitude
    - b. Drainage Area
    - c. Surface Waters or MS4
    - d. Estimate the amount of land that will be cleared during the construction activity for each drainage area.

5. Include a site map showing all of the following:
  - a. Boundaries of the property.
  - b. Entrance/Exit Points.
  - c. Locations where construction activities will occur.
  - d. Locations where dewatering operation will occur.
  - e. Drainage patterns and approximate slopes and elevations anticipated after major grading activities.
  - f. Areas of soil disturbance.
  - g. Areas which will not be disturbed.
  - h. Location of major structural and nonstructural controls.
  - i. Location of areas where stabilization practices are expected to occur.
  - j. Location of surface waters and wetlands.
  - k. Location where stormwater is proposed to be discharged during construction to a surface water or MS4.
  
6. List all non-stormwater discharges covered under the CGP and the pollution prevention procedures that will be implemented. The following types of non-stormwater discharges, if they are listed in the SWPPP and the SWPPP includes appropriate pollution prevention procedures as to not cause or contribute to a violation of water quality standards are to be considered to be covered (allowed) by the CGP:
  - a. Discharges from firefighting activities.
  - b. Fire hydrant flushings.
  - c. Waters without detergents used to spray off loose solids from vehicles.
  - d. Waters used to control dust.
  - e. Potable water sources such as waterline flushings.
  - f. Landscape irrigation water and drainage.
  - g. Routine external building washdown provided no detergents are used.
  - h. Pavement washwaters that do not contain detergents, leaks, spills of toxic or hazardous materials.
  - i. Air conditioning condensate.
  - j. Spring water.
  - k. Foundation or footing drain flows that are not contaminated with process material such as solvents.
  - l. Non-contaminated ground water associated with dewatering activities as described in Part 3.4 of the CGP.
  
7. The following non-stormwater discharges are prohibited by the CGP:
  - a. Wastewater from concrete washout.
  - b. Wastewater from washout or cleanout of stucco, paint, form release oils, curing compounds, and other construction materials.

- c. Fuels, oils, or other pollutants from vehicle and equipment operation and maintenance.
  - d. Soaps, detergents, solvents, or other cleaners.
  - e. Hazardous substances or oil resulting from an on-site spill.
  - f. Solid materials, including building materials.
  - g. Any other non-stormwater discharge not specifically allowed by the CGP as identified above.
8. Dewatering Controls (If Applicable): Include a description of the BMPs that will be used to ensure that discharges of noncontaminated ground water from dewatering operations do not cause or contribute to violations of state water quality standards.
  9. BMPs: Describe the BMPs that will be implemented for each major activity and the timing during the construction process that they will be implemented.
  10. Permanent stormwater management controls: Describe the stormwater management controls or BMPs (e.g., stormwater detention or retention systems, vegetated swales, or velocity dissipation devices at discharge points) that will be installed during the construction process to control pollutants in stormwater discharges.
  11. Inspections: Inspections must be at least once every seven calendar days and within 24- hours of the end of a storm event that is 0.50 inches or greater (even if it rains on the weekend or a holiday).
  12. Maintenance: Describe the maintenance activities and schedules that will be followed to keep BMPs in good and effective operating condition.
  13. Signed Certifications: Include all the signed contractors and subcontractors certifications in the SWPPP (Contained at the end of this specification is an example certification form).

**1.12 Site Data**

- A. The following site data is provided to the Contractor for use in preparing the SWPPP and completing the NOI:

Total Site Area:	+/-95.49 ac
Total Area Impacted by Construction:	54.51 ac
Existing Site Soils:	Milhopper Sand, Kendrick Sand, EauGallie Sand, and Apopka Sand
Drainage Area Contributing to Each Discharge Point:	+/- 57.7 ac to Joint-Use Master Stormwater Pond



	+/- 12.6 ac to the Powell Road Stormwater System +/- 4.4 ac to the Huey Street Drainage System
Latitude and Longitude of Project Location:	28516.97N, 820123.72W
Receiving Waters:	Little Jones Creek & Lake Deaton Outlet

### 1.13 Minimum Erosion and Sediment Control Construction Requirements

- A. Stabilize all construction site exits with coarse aggregate or other approved materials, in accordance with details on the Drawings. Other minimum construction requirements that need to be implemented in order to comply with the NPDES Generic permit include installation of sediment barriers down slope from construction activities that disturb site soil; constructing rock surface temporary parking areas; installation of sediment barriers down slope prior to clearing and grubbing; installation of sediment barriers on the down slope side of utility construction and soil stockpiles; and the installation of sediment barriers on the down slope side of grading activities.
- B. Stabilization measures shall be initiated as soon as practicable, but in no case more than 7 days, in portions of the site where construction activities have temporarily or permanently ceased.
- C. The Owner has the authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, trenching, borrow and embankment operations. The Owner also has authority to direct Contractor to provide immediate permanent or temporary erosion and sediment control measures.
- D. The Contractor shall respond to erosion and sediment control maintenance requirements or implement additional measures to control erosion ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.
- E. The Contractor shall incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.
- F. For drainage basins with 10 or more disturbed acres at one time, a temporary (or permanent) sediment basin providing 3,600 cubic feet of storage per acre drained, or equivalent control measures, shall be provided where attainable until final stabilization of the site. The 3,600 cubic feet of storage area per acre drained does not apply to flows from offsite areas and flows from onsite areas that are either undisturbed or have undergone final stabilization where such flows are diverted around both the disturbed area and the sediment basin. For drainage basins with 10 or more disturbed acres at one time and where a temporary sediment basin

providing 3,600 cubic feet of storage per acre drained, or equivalent controls is not attainable, a combination of smaller sediment basins and/or sediment traps and other BMPs should be used. At a minimum, silt fences, or equivalent sediment controls are required for all sideslope and downslope boundaries of the construction area.

- G. Water trucks shall be used as needed during construction to reduce dust generated on the site. Dust control must be provided by the Contractor and shall be in compliance with applicable local and state dust control regulations.

#### **1.14 Maintenance Requirements**

- A. Maintain all erosion and sediment control measures throughout construction. Repair or replace all damaged sediment barriers. Remove accumulated sediment along all silt fences where the height of the sediment exceeds one-third of the height of the silt fence. Inspect all temporary and permanent grassing areas and re-grass where there are bare spots, washouts, or unhealthy growth.
- B. At the completion of construction, once final stabilization has been achieved, clean all accumulated sediment from all storm structures, pipelines, and stormwater ponds. Remove all temporary sediment controls upon receipt of authorization to remove has been received from the Owner or Engineer. Note that this may not occur for some time after construction activities have been completed, in order to ensure their removal has not occurred until final stabilization has been achieved to the satisfaction of the Owner and Engineer.

#### **1.15 Stormwater Discharge Provisions**

- A. Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil in accordance with local and state regulations.
- B. All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities shall be provided at the site throughout the construction phase for use by all construction personnel and shall be serviced by a commercial operator at least once a week.
- C. Discharges resulting from groundwater dewatering activities at construction sites are permitted provided the groundwater is free of sediments, is not contaminated, and dewatering occurs in accordance with state and local governing agency regulations.

- D. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the site, treated, and disposed at an approved solid waste or chemical disposal facility.
- E. The discharge of hazardous substances or oil in the stormwater discharge(s) from a facility or activity shall be prevented. This does not relieve the operator of the reporting requirements of 40 CFR part 117 and 40 CFR part 302. The operator shall submit within 14 calendar days of knowledge of the release a written description of: the release (including the type and estimate of the amount of material released), the date that such release occurred, the circumstances leading to the release, and remedial steps to be taken. The SWPPP must be modified within 14 calendar days of knowledge of the release to: provide a description of the release, the circumstances leading to the release, and the date of the release. In addition, the plan must be reviewed to identify measures to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified where appropriate.

**CONTRACTOR / SUBCONTRACTOR CERTIFICATION**

The SWPPP shall list all the contractors or subcontractors who will be conducting construction activities at the site, and identify the areas of the site in which they will be working.

All contractors and subcontractors identified in the SWPPP must sign a copy of the following certification statement before conducting any construction activities at the site. The certifications must have the name and title of the person signing the certification; the name, address, and telephone number of the contracting firm; and the signature date.

These statements must be maintained in the SWPPP file on site.

Name of Contractor / Subcontractor Conducting Construction at the site:

\_\_\_\_\_  
Business Name

\_\_\_\_\_  
Business Address  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Business Telephone Number

CERTIFICATION:

**"I certify under penalty of law that I understand, and shall comply with, the terms and conditions of the State of Florida Generic Permit for Stormwater Discharge from Large and Small Construction Activities and this Stormwater Pollution Prevention Plan."**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

**CONTRACTOR  
CERTIFICATION**

The SWPPP has been prepared by:

---

Business Name

---

Business Address

---

---

---

Business Telephone Number

The Contractor who has prepared the SWPPP shall make the following certification:

**“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”**

---

Signature

Date

---

Printed Name

**PART 2 PRODUCTS – Not Used**

**PART 3 EXECUTION – Not Used**

**END OF SECTION**

## SECTION 01420

### REFERENCES

#### PART 1 GENERAL

##### 1.01 Section Includes

Referenced standards and abbreviations

##### 1.02 Referenced Standards

- A. Any reference to published specifications or standards of any organization or association shall comply with the requirements of the specification or standard which is current on the date of Advertisement for Bids. In case of a conflict between the referenced specifications or standards, the one having the more stringent requirements shall govern.
- B. In case of conflict between the referenced specifications or standards and the Contract Documents, the Contract Documents shall govern.

##### 1.03 Abbreviations

The following are definitions of abbreviations used within the Project Manual:

AA	Aluminum Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
ANSI	American National Standard Institute
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CRSI	Concrete Reinforcing Steel Institute
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FS	Florida Statutes
NEC	National Electrical Code
NECA	National Electrical Contractors' Association
NEMA	National Electrical Manufacturers Association
NSF	National Sanitation Foundation
OSHA	Occupational Safety and Health Administration
PS	United States Products Standards
SSPC	Structural Steel Painting Council
UL	Underwriter's Laboratories, Inc.
FDOT Specification	FDOT Standard Specification for Road and Bridge Construction, latest edition
FDOT Index	FDOT Standard Plans for Road Construction, latest edition

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## SECTION 01425

### FDOT STANDARDS REFERENCE

#### PART 1 GENERAL

##### 1.01 Section Includes

Instruction on the use and applicability of FDOT standards on the project

##### 1.02 Requirements

- A. The Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, latest non-metric edition ("Standard Specifications"), and Standard Plans for Road Construction, latest non-metric edition ("Standard Plans") are referenced herein as source documents for applicable technical specifications and construction details to be used in the construction of this project. The term "latest edition" refers to the latest edition implemented by FDOT and includes all FDOT implemented supplements.
- B. Method of Measurement and Basis of Payment is to be in accordance with these Contract Documents rather than the Florida Department of Transportation Standard Specifications. Any item which is detailed in the Plans and for which material types, sizes and quality are also called out, the "Standard Plans" shall take preference over the plan detail unless otherwise directed by the Engineer.
- C. Where the FDOT Standard Specifications use the reference "Department", replace "Department" with "Owner", except for when such reference is to Department Standards and evaluation criteria.
- D. The Standard Plans are referenced herein as a source document for applicable construction items and details called for in the plans for which a specific plan detail is not provided. The Contractor shall construct the items called for in the plans in accordance with the "Standard Plans" unless otherwise defined or detailed in the plans or as directed by the Owner, Engineer or authorized representative.
- E. The Standard Plans are available for download from the FDOT website at:  
  
[fdot.gov/design/standardplans](http://fdot.gov/design/standardplans)
- F. In case of conflict, the Project Manual takes precedence over FDOT specifications for a particular construction requirement.
- G. Copies of the latest implemented edition and implemented supplements of the Florida Department of Transportation Standard Specifications are available for download from the FDOT website at:



<http://www.fdot.gov/programmanagement/Implemented/SpecBooks/>

- H. The Contractor shall inform the Owner and Engineer in writing of any specification that the Contractor feels is ambiguous or conflicting with other plan notes and details prior to the construction of the associated item. The Engineer will determine which information is to be used for construction. The Contractor is responsible for the removal and replacement of any item improperly constructed resulting from a misinterpretation of the specifications at no additional cost to the Owner.

## **PART 2 PRODUCTS - Not Used**

## **PART 3 EXECUTION**

### **3.01 General**

The Contractor shall use Divisions Two (II) and Three (III) of the FDOT Specifications as they relate to methods of construction and material types and quality for the appropriate construction items contained within this project.

**END OF SECTION**

## SECTION 01450

### QUALITY CONTROL

#### PART 1 GENERAL

##### 1.01 Section Includes

Quality control, quality assurance

##### 1.02 Quality Control

- A. It is the Contractor's responsibility to perform all work in conformance with the Plans and Specifications. In order to fulfill this responsibility, the Contractor is required to have an approved Quality Control Program, including testing, as part of its Contract work in accordance with the Contract Documents and to submit details of its Program to the Engineer for review and approval prior to commencing any construction operations. The submittal shall include detailed information on locations and number of all tests, etc., that will be necessary for the Contractor to make its own determination that the work is being performed in compliance with the Project requirements.
- B. As part of the Contractor's Quality Control Program included as part of its work, the Contractor shall employ and pay for an independent, approved soils testing laboratory to perform testing services outlined in these Contract Documents.
- C. The Contractor's Quality Control Program shall include, but not be limited to, the following in addition to the type and frequency of tests as required by the technical specifications:
  - 1. Piping and structural excavation, bedding and backfill materials and density quality control testing
  - 2. Determination of compactive effort needed for compliance with the density requirements.
  - 3. Portland cement concrete and asphalt paving quality control testing including design mix review, materials, field slump and air content, and field and lab cured strength samples and testing.
- D. In addition to Quality Control Testing, the Contractor shall be responsible for required testing or approvals for any work (or any part thereof) if laws or regulations of any public body having jurisdiction specifically require testing, inspections or approval. The Contractor shall pay all costs in connection therewith and shall furnish the Engineer the required certificates of inspection, testing or approval. The Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Owner or Engineer acceptance of a supplier of materials or equipment proposed to be incorporated into the work.

- E. Any design or testing laboratory utilized by the Contractor shall be an independent laboratory acceptable to the Owner and the Engineer, approved in writing, and complying with the latest edition of the "Recommended Requirements for Independent Laboratory Qualification", published by the American Council of Independent Laboratories.
- F. Testing laboratories, whether provided by the Owner or the Contractor, shall promptly notify the Owner, Engineer and the Contractor of irregularities or deficiencies of work that are observed during performance of services. Laboratories shall submit two (2) copies of all reports directly to the Owner and Engineer and two (2) copies to the Contractor.

### **1.03 Quality Assurance**

- A. In addition to the services provided by the laboratory paid for by the Contractor as a part of its work, the Owner, at its sole discretion, may employ an additional independent soils laboratory as part of Owner's Quality Assurance Program to verify that the work meets the requirements of the Contract Documents. The Owner furnished Quality Assurance testing may include the type and frequency of tests as required by the technical specifications. The Owner reserves the right to have additional tests made beyond those specified in the Contract Documents. The Contractor shall cooperate with the Owner and make the work and samples available for Owner testing at no additional cost in case the Owner chooses to have additional Owner furnished testing performed. It is the sole responsibility of the Contractor to see that its work meets all provisions of the Contract Documents.
- B. The Contractor shall cooperate with the soils laboratory personnel and provide access to the work to be tested. The Contractor shall notify the Engineer and Owner's testing laboratory sufficiently in advance of operations to allow scheduling of tests. The Contractor shall furnish casual labor and facilities to obtain and handle samples at the site and to store and cure test samples as required.

### **1.04 Testing of Materials**

- A. Unless otherwise specified, all materials shall be sampled and tested in accordance with the latest published standard methods of ASTM in effect at the time bids are received.
- B. Test of materials shall be made by a representative of the Contractor, unless otherwise provided. Testing of equipment shall be the responsibility of the Contractor or an authorized manufacturer's representative. All test results shall be furnished to the Engineer in writing. The Contractor shall provide facilities required to collect and forward samples. The Contractor shall furnish the required samples without charge.

- C. The Contractor shall not make use of or incorporate in the work, the materials represented by the sample until tests have been made and the material found to be in accordance with the requirements of the Specifications.
- D. Materials to be tested and the applicable test procedure shall be as outlined in the individual sections of these Specifications.
- E. Perform in-place density on crushed concrete base at a frequency of 1 test per 300 linear foot of roadway or 5,000 square feet of pavement.
- F. Perform Limerock Bearing Ratio tests at a frequency of 1 test per visual change in material and a minimum of 1 test per 15,000 square feet of pavement.
- G. Regardless of the base type selected, a minimum of 2 feet separation should be maintained between the bottom of the base course and the clayey soils. If necessary, the minimum separation can be obtained by undercutting the clays or filling the site.
- H. Contractor's testing lab field representative shall perform a final visual base inspection prior to placement of prime or tack coat and paving and report to the Owner as to acceptance of base prior to paving (submit a report to the Owner).

#### **1.05 Source and Quality of Materials and Equipment**

- A. The source of materials to be used shall be in accordance with the Contract Documents and as approved by the Engineer before delivery. The approval of the source of any material shall continue as long as the material conforms to the Specifications.
- B. All material not conforming to the requirements of the Specifications shall be considered as defective and shall be removed from the work. If in place, faulty materials shall be removed by the Contractor at its expense and replaced with acceptable material unless permitted otherwise by the Owner. No defective materials that have been subsequently corrected shall be reused until approval has been given.
- C. Upon failure of the Contractor to comply immediately with any order of the Owner to remove and replace defective material, the Owner shall have authority to remove and replace defective materials, and to deduct the cost of removal and replacement from any monies due or to become due to the Contractor. Failure to reject any defective materials or work at the time of installation shall in no way prevent later rejection when such defects are discovered, nor obligate the Owner to final acceptance.

#### **1.06 Additional Testing**

In addition to soils laboratory and materials testing, the Contractor shall perform other testing called for in the Contract Documents including but not limited to piping, pressure, leakage, infiltration and exfiltration, as required.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## SECTION 01520

### TEMPORARY FACILITIES AND CONTROLS

#### PART 1 GENERAL

##### 1.01 Section Includes

Construction facilities, controls, temporary utilities, project identification signs, field office and storage sheds, storage of materials and equipment.

##### 1.02 Related Sections

Section 01550 - Temporary Traffic Control

##### 1.03 Submittals

- A. Prior to installation of construction facilities and temporary controls, submit the following items for review and approval:
- B. Project identification sign - provide proposed text, layout, and sizing of all required signs

##### 1.04 Construction Facilities and Temporary Controls

All construction facilities and temporary controls remain the property of the Contractor establishing them and shall be maintained in a safe and useful condition until removed from the construction site.

##### 1.05 Removal of Temporary Construction

Remove the various temporary facilities, services, and controls and legally dispose of them as soon as the Owner deems permissible. Portions of the site and areas used for temporary facilities shall be restored to existing or better condition, including but not limited to fill replacement, regrading, compaction, and sodding.

##### 1.06 Transportation and Handling

- A. Manufactured materials and products shall be delivered to the project site as needed for installation, undamaged, in original packages, containers, or bundles, as packaged by the manufacturer with manufacturer's name, brand, seals, and labels intact.
- B. Materials other than those designated within the Specifications or approved by the Owner shall not be delivered to the project site.

##### 1.07 Storage and Protection

- A. The Contractor shall be responsible for protection and preservation of all materials until final acceptance of the Project. Any damage to work prior to acceptance shall be remedied by the Contractor at no additional cost to the Owner.
- B. Provide temporary weather-tight enclosures to protect work from damage by the elements, and protect finished surfaces to prevent any damage resulting from the work of any trade.

#### **1.08 Security**

- A. Contractor shall, at all times, be responsible for the security required in all project areas and shall provide all reasonable protection to prevent damage, injury or loss to employees on the Work and all other persons who may be affected thereby; all the work materials and equipment to be incorporated therein, whether in storage on or off the project site, under the care, custody or control of the Contractor or any subcontractors; and any other property under the care, custody or control of the Contractor or any subcontractors. Contractor shall be responsible for such security and safety until final acceptance of the Work.
- B. Full time watchmen will not be specifically required as a part of the Contract, but the Contractor shall provide inspection of work area daily and shall take whatever measures are necessary to protect the safety of the public, workmen, and materials, and provide for the security of the site, both day and night.

### **PART 2 PRODUCTS**

#### **2.01 Temporary Electric Service**

- A. Furnish and maintain temporary lighting and power required to perform the Work. Include in the Bid all costs for providing temporary electrical service.
- B. Temporary service shall include protective enclosures, branch wiring, outlets, lamps, and grounding as required by NEC and Local Electrical Codes.

#### **2.02 Temporary Heating**

The Contractor shall furnish fuel or power and provide and operate all temporary heating units. Heat shall be provided as necessary to perform the Work. Temporary heating units shall be adequately vented and approved devices which will not damage finished areas. The Contractor shall also furnish all tarpaulins and temporary enclosures necessary to provide this protection.

#### **2.03 Temporary Ventilation**

The Contractor shall provide, operate, and furnish power for temporary ventilation required for the proper installation and curing of materials and safety of workmen.

## **2.04 Temporary Water**

- A. Provide a temporary water distribution system for all construction purposes and pay for all water used. Obtain temporary meters from the local water utility as required and pay all associated fees.
- B. Furnish potable drinking water in suitable dispensers and with cups for use of all employees at the job.
- C. Provide all temporary piping, hoses, etc., required to transport water to the point of usage by all trades.

## **2.05 Temporary Sanitary Facilities**

Provide temporary toilet facilities as required. Maintain these during the entire period of construction under this Contract for the use of all construction personnel on the job. Enough chemical toilets shall be provided to conveniently serve the needs of all personnel. Chemical toilets and their maintenance shall meet the requirements of State and local health regulations and ordinances.

## **2.06 Temporary Pumping and Site Drainage**

Keep the site free from water at all times to permit continuous access and to prevent damage to the work.

## **2.07 Material Hoists and Cranes**

- A. Provide material hoists required for normal use by all trades and employ skilled hoist operators. Provide all necessary guards, signals, safety devices, etc., required for safe hoist operation. The construction and operation of material hoists shall be in accordance with the applicable ANSI Standards, the "Manual Code of Accident Prevention in Construction" of the Associated General Contractors of America, OSHA, and of other Federal, State, and municipal codes or ordinances. The Contractor shall prohibit the use of hoists for transporting personnel. Hoists shall be located to avoid risk of damage to completed work.
- B. Special rigging and hoisting facilities shall be provided by each trade requiring their use.

## **2.08 Temporary Runways, Scaffolding, and Ladders**

- A. Provide temporary ladders, ramps, and runways as required for performance and inspection of the work. The above facilities shall be constructed and maintained in accordance with the applicable Federal, State, and Municipal regulations and codes.
- B. Furnish, erect, and maintain all scaffolding required for this work. Scaffolding shall be constructed and maintained in accordance with applicable State and



Federal laws and local ordinances. Scaffolding shall be promptly removed after serving its purpose.

- C. The structural strength and safety of scaffolding, runways, covers, railings, ladders, stairs, etc., and compliance with law shall be the sole responsibility of the Contractor.

## **2.09 Temporary Chutes**

No materials shall be dropped from structures except through enclosed wooden or metal chutes which shall be provided and maintained as required for the performance of the work by the various trades.

## **2.10 Project Identification Sign**

- A. Prior to the start of the field construction, furnish and erect two (2) signs for the project, one at each end, placed at a location determined by the City. The sign shall be erected when the work is started and shall be suitably supported, braced, and maintained, and shall be removed upon completion of the project or when directed by the City.
- B. The sign shall be 4'x8'x1" exterior grade plywood or 4'x8'x3/16" PVC. All surfaces of the plywood sign shall be painted with three coats of white exterior grade enamel paint (PVC signs shall be white). The proposed sign shall consist of the project name, funding information, and the City logo. Other logos and information may be required. The City will provide the graphics (jpgs) needed (logos) and other required text and funding information
- C. Submit to the City for approval the proposed sign lettering (fonts, size), Logo placement and text prior to fabricating the sign.
- D. No other signs will be permitted.

## **2.11 Contractor's Field Office and Storage Sheds**

The Contractor shall provide field office and storage sheds that it determines are required for the performance of the Work and protection of materials and equipment.

## **2.12 Owner / Engineer Field Office - N/A**

# **PART 3 EXECUTION**

## **3.01 Access Roads and Parking Areas**

- A. Construct temporary roadways and parking areas within the site as required to provide proper access to the site for delivery of material and equipment of all trades. It is up the Contractor to determine whether it needs to construct any temporary roads or parking areas to accommodate its construction (including delivery of materials, equipment, and manpower to the site).

- B. At completion of the work or when directed by the Owner, surfacing and sub-base material used for the temporary road and parking areas shall be removed, unless otherwise approved by the Owner.

**END OF SECTION**

**SECTION 01550**  
**TEMPORARY TRAFFIC CONTROL**

**PART 1 GENERAL**

**1.01 Section Includes**

Traffic and dust control

**1.02 Related Sections**

Section 01520 - Temporary Facilities and Controls

**1.03 Definitions**

The term "Temporary Traffic Control" also known as "Maintenance of Traffic" as used herein, shall include all facilities, devices, traffic control personnel, and operations as are required for the safety and convenience of the public as well as for minimizing public nuisance.

**1.04 References**

- A. Florida Department of Transportation Standard Plans for Road Construction
- B. Manual on Uniform Traffic Control Devices

**1.05 Submittals**

Provide traffic control plan. Include proposed signs, markings, barricades, detour routes, sequencing, and phasing for vehicular and pedestrian traffic routes during construction.

**1.06 Qualifications**

Provide at least one employee in the field (superintendent or foreman) who holds an IMSA (International Municipal Signal Association) Work Zone Traffic Control Safety Certification. This certified employee shall be on the job site when the traffic control measures are installed and when work is occurring within the zones.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION**

**3.01 Site Preparation**

- A. Contact property owners affected by construction. Coordinate temporary driveway closures and sequencing. Maintain access for all property owners during construction.

- B. Remove existing pavement markings and remove or relocate existing signs as necessary to implement traffic control.
- C. Install signs, markings, barricades in accordance with approved traffic control plan.
- D. Implement lane closures in accordance with the parameters shown on the drawings and in the approved traffic control plan.
- E. Perform work in a manner that will cause minimum interruptions to traffic.
- F. Place excavated material outside roadway clear zones, and away from pedestrian facilities.
- G. All trenches shall be backfilled each day prior to the completion of construction activities.
- H. Where special hazards exist, install traffic control through the use of lighted concrete barriers, barricades, or other such traffic control facilities as needed to ensure public safety.

### **3.02 Maintenance**

- A. Inspect traffic control devices on a daily basis to ensure placement of barricades and function of lights is maintained throughout construction.
- B. Wet unstabilized areas as necessary to control dust.
- C. Adjust traffic control devices as required under emergency conditions.

**END OF SECTION**

## SECTION 01630

### PRODUCT SELECTION AND SUBSTITUTION PROCEDURES

#### PART 1 GENERAL

##### 1.01 Section Includes

Product selection and substitution procedures

##### 1.02 Product Selection

- A. Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, new at the time of installation.
- B. To the fullest extent possible, provide products of the same kind from a single source.
- C. Compatibility among product options is required. Where more than one choice is available as options during product selection, select an option which is compatible with other products and materials already selected.
- D. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.
- E. Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- F. Where Contract Documents are at variance with specific manufacturer's details and installation procedures, contact Engineer for resolution prior to start of work.
- G. For products specified by naming a number of products and manufacturers and "or equal", select any of the products and manufacturers listed, or propose a substitution. If the Contractor wishes to propose a substitution, the Contractor must submit a request for product substitution for approval by the Engineer and Owner.
- H. For products specified naming only one product and manufacturer or a number of products and manufacturers without the "or equal" allowance, no substitutes are allowed.
- I. For products specified by reference standards only, the Contractor may provide any product complying with the specified standard.
- J. For products specified by performance and descriptive methods, without naming manufacturer's products, the Contractor may provide the products of any

manufacturer complying with the Contract Documents, subject to the review of product data and concurrence by the Engineer as specified herein.

### **1.03 Substitutions**

- A. The intent of these Specifications is to provide the OWNER with a quality facility without discouraging competitive bidding. Substitutions may be submitted and will be evaluated as specified herein.
- B. If the Contractor wishes to provide a product other than one named in the Specifications, he shall submit sufficient information to the Engineer for evaluation and determination of acceptability of the product prior to Bid Opening.
- C. The Contractor is responsible for obtaining information required by the Engineer for the evaluation of products. The Engineer is responsible for determination of the equality of products, and his decision shall be final, except as otherwise provided by law and funding agency regulations.
- D. Substitution requests can be made after Bid Opening when:
  - 1. A specified product is no longer available
  - 2. The product cannot be delivered by the manufacturer in a timely manner
  - 3. The product is found to be incompatible with other specified products
  - 4. Proposed substitutions will yield a cost savings to the Owner
- E. The Contractor shall be responsible for the constructability and performance of any substitute materials requested by the Contractor and approved by the Engineer or by the Owner. The Contractor shall ensure that any approved substitute materials will perform to the intent of the specified materials, at no additional cost or time to the Owner, including the costs of installation, testing, repair, or correction of the utility system due to the performance or lack thereof of the substitute material.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

## **SECTION 01720**

### **PRECONSTRUCTION SURVEY**

#### **PART 1 GENERAL**

##### **1.01 Section Includes**

Preconstruction topographic survey requirements

##### **1.02 Submittals**

- A. Prior to construction, conduct topographic surveying of the portions of the site as shown on the map in Appendix C.
- B. Provide to the Owner the survey in AutoCad Civil 3D, 2017 or newer version.

#### **PART 2 PRODUCTS - Not Used**

#### **PART 3 EXECUTION**

##### **3.01 Survey Minimum Requirements**

- A. The data points in the survey shall be points with an elevation (x, y, z data points)
- B. The project coordinate system will be based horizontally on the North American Datum 83 (NAD 83) (1990 adjustment) using the published monumentation system. The project shall be referenced to state plane coordinates by field locating published control points. The National Geodetic Survey control points shall be researched and verified in the field. This base of reference will be used to establish the coordinate system for the project.
- C. The project shall be based on the North American Vertical Datum 88 (NAVD 88). The project shall be referenced to these published elevations by field locating published benchmarks. The National Geodetic Survey benchmarks shall be researched and verified in the field.
- D. Conduct surveying on a 50-ft grid.

**END OF SECTION**

**SECTION 01770**  
**CONTRACT CLOSEOUT**

**PART 1 GENERAL**

**1.01 Section Includes**

Substantial completion requirements, clean-up, final completion requirements, closeout submittals

**1.02 Clean-Up Operations**

- A. The entire Project site shall be thoroughly cleaned at the completion of the Work.
- B. Clean all installed pipelines, structures, sidewalks, paved areas, accumulated silt in ponds, plus all adjacent areas affected by construction, as directed by the Owner or jurisdictional agency. Equipment to clean these surfaces shall be subject to approval by the Owner.
- C. Restore to original condition or better all property not designated for alteration by the Contract Documents, including all areas used for staging and storage. Restoration includes but is not limited to fill replacement, regrading, compaction, and sodding. Conduct inspections of the completed restoration with the Owner, and conduct additional restoration as directed.

**1.03 Substantial Completion Requirements**

- A. Complete the following before requesting the inspection for certification of substantial completion.
  - 1. Submit record drawings in accordance with section 01780.
  - 2. Complete required cleaning and testing of the completed construction in accordance with the specifications and the Owner's operating and maintenance personnel.
- B. Work is not substantially complete until the following has occurred:
  - 1. The Owner has received clearance to place the completed construction into service from the regulatory agencies.

**1.04 Final Completion Requirements**

- A. Complete the following before requesting the inspection for certification of final completion.
  - 1. All punchlist items identified during the substantial completion inspection.



2. Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.
3. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.
4. Clean all marred surfaces including touch up painting, pressure washing, or other measures as needed as directed by the Owner.
5. Broom clean paved driveways and parking areas.
6. Hose clean sidewalks, loading areas, and others contiguous with principal structures.
7. Fully restore all property not designated for construction including all areas used for staging and storage.
8. Provide Final Record Drawings in accordance with Section 01780.

### **1.05 Closeout Submittals**

- A. Upon completion of the project, or portions thereof, the Contractor shall transfer to the Owner all applicable items accumulated throughout construction. These include but are not limited to the following items:
  1. Service manuals, installation instructions, maintenance and operating instructions, special tools, and specialties
  2. Spare parts ordered as part of this Contract
  3. Delivery of any salvaged or borrowed materials or equipment to the Owner
  4. All keys to all doors, gates, and equipment
  5. Checklist indicating satisfactory completion of all unfinished items from the final inspection
  6. Certificate of Substantial Completion
  7. Certificate of Final Completion
  8. Submittal of the Material and Workmanship Bond
  9. Submittal of manufacturers' guarantees, warranties, bonds, and letters of coverage extending beyond the time limitations of the Contractor's guarantee.
  10. Contractor's Final Release of Lien
  11. Final Waivers of lien from all Subcontractors and Suppliers
  12. Consent of Surety to Final Payment
  13. Final record documents of completed facilities

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

**SECTION 01780**  
**RECORD DRAWINGS**

**PART 1 GENERAL**

**1.01 Section Includes**

Record Drawing requirements including format requirements and submittal procedures.

**1.02 General Requirements**

- A. As the Work progresses, the Contractor shall be responsible for recording information on the approved Contract Documents concurrently with construction progress.
- B. Mark on the Contract Drawings all changes in direction and location of structure, piping, equipment, electrical, and mechanical work.
- C. If requested, mark on the Specifications the manufacturer, trade name, catalog, and supplier of each product actually installed, and mark changes made by Change Order or Field Order.
- D. Record Drawings shall depict surveyed as-built information including horizontal and vertical locations as required herein. All Record Drawings shall be prepared by the Contractor in ACAD format using construction plan sheets provided by the Engineer. As-built information shall be field verified, measured, added to the ACAD files of the construction plan sheets provided by the Engineer, and certified, signed and sealed by the Contractor's licensed Surveyor who will be responsible for the accuracy of all dimensions and elevations. Sheet sizes and the scale of the Record Drawings shall match sheet sizing and scale of the construction plans. Add blowup details if necessary.
- E. Record Drawings shall clearly show all field changes of dimension and detail including changes made by field order or by change order.
- F. The surveyed as-built information shall be vertically based on the North American Vertical Datum of 1988 (NAVD 88) and the coordinate system shall be based horizontally on the North American Datum 83 (NAD83) (1990 adjustment). The as-built survey shall be referenced to the project benchmarks and shall be referenced to the state plane coordinates.
- G. All inlets, manholes, structures, valves, valve boxes, hydrants, blow offs, sample points, meter boxes, bollards, etc. shall be clearly shown. Vertical elevations shall be surveyed as follows: Valves (operating nut), utility pressure mains (top of center of pipe), hydrants (operating nut of hydrant and grade at the base of the hydrant), manholes (rim, inverts / flow lines, connecting pipe diameters), grate inlets (top of grate, flow lines, connecting pipe diameters), curb inlets (edge of pavement, top of

structure, connecting pipe diameters, flow lines), storm sewer (flow line and diameter), sanitary sewer (invert and diameter), fittings (type, diameter, and top elevation), meter boxes (top of box), air release valves (top of enclosure and grade at the base of the enclosure), blow offs (top of box), pump station wet wells (top of wet well, gravity sewer inverts and diameters, force main top of pipe and diameters, structure invert), pump station valve vaults (top of vault, top of pipelines and diameters in the vault, vault invert), sidewalk ramps (top and bottom elevations and cross slopes at each ramp and cross slopes).

- H. The surveyed as-built location of the newly constructed facilities shall be in an ACAD overall base drawing which is in State Plane. Providing “paper space” views that are not in State Plane of the constructed facilities is not acceptable. Providing northing and easting point tables on separate new sheets added to the construction plans is not acceptable. The as-built northing and easting data must be on the individual construction plan sheets to which the data applies.
- I. Provide data at each as-built data point showing all required information in one location: Name of feature (such as valve, hydrant, manhole, edge of pavement), northing and easting, grade elevation, constructed as-built elevation(s) of the feature.
- J. All water valves, hydrants, and blowoffs shall be horizontally referenced from at least two and preferably three permanent points.
- K. The as-built information shown on the Record Drawings is to include, but not be limited to, the following:
  - 1. Submit a topographic survey of the site after the completion of the access roads, stormwater ponds, parking lots, tennis courts, softball fields, soccer field, basketball courts, and site concrete. Reference the map in Appendix C that shows the preconstruction topographic survey area: this same area shall be surveyed after construction has been completed to the final grade.
  - 2. Horizontal locations (state plane coordinates and stations and offsets) and vertical elevations for all utility and storm structures including but not limited to manholes, inlets and cleanouts, including structure top and invert elevations and invert elevations of all connecting pipes.
  - 3. Distance along pipelines between structures, pipeline diameter and type of material, and finish grade elevations along the constructed pipeline.
  - 4. Stormwater pond top of berm and pond bottom elevations and horizontal dimensions measured at a minimum of ten locations per pond, at locations designated by the engineer (provide spot elevations and contours). Top of pond horizontal dimensions, including the berm width are also to be tied to property corners, easements, and rights-of-way.
  - 5. Stormwater control structure dimensions and elevations, including all weirs, slots, orifices (including diameter and type of material), grates, and skimmers.
  - 6. Stormwater conveyance systems including dimensions, elevations, contours, and cross sections.

7. Horizontal locations (state plane coordinates) and vertical elevations (top of pipe, fitting, and grade elevations) of all utility mains, valves, fittings, connection points, etc. Provide vertical elevations (top of pipe and grade elevation) at each end and every 100-ft along the utility main. Provide the utility main diameter and pipe material. Where pipe material changes, provide the horizontal and vertical information at each location.
8. Vertical elevations of all pipelines at crossings of potable water mains (whether the water main is existing or new) in order to document that the minimum required vertical separation has been met.
9. Horizontal offsets from adjacent potable water mains (whether the water main is existing or new) in order to document that the minimum required horizontal separation has been met.
10. Pavement width and elevations at the centerline and edge of pavement every 200 feet plus at all changes in longitudinal slope, cross slope, inlet locations, and at all driveway and street intersections. For parking lots, record centerline and edge of pavement elevations along all drive aisles and islands.
11. All parking areas, sidewalk, sidewalk ramps, landing areas, and ramps designated for handicap access shall contain horizontal and vertical measurements in order to verify required widths, slopes, and cross slopes have been met. Provide building finish floor elevations at all building access points.
12. Horizontal and vertical data for any construction that deviates from the construction drawings.
13. Where the plans contain specific horizontal location data, such as station and offset, the as-built drawings are to reflect the actual horizontal location.
14. Where the plans contain specific vertical elevation data, the as-built drawings are to reflect the actual measured vertical elevation.

### **1.03 Submittal Requirements**

- A. Record Drawings are to be prepared by the Contractor, certified by the Contractor's licensed surveyor, and delivered to the Engineer for review. The Engineer will review the drawings for completeness in accordance with the requirements of this section within seven (7) full working days. For preliminary review, submittal in ACAD and PDF format is sufficient and signed and sealed copies are not necessary. Final submittal of complete Record Drawings shall consist of one set signed and sealed by the Contractor's licensed surveyor plus ACAD and PDF files of the Record Drawings delivered to the Engineer.
- B. If the drawings are found to be incomplete or inaccurate, the drawings will be returned to the Contractor for correction.
- C. In cases where the Owner determines partial clearances or final clearance from permitting agencies are beneficial to the Owner for completed portions of the project, provide preliminary record drawings (ACAD format) to the Engineer for its use in preparing the clearance applications for the Owner. These preliminary record drawings shall include the following:

1. Horizontal locations (state plane coordinates) and vertical elevations (top of pipe, fitting, and grade elevations) of all utility mains, valves, fittings, connection points, etc. Provide vertical elevations (top of pipe and grade elevation) at each end and every 100-ft along the utility main. Provide the utility main diameter and pipe material.
  2. Temporary water main sample point locations (required for new water mains only)
  3. Vertical elevations of all pipelines at crossings of potable water mains (whether the water main is existing or new) in order to document that the minimum required vertical separation has been met.
  4. Horizontal offsets from adjacent potable water mains (whether the water main is existing or new) in order to document that the minimum required horizontal separation has been met.
  5. Horizontal locations and vertical elevations for all utility and storm structures including but not limited to manholes, inlets and cleanouts, including structure top and invert elevations and invert elevations, pipe diameter and material of all connecting pipes.
  6. Distance along pipelines between structures, pipeline diameter and type of material, and grade elevations along the constructed pipeline.
- D. Complete record drawings that are found to be satisfactory as a result of the Engineer's review will be used as the basis for the final project Record Drawings prepared by the Engineer using the Contractor provided record drawings plus Engineer added information.
- E. Complete signed and sealed Record Drawings are required to be delivered to the Owner prior to final inspection of the project. Final inspections will only be scheduled upon receipt of signed and sealed record drawings that have been reviewed by the Engineer and delivered by the Engineer to the Owner.

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION - Not Used**

**END OF SECTION**

**SECTION 02220**  
**SITE DEMOLITION**

**PART 1 GENERAL**

**1.01 Section Includes**

- A. Demolition of designated site structures, retaining walls and foundations and removal of materials from project site.
- B. Demolition and removal of pavements, curbs and gutters, drainage structures, utilities, signage or landscaping.
- C. Disconnecting and capping or removal of identified utilities.
- D. Filling voids in subgrade created as a result of removals or demolition.
- E. Disposal of demolished materials.

**1.02 Related Sections**

- A. Section 02230 - Site Preparation
- B. Section 02310 - Finish Grading
- C. Section 02315 - Excavation and Fill

**1.03 Regulatory Requirements**

- A. Conform to applicable State and local codes for demolition of structures, safety of adjacent structures, dust control, and runoff control.
- B. Obtain required permits and licenses from appropriate authorities. Pay associated fees including disposal charges.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, or fire hydrants without appropriate permits.
- E. Conform to applicable regulatory procedures when hazardous or contaminated materials are discovered.
- F. Test soils around buried tanks for contamination.

**1.04 Project Record Documents**

Accurately record actual locations of capped utilities and subsurface obstructions that will remain after demolition.

### **1.05 Project Conditions**

- A. Structures to be demolished will be discontinued in use and vacated prior to start of work.
- B. City assumes no responsibility for condition of structures to be demolished.
- C. Conditions existing at time of inspection for bidding purposes will be maintained by City as practicable. Variations within structures may occur by City's removal and salvage operations prior to start of demolition work.
- D. Unless otherwise indicated in Contract Documents or specified by the City, items of salvageable value to Contractor shall be removed from site and structures. Storage or sale of removed items on site will not be permitted and shall not interfere with other work specified in Contract Documents.
- E. Explosives shall not be brought to site or used to demolish structures.

### **PART 2 PRODUCTS - Not Used**

### **PART 3 EXECUTION**

#### **3.01 Preparation**

- A. Provide, erect, and maintain erosion control devices, temporary barriers, and security devices at locations indicated on Construction Drawings.
- B. Protect existing landscaping materials, appurtenances, and structures which are not to be demolished. Repair damage caused by demolition operations at no cost to City.
- C. Prevent movement or settlement of adjacent structures. Provide bracing and shoring as needed.
- D. Mark location of utilities. Protect and maintain in safe and operable condition utilities that are to remain. Prevent interruption of existing utility service to occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities as acceptable to governing authorities and City.

#### **3.02 Salvage**

- A. The following items are to be removed and salvaged and turned over to the City. Coordinate with the City as to when the items will be removed and available for the City to pick up from the site:
  - 1. Batting Cage
  - 2. Basketball hoops and backboards
  - 3. Bleachers
  - 4. Benches
- B. Other than the materials to be removed and provided to the City indicated above, all material designated to be removed will become property of the Contractor and shall be removed from the site.

### **3.03 Demolition Requirements**

- A. Conduct demolition to minimize interference with adjacent structures or pavements.
- B. Cease operations immediately if adjacent structures appear to be in danger and notify the City. Do not resume operations until directed by the City.
- C. Conduct operations with minimum of interference to public or private access. Maintain ingress and egress at all times.
- D. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.
- E. Sprinkle work with water to minimize dust. Provide hoses and water connections for this purpose.
- F. Comply with governing regulations pertaining to environmental protection.
- G. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing prior to start of work.
- H. Demolition plan identifies major structures and items to be demolished. Include incidental demolition to completely demolish structures whether indicated on plan or not.

### **3.04 Demolition**

- A. Demolish buildings completely and remove from site using methods as required to complete work within limitations of governing regulations. Small structures may be removed intact when acceptable to the City.
- B. Locate demolition equipment and remove materials so as to prevent excessive loading to supporting walls, floors, or framing.



- C. Demolish concrete and masonry in small sections. Break up concrete slabs-on-grade that are 2-feet or more below proposed subgrade. Remove slabs-on-grade and below grade construction within 2-feet of proposed subgrade.

### **3.05 Filling Voids**

- A. Completely fill below grade areas and voids resulting from demolition or removal of structures, underground fuel storage tanks, wells, cisterns, etc., using approved select fill materials consisting of stone, gravel, and sand free from debris, trash, frozen materials, roots, and other organic matter.
- B. Ensure that areas to be filled are free of standing water, frost, or unsuitable material, trash, and debris prior to fill placement.
- C. Place fill materials in accordance with Sections 02315 or 02320 as applicable unless subsequent excavation for new work is required.
- D. Grade surface to match adjacent grades and to provide flow of surface drainage after fill placement and compaction.

### **3.06 Disposal of Demolished Materials**

- A. Remove from site debris, rubbish, and other materials resulting from demolition operations.
- B. No burning of any material, debris, or trash on-site or off-site will be allowed.
- C. Transport materials removed from demolished structures with appropriate vehicles and dispose off-site to areas that are approved for disposal by governing authorities and appropriate property owners.

### **3.07 Cleanup**

- A. Clean the Project site to a condition satisfactory to the Engineer, free from demolished materials, rubbish or debris. Grade the site to meet adjacent contours and provide a positive flow for surface drainage.
- B. Restore items intended to remain that have been damaged by demolition work at no cost to, and to the satisfaction of the City.
- C. Return all interrupted utility services to their pre-demolition state and disconnect temporary services, unless otherwise specified.

**END OF SECTION**

**SECTION 02230**  
**SITE PREPARATION**

**PART 1 GENERAL**

**1.01 Section Includes**

- A. Layout of work and protection of bench marks.
- B. Protection of structures, trees, or vegetation to remain.
- C. Clearing and grubbing.
- D. Stripping and storing topsoil.

**1.02 Related Sections**

- A. Section 02220 - Site Demolition
- B. Section 02370 - Erosion and Sedimentation Control
- C. Section 02505 - Pipeline Removal and Taking Out of Service

**1.03 Coordination**

- A. Notify the following utility owners which may have utilities in the project area and coordinate with them to avoid service interruptions and/or safety hazards:
  - 1. Duke Energy
  - 2. Seco Energy
  - 3. CenturyLink
  - 4. Charter Communications
  - 5. Next Link Communications, Inc.
  - 6. City of Wildwood - Water
  - 7. Central Sumter Utility Company, LLC
  - 8. City of Wildwood – Sewer
- B. Contact “Sunshine State, One-Call” by dialing “811”, to determine if there are other utilities in the area, and their location. For additional information: [www.callsunshine.com](http://www.callsunshine.com).

**PART 2 PRODUCTS - Not Used**

**PART 3 EXECUTION**

**3.01 Bench Marks and Monuments**

Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor's expense.

### **3.02 Laying Out Work**

- A. Base lines, property lines, and easement lines, are shown on the Drawings. Benchmarks utilized are also shown on the drawings.
- B. Stake out the construction, establish lines and levels, temporary bench marks, batter boards, centerlines and reference points for the work, and verify all dimensions relating to interconnection with existing features.
- C. Report any inconsistencies in the proposed grades, lines and levels, dimensions and locations to the Engineer before commencing work.
- D. Contain all construction activities within the right-of-way, easements, and property secured by the Owner, as shown on the drawings. Do not disturb surrounding properties or travel on surrounding properties without written consent from the property owner. Repair or reconstruct damaged areas on an immediate basis. All costs for repairs shall be the responsibility of the Contractor.

### **3.03 Burning**

Burning is not allowed, unless notes on the drawings specifically allow it to occur. In the event burning is allowed, secure all necessary permits.

### **3.04 Protection of Trees, Shrubs, and Lawns**

- A. Protect all trees and shrubs located outside the right-of-way, easements, and Owner secured property, particularly those trees and shrubs located adjacent to work areas.
- B. Within the right-of-way, easements, and Owner secured property, the intent is to allow trees and shrubs to remain in accordance with the following schedule:
  - 1. New roadway construction – trees and shrubs to remain where located more than 15 feet from the back of curb, or outside the limits of excavation or fill areas, whichever is further.
  - 2. Utility pipeline construction – trees and shrubs to remain outside a 15 foot wide path, centered on the pipeline.
- C. Protect branches, trunks, and roots of trees and shrubs that are to remain. Trees to remain in the construction area shall be boxed, fenced or otherwise protected before any work is started; remove boxing when directed by the Engineer. Do

not permit heavy equipment or stockpiles within branch spread. Remove interfering branches without injury to trunks and cover scars with tree paint.

- D. All lawn areas disturbed by construction shall be replaced with like kind to a condition similar or equal to that existing before construction. Where sod is to be removed, it shall be carefully removed, and the same re-sodded, or the area where sod has been removed shall be restored with new sod in the manner described in the applicable section.
- E. Where fencing, walls, shrubbery, grass strips or area must be removed or damaged incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition.
- F. The cost of all labor, materials, equipment, and work for restoration shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided therefore, as part of the overhead cost of the Work, and no additional payment will be made therefore.

### **3.05 Public Nuisance**

- A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- B. Sound levels shall not exceed 55 dBA 8 a.m. to 8 p.m. This sound level shall be measured at the exterior of the nearest exterior wall of the nearest residence. Levels at the equipment shall not exceed 85 dBA at any time. Sound levels in excess of these values are sufficient cause to have the Work halted until equipment can be quieted to these levels. Work stoppage by the Owner for excessive noise shall not relieve the Contractor from completing the Work on time.
- C. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

### **3.06 Existing Utilities**

- A. The Contractor shall conduct utility verification where needed to perform its work and protect existing utilities.
- B. Utility lines that are damaged during construction shall be repaired by the Contractor and service restored within 4-hours of the breakage. The Owner retains the option of repairing any damage to utility pipes in order to expedite service to the customers. The Contractor will remain responsible for all costs associated with the repair.
- C. Exploratory excavations shall be conducted by the Contractor for the purpose of locating underground pipelines or structures in advance of the construction. Test pits shall be excavated in areas of potential conflicts between existing and proposed facilities and at piping connections to existing facilities a minimum of

48-hours or 1,000-feet in advance of work. If there is a potential conflict, the Contractor shall notify the Owner immediately. Information on the obstruction to be furnished by the Contractor shall include: Location, Elevation, Utility Type, Material and Size. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Owner.

- D. It is intended that wherever existing utilities must be crossed, deflection of the pipe within specified limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when in the opinion of the Owner this procedure is not feasible, the Owner may direct the use of fittings for a utility crossing or conflict transition as detailed on the Drawings.

### **3.07 Relocation of Utilities**

- A. Active utilities which do not interfere with the work shall be supported and protected from damage. After obtaining the Engineer's approval, relocate or remove active utilities which will interfere with work as indicated. Pay for all damage to active utilities and for relocation or removal of all interfering utilities which are ascertainable from Drawings, surveys, site inspection or encountered during construction.
- B. Coordinate with each utility and pay all costs associated with the protection of existing facilities during construction. Also coordinate necessary relocations or other construction related matters with each utility.
- C. Inactive or abandoned utilities and appurtenant structures encountered shall be removed to avoid interference as directed by the Engineer. Exposed ends of abandoned lines shall be plugged or capped in a water-tight manner.

### **3.08 Clearing and Grubbing**

- A. Areas to receive clearing and grubbing shall include all areas to be occupied by the proposed improvements, areas for fill and site grading, and borrow sites. Remove trees outside of these areas only as indicated on the Drawings or as approved in writing by the Engineer.
- B. Clearing shall consist of removing trees and brush and disposal of other materials that encroach upon or otherwise obstruct the work.
- C. Exercise extreme care during the clearing and grubbing operations. Do not damage existing structures, pipes or utilities.
- D. Grubbing shall consist of removing and disposing of stumps, roots larger than 2" in diameter, and matted roots. Remove to a depth of not less than 18" below the original surface level of the ground.
- E. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.

### **3.09 Topsoil Removal**

- A. All areas to be occupied by proposed improvements, and borrow sites shall be stripped of all brush, weeds, grass, roots and other material.
- B. Remove all loamy, organic topsoil suitable for seeding and planting to whatever depth encountered and store separately from other excavated material. Stockpile in designated areas and provide for proper drainage. Cover storage piles as required to prevent windblown dust.
- C. All removed topsoil shall be stockpiled within the project work area. Topsoil can be incorporated into the project in all areas that are to be grassed.
- D. Dispose of unsuitable topsoil as specified under disposal of debris. Excess topsoil shall be removed from site unless specifically noted on Contract Drawings.

### **3.10 Disposal of Debris**

- A. All combustible debris and refuse from site preparation operations shall be removed to legal offsite disposal areas.
- B. All non-combustible debris (not including acceptable fill material, fences, or other structures), resulting from site preparation operations shall become the property of the Contractor and shall be removed to legal offsite disposal areas.

**END OF SECTION**

## **SECTION 02240**

### **DEWATERING**

#### **PART 1 GENERAL**

##### **1.01 Section Includes**

Dewatering design and operation requirements

##### **1.02 Related Sections**

Section 02370 - Erosion and Sedimentation Control

##### **1.03 General Requirements**

- A. Obtain the services of a qualified dewatering specialist to provide dewatering plan as may be necessary to complete the Work. Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system.
- B. Dewatering discharge from the site shall comply with all NPDES general permit requirements and state water quality standards. Provide all testing and permitting required and comply with all treatment or disposal methods required to meet all local, state and federal requirements.
- C. Design and provide dewatering system using accepted and professional methods consistent with current industry practice to eliminate water entering the excavation under hydrostatic head from the bottom and/or sides. Design system to prevent differential hydrostatic head which would result in floating out soil particles in a manner termed as a "quick" or "boiling" condition. System shall not be dependent solely upon sumps and/or pumping water from within the excavation where differential head would result in a quick condition, which would continue to worsen the integrity of the excavation's stability.
- D. Provide dewatering system of sufficient size and capacity to prevent ground and surface water flow into the excavation and to allow all Work to be installed in a dry condition.
- E. No additional payment will be made for any supplemental measures to control seepage, groundwater, or artesian head.
- F. If dewatering equipment needed exceeds any of the following: 1) 6" pump volute; 2) 100,000 GPD total 24 hour (1 day) dewatering, and; 3) 1,000,000 GPD pump capacity, the Contractor shall be required to permit the dewatering system with the water management district.

- G. Contractor shall be responsible for and shall repair without cost to the Owner any damage to work in place, or other contractor's equipment, utilities, residences, highways, roads, railroads, private and municipal well systems, adjacent structures, natural resources, habitat, existing wells, and the excavation, including, damage to the bottom due to heave and including but not limited to, removal and pumping out of the excavated area that may result from Contractor's negligence, inadequate or improper design and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system.

## **PART 2 PRODUCTS - Not Used**

## **PART 3 EXECUTION**

### **3.01 General Requirements**

- A. Control, by acceptable means, all water regardless of source and be fully responsible for disposal of the water.
- B. Confine discharge piping and/or ditches to available easement or to additional easement obtained by Contractor.
- C. Control groundwater in a manner that preserves strength of foundation soils, does not cause instability or raveling of excavation slopes, and does not result in damage to existing structures. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints, jet educators, or similar positive methods. Maintain the groundwater level to a minimum of 2 feet below excavations. Provide piezometers if directed by the Engineer to document the groundwater level is being maintained.
- D. The Contractor, with his own equipment, shall do all pumping necessary to dewater any part of the work area during construction operations to insure dry working conditions. The Contractor shall take the necessary steps to protect on-site and off-site structures. Damage to any structures due to dewatering shall be repaired or the structures replaced at the Contractor's expense.
- E. Commence dewatering prior to any appearance of water in excavation and continue until Work is complete to the extent that no damage results from hydrostatic pressure, flotation, or other causes.
- F. Open pumping with sumps and ditches shall be allowed, provided it does not result in boils, loss of fines, softening of the ground, or instability of slopes.
- G. Install wells and/or wellpoints, if required, with suitable screens and filters, so that continuous pumping of fines does not occur. During normal pumping, and upon development of well(s), levels of fine sand or silt in the discharge water shall not exceed 5 ppm. Install sand tester on discharge of each pump during testing to verify that levels are not exceeded.



- H. Control grading around excavations to prevent surface water from flowing into excavation areas.
- I. Remove subgrade materials rendered unsuitable by excessive wetting and replace with approved backfill material at no additional cost to the Owner.
- J. Walls shall not be exposed to water pressure before structural work at the next higher level has properly cured and the cantilever action of walls is eliminated.
- K. Any dewatering pumps within 1500-ft of private residences shall be equipped with satisfactory sound suppression.
- L. Water from dewatering activities shall be disposed in a manner that does not cause flooding, erosion, or the transfer of sediments.

### **3.02 Maintaining Excavation in Dewatering Condition**

- A. Dewatering shall be a continuous operation. Interruptions due to power outages, or any other reason will not be permitted.
- B. Continuously maintain excavation in a dry condition with positive dewatering methods during preparation of subgrade, installation of pipe, and construction of structures until the critical period of construction and/or backfill is completed to prevent damage of subgrade support, piping, structure, side slopes, or adjacent facilities from flotation or other hydrostatic pressure imbalance.
- C. Provide standby equipment on site, installed, wired, and available for immediate operation if required to maintain dewatering on a continuous basis in the event any part of the system becomes inadequate or fails. If dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional cost to Owner.
- D. System maintenance shall include but not be limited to 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components, and any other work required to maintain excavation in dewatered condition.

### **3.03 System Removal**

Remove all dewatering equipment from the site, including wells and related temporary electrical service.

**END OF SECTION**

## **SECTION 02310**

### **FINISH GRADING**

#### **PART 1 GENERAL**

##### **1.01 Section Includes**

Topsoil placement, grading of site

##### **1.02 Related Sections**

- A. Section 02230 - Site Preparation
- B. Section 02315 - Excavation and Fill
- C. Section 02320 - Trenching, Bedding, and Backfilling

##### **1.03 References**

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
  - 1. AASHTO T267 – Determination of Organic Matter in Soils by Loss on Ignition

#### **PART 2 PRODUCTS**

##### **2.01 Topsoil**

- A. Topsoil shall be fertile, friable, natural topsoil typical of the area, free from subsoil, stones, plants, roots or other extraneous material and shall not be used while muddy or frozen.
- B. Topsoil shall contain not less than 8% organic matter (AASHTO T267). The topsoil shall consist of either natural topsoils typical of the locality and free from coarse stone aggregate or surface soils stripped from the site and enriched with humus at a rate of 8% by volume. The soil mixture prepared by mixing surface soils and humus shall be free of oil, cinders, coarse stone, and woody root material.

#### **PART 3 EXECUTION**

##### **3.01 General**

Provide all topsoil placement and finish grading and filling to achieve the lines and grades indicated on the Drawings. All earthwork shall be done in a manner that provides drainage.

### **3.02 Topsoil Placement**

Place topsoil in all areas of new grading. The compacted subgrade to receive topsoil shall be scarified to a depth of 3 inches. Topsoil shall be spread evenly and compacted to a thickness of not less than 6 inches, to the proposed elevations and grades. Grade flush with walks, curbs, and paving.

### **3.03 Finish Grading**

- A. All areas of the project including all previously grassed areas that have been disturbed, borrow sites, excavated and filled sections and adjacent transition areas shall be uniformly smooth-graded. Depressions from settlement shall be filled and compacted. Tops of embankments and breaks in grade shall be rounded. All surfaces shall be finished to provide adequate drainage. Finished surfaces shall be reasonably smooth, compacted, free from irregular surface changes and comparable to the smoothness obtained by blade-grader operations.
- B. Slope grades to drain away from structures at a minimum of ¼-inch per foot for 10 feet.
- C. Finished surfaces adjacent to paved or surfaced areas and within 10 feet of structures shall be within 1 inch of the proposed grade. All other areas shall be within 3 inches of the proposed grade.
- D. Newly graded areas shall be protected from traffic and erosion. All settlement or washing away that may occur from any cause prior to seeding or acceptance shall be repaired and grades re-established to the required elevations and slopes at no additional cost to the Owner.
- E. Unless otherwise indicated, dispose of all surplus material.

**END OF SECTION**

**SECTION 02315**  
**EXCAVATION AND FILL**

**PART 1 GENERAL**

**1.01 Section Includes**

- A. Excavation and fill for roads, ponds, general site work
- B. Sheeting, shoring and bracing
- C. Compaction

**1.02 Related Sections**

- A. Section 02230 - Site Preparation
- B. Section 02240 - Dewatering
- C. Section 02310 - Finish Grading
- D. Section 02320 - Trenching, Bedding, and Backfilling
- E. Section 02370 - Erosion and Sedimentation Control

**1.03 References**

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
  - 1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
  - 2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop
- B. American Society for Testing and Materials (ASTM) latest edition:
  - 1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
  - 2. ASTM D2487 - Classification of Soils for Engineering Purposes
- C. Occupational Safety and Health Administration (OSHA) Regulations, including:
  - 1. Part 1926 Subpart P – Excavations

**1.04 Definitions**

- A. Backfill = material placed in newly excavated areas to the topsoil, paving sub-grade, or foundation level.
- B. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

### **1.05 Quality Assurance**

- A. Field density testing frequencies:
  - 1. One test for each 5,000 square feet or fraction thereof per lift of general backfilling, minimum 2 tests each layer.
  - 2. One test per each lift of backfill around and under structures.
  - 3. One test per lift per each change in type of fill.
  - 4. One test per 1000 square feet of pavement subgrade, minimum of 2 tests.
- B. Pond construction shall result in the finished pond having side slopes and dimensions that are in accordance with the construction drawings. It is the Contractor's sole responsibility to ensure that these requirements have been met. If the constructed side slopes are steeper than the required side slopes, or the pond volume is not within three (3) percent of the design volume, the Contractor may be required to make corrections to the pond at no additional cost to the Owner.
- C. Sheeting, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

### **1.06 Preconstruction Requirements**

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

## **PART 2 PRODUCTS**

### **2.01 General**

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

### **2.02 Materials**

- A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12% of acceptable materials shall pass the number 200 sieve.

- B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML, MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.
- C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

### **2.03 Sheeting, Shoring, and Bracing**

- A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.
- B. Provide timber work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.
- C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

## **PART 3 EXECUTION**

### **3.01 General Construction Requirements**

- A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.
- B. Provide barriers, warning lights and other protective devices at all excavations.
- C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.
- D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.
- E. If open excavations cross existing rigid surfacing, the surfacing shall be removed for a width one foot beyond the anticipated edge of the excavation. The pavement break shall be sawed to insure a straight joint. Surface replacement

shall match existing surfacing except as otherwise indicated on the Drawings. Where open excavation is allowed along or across public roadways, excavation, backfill, and surface replacement shall conform to the requirements of all permits applicable thereto. In no case shall surface replacement edges bear on less than 12" of undisturbed soil.

### **3.02 Preparation**

- A. Identify required lines, levels, contours, and datum.
- B. Locate and identify existing utilities that are to remain and protect from damage.
- C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.
- D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Protect benchmarks, property corners, and other survey monuments from damage or displacement. If marker needs to be removed it shall be referenced by licensed land surveyor and replaced, as necessary, by same.
- F. Prior to placing fill in low areas, such as previously existing ditches, ponds, or lakes, perform following procedures:
  - 1. Drain water out by gravity with ditch having flow line lower than lowest elevation in low area. If drainage cannot be performed by gravity ditch, use adequate pump to obtain the same results.
  - 2. After drainage of low area is complete, remove mulch, mud, debris, and other unsuitable material by using acceptable equipment and methods that will keep natural soils underlying low area dry and undisturbed.
  - 3. If proposed for fill, muck, mud, and other materials removed from low areas shall be dried on-site by spreading in thin layers for observation by Engineer. Material shall be inspected and, if found to be suitable for use as fill material, shall be incorporated into lowest elevation of site filling operation, but not under building or pavement subgrade or within 10'-0" of perimeter of building subgrade or paving subgrade. If, after observation by Engineer, material is found to be unsuitable, unsuitable material shall be removed from site.

### **3.03 Sheeting, Shoring, and Bracing**

- A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.

- B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.
- C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.
- D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4' of the ground or pavement surface may be left in place without written permission of the Engineer. No extra payment will be made for supports left in place at the Contractor's option.
- E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.
- F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

### **3.04 Excavation**

- A. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction. Slope sides of excavations in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.
- B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill to the correct level at the expense of the Contractor.
- D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.



- E. All suitable materials removed from excavation areas shall be used for the project. Excess excavated suitable material shall be stockpiled on site at a location of the Owner's choosing, and shall become the property of the Owner, unless otherwise indicated on the Drawings.
- F. Suitable onsite excavated materials containing silty or slightly clayey to clayey fine sands shall be sufficiently dried by surface spreading and discing if necessary, or by mixing with cleaner fine sands prior to placement in fill areas.
- G. Unsuitable materials within the influence area of construction shall be excavated, removed from the site, and disposed, unless otherwise indicated on the Drawings.
- H. Excavations shall be kept dry, compacted, and stable to a depth two feet below the bottom of the excavation.
- I. If portions of the bottom of excavations consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the construction, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.

### **3.05 Filling**

- A. All fill material shall be suitable soils or flowable fill. Fill placed within 1 foot of structures shall not contain rock or stone larger than 2 inch diameter. If a sufficient quantity of suitable material is not available from other excavations within the site, provide additional suitable material or flowable fill.
- B. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8 inch loose depth. In all other areas, place fill in layers of 12 inch loose depth.
- C. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place fill materials evenly adjacent to structures, without wedging against structures.
- D. Where filling is required on both sides of structures, fill and compact simultaneously on opposite sides in even layers.

### **3.06 Compaction**

- A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.

- B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.
- C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.
- D. 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.

### **3.07 Testing and Cleanup**

- A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
- B. All surplus excavated material shall be disposed of by the Contractor.

### **3.08 Field Quality Control**

- A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):
  - 1. Fill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
  - 2. Fill placed within pond and road embankment = 95 percent
  - 3. Fill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
  - 4. Fill placed within landscape areas = 85 percent
  - 5. Fill placed within all other areas = 90 percent

Where fill is placed and differing density requirements are defined, the more stringent density requirement governs.

**END OF SECTION**

## SECTION 02320

### TRENCHING, BEDDING, AND BACKFILLING

#### PART 1 GENERAL

##### 1.01 Section Includes

- A. Trenching for piping and electrical work.
- B. Excavation for manholes, junction boxes, meter vaults, and appurtenances.
- C. Sheeting, shoring and bracing
- D. Bedding, backfilling, and compaction.

##### 1.02 Related Sections

- A. Section 02230 - Site Preparation
- B. Section 02240 - Dewatering
- C. Section 02310 - Finish Grading
- D. Section 02315 - Excavation and Fill
- E. Section 02370 - Erosion and Sedimentation Control

##### 1.03 References

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
  - 1. AASHTO M145 - Classification of Soils and Soil Aggregate Mixtures
  - 2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-in Drop
- B. American Society for Testing and Materials (ASTM) latest edition:
  - 1. ASTM D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort
  - 2. ASTM D2487 - Classification of Soils for Engineering Purposes
- C. Occupational Safety and Health Administration (OSHA) Regulations, including:
  - 1. Part 1926 Subpart P – Excavations

##### 1.04 Definitions

- A. Bedding = Area from bottom of trench to centerline of pipe
- B. Backfill = material above the top of pipe to the topsoil, paving sub-grade, or foundation level.
- C. Influence Area = the area within lines sloped downward at 45 degrees from the outer edges of paving, foundations, and utility lines. As a minimum, the influence area shall extend 5 feet beyond the edge of pavement (where there is no curb) or 5 feet beyond the back of curb.

### **1.05 Quality Assurance**

- A. Field density testing frequencies:
  - 1. One test for each 300 linear feet of pipeline or fraction thereof per lift of general backfilling in the pipeline trench. Where less than 300 linear feet of pipeline is installed, one test per lift of backfill is required, staggered along the pipeline at locations determined by the Engineer
  - 2. One test for each 100 square feet or fraction thereof of backfill around and under structures, with a minimum of two tests per lift.
  - 3. One test per lift per each change in type of fill.
- B. Sheeting, shoring, and bracing used for the support of excavations over 20 feet deep shall be designed by a professional engineer licensed by the State of Florida.

### **1.06 Preconstruction Requirements**

Precondition surveys and vibration monitoring are required for those areas where residential structures are within 100 feet of the proposed construction.

## **PART 2 PRODUCTS**

### **2.01 General**

It is intended that previously excavated materials conforming to the following requirements be utilized wherever possible.

### **2.02 Materials**

- A. Acceptable materials (suitable material): AASHTO M145 classification A-1, A-3, A-2-4, ASTM D2487 classification GW, GP, GM, SM, SW, SP; unless otherwise disapproved within the Soil and Subsurface investigation reports. No more than 12 percent of acceptable materials shall pass the number 200 sieve.
- B. Unacceptable materials (unsuitable material): AASHTO M145 classification A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7, A-8; ASTM D2487 classification GC, SC, ML,

MH, CL, CH, OL, OH, PT; unless otherwise approved within the Soil and Subsurface investigation reports.

- C. Flowable fill shall be “Excavatable” and shall meet the requirements of FDOT specification section 121, with a maximum 28-day compressive strength of 100 psi and a minimum 28-day compressive strength of 80 psi.

### **2.03 Sheeting, Shoring, and Bracing**

- A. The structural strength and safety of all sheeting, shoring and bracing shall be the sole responsibility of the Contractor. Repair any damage resulting from failure to provide adequate supports.
- B. Provide timber-work, shoring, bracing, sheeting, and sheet piling where necessary to retain banks of excavations, prevent cave-in of adjacent ground, prevent displacement of utilities and structures, and to protect public safety.
- C. Contractor is solely responsible for the design, installation, and operation of dewatering systems and their safety and conformity with local codes and regulations.

## **PART 3 EXECUTION**

### **3.01 General Construction Requirements**

- A. Provide suitable temporary drainage channels for any water that may flow along or across the work as specified hereafter.
- B. Provide barriers, warning lights and other protective devices at all excavations.
- C. Sidewalks, roads, streets, and pavements shall not be blocked or obstructed by excavated materials, except as authorized by the Engineer, in which case adequate temporary provisions must be made for satisfactory temporary passage of pedestrians, and vehicles. Minimize inconvenience to public travel or to tenants occupying adjoining property.
- D. Where necessary to place excavated material adjacent to buildings, erect barriers to keep earth at least 4 feet from such buildings. Earth deposited on lawns shall be promptly and carefully removed to preserve the turf. All trees, shrubs, and landscaping shall be protected. Boring and jacking shall be used, if necessary, except where written permission is granted to remove trees and shrubs.
- E. If open excavations cross existing rigid surfacing, the surfacing shall be removed for a width one foot beyond the anticipated edge of the excavation. The pavement break shall be sawed to insure a straight joint. Surface replacement shall match existing surfacing except as otherwise indicated on the Drawings. Where open excavation is allowed along or across public roadways, excavation, backfill, and surface replacement shall conform to the requirements of all permits

applicable thereto. In no case shall surface replacement edges bear on less than 12 inches of undisturbed soil.

- F. Remove clayey materials [A-2-6/A-6/A-7] in accordance with FDOT Standard Plans Index 120-002. Conduct proof-rolling of the exposed subgrade to help determine the area that may need to be undercut. Positive drainage around the roadway/driveway areas should be established to prevent irrigation and stormwater from migrating into the pavement area.

### **3.02 Preparation**

- A. Identify required lines, levels, contours, and datum.
- B. Locate and identify existing utilities that are to remain and protect from damage.
- C. Notify utility companies to remove or relocate utilities that are in conflict with proposed improvements.
- D. Protect plant life, lawns, fences, existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- E. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of the Owner. All benchmarks, property corners, and other survey monuments that are lost, damaged, or destroyed shall be replaced by a Licensed Surveyor at the Contractor's expense.

### **3.03 Sheeting, Shoring, and Bracing**

- A. Furnish, install, and maintain, without additional compensation, sheeting, bracing, and shoring support required to keep excavations within the easement provided, to support the sides of the excavation, and to prevent any movement which may damage adjacent pavements or structures, damage or delay the work, or endanger life and health. Voids outside the supports shall be immediately filled and compacted.
- B. Sheeting, where required, shall be driven below the bottom of excavation so the lowest set of wales and struts are above the bottom of the excavation to allow necessary working room.
- C. The Engineer may direct in writing that supports in trenches be cut off at any specified elevation, in which case Contractor shall be paid for the supports left in place.
- D. Contractor may leave in place, to be embedded in the backfill of the excavation, any or all supports for the purpose of preventing injury to persons or property, whether public or private. However, no supports which are within 4 feet of the ground or pavement surface may be left in place without written permission of the

Engineer. No extra payment will be made for supports left in place at the Contractor's option.

- E. All supports not left in place shall be removed in such manner as to avoid endangering the piping, structures, utilities or property, whether public or private. All voids left by the withdrawal of sheeting shall be immediately filled and compacted.
- F. The right of the Engineer to order supports left in place shall not be construed as creating an obligation on his part to issue such orders. Failure by the Engineer to exercise this right shall not relieve the Contractor from total liability for damages to persons or property resulting from the failure of the Contractor to leave in place sufficient supports to prevent any caving or moving of the ground adjacent to the excavation.

### **3.04 Trenching**

- A. All excavations shall be made by open cut unless otherwise indicated. Sides of trenches shall be kept as nearly vertical as possible from the trench bottom to a level of one foot above the top of the pipe. Slope sides of trenches in accordance with OSHA requirements and the recommendations contained within the project geotechnical report.
- B. Excavation of trenches shall not advance more than 50 feet ahead of completed pipe installation except as approved by the Engineer.
- C. Excavate trenches to depth indicated or required for indicated flow lines and invert elevations. Over excavate trenches a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- D. Where rock is encountered, carry excavation 6 inches below scheduled elevation and backfill with a 6 inch layer of crushed stone or gravel prior to installation of pipe.
- E. For pipes or conduit 5 inches or less, excavate to indicated depths. Hand excavate bottom cut to accurate elevations and support pipe or conduit on undisturbed soil.
- F. For pipes or conduit 6 inches or larger, and other work indicated to receive subbase, excavate to subbase depth indicated, or, if not otherwise indicated, to 6 inches below bottom of work to be supported.
- G. Except as otherwise indicated, excavate for pressure piping so top of piping is minimum 3 feet below finished grade.
- H. Unsuitable excavated materials shall be removed from the site and disposed, unless otherwise indicated on the Drawings.

- I. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.
- J. Trench bottoms shall be kept dry, compacted, and stable to a depth two feet below the bottom of the trench.
- K. Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 9 -12 inch clearance on each side of pipe or conduit.
- L. If more than one pipe is to be installed in a trench, the pipes shall be spaced a minimum of one foot apart for pipes 4 inches and larger.
- M. If portions of the bottom of trenches consist of material unstable to such a degree that, in the opinion of the Engineer, it cannot adequately support the pipe or structure, the bottom shall be over excavated and stabilized with approved coarse granular stabilization material. Depth of stabilization shall be as directed by the Engineer. The initial 50 tons of stabilization shall be incidental to the Contract. Compensation will be allowed only for such additional quantities as the Engineer shall direct in writing to be placed.
- N. Do not backfill trenches until tests and inspections have been made.

### **3.05 Trench Backfilling**

- A. Following placement of pipe and inspection of joints, install tamped bedding material. Place bedding fill materials in layers of 6 inch loose depth.
- B. All bedding and backfill material shall be suitable soils or flowable fill. Backfill material within 1 foot of pipe and appurtenances shall not contain rock or stone larger than 2 inch diameter. If a sufficient quantity of suitable material is not available from the trench or other excavations within the site, provide additional suitable material or flowable fill.
- C. After completion of bedding and preliminary approval of piping and testing, the pipe shall be covered to a point one foot above the top of the pipe for the full trench width, placed in layers of 8 inch loose depth.
- D. Place backfill over pipe. Where trench is within the influence area of roadways, structures, foundations, or slabs, place backfill in layers of 8 inch loose depth. In all other areas, place backfill in layers of 12 inch loose depth.
- E. Take necessary precautions not to cause settlement or damage to adjacent slabs, walls, structures, or foundations. Place backfill and fill materials evenly adjacent to structures, without wedging against structures or displacement of piping or conduit.

### **3.06 Minor Structural Excavation and Backfilling**



- A. Minor structures are defined as manholes, junction boxes, inlets, valve vaults, and meter vaults. Do not excavate for any structure until that structure is scheduled for construction. Excavate only to the depth and dimensions necessary for the construction.
- B. The bottom of all excavations shall be undisturbed earth unless otherwise indicated, and shall be approved by the Engineer before any subsequent work is started. Over excavate a minimum of 2 feet where excavations occur within unsuitable soils, and replace over excavated material with suitable soils.
- C. Excavations carried below depths indicated on the Drawings without the previous approval of the Engineer shall be filled with 2500 psi concrete or flowable fill at the Owner's discretion to the correct level at the expense of the Contractor.
- D. Maintain excavations in good order. If the bearing capacity of the foundation soils is reduced because the excavation is allowed to remain open prior to commencing work, the weathered soil shall be removed and replaced with 2500 psi concrete or flowable fill at the Owner's discretion at the expense of the Contractor.
- E. Do not backfill until new concrete has properly cured, coatings have been approved, and any required tests have been accepted.
- F. Fill within the influence area of roadways, structures, foundations, or slabs, shall be placed in layers of 8 inch loose depth. In all other areas, place fill in layers of 12 inch loose depth.
- G. Exercise care during backfilling operations to avoid any puncture, break or other damage to waterproofing systems, if any. Backfill adjacent to waterproofing in the presence of the Engineer.
- H. Where backfilling is required on both sides of structures, backfill and compact simultaneously on opposite sides in even layers. Other backfilling sequences shall be as specifically noted.

### **3.07 Compaction**

- A. Unless otherwise indicated, the type of equipment and number of passes required to obtain the specified degree of compaction shall be determined at the site, subject to the approval of the Engineer.
- B. Provide mechanical compaction for cohesive material and vibratory compaction for granular materials, unless otherwise approved by the Engineer. Vibratory compaction is not allowed within 100 feet of existing structures. In these areas, compaction shall be accomplished by static means only. If compaction difficulties arise, the Engineer shall be consulted to review and possibly modify compaction procedures.

- C. Noncohesive soils shall be compacted with vibrating roller or equivalent; cohesive soils shall be compacted with sheeps-foot roller, pneumatic tamping, or approved equivalent, unless otherwise indicated.
- D. 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.

### **3.08 Testing and Cleanup**

- A. Provide for testing and cleanup as soon as practicable, so these operations do not lag far behind pipe installation. Perform preliminary cleanup and grading operations immediately after backfilling.
- B. All surplus excavated material shall be disposed of by the Contractor.

### **3.09 Field Quality Control**

- A. Minimum Density Requirement (ASTM D1557 or AASHTO T180):
  - 1. Backfill placed under and within the influence area of roadways, structures, slabs, foundations = 98 percent
  - 2. Backfill placed within pond and road embankment = 95 percent
  - 3. Backfill placed within public road right-of-way and utility easements outside the road influence area = 95 percent
  - 4. Backfill placed within landscape areas = 85 percent
  - 5. Backfill placed within all other areas = 90 percent

Where backfill is placed and differing density requirements are defined, the more stringent density requirement governs.

**END OF SECTION**

## SECTION 02370

### EROSION AND SEDIMENTATION CONTROL

#### PART 1 GENERAL

##### 1.01 Section Includes

Designing, providing, maintaining, removing temporary erosion and sedimentation controls.

##### 1.02 Related Sections

- A. Section 01415 - Stormwater Pollution Prevention / NPDES Requirements
- B. Section 02230 - Site Preparation
- C. Section 02240 - Dewatering
- D. Section 02315 - Excavation and Fill
- E. Section 02320 - Trenching, Bedding, and Backfilling

##### 1.03 References

- A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, latest edition:
  - 1. Specification 300 - Prime and Tack Coats for Base Courses
  - 2. Specification 985 - Geotextile Fabrics
- B. State of Florida Erosion and Sediment Control Manual, latest edition.

##### 1.04 Owner's Instructions / Sequencing

- A. Owner has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, trenching, borrow and embankment operations. Owner also has authority to direct Contractor to provide immediate permanent or temporary erosion and sediment control measures.
- B. Contractor shall respond to erosion and sediment control maintenance requirements or implement additional measures to control erosion ordered by Owner or governing authorities within 48 hours or sooner if required at no additional cost to the Owner.
- C. Contractor will be required to incorporate permanent erosion control features into project at earliest practical time to minimize need for temporary controls.

## **PART 2 PRODUCTS**

### **2.01 Erosion Control**

- A. Seeding and Mulching
- B. Sodding
- C. Hydro-seeding
- D. Coarse Aggregate
- E. Prime Coat - Per FDOT Specification 300

### **2.02 Sedimentation Control**

- A. Silt Fence - Per Details on the Drawings
- B. Floating Turbidity Barriers - Per Details on the Drawings

## **PART 3 EXECUTION**

### **3.01 Erosion Control**

- A. Maintain temporary erosion control systems as directed by Owner or governing authorities to control erosion and siltation during life of contract.
- B. The erosion and sediment control measures shown on the plans represent a minimum requirement. The Contractor is responsible for determining additional erosion and sediment control measures needed in order to prevent the transfer of sediment from the project area and prevent the erosion of surfaces during construction, as needed to protect adjacent properties and water bodies.
- C. Permanently grass cut slopes as excavation proceeds to extent considered desirable and practical as determined by the Owner.
- D. Grass all disturbed areas within 7 days of initial disturbance. Type of grassing shall be as follows: temporary grassing to be sodding at all drainage structures, retention areas, swales and ditches, and where slopes are steeper than 5:1. Temporary grassing can be seed and mulch at all other locations unless otherwise indicated in the drawings or specifications.
- E. Erosion control of areas to be paved shall meet the following:
  - 1. Install subgrade and base course materials within 48 hours of the removal/open cutting of existing pavement consisting of streets, driveways, or sidewalk. Install final surface courses within 14 days after removal of existing pavement.

2. Areas to receive asphalt shall receive erosion control measures no later than 48 hours after installation of base course. Temporary erosion control consists of placement of a bituminous prime coat and sanding the surface. Permanent erosion control consists of placement of the structural course.
  3. Areas to receive concrete paving shall be either protected with a layer of FDOT coarse aggregate material or shall be paved within 48 hours of installation of the subgrade.
- F. Dirt roads are to be stabilized and compacted within 7 days of the completion of trenching and grading activities.

### **3.02 Sedimentation Control**

- A. Install prior to construction.
- B. Inspect every two weeks during construction.
- C. Remove any sediment build-up.
- D. Repair and reinstall any damaged or missing sediment control measures. Install additional measures if inspection reveals additional sedimentation control is necessary.
- E. Rough excavate and grade any proposed stormwater ponds at the start of site grading activities. Direct site runoff to the ponds to minimize runoff to offsite areas.

**END OF SECTION**

## SECTION 02510

### WATER DISTRIBUTION SYSTEMS

#### PART 1 GENERAL

##### 1.01 Section Includes

- A. Piping, fittings, valves, and hydrants for public drinking water distribution systems
- B. Testing and disinfection
- C. This specification section outlines drinking water system requirements. There are also City specifications and details on the Drawings. In case of conflict, the City requirements govern.

##### 1.02 Related Sections

- A. Section 02320 - Trenching, Bedding and Backfilling
- B. Section 02955 - Cleaning and Flushing Of Underground Piping

##### 1.03 References

- A. American Water Works Association (AWWA) and American National Standards Institute (ANSI) latest edition:
  - 1. ANSI/AWWA C104/A21.4 - Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water
  - 2. ANSI/AWWA C105/A21.5 - Polyethylene Encasement for Ductile Iron Pipe Systems
  - 3. ANSI/AWWA C110/A21.10 - Ductile Iron and Gray Iron Fittings, 3 Inch Through 48 Inch, for Water
  - 4. ANSI/AWWA C111/A21.11 - Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings
  - 5. ANSI/AWWA C115/A21.15 - Flanged Ductile Iron Pipe with Ductile Iron or Gray Iron Threaded Fittings
  - 6. ANSI/AWWA C150/A21.50 - Thickness Design of Ductile Iron Pipe
  - 7. ANSI/AWWA C151/A21.51 - Ductile Iron Pipe, Centrifugally Cast, for Water
  - 8. ANSI/AWWA C153/A21.53 - Compact Ductile Iron Fittings for Water Service
  - 9. AWWA C502 - Dry Barrel Fire Hydrants
  - 10. AWWA C504 - Rubber Seated Butterfly Valves
  - 11. AWWA C508 - Swing Check Valves for Waterworks Service, 2 Inch Through 24 inch
  - 12. AWWA C509 - Resilient Seated Gate Valves for Water Supply Service
  - 13. AWWA C515 - Reduced-Wall, Resilient-Seated Gate Valves for Water Supply Service

14. AWWA C518 - Dual Disc Swing Check Valves for Waterworks Service
15. AWWA C550 - Protective Epoxy Interior Coatings for Valves and Hydrants
16. AWWA C600 - Installation of Ductile Iron Water Mains and Their Appurtenances
17. AWWA C605 - Underground Installation of PVC Pipe and Fittings for Water
18. AWWA C651 - Disinfecting Water Mains
19. AWWA C800 - Underground Service Line Valves and Fittings
20. AWWA C900 - PVC Pressure Pipe and Fabricated Fittings, 4 Inch Through 60 Inch
21. AWWA C901 - Polyethylene Pressure Pipe and Tubing, ½ Inch Through 3 Inch for Water Service
22. AWWA C906 - Polyethylene Pressure Pipe and Fittings, 4 Inch Through 63 Inch for Water Distribution and Transmission
23. AWWA M23 - PVC Pipe Design and Installation Manual

B. American Society for Testing and Materials (ASTM) latest edition:

1. ASTM A307 - Carbon Steel Bolts and Studs
2. ASTM A536 - Ductile Iron Castings
3. ASTM D1784 - Rigid PVC Compounds and CPVC Compounds
4. ASTM D2000 - Classification System for Rubber Products in Automotive Applications
5. ASTM F1674 - Test Method for Joint Restraint Products for Use with PVC Pipe
6. ASTM F2164 - Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure

#### 1.04 Submittals

- A. Product data for gaskets, pipe, joints, joint restraint, fittings, valves, coatings.
- B. Product data for all locate wire, tape, markers, warning tape
- C. Submit certification documenting that all pipe and fittings used to convey potable water shall conform to one of the following standards:
  1. NSF International Standard 61 (Drinking Water System Components);
  2. Section 6 of NSF International Standard 14 (Plastics Piping System Components and Related Materials); or
  3. Food and Drug Administration's Regulations for indirect food additives as contained in 21 CFR Parts 174 through 189.
- D. Piping specialties and installation details.
- E. Product data and painting schedule for field applied paint and coatings.
- F. Final coat paint colors.

- G. Proposed sequence of operation for disinfection and testing, manner of filling and flushing units, source and quality of water to be used, and proposed discharge locations.

### **1.05 Quality Assurance**

- A. Chlorination and dechlorination shall be performed by competent individuals knowledgeable and experienced in the operation of the necessary application and safety equipment in accordance with applicable Federal, State and Local laws and regulations.
- B. Collection of water samples shall be by a State Certified Testing Laboratory or by an individual holding a current Florida Dept. of Environmental Protection certification that allows collection of water samples to be used for testing.
- C. Samples of water shall be tested by a State Certified Testing Laboratory.
- D. The contractor installing the underground fire protection piping shall hold a class I, II, or V level certification as issued by the State of Florida, as required by FS 633.021(15).

### **1.06 Product Delivery, Storage, and Handling**

Exercise care in transporting and handling pipe and fittings in order to avoid damage to materials or coatings. Lifting shall be by hoist or on skids when hand lifting is not feasible. Dropping shall not be permitted. Store pipe as recommended by the manufacturer. Damaged pipe and fittings shall be replaced.

### **1.07 Notification Requirements**

- A. All testing required to be witnessed by the Owner requires a minimum seventy-two (72) hours advance notice to the Owner.
- B. All proposed connections to existing mains (such as wet taps and line stops) require a minimum seventy-two (72) hours advance notice to the Owner.
- C. Installation of fire hydrants, thrust collars and restraints, valve pads, hydrant shear pads, and meter boxes and services, are to be witnessed by the Owner and require a minimum twenty-four (24) hours advance notice to the Owner.

## **PART 2 PRODUCTS**

### **2.01 Ductile Iron Pipe**

- A. Buried pipe shall conform with ANSI/AWWA C150/A21.50 and C151/ A21.51, and shall have a minimum working pressure of 150 psi. Buried pipe shall comply with the following pressure class (PC) designations unless otherwise indicated on the Drawings:



1. 12 inch diameter and smaller = PC 350
  2. 14 inch through 24 inch diameter = PC 250
  3. 30 inch through 64 inch diameter = PC 200
- B. Exposed pipe 4 inches and larger shall be flanged and shall conform with AWWA/ANSI C115/A21.15, and shall have a minimum working pressure of 150 psi. Flanged pipe shall comply with the following thickness class (TC) designations unless otherwise indicated on the Drawings:
1. 4 inch diameter = TC 54
  2. 6 inch through 24 inch diameter = TC 53
- C. All flanges shall be class 125, and shall be fully machine faced after being screwed tightly on the pipe. Bolts and nut shall conform to ASTM A307, Grade B.

## **2.02 Fittings for Ductile Iron and PVC Pipe**

- A. Fittings shall be manufactured of ductile iron, conforming to ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53.
- B. All full body (C110/A21.10) fittings shall be pressure rated to 250 psi, minimum. All compact fittings (C153/A21.53) shall be pressure rated to 350 psi, minimum.
- C. Fitting joints shall be compatible with the type of pipe in use or specified, e.g., flange fittings for flange pipe and mechanical joint for mechanical joint pipe and push-on joint pipe.

## **2.03 Linings and Coatings for Ductile Iron Pipe and Fittings**

- A. Interior lining shall be standard thickness cement mortar lining and bituminous seal coat, conforming to ANSI/AWWA C104/A21.4.
- B. Exterior coating for buried pipe and fittings shall be a petroleum asphaltic coating in accordance with ANSI/AWWA C110/A21.10.
- C. All exposed pipe and fittings shall be painted with a three coat system. The first coat shall be primer, 2.5-3.5 mil Dry Film Thickness (DFT) Tnemec Series 1 Omnithane or approved equal; the intermediate coat shall be 4.0-10.0 mil DFT Tnemec Color Hi-Build Epoxoline II Series N69 or approved equal, and the final coat shall be 2.0-3.0 mil DFT Tnemec EnduraShield Series 73 or approved equal. The final coat paint color shall be as selected by the local utility.
- a. Exposed Ductile iron pipe and fittings shall be prepared for painting using Surface Preparation SP 6 Commercial Blast Cleaning consisting of the following: 1) Remove all oil and grease from the surface. Blast clean surface to a Commercial Finish, removing mill scale, dirt, rust, and foreign matter by the methods outlined herein. Two thirds of each square inch of surface area shall be free of all visible residues. 2) Blasting shall be done with centrifugal wheel or

compressed air blast using either steel grit or flint silica sand. Abrasive should provide a profile depth of 1.0 to 2.0 mils. Steel Grit #G 80 or flint silica sand 20 50 mesh is recommended to obtain proper profile depth. Remove all dust and sand by vacuuming. 3) The blast cleaned surface shall be primed as soon as possible and before any rusting of the surface occurs.

#### **2.04 Joints for Ductile Iron Pipe and Fittings**

- A. Mechanical and push-on joints shall be rubber gasketed, conforming to ANSI/AWWA C111/A21.11. Rubber gaskets shall be made of vulcanized styrene butadiene rubber (SBR). Mechanical joint bolts and nuts shall conform to ASTM A307, Grade B. Ductile iron glands shall be provided with ductile iron pipe.
- B. Lubricants other than that furnished by the pipe manufacturer with the pipe shall not be used.

#### **2.05 Restrained Joints for Ductile Iron Pipe, Valves, and Fittings**

- A. Restrained joints for ductile iron pipe bell joints shall be American Fast Grip Gasket, McWane Sure Grip 350 Gasket, U.S. Pipe Field Lok 350 Gasket, or EBAA Iron Mega Lug Series 1100HD.
- B. Restrained joints for ductile iron pipe, valve, and fitting mechanical joints shall be EBAA Iron Mega Lug Series 1100, Star Grip Series 3000, or Tyler Union Tuf-Grip Series TLD.
- C. Locking bell joint restraint shall be American Flex Ring Joint, American Lok-Ring Joint, or U.S. Pipe TR-Flex.
- D. Pipe joints shall be restrained upstream and downstream of fittings in accordance with the manufacturer's requirements or the table shown in the Drawings, whichever is greater.

#### **2.06 PVC Pressure Pipe**

- A. Pipe 4 inch through 30 inch diameter shall conform to AWWA C900.
- B. Pipe shall conform to ASTM D1784, Type I, Grade I, 4000 psi design stress, and shall be National Sanitation Federation (NSF) approved.
- C. Water main pipe shall be class 235 (DR18), fire mains shall be class 305 (DR 14). Pipe barrel dimensions, pressure classes, and dimension ratios are to be for PVC pipe with Cast Iron Outside Diameter (CIOD). All pipe shall contain markings on each section showing conformance to the above specifications.
- D. PVC pipes shall be color coded blue and stenciled (0.75-inch lettering on the pipe in at least three areas per pipe section) "Potable Water Main".

#### **2.07 PVC Pressure Pipe Joints**

- A. Joints shall be rubber gasketed conforming to AWWA C900.
- B. The bell shall be integral with the pipe and of equal or greater pressure rating. The bell of pipe and fittings using push-on joints shall have an integral groove to retain the gasket in place.
- C. Provide adapters as required to join PVC pipe to pipe, fittings and equipment of other materials.

#### **2.08 Restrained Joints for PVC Pressure Pipe**

- A. Restrained joints for PVC pipe mechanical joints shall be Tyler Union Series 2000 Tuf Grip TLP, JCM Sur-Grip Bell Restrainer, Ford Uni-Flange Series 1500 Circle Lock, or EBAA Iron Mega Lug Series 2000PV.
- B. Restrained joints for PVC pipe push on joints shall be EBAA Iron Mega Lug Series 1500 or Series 1600 (C900 PVC), Series 2800, Ford Uni-Flange Series 1390, or Smith-Blair Bell-Lok Series 165.
- C. Pipe joints shall be restrained upstream and downstream of fittings in accordance with the manufacturer's requirements or the table shown in the Drawings, whichever is greater.

#### **2.09 Polyethylene Pipe and Fittings (4 Inches and Larger) - N/A**

#### **2.10 Polyethylene (PE) Pressure Pipe and Tubing, Joints and Fittings (½ Inch through 3 inch)**

- A. Polyethylene pipe and tubing used for service lines ½-3 inch diameter shall be blue polyethylene in accordance with AWWA C901, standard code designation PE 4710, SDR 9 (outside diameter based dimension ratio), 250 psi. Pipe and fittings shall be NSF approved for the usage to which they are to be applied.
- B. Joints in SDR-PR PE pipe shall be butt heat fusion or socket heat fusion type.
- C. Fittings shall be manufactured of the same material as the pipe and shall be of the same DR.
- D. Provide adapters as required to join PE pipe-to-pipe, fittings and equipment of other materials.

#### **2.11 Service Saddles**

Service saddles shall meet the requirements of AWWA C800 and shall consist of epoxy coated ductile iron bodies in accordance with ASTM A536, with double stainless steel straps, bolts, washers and nuts. Stainless steel shall be Type 304, and nuts are to be Teflon coated. The ductile iron body is to be fusion bonded nylon coated, minimum

thickness 12 mils, outlet of saddle is to have NPT threads. Service saddles shall be manufactured by Ford, Mueller, or Smith-Blair.

## **2.12 Tapping Sleeves**

Tapping sleeves are to be 18-8 type 304 stainless steel and stainless steel outlet, as manufactured by JCM or approved equal.

## **2.13 Polyethylene Encasement - N/A**

## **2.14 General Valve Requirements**

- A. Unless otherwise indicated or specified, all valves two inches and smaller shall be all brass or bronze; valves over two inches shall be iron body, fully bronze or bronze mounted.
- B. Where required for satisfactory operation of valves, provide valve operators, extension stems, stem guides, cast iron valve boxes, floor boxes, handwheels, operator stands, position indicators, and other valve appurtenances. Extension stems shall be complete with guide bearings, wrench nut, and tee handle wrench. All machinery stuffing boxes shall be packed with material selected for the service intended. Maintain all packing until final acceptance by the Owner.
- C. Manufacturer's name, service, and pressure marking shall be cast into the body.
- D. Valve operators shall be sized for operation at the pressure and flow conditions required for proper operation.
- E. Extension stems shall be provided for all valves in buried locations and in other locations where indicated on the Drawings.
- F. Extension stems shall be fabricated from solid steel shafting not smaller in diameter than the stem of the valve or from galvanized steel pipe having an internal diameter not smaller than the diameter of the valve stem. Stem couplings shall be both threaded and keyed to the coupled stems and shall be of standard design and construction. Pipe couplings will not be acceptable.
- G. Stems for buried valves shall extend to within 6 inches of the surface of the ground. Each extension stem shall be connected to the valve operator with a suitable universal joint type coupling. All connections shall be pinned. Each extension stem shall be provided with spacers which will center the stem in a valve box having an inside diameter of approximately 5 inches, and shall be equipped with a standard AWWA wrench nut as described in AWWA C500, except where handwheels are indicated.

## **2.15 Linings and Coatings for Valves**

- A. Exterior coating on buried valves shall be rust inhibiting epoxy primer, followed by a coal tar epoxy, total minimum dry film thickness of 16 mils, applied at the

factory. Exterior coating of exposed valves shall be factory applied rust inhibiting epoxy primer, minimum 3 mils dry film thickness.

- B. After installation, exterior surfaces shall be painted with a two coat system. The first coat (intermediate coat) shall be 4.0-10.0 mil DFT Tnemec Color Hi-Build Epoxoline II Series N69 or approved equal, and the final coat shall be 2.0-3.0 mil DFT Tnemec EnduraShield Series 73 or approved equal. The final coat paint color shall be as selected by the local utility.
- C. The interior of valves with a cast iron or ductile iron body shall be coated with an epoxy protective coating meeting NSF International Standard 61 and AWWA C550.

## **2.16 Gate Valves**

- A. Gate valves 3 inches and larger shall be resilient wedge gate valves, conforming to AWWA C509 or AWWA C515 (valves 16"-48"). The valves shall be iron body, cast iron fully encapsulated molded rubber wedge complying with ASTM D2000, non-rising stem with O-ring seals. Valves shall open counterclockwise. Resilient wedge to be US Food and Drug Administration approved for potable water and have an EPDM visible marking.
- B. Valves shall have an unobstructed waterway equal to or greater than the full nominal diameter of the valve.
- C. All valves will have 250 psig working pressure and a 500 psi static test pressure. The valves shall be non-rising stems and the stem material shall be 18-8 stainless steel, Type 304, ANSI 420/ASTM A276 with no measurable level of lead content. Valves shall have two upper o-ring seals on the stem above the thrust collar and at least one o-ring seal below the collar so designed to allow for replacement of the upper o-rings with the valve under full operating pressure. Valves shall have thrust washers located above and below the thrust collar to insure a smooth frictionless operation.
- D. All valves shall have a 2 inch ductile iron wrench nut with direction of valve operation clearly visible when looking down on the nut. Hold down nut or bolt shall be Type 316 stainless steel. All exterior bonnet and thrust collar fasteners, whether recessed or exposed, are to be Type 316 Stainless Steel and marked by type.
- E. The waterway seat area will be smooth without ridges or cavities and valves will have full size bore throughout the flow-way. All valves will be hydrostatically pressure tested prior to shipment in accordance with AWWA C509 and are to be covered by the manufacturers Ten Year Limited Warranty from date of purchase by the end user.
- F. The resilient sealing mechanism shall provide zero leakage at test and normal working pressure when installed with the line flow from either direction.

- G. Gate valves larger than 12 inches shall be resilient seated and shall include either spur gear actuators (for valves to be installed in a vertical position) or bevel gear and side actuators (for valves to be installed in a horizontal position).
- H. The height of the valve and its supporting foundation shall conform to the height of the connecting pipe. All valves 20 inches and smaller shall be set in a vertical position. Deflect main as needed to accommodate large gate valves (16" and 20" size) installed in the vertical position.
- I. Valves 24 inches and larger are to be installed in the horizontal position with a bevel gear actuator and cleanout ports. Provide temporary piping and fittings from cleanout port to above grade to facilitate cleaning of valve guides after installation via flushing.
- J. Exposed valves shall be installed in a vertical position wherever possible. Unless otherwise indicated or directed by the utility, valve stems shall never be below a horizontal position.
- K. Open and close each valve observing full operation prior to installing successive lengths of pipe.
- L. Standard gate valves 2½ inches and smaller shall be Class 150 bronze gate valves by Powell Valves or approved equal.
- M. Gate valves 3"-12" shall be American Flow Control Series 2500, Clow Series F-6100, or Mueller Series A-2360.
- N. Gate Valves larger than 12 inches shall be American Flow Control Series 2500 or Mueller Series A-2361.

## **2.17 Tapping Valves**

Tapping valves shall be resilient seated gate valves and shall conform to the requirements of AWWA C509. Tapping Valves shall be American Flow Control Series 2500, Clow Series F-6114, or Mueller Series A2361.

## **2.18 Butterfly Valves - N/A**

## **2.19 Air Release Valves - N/A**

## **2.20 Swing Check Valves - N/A**

## **2.21 Corporation Stops**

Corporation stops shall be 1 inch, 1½ inch or 2 inch brass ball type, equipped with connections suitable for service piping. Conformance with AWWA C800 and C901 is required. Corporation stops shall be Ford FB1000 or McDonald 4701B-22.

## **2.22 Curb Stops - N/A**

## **2.23 Valve Boxes**

- A. All buried valves shall be provided with adjustable valve boxes approximately 5 inches in diameter and shall be heavy duty traffic rated.
- B. Valve boxes shall be cast iron. Valve box lids shall be cast iron H-20 load rated.
- C. Valve boxes shall be of sufficient length to operate all valves buried in the ground. Valve boxes shall consist of base, center section, and top section with cover. All valve box extensions shall be cast iron.
- D. Valve box lids in paved areas shall be lockable.
- E. Valve boxes located in unpaved areas shall be Slip Type design to permit movement of the top section without transmitting forces onto the valve body.
- F. Valve boxes shall have valve box covers with the inscription "WATER" cast thereon.
- G. All valve box covers shall be painted with a three coat system. The first coat shall be primer, 2.5-3.5 mil Dry Film Thickness (DFT) Tnemec Series 1 Omnithane or approved equal; the intermediate coat shall be 4.0-10.0 mil DFT Tnemec Color Hi-Build Epoxoline II Series N69 or approved equal, and the final coat shall be 2.0-3.0 mil DFT Tnemec EnduraShield Series 73 or approved equal. The final coat paint color shall be Ultra Blue No. 124A or as approved by the local utility.
- H. Acceptable manufacturers: Tyler Union, Sigma Corporation, Star Pipe Products.

## **2.24 Curb Boxes - N/A**

## **2.25 ARV Enclosures - N/A**

## **2.26 Hydrants**

- A. Hydrants shall conform to AWWA C502 and shall be furnished complete with wrench and other appurtenances. Manufacturer's certification of compliance with AWWA C502 and tests listed therein will be required.
- B. All hydrants shall be of breakable type, with the breakable section located slightly above the finish ground line. Hydrants shall contain two 2½ inch hose connections and one 4½ inch steamer connections with national standard fire hose coupling screw threads, 5¼ inch valve opening, 6 inch diameter mechanical joint inlet, 1½ inch pentagon operating nut. The hydrants shall open counterclockwise.
- C. All hydrants shall be painted with a three coat system. The first coat shall be primer, 2.5-3.5 mil Dry Film Thickness (DFT) Tnemec Series 1 Omnithane or

approved equal; the intermediate coat shall be 4.0-10.0 mil DFT Tnemec Color Hi-Build Epoxoline II Series N69 or approved equal, and the final coat shall be 2.0-3.0 mil DFT Tnemec EnduraShield Series 73 or approved equal. The final coat paint color shall be as selected by the local utility.

- D. Hydrants shall be Mueller Centurion (Traffic model A-423), American-Darling B-84-B, Kennedy K-81A, or Clow Medallion F-2545.

## **2.27 Line Stops**

- A. Line stops shall consist of a line stop fitting, stopping plug/valve, blind flange for installation after stop is completed, and 1-inch equalization/purge fitting.
- B. The line stop fitting shall be 18-8 type 304 stainless steel.
- C. Fitting gaskets shall comply with ANSI/AWWA C111/A21.11. Rubber gaskets shall be made of vulcanized styrene butadiene rubber (SBR).
- D. All hardware and accessories shall be 304 stainless steel.
- E. The blind flange shall be type 304 stainless steel.
- F. Provide additional pipe restraining in the vicinity of the line stop for preventing pipe movement due to any unbalanced forces created by the line stop and subsequent cutting and removal of existing pipe adjacent to any line stop.

## **2.28 Pipeline Identification Tape**

- A. Identification tape shall be an inert plastic film specifically formulated for prolonged underground use. Minimum thickness of the vinyl core shall be 4 mils, width 6 inches, letter size 1 inch. Lettering shall be continuous.
- B. Tape shall be the standard product of a manufacturer regularly engaged in the supply of this tape. Provide tape with adhesive backing for attachment to pipe.
- C. Identification tape shall be color coded blue with black lettering "POTABLE WATER MAIN".

## **2.29 Pipeline Warning Tape**

Warning tape shall be 6 inch wide vinyl continuous tape, for identification and warning purposes. It shall be color coded blue with black lettering "CAUTION: WATER MAIN BURIED BELOW".

## **2.30 Locating Wire and Tracer Wire**

- A. Locating wire shall be color-coded 10 gage continuous insulated wire. Color coding shall be blue.



- B. Tracer wire shall be color-coded 10 gauge continuous insulated wire, with HDPE jacket (min. thickness of 45 mils) specifically manufactured for use in horizontal directional drill installations. The color of the wire jacket shall be blue.

### **2.31 Disinfection and Dechlorination System**

- A. Sizing and selection of disinfection system, disinfection equipment, disinfection system piping, and appurtenances is the responsibility of the Contractor.
- B. All equipment used in disinfection work shall be in proper working condition, and shall be adequate for the specified work.
- C. Provide equipment and feed system for chlorinating agent that is appropriate to the chlorinating agent and the piping to be disinfected. Also provide equipment and feed system for dechlorinating agent that is appropriate to the dechlorinating agent and the piping to be dechlorinated.
- D. Disconnect and remove equipment, piping, and appurtenances after the water mains have been successfully disinfected and dechlorinated, bacteriological testing has been completed, and water mains have been approved for connection to the existing water distribution system.

## **PART 3 EXECUTION**

### **3.01 General Installation Requirements**

- A. All lengths of pipe shall be dimensioned accurately to measurements established at the site, and shall be worked into place without springing or forcing.
- B. Cut all pipe and drill all holes that may be necessary. Cut sections of pipe shall be reamed or filed to remove all burrs. The pipe interior and joints shall be thoroughly cleaned before being installed and kept clean during construction.
- C. All changes in direction shall be made with fittings or approved joint deflection. Bending of pipe, except copper and polyethylene, is prohibited. Joint deflection shall not exceed 75 percent of the manufacturer's recommended maximum deflection.
- D. Any transition from one pipe size to another shall be made with a reducing fitting. Reducing bushings are prohibited except where specifically indicated on the Drawings or approved by the Engineer.
- E. Make adequate provision for expansion and contraction of piping.
- F. Trenching, bedding and backfilling shall be in accordance with Section 02320.

- G. Valves shall be installed in all pipe ahead of appliances and equipment not furnished with stops, and elsewhere as required for proper control and isolation of sections of systems for maintenance purposes.
- H. Minimum cover over pipe shall be 36 inches.

### **3.02 Concrete Cradles and Encasement - N/A**

### **3.03 Separation of Non-Potable and Potable Water Lines**

- A. The horizontal separation between water mains and sanitary sewer, storm sewer, wastewater force mains, stormwater force mains, reclaimed water mains and onsite sewage treatment and disposal systems shall be in accordance with the following:
  - 1. The outside of water mains shall be a minimum of three feet from the outside of any existing or proposed storm sewer, stormwater force main, vacuum type sanitary sewer and reclaimed water main.
  - 2. The outside of water mains shall be a minimum of six feet from the outside of any existing or proposed gravity sanitary sewer and wastewater force main. The minimum horizontal separation distance between the outside of water mains and the outside of gravity sanitary sewers can be reduced to three feet where the bottom of the water main is at least six inches above the top of the sewer.
  - 3. The outside of water mains shall be a minimum of ten feet from all parts of any existing or proposed onsite sewage treatment and disposal system such as septic tanks, drainfields, and grease traps. Onsite sewage treatment and disposal systems do not include package sewage treatment facilities and public wastewater treatment facilities.
- B. The vertical separation between water mains and sanitary and storm sewer, wastewater or stormwater force mains, and reclaimed water mains shall be in accordance with the following:
  - 1. Wherever possible, water mains shall cross over existing or proposed gravity sanitary sewer, vacuum type sanitary sewer, and storm sewer, so the outside of the water main is at least six inches above the outside of the sewer. Where it is not possible for the water main to cross over existing or proposed gravity sanitary sewer, vacuum type sanitary sewer, and storm sewer, then the water main can cross under these types of pipeline systems provided the outside of the water main is at least 12 inches below the outside of the pipeline. At the crossing, the proposed pipe joints shall be arranged so that all water main joints are at least three feet from vacuum type sanitary sewer or storm sewer joints, and at least six feet from gravity sanitary sewer joints.
  - 2. Wherever possible, water mains shall cross over existing or proposed reclaimed water mains, wastewater force mains and stormwater force mains. Whether the water main crosses over or under these types of pipeline systems, the outside of the water main shall be at least 12 inches

from the outside of the existing or proposed reclaimed water main, wastewater force main and stormwater force main. At the crossing, the proposed pipe joints shall be arranged so that all water main joints are at least three feet from reclaimed water main joints and stormwater force main joints, and at least six feet from the joints of wastewater force mains.

- C. No water main shall pass through or come in contact with any part of a sanitary sewer manhole.
- D. The following are acceptable alternative construction features to be considered for cost evaluation with no guarantee they will be approved for implementation where it is not possible to meet the separation requirements. Exceptions from meeting the pipe separation requirements, without mitigation, shall be allowed only by FDEP if technical or economic justifications for each exception provided by the Engineer are acceptable to FDEP and are only to be implemented upon receipt of expressed written consent from the Engineer and approval from FDEP on a case by case basis. All possible measures to achieve compliance with the pipe separation requirements shall be considered first along with design changes to meet the requirements before the Engineer submits a justification of an exception to FDEP for approval. Implementation of these measures without the expressed written consent of the Engineer and approval by FDEP could result in the requirement that the installed unapproved measures be removed and replaced at no cost to the Owner.
  - 1. Where a water main is less than the required minimum horizontal distance from another pipeline or where a water main crosses another pipeline and joints in the water main are less than the minimum required distance between the joints in the other pipeline:
    - a. Use of pressure rated pipe conforming to AWWA standards for a gravity or vacuum type pipeline.
    - b. Use of welded, fused, or otherwise restrained joints for either pipeline.
    - c. Use of watertight casing pipe or concrete encasement at least four inches thick for either pipe.
  - 2. Where a water main is less than three feet horizontally from another pipeline or where a water main crosses another pipeline less than the required minimum separation:
    - a. Use of pipe or casing pipe, having high impact strength (at least equal to 0.25 inch thick ductile iron pipe), or concrete encasement at least four inches thick for the water main and for the other pipeline if the other pipeline conveys wastewater or reclaimed water.

### **3.04 Plugs**

- A. Installed piping systems shall be temporarily plugged at the end of each day's work, or other interruption to progress on a given line. Plugging shall be adequate to prevent entry of small animals or persons into the pipe or the entrance or insertion of deleterious materials.
- B. Standard plugs shall be inserted into all dead-end pipes, tees, or crosses; spigot ends shall be capped; flanged and mechanical joint ends shall have blind flanges of metal.
- C. Plugs installed for pressure testing shall be blind flanges fully secured and blocked to withstand the test pressure.
- D. Where plugging is required because of contract division or phasing for later connection, the ends of such lines shall be equipped with a permanent type plug or blind flange. Installation or removal of such plugging shall be considered incidental to the work.

### **3.05 Ductile Iron Pipe**

- A. Mechanical joints: install according to the manufacturer's specifications. Socket and gasket shall be clean and gasket shall be properly centered before joint is made.
- B. Push-On Type Joints: Remove any foreign matter in the gasket seat, wipe gasket clean, flex and place in socket. Apply thin film of lubricant to inside surface of gasket. Complete joint assembly by forcing the plain end of the entering pipe past the gasket until it makes contact with the bottom of the socket.
- C. Flanged Joints: Bolt flanged joints with care so there is no restraint on the opposite end of the piece, which would prevent pressure from being evenly and uniformly applied upon the gasket. The pipe or fitting must be free to move in any direction while bolting. Gradually tighten bolts, each in turn, at a uniform rate of gasket compression around the entire flange.

### **3.06 O-Ring Type Push-On Joints for PVC Pipe**

- A. Clean the pipe end and the bell thoroughly. Insert O-Ring gasket, making certain it is properly oriented. Lubricate the spigot well with an approved lubricant; do not lubricate the bell or O-ring. Insert the spigot end of the pipe carefully into the bell until the reference mark on the spigot is flush with the bell.
- B. Field cut pipe shall be beveled, have all burrs removed, and shall have a reference mark applied the correct distance from the end.

### **3.07 Butt Heat Fusion Joints for PE (Polyethylene) Pipe**

- A. Equipment for butt heat fusion joints shall be as recommended by the pipe manufacturer.

- B. Carefully face pipe ends and check for squareness prior to heating ends. Apply clamps as necessary to match outside pipe end diameters. Follow the pipe manufacturer's recommendations concerning temperature, melt time, heat soak times, and joining time. Maintain joining pressure until pipe has cooled to a temperature of 150-160 degrees F. Handle pipe carefully until joint has returned to ambient temperature. Inspect all joints carefully for any irregularities; cut out and re-do all defective joints.

### **3.08 Socket Heat Fusion for PE (Polyethylene) Pipe**

- A. Equipment for socket heat fusion shall be as recommended by the pipe manufacturer.
- B. Bevel the pipe end and remove burrs before making joint. Clean heating tool thoroughly and, if tool is not Teflon coated, spray with a silicone release solution. Heat tool to the temperature recommended by the pipe manufacturer. Place both pipe and fitting on the tool until the correct degree of melt is achieved. Remove pipe and fitting from the tool simultaneously and insert the pipe squarely into the fitting; do not turn pipe or fitting during insertion. Avoid any movement of the joint for 10 to 15 seconds. Handle pipe carefully until the joint has returned to ambient temperature.

### **3.09 Polyethylene Pipe Joining (4 Inches and Larger Pipe) - N/A**

### **3.10 Polyethylene Encasement Installation - N/A**

### **3.11 Buried and Exposed Valves**

- A. Buried valves 6 inch diameter and larger shall be set on a foundation of solid concrete or stone not less than 8 inches thick nor less than one cubic foot in volume. Foundations shall be set on firmly compacted ground. Valves are to be restrained on each side of the valve at the connection to adjoining pipe.
- B. The height of the valve and its supporting foundation shall conform to the height of the connecting pipe. Valves shall be set in a vertical position, except where indicated herein or as determined in the field to require a horizontal installation as determined by the utility. Where valves are required to be installed in a horizontal position, provide with a bevel gear side actuator.
- C. Exposed valves shall be installed in a vertical position wherever possible. Unless otherwise indicated or directed by the utility, valve stems shall never be below a horizontal position.
- D. Open and close each valve observing full operation prior to installing successive lengths of pipe.

### **3.12 Wet Taps**

All wet taps of existing water lines are to be coordinated with the utility.

### **3.13 Air Release Valves - N/A**

### **3.14 Valve Boxes and Curb Boxes**

- A. Boxes shall rest on the valve and shall be adjusted so that the cover may be set flush with paving; in areas without paving, set the cover as directed by the Engineer. Boxes shall be set to allow equal movement above and below finish grade.
- B. The base of the box shall be centered over the valve, and the top of the base section shall be approximately on line with the nut on top of the valve stem. The entire assembly shall be plumb.

### **3.15 Hydrants**

- A. Blue pavement reflectors (cat eyes) shall be placed in the centerline of the driving lane directly in front of the fire hydrant.
- B. All hydrants shall be inspected in the field upon delivery to the job to insure proper operation before installation.
- C. There shall be no trees, shrubs, or landscaping planted around the fire hydrants or in areas designated as fire lanes.
- D. Final field location of all hydrants shall be as approved by the utility. All hydrants shall be located no less than three feet (3') and no more than eight feet (8') from back of curb of the adjacent roadway, or seven (7) feet from the edge of pavement, and no less than five (5) feet from any physical feature which may obstruct access or view of any hydrant unless otherwise approved by the utility.
- E. Hydrants shall be plumb and shall be set so that the lowest hose connection is, at least, eighteen (18) inches above the surrounding finished grade.
- F. Combustible construction cannot occur until proper documentation has been submitted to the local fire marshal. Documentation shall show that hydrants have been installed, tested, and are in proper working order.
- G. New or relocated fire hydrants shall be located such that the underground drain (weep hole) is at least:
  - 1. Three feet from any existing or proposed storm sewer, stormwater force main, reclaimed water main, or vacuum type sanitary sewer.
  - 2. Six feet from any existing or proposed gravity sanitary sewer and wastewater force main.
  - 3. Ten feet from any onsite sewage treatment and disposal system such as septic tanks, drainfields, and grease traps. Onsite sewage treatment and disposal systems do not include package sewage treatment facilities and public wastewater treatment facilities.

### **3.16 Line Stops**

- A. All line stops and shut downs of existing water lines are to be coordinated with the utility.
- B. Line stops shall be completed while the water system is pressurized.
- C. A concrete encasement shall be poured for pipe support at the point of line stop.
- D. Provide additional pipe restraining in the vicinity of the line stop for preventing pipe movement due to any unbalanced forces created by the line stop.

### **3.17 Installation of Identification and Warning Tape**

- A. Install identification tape on all pipelines. Place tape as follows:
  - 1. 2 inch through 8 inch diameter pipe - center along top half of pipe
  - 2. 10 inch through 18 inch diameter pipe - place along both sides of the top half of pipe
  - 3. 20 inch diameter and larger pipe - place on both sides of top half of pipe with a third strip centered along top half of pipe
- B. Place tape from joint to joint on every section of pipe.
- C. Install warning tape along all pipelines. Install 2 feet above pipe, minimum of 1 foot below grade.

### **3.18 Locator Wire and Tracer Wire**

- A. Install locator wire along all pressurized pipelines 2 inch diameter and larger.
- B. Terminate locator wires at top of the valve box with 12 inches of extra wire.
- C. Test the locate wire for continuity and submit report documenting the continuity testing. Repair or replace locate wire at failed test locations as directed by Owner.
- D. Install two tracer wires along polyethylene pipe prior to pulling through bore hole. Tape wire to pipe every 5 feet minimum along the pipeline.
- E. After pulling pipe, clean exposed ends for installation of fittings, test tracer wire for continuity.

### **3.19 Testing General Requirements**

- A. Hydrostatic testing shall be in accordance with AWWA C600 (Ductile iron water mains), AWWA C605 (PVC water mains) and ASTM F2164 (polyethylene water mains).

- B. Test procedures and method of disposal of water shall be approved by the Engineer. All tests shall be made in the presence of the Engineer and utility. Preliminary tests made by the Contractor without being observed by the Engineer will not be accepted. Notify the Engineer and the utility companies at least 72 hours before any work is to be inspected or tested.
- C. All defects in piping systems shall be repaired and/or replaced and retested until acceptable. Repairs shall be made to the standard of quality specified for the entire system.
- D. Sections of the system may be tested separately, but any defect which may develop in a section previously tested and accepted shall be promptly corrected and retested. Pressure tests shall be made between valves to demonstrate ability of valves to sustain pressure.
- E. Provide all necessary test pumping equipment, water, water meters, pressure gauges, and other equipment, material and facilities required for all hydrostatic, leakage, and pressure testing. Increments on gages used for pressure pipe testing shall be of scaled to the nearest 1 psi. Gages, pumps, and hoses shall be in good working order with no noticeable leaks.
- F. Tests for any exposed piping shall be made before covering and insulation is placed.
- G. The pressure and leakage test for buried piping shall be made after all jointing operations are completed and restraints have been in place at least seven days. Lines tested before backfill is in place shall be retested after compacted backfill is placed.
- H. All service connections to water mains shall be completed prior to testing.
- I. Sections of piping between valves and other short sections of line may be isolated for testing. If shorter sections are tested, test plugs or bulkheads required at the ends of the test section shall be furnished and installed by Contractor, together with all anchors, braces, and other devices required to withstand the hydrostatic pressure without imposing any thrust on the pipe line. Contractor shall be solely responsible for any damage that results from the failure of test plugs or supports.
- J. All items including valves and controls shall be given a thorough test. The entire system shall be operated for two days to prove compatibility of equipment and to achieve proper adjustment for operation. Valves, pipes, tanks, and other items that are non-operating or occasional-operating shall be tested for ability to meet design criteria.

### **3.20 Sequence of Testing and Disinfection**

- A. The sequence of testing and disinfection shall be as follows:



1. Conduct pressure and leakage testing.
2. Perform flushing in accordance with Section 02955.
3. Disinfect the water main, including valves and fittings
4. Dechlorinate and flush after disinfection.

### 3.21 Pressure and Leakage Testing (PVC and DI Mains)

- A. Piping shall be slowly filled with water and all air expelled. 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. Apply leakage test pressure of 150 psi (water mains), or 200 psi (fire mains). Maintain pressure at a maximum variation of 5 percent during the entire leakage test. The duration of the leakage test shall be two hours minimum, and for such additional time necessary to complete inspection of the section of line under test. Leakage measurements shall not be started until a constant test pressure has been established. The line leakage shall be measured by means of a water meter installed on the supply side of the pressure pump.
- C. No leakage is allowed in exposed piping, buried piping with flanged, threaded, or welded joints or buried non-potable piping in conflict with potable water lines.
- D. The testing allowance shall be defined as the quantity of water that must be applied to the pipe section being tested to maintain a pressure within 5 psi of the specified hydrostatic test pressure. No installation will be accepted if the quantity of makeup water is greater than that determined by the following formula:

$$L = \frac{S \times D \times P^{0.5}}{148,000}$$

- L = Testing Allowance (quantity of makeup water) in gallons per hour  
 S = Length of line being tested, in feet  
 D = Nominal internal diameter (in inches) of the pipe.  
 P = The average test pressure during the pressure test, in pounds per square inch (gauge) This actual pressure shall be determined by finding the difference between the average elevation of all tested pipe joints and the elevation of the pressure gauge and adding the difference in elevation head to the authorized test pressure.

- E. All leaks shall be repaired by removing and replacing defective pipe and joints with pipe and joints free of defects, after which the lines shall be retested. Such repair and retesting shall be done until the lines pass the specified retest.
- F. All apparent leaks discovered within one year from the date of final acceptance of the work by the Owner shall be located and repaired by Contractor, regardless of the total line leakage rate.

### **3.22 Fire Hydrant Testing**

The Contractor shall provide a post-construction fire flow test witnessed and approved by the Engineer and the Utility. Hydrants shall deliver a minimum of 1250 gpm with a residual pressure of 20 psi.

### **3.23 Disinfection General Requirements**

- A. Disinfect all water mains, including all valves and fittings.
- B. All disinfection work shall be acceptable to FDEP and the State Department of Health. If any requirements of this Section are in conflict with requirements of the authority for disinfection, those of the authority shall govern. The water main disinfection and bacteriological sampling and methods of disinfection for all water containment devices and piping systems shall conform to AWWA C651.
- C. All valves and appurtenances shall be operated while the line or unit is being disinfected to insure that all surfaces of the valves are disinfected. Valves shall be manipulated to keep the strong chlorine solution and/or contaminated water from flowing into units that have been previously chlorinated and/or flushed.

### **3.24 Disinfection**

- A. Direct chlorine feed is preferred for disinfection. Use of high-test calcium hypochlorite or the tablet method of disinfection must be approved by the Engineer and must be in accordance with AWWA procedures.
- B. Granular calcium hypochlorite shall be prepared as a water mixture before introduction into the unit. The dry powder shall first be made into a paste and then thinned to approximately a one percent chlorine solution. To prepare a one percent chlorine solution, add one pound of calcium hypochlorite (65-70 percent available  $\text{Cl}_2$ ) to 7½ gallons of water.
- C. Chlorinating agent shall be applied at the supply end of the unit being disinfected. For pipes, disinfectant shall be applied through a corporation cock installed in the top of the pipe.
- D. Water shall be introduced at a controlled rate in order to regulate the chlorine dosage. The rate of chlorine mixture flow shall be proportioned to the rate of water entering the unit so the chlorine dose applied shall produce at least 25 mg/L chlorine residual after a period of 24 hours. If the total residual has decreased below 25 mg/L, the system may be required to be rechlorinated if required by the Engineer.
- E. Operate valves and other appurtenances during disinfection to assure sterilizing mixture is dispersed into all parts of system being disinfected.
- F. Upon approval by the Engineer and Owner, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water

throughout its lengths shows upon test, a free chlorine residual of no more than 4 mg/L. The flushing activity shall be conducted in such a manner as to avoid any soil erosion or localized flooding.

- G. The discharge locations for the chlorinated water shall be approved by the Owner. Neutralize the chlorine residual by means of a reducing agent in accordance with AWWA C651.

### **3.25 Bacteriological Sampling and Testing**

- A. Samples of water shall be collected by a representative of a State Certified Testing Laboratory or by an individual holding a current Florida Dept. of Environmental Protection certification that allows collection of water samples to be used for testing. All water sample collection shall take place with a representative of the Owner present.
- B. Sample locations shall be along every 1200 feet of new main, plus one from each end of the line and at least one from each branch. The sample points must have a brass non-threaded smooth-nosed downward spouted hose bibb mounted on a rigid stand pipe at least three feet above the finish grade. No hose or fire hydrant shall be used in the collection of samples. Warning tags shall be attached to each sample point.
- C. After flushing, water samples collected on two successive days from the treated piping system at the approved sample points shall show acceptable bacteriological results. All bacteriological testing shall be performed by a State Certified Laboratory contracted by the Contractor. Proper chain of custody procedures must be followed and samples shall only be collected by certified laboratory personnel.
- D. Should the initial treatment result in an unsatisfactory bacterial test, the original chlorination and dechlorination procedure and bacteriological testing shall be repeated by the Contractor until satisfactory results are obtained.
- E. Copies of all testing results and all related correspondence from the testing lab shall be submitted to the Engineer and Owner.

### **3.26 Placing the New Water Main In To Service**

- A. In order for the Owner to request clearance from regulatory agencies to place the water main in to service, the following items need to be completed:
  - 1. All required testing of the water main must be complete and shall have satisfactory test results.
  - 2. Preliminary Record Drawings that contain as-built information on the constructed water main need to be provided to the Owner and Engineer in accordance with Section 01780.

- B. The water main can only be placed in to service once clearance is received from FDEP, followed by approval by the Utility and Owner. Remove temporary sampling points following the Owner's approval to place the water main in service. Provide a permanent cap or plug at each temporary bacteriological sampling point location.

**END OF SECTION**

## SECTION 02605

### PRECAST STRUCTURES AND ACCESSORIES

#### PART 1 GENERAL

##### 1.01 Section Includes

- A. Precast sanitary and storm structures
- B. Lift Station Wet Well and Vaults
- C. Precast structure grates, access covers, and accessories
- D. Precast structure linings and coatings

##### 1.02 Related Sections

Section 02320 - Trenching, Bedding, and Backfilling

##### 1.03 References

- A. American Society for Testing and Materials (ASTM) latest edition:
  - 1. A48 - Gray Iron Castings
  - 2. A185 - Steel Welded Wire Reinforcement, Plain, for Concrete
  - 3. C216 - Facing Brick
  - 4. C270 - Mortar for Unit Masonry
  - 5. C443 - Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
  - 6. C478 - Precast Reinforced Concrete Manhole Sections
  - 7. C923 - Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals
  - 8. C990 - Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants
  - 9. C1244 - Test method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test
  - 10. D3753 - Glass Fiber Reinforced Polyester Manholes and Wetwells

##### 1.04 Submittals

- A. All gratings and castings
- B. Precast structures
- C. Coatings and Linings for precast structures
- D. Connections to precast structures

- E. Submit the name of the subcontractor that will be installing the interior coatings (spray on liner) and a list of references of past experience documenting successful application of the spray on coating. Provide a minimum of three (3) references with project name, description of work, contact name and phone number for each reference.

## **PART 2 PRODUCTS**

### **2.01 General**

- A. Concrete shall have minimum 4000 psi compressive strength.
- B. Welded wire fabric shall conform to ASTM A185. Use 4 x 4 - W4 x W4 welded wire fabric unless otherwise indicated.
- C. Integrally cast steps within precast structures are not allowed.
- D. The date of manufacture and the name or trademark of manufacturer shall be clearly marked on each precast section.

### **2.02 Sewer Manholes**

- A. All new sanitary sewer manholes shall be precast, and shall conform to ASTM C478. Concrete shall be Class II and have a minimum compressive strength of 4,000 psi at 28 days. The minimum wall thickness shall be five inches. Precast manholes shall be constructed with a precast monolithic base structure and the minimum base thickness shall be eight inches as shown on the Standard Construction Detail. The top section shall be an eccentric riser. The barrel, top and base sections shall have tongue and groove joints. All jointing material shall be a cold adhesive preformed plastic gasket, conforming to ASTM C 443. All manholes shall be leak-free.
- B. For sewer pipe sizes 24 inches in diameter and smaller, the minimum inside diameter of the manhole shall be 48 inches. For sewer pipe sizes between 24 and 36 inches, the minimum inside diameter of the manhole shall be 60 inches. For sewer pipe sizes larger than 36 inches in diameter, a 72 inch inside diameter manhole shall be provided.
- C. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on each precast section after coating of the exterior surface. Lift rings or non-penetrating lift holes shall be provided for handling precast manhole sections.

### **2.03 Flow Channel**

The flow channel shall be Portland Cement Type II concrete, minimum compressive strength of 2,500 psi. Fillers of any other material will not be accepted. Brick shall not be

used to construct channels or benching. Flow channels shall be formed in the invert of the manhole and shall extend to the spring line of all connecting pipes, conforming to the dimension of the adjacent pipe and providing changes in size, grade and alignment evenly.

#### **2.04 Manhole Drop Connections**

In general, manhole drop connections are not allowed unless specifically shown on the Construction Plans. If allowed, an outside drop pipe shall be provided for a sewer entering a manhole where its invert elevation is 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer invert and the manhole invert is less than 24 inches, the manhole invert shall be filleted to prevent solids deposition.

#### **2.05 Manhole Force Main Connections**

Force mains shall be oriented to facilitate flow, and shall enter the manhole such that the force main invert is no more than 12 inches above the invert of the effluent sanitary sewer line.

#### **2.06 Manhole External Seal**

The top of manholes, cone, riser rings, iron frame, cover and all joints shall be encapsulated with a heat shrink-wrap with a minimum thickness of 98 mils (2.5mm). The wrap shall have a cross-linked polyolefin backing coated with a protective heat activated adhesive. The wrap should effectively bond to the substrate via primer provided by the manufacturer, providing corrosion and moisture protection. The wrap shall be applied with a high intensity propane torch. Heat Shrink wrap for all barrel section joints of manholes shall be a minimum 9-inch width wrap and a minimum of 12-inch width wrap shall be applied to the top section, riser rings, and manhole ring and cover. Adhesive tape materials are not be allowed.

#### **2.07 Manhole Linings and Coatings**

- A. New sewer manholes shall be coated inside and out with two (2) coats of water based polyamine epoxy coating, installed at a minimum thickness of 8 mils per coat. Coatings shall be applied by the manhole manufacturer in strict accordance with the paint manufacturer's recommendations.
- B. Manholes that receive force main discharge shall be lined. For new manholes, the interior liner shall be HDPE, minimum thickness of 2 mm, as manufactured by Agru America (Sure Grip liner) or approved equal. For existing manholes, the interior shall be coated with Raven 155 primer (min. 8 mils) and Raven 405 Liner (min. of 125 mils), or equal.

#### **2.08 Lift Station Wet Well**

- A. Base, riser, and top shall be in accordance with details on the Drawings.

- B. All precast construction shall be in accordance with ASTM C-478, minimum wall thickness of 6 inches.
- C. New wet wells shall be lined with HDPE, minimum thickness of 5 mm, as manufactured by Agru America (Sure Grip liner) or approved equal.
- D. Existing wet wells that are required to be re-lined shall be coated with Raven 155 primer (min. 8 mils) and Raven 405 Liner (min. of 125 mils), or equal.
- E. The exterior of new wet wells shall be coated with two (2) coats of water based polyamine epoxy coating, installed at a minimum thickness of 8 mils per coat. Coatings shall be applied by the manufacturer in strict accordance with the paint manufacturer's recommendations.

#### **2.09 Lift Station Valve Vault**

- A. Valve vaults shall be precast with concrete and reinforcement conforming to ASTM C478.
- B. Exterior coatings coated with two (2) coats of water based polyamine epoxy coating, installed at a minimum thickness of 8 mils per coat. Coatings shall be applied by the manufacturer in strict accordance with the paint manufacturer's recommendations.
- C. The interior coating shall be Raven 155 primer (min. 8 mils) and Raven 405 Liner (min. of 125 mils), or equal.

#### **2.10 Manhole Frames and Lids**

- A. Frames and covers shall be gray iron per ASTM A48, Class 30B and shall be US Foundry Type 227AS, traffic bearing (AASHTO H-20 loading), unless otherwise noted in the Drawings. Raised lettering on covers shall be "STORM", "SEWER", or as detailed on the drawings.
- B. Castings shall be smooth, clean, free from blisters, blowholes, shrinkage.
- C. Sanitary sewer manhole covers shall have non-penetrating pick holes.

#### **2.11 Catch Basin Inlets, Frames, and Grates**

- A. Provide cast iron inlets, frames, and grates in accordance with details on the Drawings.
- B. All frames and inlet grates shall be products of U.S. Foundry & Manufacturing Corporation, or equal.
- C. All inlet grates shall be secured by chain and eyebolt to the top of the structure.

#### **2.12 Wet Well and Valve Vault Access Covers**



- A. The access covers shall be traffic bearing (AASHTO H-20 loading), hinged on the long side, with 0.25 inch thick diamond plate, with a flush lifting handle, and T-316 stainless steel hold open arms and heavy duty hinges, T-316 tamper proof attaching hardware, automatic T-316 hold open arm with aluminum latch. All bolts, locknuts, and accessories shall be stainless steel.
- B. Doors shall open to 90 degrees and automatically lock with a T-316 stainless steel hold open arms with release handles. The doors shall be equipped with stainless steel compression springs, a locking bar for a padlock (padlock to be supplied by the Owner), and fixed inside handle. Doors shall close flush with the frame.
- C. Castings shall be smooth, clean, free from blisters, blowholes, shrinkage.
- D. All access covers shall be watertight.

## **PART 3 EXECUTION**

### **3.01 Confined Space**

Provide all necessary safety equipment and training required for work done in structures such as, but not limited to, Wet Wells, Valve Vaults, and Manholes. The equipment will include, but not be limited to, ventilation systems, gas detection devices, and safety harnesses. It is the Contractor's responsibility to determine if a structure is a confined space and supply the required safety equipment and training.

### **3.02 Manhole, Inlet and Wet Well Installation**

- A. The Contractor shall be completely responsible for any tanks, wetwells or similar structures that may become buoyant during the construction and modification operations due to the ground water or floods and before the structure is put into operation. The proposed final structures have been designed to account for buoyancy; however the Contractor may employ methods, means and techniques during construction which may affect the buoyancy of structures. The Contractor shall take the necessary steps to protect structures. Damage to any structures due to floating or flooding shall be repaired or the structures replaced at the Contractor's expense.
- B. Install required bedding.
- C. Install base to proper elevation and alignment. Handle precast sections by lift rings only. Remove lift rings and fill all holes with non-shrink grout after erection.
- D. Pour invert immediately after setting first section of barrel.
- E. Prior to setting subsequent barrel sections, apply primer to tongue and groove ends and allow to set in accordance with manufacturer's recommendations. Add additional material on exterior joint if necessary for watertight joint.

- F. Apply coatings and liners as required.
- G. Backfill in accordance with Section 02320.
- H. Completed sewer manholes, wet wells, and valve vaults shall be watertight.

### **3.03 Installation of Castings**

- A. Manhole castings to be fully embedded in mortar with adjustment brick courses placed between the frame and manhole, minimum of 2 courses, maximum of 4 courses. Mortar shall conform to ASTM C270, type M, brick to conform to ASTM C216, grade SW.
- B. Top of manhole castings in paved areas, including driveways and sidewalks to be flush with grade. Top of manhole castings outside paved areas to be 2 inches above grade, unless otherwise noted on the Drawings.

### **3.04 Pipe Connections**

- A. Connection of ductile iron or PVC pipe to the manhole shall provide a watertight connection per ASTM C923. The use of adhesives or lubricants for installation of rubber connectors is prohibited.
- B. Connection of concrete pipe to the manhole shall be made with non-shrink metallic grout.

### **3.05 Manhole and Wet Well Testing**

- A. There shall be no visible leakage through the structure walls or connections.
- B. All manholes are to be tested in accordance with ASTM C1244 and are required to pass this test.

**END OF SECTION**

## SECTION 02630

### STORM DRAINAGE PIPE SYSTEMS

#### PART 1 GENERAL

##### 1.01 Section Includes

Storm sewer pipe, culverts, box culverts, underdrains, accessories

##### 1.02 Related Sections

- A. Section 02320 - Trenching, Bedding, and Backfilling
- B. Section 02605 - Precast Structures and Accessories

##### 1.03 References

- A. American Association of State Highway and Transportation Officials (AASHTO) latest edition:
  - 1. AASHTO M196 - Corrugated Aluminum Pipe for Sewers and Drains
  - 2. AASHTO M252 - Corrugated Polyethylene Drainage Pipe
  - 3. AASHTO M294 - Corrugated Polyethylene Pipe, 12 to 48-inch diameter
- B. American Society for Testing and Materials (ASTM) latest edition:
  - 1. ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
  - 2. ASTM C443 - Joints for Circular Concrete Pipe and Manholes, Using Rubber Gaskets
  - 3. ASTM C507 - Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe
  - 4. ASTM C1433 - Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
  - 5. ASTM D2321 - Underground Installation of Flexible Thermoplastic Pipe for Sewers and Other Gravity Flow Applications
  - 6. ASTM D3212 - Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals
  - 7. ASTM D3350 - Polyethylene Plastics Pipe and Fittings Material
  - 8. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe
  - 9. ASTM F758 - Smooth Wall PVC Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
  - 10. ASTM F2306 - 12 to 60 in. [300 to 1500 mm] Annular Corrugated Profile-Wall Polyethylene (PE) Pipe and Fittings for Gravity-Flow Storm Sewer and Subsurface Drainage Applications
  - 11. ASTM F2487 - Infiltration and Exfiltration Acceptance Testing of Installed Corrugated High Density Polyethylene Pipelines

- C. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction and Standard Plans for Road Construction, latest implemented editions:
1. Index No. 430-001 - Geotextile Criteria
  2. Index No. 430-001 - Miscellaneous Drainage Details
  3. Index No. 400-291 - Supplemental Details for Precast Concrete Box Culverts
  4. Index No. 400-292 - Standard Precast Concrete Box Culverts
  5. Specification Section 400 - Concrete Structures
  6. Specification Section 410 - Precast Concrete Box Culvert
  7. Specification Section 430 - Pipe Culverts and Storm Sewer
  8. Specification Section 440 - Underdrains
  9. Specification Section 449 - Precast Concrete Drainage Products
  10. Specification Section 901 - Coarse Aggregate
  11. Specification Section 945 - Corrugated Aluminum Pipe and Pipe Arch
  12. Specification Section 948 - Optional Drainage Products and Repair Systems
  13. Specification Section 985 - Geosynthetic Materials

#### **1.04 Submittals**

- A. Provide shop drawings and product data for all pipes and joints.
- B. Provide manufacturer's certificate of compliance or certified analysis in accordance with applicable standards for each shipment of materials.

#### **1.05 Product Delivery, Storage and Handling**

- A. Exercise care in transporting and handling pipe and fittings in order to avoid damage to pipe materials, coatings or joints.
- B. Lifting of materials shall be by hoist or on skids.
- C. Dropping pipe and fittings while unloading or handling is not permitted.
- D. Pipe shall be stored as recommended by the manufacturer.
- E. Damaged pipe shall be replaced at Contractor's expense.

### **PART 2 PRODUCTS**

#### **2.01 Concrete Pipe and Joints**

- A. Round concrete pipe shall comply with ASTM C76 and FDOT specification section 449, and shall be Class III pipe, unless otherwise noted on the Drawings.
- B. Elliptical concrete pipe shall comply with ASTM C507.

- C. Pipe joints shall comply with ASTM C443 and FDOT specification section 430, and rubber gaskets shall comply with FDOT specification section 942.
- D. Pipe shall not be shipped from manufacturer until the compressive strength of the pipe has reached 4000 psi and a minimum of 5 days have passed since the manufacturing or repair of the pipe has been completed.

## **2.02 High Density Corrugated Polyethylene Pipe and Joints**

- A. Pipe 4 inch through 10 inch diameter shall comply with AASHTO M252, Type S.
- B. Pipe 12 inch through 48 inch diameter shall comply with AASHTO M294, Type S, and ASTM F2306.
- C. Pipe 54 inch through 60 inch diameter shall comply with FDOT specification section 948 (Class II pipe) and shall comply with AASHTO M294
- D. Virgin material for the production of pipe and fittings shall be high density polyethylene conforming to the minimum requirements of cell classification 424420C for 4-inch through 10-inch diameters and 435400C for 12-inch through 60-inch diameters per ASTM D3350. The 12-inch through 60-inch virgin pipe material shall comply with the notched constant ligament-stress (NCLS) test as specified in ASTM F2306.
- E. Bell joints for 4 inch through 10 inch diameter pipe shall be push-on sleeve.
- F. Bell joints for 12 inch through 60 inch diameter pipe shall be integrally formed on pipe.
- G. Pipe joints shall be watertight per ASTM D3212. Gaskets shall be installed by pipe manufacturer and shall comply with ASTM F477.
- H. Fittings shall comply with AASHTO M294.

## **2.03 Filter Fabric**

Filter fabric used for wrapping drainage pipe joints shall type D-3 in accordance with FDOT specification section 985.

## **2.04 Underdrain Systems**

- A. Underdrain pipe shall be perforated polyvinyl chloride pipe in accordance with ASTM F758.
- B. Non-perforated underdrain pipe shall be polyvinyl chloride pipe in accordance with ASTM F758.
- C. Underdrain cleanouts shall be PVC pipe per ASTM F758 and shall consist of an in-line wye fitting, riser, and threaded cap.

- D. Underdrain filter material shall be coarse aggregate per FDOT specification section 901. Fine aggregate such as silica sand is not an acceptable underdrain filter material.
- E. Filter fabric used in the underdrain trench shall be type D-3 in accordance with FDOT specification section 985.

**2.05 Aluminum Coated Corrugated Steel Pipe and Pipe Arch - N/A**

**2.06 Concrete Box Culvert - N/A**

**PART 3 EXECUTION**

**3.01 General Installation Requirements**

- A. Perform work in accordance with plans and standard guidelines in a neat and accurate manner.
- B. All lengths of pipe and culvert shall be dimensioned accurately to measurements established at the site, and shall be worked into place without springing or forcing.
- C. Cut all pipe and culvert as necessary. The pipe and culvert interior and joints shall be thoroughly cleaned before being installed and kept clean during construction.
- D. Trenching, bedding and backfilling for all piping shall be in accordance with Section 02320.
- E. Establish survey control. Line and grade of pipe and culvert shall be checked continuously on a joint by joint basis.
- F. Pipe and culvert shall be laid progressively up grade, with bell upstream, in a manner to form close, concentric joints with smooth bottom inverts.
- G. All pipe and culvert joints shall be wrapped with filter fabric.
- H. Installed piping and culvert systems shall be temporarily plugged at the end of each day's work, or other interruption to progress on a given line. Plugging shall be adequate to prevent entry of small animals or persons into the pipe or the entrance or insertion of deleterious materials.

**3.02 Separation of Storm Sewer Lines and Potable Water Mains**

- A. The outside of non-pressurized storm sewer lines shall be separated horizontally a minimum of three feet from the outside of any existing or proposed water main.

- B. Wherever possible, storm sewer shall cross under existing or proposed water mains, so the outside of the storm sewer is at least six inches below the outside of the water main. Where it is not possible for the sewer to cross under existing or proposed water mains, then the sewer can cross over the water main provided the outside of the sewer is at least 12 inches above the outside of the water main. At the crossing, the proposed pipe joints shall be arranged so that all water main joints are at least three feet from storm sewer joints.
- C. The following are acceptable alternative construction features to be considered for cost evaluation with no guarantee they will be approved for implementation where it is not possible to meet the separation requirements. Exceptions from meeting the pipe separation requirements, without mitigation, shall be allowed only by FDEP if technical or economic justifications for each exception provided by the Engineer are acceptable to FDEP and are only to be implemented upon receipt of expressed written consent from the Engineer and approval from FDEP on a case by case basis. All possible measures to achieve compliance with the pipe separation requirements shall be considered first along with design changes to meet the requirements before the Engineer submits a justification of an exception to FDEP for approval. Implementation of these measures without the expressed written consent of the Engineer and approval by FDEP could result in the requirement that the installed unapproved measures be removed and replaced at no cost.
  - 1. Where sewer is less than the required minimum horizontal distance from a water main and or where the sewer crosses a water main and joints in the sewer are less than the minimum required distance between the joints in the water main:
    - a. Use of pressure rated pipe conforming to AWWA standards for a gravity or vacuum type pipeline.
    - b. Use of welded, fused, or otherwise restrained joints for either pipeline.
    - c. Use of watertight casing pipe or concrete encasement at least four inches thick for either pipe.
  - 2. Where sewer is less than three feet horizontally from a water main and or where a sewer crosses a water main at less than the required minimum separation:
    - a. Use of pipe or casing pipe, having high impact strength (at least equal to 0.25 inch thick ductile iron pipe), or concrete encasement at least four inches thick for both the sewer and the water main.

### **3.03 Concrete Pipe and Culvert**

- A. Before making joint, clean the pipe end and the bell thoroughly. Insert the O-Ring gasket, making certain it is properly oriented. Lubricate the spigot well with an approved lubricant; do not lubricate the bell or o-ring. Insert the spigot end of

the pipe carefully into the bell until the reference mark on the spigot is flush with the bell.

- B. Field cut pipe shall have a reference mark applied the correct distance from the end.
- C. On field cut pipe, provide homing mark in accordance with manufacturer's recommendations.
- D. All pipe laid shall be retained in position to maintain alignment and joint closure until backfill has been placed.
- E. Multi-celled box culverts shall be installed with a 4-inch gap between culverts. Fill gap with non-shrink grout upon completion of installation.
- F. Minimum cover over the pipe (outside top to finish grade), including cover over the bell of the pipe where applicable, shall be 24 inches.

### **3.04 High Density Corrugated Polyethylene Pipe**

- A. Install in accordance with ASTM D2321.
- B. Backfill and compact evenly on each side to prevent displacement, meeting the requirements of ASTM D2321 and Section 02320.
- C. Minimum cover over the pipe (outside top to finish grade) shall be 30 inches.

### **3.05 Filter Fabric**

Install at pipe joints in accordance with FDOT index No. 430-001. Provide minimum 12 inches overlap.

### **3.06 Underdrain Systems**

- A. Install Type II underdrain in accordance with FDOT specification Index No. 440-001 and Specification section 440. Install cleanouts at locations shown on the Drawings. Terminate the riser cap at the finished grade flush with the ground surface.
- B. Install perforated underdrain pipe in all areas except at driveway aprons and at cleanouts. At driveway aprons and cleanouts, install non-perforated underdrain pipe.

### **3.07 Aluminum Coated Corrugated Steel Pipe and Pipe Arch - N/A**

### **3.08 Visual Inspection and Testing**

- A. Prior to inspection and testing, clean all installed lines and structures.



- B. After backfill has been placed, the Engineer will visually inspect all storm lines to check joints, alignment and grade. All obstructions shall be removed.
- C. Provide light source and mirrors for lamping of storm sewer. Any sewer in which the direct light of a lamp cannot be viewed in either direction, full circle, between adjacent structures shall be considered unsatisfactory, and shall be repaired by the Contractor without additional compensation.
- D. For pipe 48 inches or less in diameter, conduct a video inspection in accordance with FDOT Standard Specification Section 430. Provide a video DVD and report using low barrel distortion video equipment with laser profile technology, non-contact video micrometer and associated software that provides the following: actual recorded length and width measurements of all cracks within the pipe; actual recorded separation measurement of all pipe joints; pipe ovality report; deflection measurements and graphical diameter analysis report in terms of x and y axis; flat analysis report; representative diameter of pipe; pipe deformation measurements, leaks, debris, or other damage or defects; deviation in pipe line and grade, joint gaps, and joint misalignment; a video record of the actual speed at which the camera is traveling; through the pipe, ensuring that the rate of travel does not exceed the limit defined in FDOT specification section 430.

**END OF SECTION**

**Infield Clay Areas**  
**Section 02795**

**Part 1- General**

**1.1 DESCRIPTION**

- A. The work specified in this section consists of the furnishing and installing the infield clay area, pitcher's mound and infield conditioner as indicated on the Construction Drawings.

**1.2 Submittals/Quality Assurance**

- A. Sports Field Contactor shall submit soil samples with laboratory test showing mechanical analysis of infield mix for owner's and engineer's approval.

**Part 2- Products**

**2.1 Materials and Equipment**

- A. Clay material shall be in accordance with ASTM F21070-7 for skinned infield mix material and shall have the following particle size recommendations: 100% passing a 4.75 mm (No. 4) sieve, 0-15% gravel (retained on a 2mm sieve) and a minimum of 60% sand with 19-40% passing a 53mm (NO. 270) sieve which is the silt and clay fraction.
- B. Mound and batter's box clays shall be Turface MarMound all-purpose clay or approved equal.
- C. Infield Conditioner shall be Turface Athletics Pro League or approved equal.

**2.2. Installation**

- A. Place 6" of infield clay and laser grade to the grades shown on the contract plans.
- B. After leveling the skinned area, nail drag surface to a depth of 2", apply 900 lbs per 1000 sq. feet of soil conditioner and nail drag to incorporate conditioner into infield clay.
- C. Install pitcher's mound as recommended by the manufacturer or supplier.

**End of Section**

**SECTION 02820**  
**FENCES AND GATES**

**PART 1 GENERAL**

**1.01 Section Includes**

- A. General Fence Requirements
- B. Fence Gates
- C. Barbed wire fencing and timber posts

**1.02 References**

- A. Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction and Roadway and Traffic Design Standards, latest implemented editions:
  - 1. Index No. 550-002 - Fence Type B
  - 2. Specification Section 550 - Fencing

**1.03 Scope of Work**

Furnish all materials, equipment, transportation, tools and labor, unless otherwise specified, to construct fencing and other appurtenances, and all items called for or that could reasonably be inferred from the drawings, including fabric, posts, frame, bracing, gates and all accessories for a complete job ready to operate. If any items for a complete job are omitted or not shown, the Contractor shall furnish and install the same without cost to the Owner.

**1.04 Submittals**

- A. Provide product data and shop drawings for all posts, rails, chain link fence fabric, tension wire, gates.
- B. Provide drawings indicating the location of all pull posts and gate locations.

**PART 2 PRODUCTS**

**2.01 General**

- A. All fence and gate material shall be FDOT Fence Type B, per FDOT Roadway and Traffic Design Standards and Standard Specifications for Road and Bridge Construction. Per these standards, there are a number of options for the fence materials. Listed below are the material options selected by the Owner to be used for this project.

- B. Where the Drawings have fence and fence accessory details, then those details must also be followed; however, in case of conflict the more stringent requirement must be met.

## **2.02 Line Posts**

- A. Zinc galvanized steel pipe (galvanized at 1.8 oz per square foot), Schedule 40, vinyl coated black, class A bonded.
- B. Required Size:
  - 1. General Fencing (ponds, right-of-way): 1½ inch nominal diameter

## **2.03 Corner, End, and Pull Posts**

- A. Zinc galvanized steel pipe (galvanized at 1.8 oz per square foot), Schedule 40, vinyl coated black, class A bonded.
- B. Required Size:
  - 1. General Fencing (ponds, right-of-way): 2 inch nominal diameter

## **2.04 Rail**

- A. Zinc galvanized steel pipe (galvanized at 1.8 oz per square foot), Schedule 40, vinyl coated black, class A bonded.
- B. Required Size:
  - 1. General Fencing (ponds, right-of-way): 1¼ inch nominal diameter

## **2.05 Chain Link Fabric**

- A. No. 9 gage steel wire zinc coated (coated at 1.8 oz per square foot). The gage requirement refers to the wire plus zinc coated diameter, and does not include any other coatings.
- B. Wire to be vinyl coated black, class A bonded.
- C. Top and bottom selvage to be twisted and barbed.
- D. Required Mesh Size: General Fencing: 2 inch
- E. Required Height (measured from bottom of fabric to top of fabric):
  - 1. General Fencing: 6 feet
  - 2. Tennis Court Fencing: 10 feet

## **2.06 Tension Wire**

- A. No. 7 gage steel wire zinc galvanized (galvanized at 1.8 oz per square foot). The gage requirement refers to the wire plus zinc coated diameter, and does not include any other coatings.
- B. Wire to be vinyl coated black, class A bonded.

## **2.07 Tie Wire**

- A. No. 9 gage steel wire zinc galvanized (galvanized at 1.8 oz per square foot). The gage requirement refers to the wire plus zinc coated diameter, and does not include any other coatings.
- B. Wire to be vinyl coated black, class A bonded.

## **2.08 Gates**

- A. Provide double swing gate, opening width as detailed on the plans, hinged to swing total of 180 degrees so gate can swing in or out. Also provide latches, locking device, and gate stop keeper (cane bolt and cane bolt anchor base embedded in concrete).
- B. All materials to match fencing materials identified above. Height of gate to match height of fence.

## **2.09 Miscellaneous Hardware**

Zinc coated commercial grade steel. Paint black or as directed by Owner.

## **PART 3 EXECUTION**

### **3.01 Posts**

Embed all posts in 3000 psi concrete bases. All posts to extend 3 feet minimum into concrete base. All concrete base diameters to be 12 inches, top of base to crown 1 inch above grade, bottom of base to be 6 inches below bottom of post.

### **3.02 Fence Fabric, Wire, Rails, and Accessories**

Install per FDOT requirements.

### **3.03 Gates**

Provide gate stop keeper embedded in concrete.

**END OF SECTION**

## SECTION 02955

### CLEANING AND FLUSHING OF UNDERGROUND PIPING

#### PART 1 GENERAL

##### 1.01 Section Includes

Water transmission main flushing and cleaning.

##### 1.02 References

- A. American Water Works Association (AWWA) and American National Standards Institute (ANSI) latest edition:
  - 1. AWWA C651 - Disinfecting Water Mains

##### 1.04 Submittals

Proposed points of connection to water sources.

#### PART 2 PRODUCTS

##### 2.01 Water Source For Flushing

- A. The following water sources can be used for flushing of the main:
  - 1. Existing City of Wildwood water main at the site.
- B. Provide all temporary jumpers and taps for connecting the water source to the water main to be flushed.
- C. Provide proposed tap locations to the utility for approval prior to placement of taps.
- D. Potable water provided by the utility shall be metered and all meter and usage fees shall be paid by the Contractor. Where, in the determination of the utility it is not practical to meter the flushing water, the water volume must be estimated by the Contractor by an approved methodology before the flushing begins.

#### PART 3 EXECUTION

##### 3.01 General

- A. The system shall be thoroughly cleaned of all material, sand, grit, gravel, stones, fluids, construction debris, and other items that can generally be construed as foreign material and that would not be found in a properly cleaned system.

- B. Clean the installed water transmission main piping system by conducting flushing or pigging followed by flushing as indicated below.

**3.02 Flushing of Pipeline**

- A. Conduct full diameter flushing of pipeline in sections in order to remove any solids or contaminated material that may have become lodged in the pipe.
- B. Obtain a minimum flushing velocity of 2.5 feet per second per AWWA C651.
- C. All taps required for flushing and the temporary or permanent release of air as needed for flushing shall be provided by the Contractor.
- D. The following Table is from AWWA C651 (Table 3) and is provided as a guideline as to the number of taps or fire hydrant outlets needed to meet the minimum flushing rate based on 40 psi residual pressure. Note that the number of taps and hydrant connections shown is for reference only and may not address all field conditions that could result in the need for additional taps or hydrant connections in order to achieve 2.5 feet per second flow.
- E.

<b>MINIMUM FLUSHING RATE</b>					
<b>Pipe Dia. (In)</b>	<b>Flow Rate For Flushing (GPM)</b>	<b>Number of Taps</b>			<b>Number of 2½” Fire Hydrant Outlets</b>
		<b>1”</b>	<b>1½”</b>	<b>2”</b>	
4	100	1	-	-	1
6	200	-	1	-	1
8	400	-	2	1	1
10	600	-	3	2	1
12	900	-	-	3	2
16	1600	-	-	4	2
20	2500	-	-	7	4

**END OF SECTION**

**SECTION 03 10 00**  
**CONCRETE FORMING AND ACCESSORIES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Form accessories.
- C. Form stripping.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 03 30 00 = Cast-in-Place Concrete
- C. Section 05 12 00 – Structural Steel.
- D. Section 13 34 19 – Metal Building Systems.

**1.03 REFERENCE STANDARDS**

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials ; 2010.
- B. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International ; 2010 (Errata 2012).
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute ; 2011.
- D. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute ; 2004.
- E. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers ; 2013.
- F. PS 1 - Structural Plywood ; 2009.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.
- C. Delegated Design Data: As required by authorities having jurisdiction.

**PART 2 PRODUCTS**

**2.01 FORMWORK - GENERAL**

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
- D. Comply with relevant portions of ACI 347, ACI 301, and ACI 318.

**2.02 WOOD FORM MATERIALS**

- A. Softwood Plywood: PS 1, B-B High Density Concrete Form Overlay, Class I. 3/4 inch Minimum thickness.



## 2.03 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, galvanized metal, fixed length, cone type, with waterproofing washer, 1 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
  - 1. Provide stainless steel form ties for all exterior surfaces exposed to view.
  - 2. Approved Manufacturers:
    - a. Dayton: Sure-Grip"
    - b. Henchman: "Snapties"
    - c. Richmond: "Snop-Tys"
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
  - 1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
  - 2. Do not use materials containing diesel oil or petroleum-based compounds.
  - 3. VOC Content: In compliance with applicable local, State, and federal regulations.
- C. Filler Strips for Chamfered Corners: Wood strip type; 3/4 by 3/4 inch size; maximum possible lengths.
- D. Dovetail Anchor Slot: Galvanized steel, at least 22 gage, 0.0299 inch thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Dovetail Anchor Slot: Zinc coated (oriented vertically) shall be located at 3 feet - 0 inches on center horizontally wherever concrete surfaces adjoin masonry. Where concrete masonry units (CMU) abut columns, provide dovetail slot at centerline of adjoining CMU.
  - 1. Approved Manufacturers:
    - a. Henchman: Number 100 Standard, 24 gauge
    - b. Hohman & Barnard, Inc. Number 305
    - c. Wire Products Company, Number F-17
    - d. Gateway Building Products: DAS-STD
- F. Flashing Reglets: Galvanized steel, at least 22 gage, 0.0299 inch thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- G. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- H. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 12 00.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

### 3.02 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.

- F. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- G. Coordinate this section with other sections of work that require attachment of components to formwork.

### **3.03 APPLICATION - FORM RELEASE AGENT**

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

### **3.04 INSERTS, EMBEDDED PARTS, AND OPENINGS**

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- E. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

### **3.05 FORM CLEANING**

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
  - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

### **3.06 FORMWORK TOLERANCES**

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.
- D. Camber slabs and beams in accordance with ACI 301.

### **3.07 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 - Quality Requirements.
- B. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- C. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

### **3.08 FORM REMOVAL**

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

**END OF SECTION**

**SECTION 03 20 00**  
**CONCRETE REINFORCING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.
- C. Section 03 30 00 – Cast-in-Place Concrete
- D. Section 13 34 19 – Metal Building Systems

**1.03 REFERENCE STANDARDS**

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI SP-66 - ACI Detailing Manual; 2004.
- C. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- D. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- E. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2014.
- F. ASTM D3963/D3963M - Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Reinforcing Steel Bars; 2001 (Reapproved 2007).
- G. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- H. CRSI (DA4) - Manual of Standard Practice; 2009.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.
- C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.
- D. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

**1.05 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI 301.
- B. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.

**PART 2 PRODUCTS**

**2.01 REINFORCEMENT**

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  - 1. Plain billet-steel bars. for bars numbers 3 to number 18.
  - 2. Epoxy coated in accordance with ASTM A775/A775M.
- B. Steel Welded Wire Reinforcement (WWR): Class A epoxy coated, deformed type; ASTM A884/A884M.

- C. Reinforcement Accessories:
1. Tie Wire: Federal specifications QQ-W-461 Annealed steel, minimum 16 gage, 0.0508 inch for use on epoxy coated steel reinforcement.
  2. Bar Supports and Spacers:
    - a. For unexposed concrete, bar supports and spacers shall be manufactured of standard brights basic wire upturned legs.
    - b. For concrete which will be exposed to view from the underside upon completion of the structures, use plastic capped bar supports and spacers.
    - c. For slabs on grade, use bolsters with runners where base will not support chair legs.
    - d. Do not use wood, brick or other non-specified material.
  3. Welded electrodes: AWS A5.1, Low Hydrogen, E70 Series.
  4. Welded Inserts: Provide wedge inserts for the support of brick ledger angles. Wedge inserts shall be placed at 4'-0" o.c. unless drawings indicate a more restrictive spacing. Provide the F-7 wedge insert and 3/4" diameter askew bolt, nut and washers as manufactured by Dayton Superior, 10101 C General Drive, Orlando, Florida, or equal.
    - a. Wedge inserts and 3/4" diameter bolts to be deemed equal shall submit test information documenting an ultimate capacity of at least 8,500 pounds when the shelf angle is loaded 2-1/4" from the face of concrete, with the bottom of the insert 1-1/2" clear from the beam bottom, for concrete strength of 4,000 psi.

## **2.02 RE-BAR SPLICING:**

- A. Coupler Systems: Mechanical devices for splicing reinforcing bars; capable of developing full steel reinforcing design strength in tension and compression.
1. Products:
    - a. Dayton Superior Corporation; Bar Lock Coupler System: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Dowel Bar Splicer with Dowel-Ins: Mechanical devices for connecting dowels; capable of developing full steel reinforcing design strength in tension and compression.
1. Products:
    - a. Dayton Superior Corporation; Dowel Bar Splicer D101A with Straight Dowel-In: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Taper Tie Hole Plug: Mechanical device for plugging tie holes; anchors optional flush or recessed grout.
1. Products:
    - a. Dayton Superior Corporation; A58 Sure Plug: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Grout: Cementitious, non-metallic, non-shrink grout for use with manufacturer's grout sleeve reinforcing bar coupler system.
1. Products:
    - a. Dayton Superior Corporation; Sleeve-Lock Grout: [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - b. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.03 FABRICATION**

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.
- C. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963/D3963M.

## **PART 3 EXECUTION**

### **3.01 GENERAL:**

- A. Cleaning and storage reinforcement: Steel reinforcement at the time concrete is placed shall be free from heavy rust, scale or other coating that will destroy or reduce the bond.

- B. All reinforcing steel shall be stored in neat piles at the site clear of the ground in such a manner that all bars can be readily identified when required.
- C. Excessive form oil on the reinforcing shall be removed by washing the reinforcing with kerosene. Exercise due care that no smoking or welding is permitted in the area of cleaning. Provide fire extinguisher at cleaning site.
- D. Supports for reinforcing steel: All reinforcing steel shall be rigidly supported, accurately located and held in position by the use of proper reinforcing steel supports, spacers and accessories before the concrete placement begins.
- E. The legs of all reinforcing supports shall be bent to form a foot so that the side and not the end of leg rods bears on the form.
- F. Metal reinforcement shall be protected by the thickness of the concrete indicated on the drawings. Where not otherwise shown, the concrete cover shall be not less than the following:
  - 1. 3 inches for footings and other principal structural members poured directly against the ground.
  - 2. 2 inches for bars larger than number 5, and 1-1/2 inches for number 5 bars and smaller where concrete will be exposed to the ground or weather after removal of forms.
  - 3. 1-1/2 inches in all beams, girders and columns.
  - 4. 3/4 inches for all slabs and walls not exposed to the ground or weather.
  - 5. In any event, there shall be not less than 3/4" of concrete protection over all reinforcing bars.
- G. Do not use bar supports or reinforcing as support for concrete runways or construction loads.
- H. Placing tolerances: Clear distance to formed surfaces: +/- 1/4 inch. Minimum spacing between bars: -1/4 inch:
  - 1. Top Bars in Slabs or Beams:
    - a. Members 8" or less in depth: +/- 1/4 inch
    - b. Members 8" to 24" in depth: +/- 1/4 inch
    - c. Members 24" or greater in depth: +/- 1/2 inch
  - 2. Crosswire of Slabs or Beams: Spaced evenly within 2 inches.
  - 3. Lengthwise of Member: +/- 2 inches
- I. Bending details: Typical bending and placing diagrams are shown on the drawings. For parts not shown, bending details and lengths shall conform to the requirements of the ACI Building Code 318 and "Manual of Standard Practice for Detailing Reinforced Concrete Structures" ACI 315.
- J. Bends for stirrups and ties shall be made around a pin having the diameter no less than 1-1/2 inches for number 3, and 2 inches for number 4.
- K. Bends for other bars shall be made around a pin having a diameter not less than six bar diameters for number 3 to number 6, 8 bar diameters for number 9, number 10 and number 11, 10 bar diameters for number 14 and number 18.
- L. All bars shall be bent cold. Heating of bars will not be allowed

### **3.02 SPECIAL REINFORCING REQUIREMENTS:**

- A. Where items are shown as built integrally with other section, but are placed as separate pours, key and dowels must be provided. Dowels shall be the same size and at the same spacing as reinforcing.
- B. Main reinforcing bars shall not be spliced unless so noted on the drawings or approved by the Architect.
- C. Provide 6 X 6 - W1.4 X W1.4 electrically welded wire fabric, ASTM A-185 reinforcing in all concrete slabs on ground unless shown otherwise.
- D. Provide corner bars of same size and spacing as main reinforcement at all intersections and corners.

- E. Where openings occur in slabs, provide two number 5 bars at all sides and extending at least two feet beyond the corners and two number 5 bars at least three feet long diagonally across each re-entrant corner.
- F. Unless permitted by an Inspector employed by the owner reinforcement shall not be bent after being embedded in hardened concrete.

**3.03 INSPECTION OF REINFORCEMENT:**

- A. Reinforcing placement must be checked by an Inspector employed by the owner before any concrete is placed. Any corrections shall be made before concrete is placed.
- B. Placement of reinforcing shall occur in such sequence that the Inspector has sufficient time to inspect the correctness of the reinforcing within the placement area and retains the right to require necessary revisions be made before concrete is placed.
- C. The Contractor shall notify the Inspector at least 24 hours in advance of concrete placement for a particular portion of the building.
- D. Galvanized wire ties of double loop and tightly fastened to secure the proper spacing of rods and ties are required.

**3.04 LAP SPLICING:**

- A. Welded wire fabric shall be overlapped wherever successive mats or rolls are continuous such that the overlap measured between outermost cross wires is not less than one wire spacing plus 2 inches.
- B. Longitudinal (continuous) footing reinforcing: Class B.
- C. Beam Reinforcing: Class B.
- D. Column Reinforcing: Class B Offset lap splices.
- E. Column/footing dowels: Class B
- F. Masonry vertical reinforcing: Class B.
- G. Splices not included above: Class B

**END OF SECTION**

**SECTION 03 30 00**  
**CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Floors and slabs on grade.
- B. Joint devices associated with concrete work.
- C. Miscellaneous concrete elements, including equipment pads.
- D. Concrete curing.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 03 10 00 - Concrete Forming and Accessories: Forms and accessories for formwork.
- C. Section 03 20 00 - Concrete Reinforcing.
- D. Section 07 92 00 - Joint Sealants: Products and installation for sealants for saw cut joints and isolation joints in slabs.
- E. Section 09 91 13 – Exterior Painting
- F. Section 13 34 19 – Metal Building Systems

**1.03 REFERENCE STANDARDS**

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International;
- B. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International;
- C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International
- D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International
- E. ACI 305R - Hot Weather Concreting; American Concrete Institute International.
- F. ACI 306R - Cold Weather Concreting; American Concrete Institute International;
- G. ACI 308R - Guide to Curing Concrete; American Concrete Institute International
- H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International
- I. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
- J. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete
- K. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete
- L. ASTM C150/C150M - Standard Specification for Portland Cement
- M. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
- N. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete.
- O. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete
- P. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
- Q. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

- R. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete
- S. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)T. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- U. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs
- V. COE CRD-C 48 - Method of Test for Water Permeability of Concrete.

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
  - 1. For curing compounds, provide data on method of removal in the event of incompatibility with specified finish.
  - 2. Provide certificates signed by material manufacturer, certifying that each material complies with the specified requirements.
- C. Mix Design: Submit proposed concrete mix design.
  - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
  - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Test Reports
  - 1. Submit results of all compression, slump and air content tests performed during mix design and throughout the duration of the project as required by the Specifications.
  - 2. Submit sieve analysis of coarse and fine aggregate intended for use in the project.
  - 3. Submit a copy of State Certification that the concrete batching and weighing equipment has been inspected and approved.
  - 4. Submit letters from the cement and aggregate suppliers certifying that furnished materials meet appropriate ASTM Standards.
- E. Samples: Submit samples of underslab vapor retarder to be used.
- F. Samples: Submit two, 12 inch long samples of waterstops and construction joint devices.
- G. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.
- H. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

#### **1.05 QUALITY ASSURANCE**

- A. Do not commence placement of concrete until mix designs have been approved by the Architect.
- B. Any concrete work which does not conform to the specified requirements, including strength, tolerance and finishes shall be corrected by the Contractor at his expense and as directed by the Architect.
  - 1. Tolerances listed in sub-paragraphs of 3.03 below.
- C. Perform work of this section in accordance with ACI 301 and ACI 318.
  - 1. Maintain one copy of each document on site.
- D. Follow recommendations of ACI 305R when concreting during hot weather.
- E. Follow recommendations of ACI 306R when concreting during cold weather.

#### **1.06 TESTING:**

- A. Concrete shall be sampled and tested for Quality Control during placement of concrete.



- B. Failure to detect defective work or material shall not in any way prevent later rejection when such defect is discovered nor shall it obligate Architect for final acceptance.
- C. Required Sampling and Testing
  - 1. Samples, for strength tests of each concrete mix shall be taken not less than once a day nor less than once for each 50 cu. yd. of concrete.
- D. If the total volume of concrete is such that the frequency of testing required above would provide less than five strength tests for a given mix, tests shall be made from at least five randomly selected batches.
  - 1. Secure composite samples in accordance with ASTM C172.
  - 2. Mold and cure five specimens from each sample in accordance with ASTM C31.
    - a. Samples for test shall be taken at the 1/4 and 3/4 points of the load mixer.
    - b. Cure specimens under laboratory conditions except as follows:
      - 1) When in the opinion of the Architect there is a possibility of the surrounding air temperature falling below 40 degrees F, they may require additional specimens to be cured under job conditions.
      - 2) In hot weather or periods of low humidity the Architect may require additional specimens to be cured under job conditions
        - (a) Test specimens in accordance with ASTM C39.
          - (1) Test one specimen at 3 days.
          - (2) Test one specimen at 7 days.
          - (3) Test two specimens at 28 days for acceptance. This test of two specimens constitutes one strength test. The results of the strength test shall be the average of the strengths of the two specimens tested.
        - (b) Hold one specimen for future use if test does not comply at 28 days.
        - (c) Determine slump of the concrete sample for each strength test and whenever consistency appears to vary, using ASTM C143.
        - (d) Determine air content for each strength test in accordance with either ASTM C231, ASTM C173, or ASTM C138.
        - (e) Determine temperature of concrete sample for each strength test.
- E. Evaluation of Test Results
  - 1. For evaluation each specified concrete mix shall be represented by at least five strength tests.
- F. The strength level of the concrete will be considered satisfactory if both of the following requirements are met.
  - 1. The average of all sets of three consecutive strength tests (average of two cylinders) exceeds specified strength.
  - 2. No individual strength test (average of two cylinders) falls below the specified strength by 500 psi.
- G. If the strength level does not meet the above requirements, the Architect shall consider the concrete to be deficient and shall have the right to reject the work or require load tests on the structure in the areas the tests represent at no cost to the Owner.
- H. Report tests results in writing to the Architect and the Contractor on the same day that tests are made. Reports of compressive strength tests shall contain:
  - 1. Project identification name and number
  - 2. Date of concrete placement
  - 3. Name of Contractor
  - 4. Name of Concrete Supplier and Truck Number
  - 5. Name of Concrete Testing Service
  - 6. Concrete type and class
  - 7. Location of concrete batch in the structure
  - 8. Design compressive strength at 28 days
  - 9. Slump
  - 10. Air Content

11. Concrete temperature
  12. Concrete mix identification number
  13. Compressive breaking strength
  14. Type of break for both 7-day tests and 28-day tests.
- I. TESTING SERVICES:
1. The Owner will employ an independent testing laboratory meeting the requirements of ASTM E329 and approved by the Architect to perform the following services:
    - a. Sample concrete at placement and make slump, air content, temperature and compression tests as described above.
    - b. Report tests results to the Architect.
  2. Contractor Responsibilities
    - a. Pay for additional testing and inspection of materials or concrete occasioned by their failure by test or inspection to meet specification requirements.
    - b. Provide the necessary testing services for the qualification of proposed materials and the establishment of mix designs; and for any other testing services required by the Contractor.
    - c. Furnish any necessary labor to assist the designated testing agency in obtaining and handling samples.
    - d. Advise the testing agency sufficiently in advance of operations to allow for completion of tests.
    - e. Provide and maintain for the sole use of the testing agency adequate facilities for safe storage and proper curing of concrete test specimens as required by ASTM C31.
    - f. The use of Testing Services shall in no way relieve the Contractor of the responsibility to furnish materials and construction in full compliance with the Contract Documents.

## **PART 2 PRODUCTS**

### **2.01 CONCRETE MATERIALS**

- A. Cement: ASTM C150, Type I - Normal Portland type.
  1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
  1. Acquire all aggregates for entire project from same source.
  2. Fine Aggregate: Clean, sharp sand, free from loam, clay, lumps or other deleterious substance.
    - a) Fineness Modulus – 2.4
    - Bulk Specific Gravity – 2.6
  3. Coarse Aggregate For Normal Weight Concrete: Comply with ASTM C33 size #57. Clean, uncoated, processed aggregate of crushed stone or washed gravel containing no clay, mud, loam or foreign matter. Use of pit or bank run gravel is not permitted. Aggregate shall meet ASTM C33 Size No. 56 or 57.
    - a) Pea Gravel Size – 3/8"
      - Dry Unit Weight – 90-95 lb/cuft
      - Bulk Specific Gravity – 2.6
  4. Where contractor elects to place concrete by pumping he shall provide a pump with sufficient capacity to place this size of aggregate.
  5. ASTM C404 for masonry grout. Maximum aggregate size shall be 3/8".
- C. Water: Clean and not detrimental to concrete.
  1. Water shall be fresh and potable. Water shall be obtained from city water system. The Contractor shall pay for the quantity of water used during construction and also furnish, install and maintain a water meter if required by the Water Department.

### **2.02 ADMIXTURES**

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

- B. Air Entrainment Admixture: ASTM C260/C260M.
  - 1. Products:
    - a. "Darex" by W.R. Grace.
    - b. "SikaAer" by Sika Chemical Co.
    - c. "MBVR" by Master Builders
    - d. "Air-Mix" by Euclid
    - e. "Sealtight" by W.R. Meadows
- C. High Range Water Reducing Admixture: ASTM C494/C494M Type F and shall contain no chloride ions..
  - 1. Products:
    - a. "Melmet" by American Admixtures.
    - b. "WRDA 19" by W.R. Grace Co.
    - c. "Sikament" by Sika Chemical Co.
  - 2. Dosage and use of any mix containing this admixture shall be in strict accordance with the manufacturers direction and only with the written permission of the Engineer.
  - 3. A representative of the admixture manufacturer shall be present to observe the products use and to assure that it is being used in accordance with the manufacturers directions.
- D. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
  - 1. Provide pigmented type, with ASTM C979/C979M inorganic pigments.
  - 2. Products:
    - a. "Daratard 17" by W.R. Grace & Company.
    - b. "Pozzolith 100XR" by Master Builders, Inc..
    - c. "Lubricon R" by American Admixture
    - d. "Plastocrete 161R" by Sika Chemical Co.
- E. Water Reducing Admixture: ASTM C494/C494M Type A.
  - 1. Products:
    - a. "Pozzolith 300 Series" by Master Builders.
    - b. "WRDA/HYCOL" by Grace.
    - c. "Plastocrete 161" by Sika
    - d. "Eucon-WR-75" by Euclid
- F. Calcium Chloride
  - 1. Do not use calcium chloride in any concrete.

### 2.03 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
  - 1. Installation: Comply with ASTM E1643.
  - 2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
  - 3. Products:
    - a. Fortifiber Building Systems Group; Moistop Ultra 10: [www.fortifiber.com](http://www.fortifiber.com).
    - b. W.R. Meadows, Inc.; PERMINATOR Class A - 10 mils: [www.wrmeadows.com](http://www.wrmeadows.com).
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Products:
 

a. Five Star	U.S. Grout
b. Euco NS	Euclid Chemical
c. Masterflow 713	Master Builders

### 2.04 BONDING AND JOINTING PRODUCTS

- A. Epoxy Bonding System:

1. Complying with ASTM C881/C881M and of Type required for specific application.
2. Products:
  - a. Sikadur Hi-Mod Sika Chemical
  - b. Thiopoxy W.R. Grace
  - c. Epoxy #452 Euclid Chemical
  - d. [Sika Armatec EPO CEM 110](#) Sika Chemical
- C. Slab Isolation Joint Filler: Thickness as indicated in drawings. If not indicated provide 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
  1. Material: ASTM D1751, non-staining, non-extruding and resilient bituminous type.

## 2.05 CURING MATERIALS

- A. ~~Membrane curing compound:~~
  1. ~~Conform to ASTM C171, Class B, Clear 100% resin type.~~
  2. ~~Do not use on any surface which will later receive paint, sealer, hardener, carpeting, tile or other bonded covering.~~
    - a. ~~Acceptable Products:~~
  3. ~~Sealtight AR-30 W.R. Meadows~~
  4. ~~Kurez Euclid Chemical~~
  5. ~~Horncure W.R. Grace~~
  6. ~~Hydrocide Resin Sonneborn~~
- B. ~~Curing/sealing compound:~~
  1. ~~Sodium Silicate Sealer~~
    - a. ~~Acceptable Products~~
    - b. ~~Cure Hard Meadows~~
    - c. ~~Eucosil Euclid Chemical~~
    - d. ~~WB-309 Grace~~
    - e. ~~Sonosil Sonneborn~~
    - f. ~~Acurion Anti-Hydro Waterproofing~~
  2. ~~Verify compatibility of finish with curing/sealing compounds.~~
- C. Moisture-Retaining Sheet: ASTM C171.
  1. Polyethylene film, clear, minimum nominal thickness of 0.0040 in..

## 2.06 CONCRETE MIX DESIGN

- A. Contractor shall provide all testing services for approval of mixes.
- B. The Contractor shall furnish the Architect for approval a mix design for each class of concrete at least 15 days prior to start of work.
- C. Do not begin production until mixes have been approved by Architect.
- D. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- E. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
  1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
- F. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- G. Normal Weight Concrete:
  1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
  2. Water-Cement Ratio: Maximum .57 percent by weight.
  3. Total Air Content: 2-4 percent, determined in accordance with ASTM C173/C173M.
  4. Maximum Slump: 4 inches.
  5. Maximum Aggregate Size: 5/8 inch.

- 6. Cement Type II – Specific Gravity 2.9
- 7. Slump = 3"
- 8. F'c = 4000 psi

**2.07 MIXING**

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

**3.02 PREPARATION**

- A. Verify that forms are clean and free of rust before applying release agent.
- B. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- C. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
  - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
  - 2. Use latex bonding agent only for non-load-bearing applications.
- D. Where new concrete with integral waterproofing is to be bonded to previously placed concrete, prepare surfaces to be treated in accordance with waterproofing manufacturer's instructions. Saturate cold joint surface with clean water, and remove excess water before application of coat of waterproofing admixture slurry. Apply slurry coat uniformly with semi-stiff bristle brush at rate recommended by waterproofing manufacturer.
- ~~E. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.~~
- ~~F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.~~

**3.03 PLACING CONCRETE**

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify Architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Place concrete within the tolerances specified below:
  - 1. Dimensional tolerances for formed surfaces:
    - a. Variation from plumb:
      - 1) In the lines and surfaces of columns, piers, walls and in arises:
        - (a) In any 10 ft. of length.....1/4 in.

- (b) Maximum for the entire length (length greater than 40'-0").....1 in.
  - 2) Exposed corner columns, control-joint grooves, and other conspicuous lines:
    - (a) In any 20 ft. of length.....1/4 in.
    - (b) Maximum for the entire length.....1/2 in.
- b. Variation from the level or from the grades specified in the contract documents:
  - 1) In slab soffits, ceilings, beam soffits and in arises, measured before removal of supporting shores
    - (a) In any 10 ft. of length.....1/4 in.
    - (b) In any bay or in any 20 ft. of length.....3/8 in.
    - (c) Maximum for the entire length.....3/4 in.
  - 2) In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:
    - (a) In any bay or in 20 ft. length.....1/4 in.
    - (b) Maximum for the entire length.....1/2 in.
- c. Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:
  - 1) In any bay.....1/2 in.
  - 2) In any 20 ft. of length.....1/2 in.
  - 3) Maximum for the entire length.....1 in.
- d. Variation in the sizes and location of sleeves, floor openings, and wall openings.....+1/4 in.
- e. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:
  - 1) Minus.....1/4 in.
  - 2) Plus.....1/2 in.
- f. Footings\*
  - 1) Variations in dimensions in plan:
    - (a) Minus.....1/4 in.
    - (b) Plus.....1/2 in.
    - (c) Misplacement or eccentricity:
      - (1) 2 percent of the footing width in the direction of misplacement but not more than.....2 in.
    - (d) Thickness:
      - (1) Decrease in specified thickness.....5%
      - (2) Increase in specified thickness.....No limit
  - 2) Footing Tolerances apply to concrete dimensions only, not to positioning of vertical reinforcing steel, dowels, or embedded items.

### 3.04 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

### 3.05 CONCRETE FINISHING

- A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
  - 1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
  - 2. At Basketball Court, apply medium broom finish perpendicular to length of court by straiting float-finished concrete surface 1/16" to 1/8" deep with stiff-bristled broom. See Section 09 91 13 – Exterior Painting, for additional prep for Basketball Court

### 3.06 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
  - 1. Normal concrete: Not less than 7 days.
- C. Surfaces Not in Contact with Forms:
  - 1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
  - 2. Final Curing: Begin after initial curing but before surface is dry.
    - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.
    - b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

### **3.07 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
- D. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- E. Compressive Strength Tests: ASTM C39/C39M. For each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
- H. Slab Testing: Cooperate with manufacturer of specified moisture vapor reduction admixture (MVRA) to allow access for sampling and testing concrete for compliance with warranty requirements.

### **3.08 DEFECTIVE CONCRETE**

- A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

### **3.09 PROTECTION**

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

**END OF SECTION**

**SECTION 03 41 13**  
**PRECAST CONCRETE HOLLOW CORE PLANKS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Precast roof and planks.
- B. Connection plates with brackets and hangers.
- C. Grouting plank joint keys.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 3000 - Cast-in-Place Concrete.

**1.03 REFERENCE STANDARDS**

- A. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- E. ASTM A416/A416M - Standard Specification for Low-Relaxation, Seven-Wire Steel Strand for Prestressed Concrete; 2018.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.
- G. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.
- H. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2014 (Amended 2015).
- I. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015.
- J. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.
- K. IAS AC157 - Accreditation Criteria for Fabricator Inspection Programs for Reinforced and Precast/Prestressed Concrete; 2017.
- L. PCI MNL-116 - Manual for Quality Control for Plants and Production of Structural Precast Concrete Products; 1999.
- M. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete; 2012.
- N. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete; 1988.
- O. PCI MNL-126 - Manual For The Design of Hollow Core Slabs; 1998.
- P. PCI (CERT) - PCI Plant Certification; Current Edition.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination: Coordinate location of hanger tabs and devices for mechanical and electrical work and cutting of field openings.
- B. Preinstallation Meeting: Convene one week before starting work of this section.
  - 1. Discuss anchor and weld plate locations, sleeve locations, and cautions regarding cutting or core drilling.

**1.05 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Indicate standard component configuration, design loads, deflections, and cambers.



- C. Shop Drawings: Indicate plank locations, connection details, edge conditions, bearing requirements, support conditions, dimensions, openings, and relationship to adjacent materials.
- D. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- E. Designer's Qualification Statement.
- F. Manufacturer's Qualification Statement.
- G. Fabricator's Qualification Statement: Provide documentation showing precast concrete fabricator is accredited under IAS AC157.
- H. Erector's Qualification Statement.
- I. Sustainable Design Reporting: If any fly ash, ground granulated blast furnace slag, silica fume, rice hull ash, or other waste material is used in mix designs to replace Portland cement, submit the total volume of concrete, mix design(s) used showing the quantity of Portland cement replaced, reports showing successful cylinder testing, and temperature on day of pour if cold weather mix is used.

#### **1.06 QUALITY ASSURANCE**

- A. Designer Qualifications: Design precast concrete hollow core planks under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in Florida.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.
- C. Fabricator Qualifications: Precast concrete fabricator accredited by IAS according to IAS AC157.
- D. Erector Qualifications: Company specializing in performing the type of work specified in this section, with minimum 3 years of experience.
- E. Welding Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.4/D1.4M.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Lifting or Handling Devices: Capable of supporting member in positions anticipated during manufacture, storage, transportation, and erection.
- B. Mark each member with date of production and final position in structure.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Precast Concrete Hollow Core Planks:
  - 1. Any manufacturer with PCI Plant Certification.
  - 2. Any manufacturer with NPCA Plant Certification.

#### **2.02 PRECAST UNITS**

- A. Precast Hollow Core Planks: Comply with PCI MNL-120, PCI MNL-126, ACI 318, and ACI 301.
  - 1. Dimensions as indicated on drawings.
  - 2. Nominal thickness: 6 inches.
  - 3. Design components to withstand dead loads and design loads in the configuration indicated on drawings and as follows:
    - a. Roof Assembly: 20 pounds live load.
    - b. Maximum Allowable Deflection of Roof Planks: 1/180.
  - 4. Replace as much Portland cement as possible with fly ash, ground granulated blast furnace slag, silica fume, or rice hull ash as is consistent with strength requirements.
  - 5. Design connections in accordance with PCI MNL-123.
  - 6. Design components to accommodate construction tolerances, deflection of other building structural members and clearances of intended openings.

7. Grouted Keys: Capable of transmitting horizontal shear force of 2,000 pounds per linear foot.

### **2.03 MATERIALS**

- A. Concrete Materials: ACI 301.
- B. Tensioning Steel Tendons: ASTM A416/A416M.
- C. Reinforcing Steel: ASTM A615/A615M.
- D. Non-Shrink Grout: Non-metallic, minimum compressive strength of 10,000 psi.
- E. Cement Grout: Minimum compressive strength of 3,000 psi at 28 days.

### **2.04 ACCESSORIES**

- A. Connecting and Supporting Devices: Plates, angles, items cast into concrete, ASTM A36/A36M carbon steel; prime painted.
- B. Core Hole End Plugs: Foamed-in-place insulation.
- C. Hanger Tabs: Galvanized steel, designed to fit into grouted key joints, capable of supporting 500 lbs dead load, predrilled to receive hanger.
- D. Bearing Pads: High density plastic, 1/8 inch thick, smooth on one side.
- E. Sill Seal: Compressible glass fiber strips.

### **2.05 FABRICATION**

- A. Weld reinforcing in accordance with AWS D1.4/D1.4M.
- B. Embed anchors, inserts, plates, angles, and other items at locations indicated.
- C. Provide openings required by other sections, at locations indicated.
- D. Cut exposed ends flush.
- E. Plant Finish: Finish members to PCI MNL-116 Commercial Grade.
- F. Plant Finish: PCI MNL-116.
  1. Roof Members: Commercial Grade.
- G. Connecting and Supporting Steel Devices: Do not paint surfaces in contact with concrete or surfaces requiring field welding.

### **2.06 FABRICATION TOLERANCES**

- A. Comply with PCI MNL-116 and PCI MNL-135.
  1. Maximum Variation From Nominal Dimensions:
    - a. Width: Plus or minus 1/4 in.
    - b. Length: Plus or minus 1/2 in.
    - c. Depth: Plus or minus 1/4 in.
  2. Maximum Variation From Intended Camber: Plus or minus 1/4 inch in 10 feet.
  3. Maximum Variation from Plan End Squareness: Plus or minus 1/4 in.
  4. Maximum Sweep: Plus or minus 1/4 in.
  5. Maximum Misalignment of Anchors, Inserts, Openings: Plus or minus 1/8 inch.
  6. Maximum Bowing of Members: Length/360.
  7. Maximum Bowing of Members: Plus or minus 1/4 inch in 10 feet.

### **2.07 SOURCE QUALITY CONTROL**

- A. Produce planks in accordance with requirements of PCI MNL-116. Maintain plant records and quality control program during production of precast planks. Make records available upon request.
  1. Maintain one copy on project site.
- B. Inspect stressing tendons before delivery for compliance with specified standards.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that site conditions are ready to receive work and field measurements are as indicated on shop drawings.
- B. Verify supporting structure is ready to receive work.

### **3.02 PREPARATION**

- A. Prepare support devices for the erection procedure and temporary bracing.

### **3.03 ERECTION**

- A. Erect members without damage to structural capacity, shape, or finish. Replace or repair damaged members.
- B. Install bearing pads at bearing ends of planks.
- C. Align and maintain uniform horizontal and end joints, as erection progresses.
- D. Maintain temporary bracing in place until final connection is made. Protect members from staining.
- E. Adjust differential camber between precast members to tolerance before final attachment.
- F. Adjust differential elevation between precast members to tolerance before final attachment.
- G. Secure units in place. Perform welding in accordance with AWS D1.1/D1.1M.
- H. Grout longitudinal keys as indicated.
- I. Tape seal underside of plank joints to prevent grout leakage.
- J. Make plank-to-plank joints smooth using grout, troweled smooth. Transition differential elevation of adjoining planks with grout to a maximum slope of 1:12.

### **3.04 TOLERANCES**

- A. Erect members level and plumb within allowable tolerances. Comply with PCI MNL-135.
  - 1. Maximum Jog in Alignment of Matching Ends: Plus or minus 1/2 inch.
  - 2. Exposed Joint Dimension: Plus or minus 3/8 inch.
  - 3. Differential Top Elevation As Erected: Plus or minus 3/8 inch.
  - 4. Bearing Length in Span Direction: Plus or minus 3/8 inch.
  - 5. Differential Bottom Elevation of Exposed Planks: Plus or minus 3/16 inch.

### **3.05 PROTECTION**

- A. Protect members from damage caused by field welding or erection operations.
- B. Provide non-combustible shields during welding operations.

### **3.06 CLEANING**

- A. Clean weld marks, dirt, and blemishes from surface of exposed members.

**END OF SECTION**

**SECTION 04 22 00**  
**CONCRETE UNIT MASONRY**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Concrete masonry units.
  - 2. Mortar and grout.
  - 3. Steel reinforcing bars.
  - 4. Masonry-joint reinforcement.
  - 5. Embedded flashing.
  - 6. Miscellaneous masonry accessories.
- B. Related Requirements:

**1.2 DEFINITIONS**

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

**1.3 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
  - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
  - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.
- C. Samples for Initial Selection:
  - 1. Pre-faced CMUs.

**1.4 QUALITY ASSURANCE**

- A. Testing Agency Qualifications: Qualified in accordance with ASTM C1093 for testing indicated.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

## 1.6 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
  - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
  - 2. Protect sills, ledges, and projections from mortar droppings.
  - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
  - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

## PART 2 - PRODUCTS

### 2.1 SOURCE LIMITATIONS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these

characteristics, from single source from single manufacturer for each product required.

- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

## 2.2 PERFORMANCE REQUIREMENTS

- A. Provide unit masonry that develops indicated net-area compressive strengths at 28 days.
  - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) in accordance with TMS 602/ACI 530.1/ASCE 6.

## 2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.

## 2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
  - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
  - 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
  - 1. Density Classification: Normal weight, unless otherwise indicated.
  - 2. Size (Width): Manufactured to dimensions **3/8 inch** less-than-nominal dimensions.

## 2.5 [CONCRETE] [AND] [MASONRY] LINTELS

- A. General: Provide one of the following:
- B. Concrete Lintels Matching CMU in Color, Texture: ASTM C1623, matching density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.
- C. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

## 2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

## 2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, **Grade 60**.
- B. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.
  - 1. Interior Walls: **[Mill-] [Hot-dip]** galvanized carbon steel.
  - 2. Exterior Walls: **[Hot-dip galvanized carbon] [Stainless]** steel.
  - 3. Wire Size for Side Rods: **[0.148-inch] [0.187-inch]** diameter.
  - 4. Wire Size for Cross Rods: **[0.148-inch] [0.187-inch]** diameter.
  - 5. Spacing of Cross Rods: Not more than **16 inches** o.c.
  - 6. Provide in lengths of not less than **10 feet**[, with prefabricated corner and tee units].

## 2.8 TIES AND ANCHORS

- A. General: Ties and anchors extend at least **1-1/2 inches** into masonry but with at least a **5/8-inch** cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
  - 1. Mill-Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A641/A641M, Class 1 coating.
  - 2. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
  - 3. Steel Plates, Shapes, and Bars: ASTM A36/A36M.

## 2.9 EMBEDDED FLASHING MATERIALS

## 2.10 MISCELLANEOUS MASONRY ACCESSORIES

## 2.11 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

- C. Mortar for Unit Masonry: Comply with ASTM C270, Property Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
  - 1. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
- D. Grout for Unit Masonry: Comply with ASTM C476.
  - 1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
  - 1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  - 2. Verify that foundations are within tolerances specified.
  - 3. Verify that reinforcing dowels are properly placed.
  - 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.



### 3.3 TOLERANCES

#### A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus **1/2 inch** or minus **1/4 inch**.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus **1/2 inch**.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus **1/4 inch** in a story height or **1/2 inch** total.

#### B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than **1/4 inch in 10 feet**, or **1/2-inch** maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet**, **1/4 inch in 20 feet**, or **1/2-inch** maximum.
3. For vertical lines and surfaces do not vary from plumb by more than **1/4 inch in 10 feet**, **3/8 inch in 20 feet**, or **1/2-inch** maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet**, **1/4 inch in 20 feet**, or **1/2-inch** maximum.
5. For lines and surfaces, do not vary from straight by more than **1/4 inch in 10 feet**, **3/8 inch in 20 feet**, or **1/2-inch** maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than **1/4 inch in 10 feet**, or **1/2-inch** maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than **1/16 inch**.

#### C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus **1/8 inch**, with a maximum thickness limited to **1/2 inch**.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than **1/8 inch**.
3. For head and collar joints, do not vary from thickness indicated by more than plus **3/8 inch** or minus **1/4 inch**.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus **1/8 inch**.

### 3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal **4-inch** horizontal face

dimensions at corners or jambs.

- C. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- D. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- E. Fill cores in hollow CMUs with grout **24 inches** under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

### 3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
  - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
  - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
  - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
  - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
  - 1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
  - 2. Wet joint surfaces thoroughly before applying mortar.
  - 3. Rake out mortar joints for pointing with sealant.
- D. Rake out mortar joints at pre-faced CMUs to a uniform depth of **1/4 inch** and point with epoxy mortar to comply with epoxy-mortar manufacturer's written instructions.
- E. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- F. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- G. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

### 3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of **5/8 inch** on exterior side of walls, **1/2 inch** elsewhere. Lap reinforcement a minimum of

**6 inches.**

1. Space reinforcement not more than **16 inches** o.c.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

### 3.7 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
  1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
  2. Install preformed control-joint gaskets designed to fit standard sash block.
  3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
  4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

### 3.8 LINTELS

- A. Provide concrete, or, masonry lintels where shown and where openings of more than **12 inches** for brick-size units and **24 inches** for block-size units are shown without structural steel or other supporting lintels.
- B. Provide minimum bearing of **8 inches** at each jamb unless otherwise indicated.

### 3.9 FLASHING

- A. General: Install embedded flashing at ledges and other obstructions to downward flow of water in wall where indicated.
- B. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.

### 3.10 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
  - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
  - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
  - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

### 3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements is done at Contractor's expense.
- B. Testing Frequency: One set of tests for each **5000 sq. ft.** of wall area or portion thereof.

### 3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.
- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

### 3.13 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042200

**SECTION 05 50 00**  
**METAL FABRICATIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Shop fabricated steel and aluminum items.
- B. Bollards
- C. Anchor bolts
- D. Miscellaneous metal work

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 03 30 00 – Cast-in-Place Concrete
- F. Section 13 34 19 – Metal Building Systems

**1.03 REFERENCE STANDARDS**

- A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
- E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- G. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates.
- H. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- I. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric).
- J. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings.
- K. ASTM B85/85M - Standard Specification for Aluminum-Alloy Die Castings.
- L. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- M. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric].
- N. ASTM B210 - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes.
- O. ASTM B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes (Metric).
- P. ASTM B211 - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire.
- Q. ASTM B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold-Finished Bar, Rod, and Wire (Metric).
- R. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- S. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society.

- T. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society.
- U. AWS D1.2/D1.2M - Structural Welding Code - Aluminum; American Welding Society.
- V. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel. International Accreditation Service, Inc.
- W. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; Society for Protective Coatings.
- X. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings.
- Y. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings.

#### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
  - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.
- D. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

#### **1.05 QUALITY ASSURANCE**

- A. Design railings under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
- B. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel (AC172).

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS - STEEL**

- A. Steel Sections: ASTM A36/A36M.
- B. Plates: ASTM A283.
- C. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
- D. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, plain.
- E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
- G. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

#### **2.02 MATERIALS - ALUMINUM**

- A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.
- B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5052 alloy, H32 or H22 temper.
- C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210 (ASTM B210M), 6063 alloy, T6 temper.
- D. Aluminum-Alloy Bars: ASTM B211 (ASTM B211M), 6061 alloy, T6 temper.
- E. Aluminum-Alloy Sand Castings: ASTM B26/B26M.
- F. Aluminum-Alloy Die Castings: ASTM B85/B85M.
- G. Bolts, Nuts, and Washers: Stainless steel.
- H. Welding Materials: AWS D1.2/D1.2M; type required for materials being welded.

### **2.03 FABRICATION**

- A. Fit and shop assemble items in largest practical sections, for delivery to site.
- B. Fabricate items with joints tightly fitted and secured.
- C. Continuously seal joined members by continuous welds.
- D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
- F. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

### **2.04 FABRICATED ITEMS**

- A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.

### **2.05 FINISHES - STEEL**

- A. Prime paint steel items.
  - 1. Exceptions: Galvanize items to be embedded in concrete.
  - 2. Exceptions: Do not prime surfaces in direct contact with concrete, where field welding is required, and items to be covered with sprayed fireproofing.
- B. Prepare surfaces to be primed in accordance with SSPC-SP2.
- C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- D. Prime Painting: One coat.
- E. Galvanizing of Structural Steel Members: Galvanize after fabrication to ASTM A123/A123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
- F. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

### **2.06 FINISHES - ALUMINUM**

- A. Exterior Aluminum Surfaces: Class I color anodized.
- B. Interior Aluminum Surfaces: Class I natural anodized.
- C. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.
- D. Class II Natural Anodized Finish: AAMA 611 AA-M12C22A31 Clear anodic coating not less than 0.4 mils thick.
- E. Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

### **2.07 FABRICATION TOLERANCES**

- A. Squareness: 1/8 inch maximum difference in diagonal measurements.
- B. Maximum Offset Between Faces: 1/16 inch.
- C. Maximum Misalignment of Adjacent Members: 1/16 inch.
- D. Maximum Bow: 1/8 inch in 48 inches.
- E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field conditions are acceptable and are ready to receive work.

### **3.02 PREPARATION**

- A. Clean and strip primed steel items to bare metal where site welding is required.



- B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

### **3.03 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- C. Field weld components as indicated on drawings.
- D. Perform field welding in accordance with AWS D1.1/D1.1M.
- E. Obtain approval prior to site cutting or making adjustments not scheduled.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

### **3.04 TOLERANCES**

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch.
- C. Maximum Out-of-Position: 1/4 inch.

**END OF SECTION**

## SECTION 075423

### THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Roof insulation.

###### B. Related Requirements:

1. Section 077100 "Roof Specialties" for manufactured copings, and, roof edge flashings.

##### 1.2 ACTION SUBMITTALS

###### A. Product Data:

1. Thermoplastic polyolefin (TPO) roofing system.
2. Accessory roofing materials.
3. Roof insulation.

###### B. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

##### 1.3 WARRANTY

###### A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.

1. Special warranty includes roof membrane, base flashings, roof insulation, and other components of roofing system.
2. Warranty Period: 20 years from date of Substantial Completion.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

###### A. General Performance: Installed roofing system and flashings to withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure

due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings to remain watertight.

- B. Material Compatibility: Roofing materials to be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

## 2.2 ACCESSORY ROOFING MATERIALS

- A. General: Accessory materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, **55 mils** thick, minimum, of same color as TPO sheet.
- C. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately **1 by 1/8 inch** thick; with anchors.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- E. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

## 2.3 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer.
- B. Molded (Expanded) Polystyrene Board Insulation: ASTM C578, Type VIII, **1.15-lb/cu. ft.** minimum density, **13-psi** minimum compressive strength, square edge.
  - 1. Manufacturers: Subject to compliance with requirements, **[provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:**
    - a. **[Atlas Molded Products, a division of Atlas Roofing Corporation]**
    - b. **[Carlisle Syntec Systems]**
    - c. **[DiversiFoam Products]**
    - d. **[Dyplast Products]**
    - e. **<Insert manufacturer's name>**
  - 2. Thermal Resistance: R-value of 3.8 per **1 inch**.
  - 3. Size: **[48 by 48 inches] [48 by 96 inches]**.
  - 4. Thickness:
    - a. Base Layer: **[1-1/2 inches] <Insert thickness>**.

- b. Upper Layer: <Insert thickness>.
- C. Tapered Insulation: Provide factory-tapered insulation boards.
  - 1. Material: Match roof insulation.
  - 2. Minimum Thickness: **1/4 inch**.
  - 3. Slope:
    - a. Roof Field: **1/4 inch per foot** unless otherwise indicated on Drawings.
    - b. Saddles and Crickets: **1/2 inch per foot** unless otherwise indicated on Drawings.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
  - 1. Verify that joints in precast concrete roof decks have been grouted flush with top of concrete.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, **[FM Approvals' RoofNav]** **[SPRI's Directory of Roof Assemblies]** listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.
- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.

### 3.3 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
- B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

END OF SECTION 075423

SECTION 07 71 00  
ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Copings.
  - 2. Roof-edge specialties.

1.2 ACTION SUBMITTALS

- A. Product Data:
  - 1. Copings.
  - 2. Roof-edge specialties.
- B. Product Data Submittals: For each product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.4 FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

## 1.5 WARRANTY

- A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section 07 54 23 "TPO Roofing."

## PART 2 - PRODUCTS

### 2.1 SOURCE LIMITATIONS

- A. Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Section 07 54 23 TPO Roofing.

### 2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties to withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. SPRI Wind Design Standard: Manufacture and install copings, roof-edge specialties tested in accordance with SPRI ES-1 and capable of resisting the following design pressures:
  - 1. Design Pressure: As indicated on Drawings.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

### 2.3 MATERIALS

- A. Aluminum Sheet: **ASTM B209**, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.

### 2.4 MISCELLANEOUS MATERIALS

- A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:
  - 1. Fasteners for Aluminum: Aluminum or Series 300 stainless steel.

## 2.5 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Aluminum Extrusion Finishes:
  - 1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
    - a. Two-Coat Fluoropolymer: AAMA [2604] [2605]. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Examine walls, roof edges, and parapets for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. Install roof specialties in accordance with manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.



- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

### 3.3 INSTALLATION OF ROOF-EDGE SPECIALITIES

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

### 3.4 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder and sealants.
- C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100

**SECTION 07 92 00**  
**JOINT SEALANTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.

**1.02 RELATED REQUIREMENTS**

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Divisions 1 Specification Sections, apply to this section.
- B. Section 01-61-16 - Volatile Organic Compound (VOC) Content Restrictions: Additional requirements for sealants and primers.

**1.03 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2006 (Reapproved 2011).
- B. ASTM C834 - Standard Specification for Latex Sealants; 2014.
- C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2012.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2014.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2013.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2008 (Reapproved 2012).
- G. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2014.
- H. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2005 (Reapproved 2010).
- I. SWRI (VAL) - SWR Institute Validated Products Directory; Current Listings at [www.swrionline.org](http://www.swrionline.org).
- J. SWRI (VAL) - SWR Institute Validated Products directory; Sealant, Waterproofing and Restoration Institute; online at <http://www.swrionline.org/ValidatedSealants>.

**1.04 SUBMITTALS**

- A. See Section 01-30-00 - Administrative Requirements, for submittal procedures.
- B. Product Data for Sealants: Submit manufacturer's technical data sheets for each product to be used, that includes the following.
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 4. Substrates the product should not be used on.
  - 5. Substrates for which use of primer is required.
  - 6. Substrates for which laboratory adhesion and/or compatibility testing is required.
  - 7. Installation instructions, including precautions, limitations, and recommended backing materials and tools.
  - 8. Sample product warranty.
  - 9. Certification by manufacturer indicating that product complies with specification requirements.
  - 10. SWRI Validation: Provide currently available sealant product validations as listed by SWRI (VAL) for specified sealants.

- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

### **1.05 QUALITY ASSURANCE**

- A. Maintain one copy of each referenced document covering installation requirements on site.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience.
- D. Installation Plan: Include schedule of sealed joints, including the following.
  - 1. Method to be used to protect adjacent surfaces from sealant droppings and smears, with acknowledgement that some surfaces cannot be cleaned to like-new condition and therefore prevention is imperative.

### **1.06 WARRANTY**

- A. See Section 01-78-00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective work within a five year period after Date of Substantial Completion.
- C. Warranty: Include coverage for installed sealants and accessories that fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Non-Sag Sealants: Permits application in joints on vertical surfaces without sagging or slumping.
  - 1. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
  - 2. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 3. Dow Corning Corporation; [www.dowcorning.com/construction/#sle](http://www.dowcorning.com/construction/#sle).
  - 4. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 5. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 6. The QUIKRETE Companies: [www.quikrete.com](http://www.quikrete.com).
  - 7. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 8. Sika Corporation: [www.usa-sika.com](http://www.usa-sika.com).
  - 9. W.R. Meadows, Inc: [www.wrmeadows.com](http://www.wrmeadows.com).
- B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
  - 1. BASF Construction Chemicals-Building Systems: [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com).
  - 2. Bostik Inc: [www.bostik-us.com](http://www.bostik-us.com).
  - 3. Dow Corning Corporation; [www.dowcorning.com/construction/#sle](http://www.dowcorning.com/construction/#sle).
  - 4. Pecora Corporation: [www.pecora.com](http://www.pecora.com).
  - 5. The QUIKRETE Companies: [www.quikrete.com](http://www.quikrete.com).
  - 6. Tremco Global Sealants: [www.tremcosealants.com](http://www.tremcosealants.com).
  - 7. Sika Corporation: [www.usa-sika.com](http://www.usa-sika.com).
  - 8. W.R. Meadows, Inc: [www.wrmeadows.com](http://www.wrmeadows.com).
  - 9. Substitutions: See Section 01-60-00 - Product Requirements.

### **2.02 JOINT SEALANT APPLICATIONS**

- A. Scope:
  - 1. Interior Joints: Do not seal interior joints unless specifically indicated to be sealed. Interior joints to be sealed include, but are not limited to, the following items.
    - a. Joints between door, window, and other frames and adjacent construction.

- b. In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping, and other openings; between wall/ceiling and other construction; and other flanking sound paths.
        - 1) Exception: Such gaps and openings in gypsum board finished stud walls and suspended ceilings.
        - 2) Exception: Through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
      - c. Other joints indicated below.
    - 2. Do not seal the following types of joints.
      - a. Intentional weepholes in masonry.
      - b. Joints indicated to be treated with manufactured expansion joint cover or some other type of sealing device.
      - c. Joints where sealant is specified to be provided by manufacturer of product to be sealed.
      - d. Joints where installation of sealant is specified in another section.
      - e. Joints between suspended panel ceilings/grid and walls.
  - B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.
    - 1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.
    - 2. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing.
    - 3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
    - 4. Wiring Slots in Concrete Paving: Self-leveling epoxy sealant.
  - C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
    - 1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
    - 2. Wall and Ceiling Joints in Wet Areas: Nonsag polyurethane sealant for continuous liquid immersion.
    - 3. Floor Joints in Wet Areas: Nonsag polyurethane "nontraffic-grade" sealant suitable for continuous liquid immersion.
    - 4. Wall, Ceiling, and Floor Joints Where Tamper-Resistance is Required: Nonsag tamper-resistant silyl-terminated polyurethane sealant.
    - 5. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; clear.
    - 6. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
    - 7. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
    - 8. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.
  - D. Interior Wet Areas: restrooms; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.
  - E. Sound-Rated Assemblies: Walls and ceilings identified as "STC-rated", "sound-rated", or "acoustical".
  - F. Areas Where Tamper-Resistance is Required: As indicated on the drawings.

### **2.03 JOINT SEALANTS - GENERAL**

- A. Sealants and Primers: Provide products with levels of volatile organic compound (VOC) content as indicated in Section 01-61-16.
- B. Colors: To be selected by Architect from manufacturer's standard range.

### **2.04 NONSAG JOINT SEALANTS**

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
  - 1. Movement Capability: minimum.
  - 2. Non-Staining To Porous Stone: Non-staining to light-colored natural stone when tested in accordance with ASTM C1248.

3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
- B. Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
    1. Movement Capability: Plus and minus 25 percent, minimum.
    2. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
    3. Color: To be selected by Architect from manufacturer's standard range.
    4. Cure Type: Single-component, neutral moisture curing
    5. Service Temperature Range: Minus 65 to 180 degrees F.
  - C. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
    1. Color: White.
  - D. Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
    1. Movement Capability: Plus and minus 12-1/2 percent, minimum
    2. Hardness Range: 25 to 30, Shore A, when tested in accordance with ASTM C661.
    3. Color: To be selected by Architect from manufacturer's standard range.
  - E. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
    1. Movement Capability: Plus and minus 25 percent, minimum.
    2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
    3. Color: To be selected by Architect from manufacturer's standard range.
    4. Service Temperature Range: Minus 40 to 180 degrees F.
  - F. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
    1. Movement Capability: Plus and minus 35 percent, minimum.
    2. Color: To be selected by Architect from manufacturer's standard range.
    3. Service Temperature Range: Minus 40 to 180 degrees F.
  - G. Tamper-Resistant Polyurethane Sealant: ASTM C920, Grade NS, Uses M, G, and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
    1. Movement Capability: Plus and minus 12-1/2 percent, minimum.
    2. Hardness Range: 50 to 60, Shore A, when tested in accordance with ASTM C661.
    3. Color: To be selected by Architect from manufacturer's standard range.
    4. Service Temperature Range: Minus 40 to 180 degrees F.
  - H. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
    1. Color: To be selected by Architect from manufacturer's standard range.
    2. Grade: ASTM C834; Grade - Minus 18 Degrees C.
  - I. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.

## **2.05 SELF-LEVELING SEALANTS**

- A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
  1. Movement Capability: Plus and minus 25 percent, minimum.
  2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
  3. Color: To be selected by Architect from manufacturer's standard range.
  4. Service Temperature Range: Minus 40 to 180 degrees F.

- B. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
  - 1. Movement Capability: Plus and minus 25 percent, minimum.
  - 2. Hardness Range: 35 to 55, Shore A, when tested in accordance with ASTM C661.
  - 3. Color: To be selected by Architect from manufacturer's standard range.
- C. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
  - 1. Composition: Multi-component, 100 percent solids by weight.
  - 2. Hardness: Minimum of 85 (Shore A) or 35 (Shore D), when tested in accordance with ASTM D2240 after 7 days.
  - 3. Color: To be selected by Architect from manufacturer's standard colors.
  - 4. Joint Width, Minimum: 1/8 inch.
  - 5. Joint Width, Maximum: 1/4 inch.
  - 6. Joint Depth: Provide product suitable for joints from 1/8 inch to 2 inches in depth excluding space for backer rod.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.

#### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in inconspicuous area to verify that it does not stain or discolor slab.

#### **3.03 INSTALLATION**

- A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Perform installation in accordance with ASTM C1193.
- C. Perform acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

### **3.04 POST-OCCUPANCY**

- A. Post-Occupancy Inspection: Perform visual inspection of entire length of project sealant joints at a time that joints have opened to their greatest width; i.e. at low temperature in thermal cycle. Report failures immediately and repair.

**END OF SECTION**

## SECTION 08 11 13

### HOLLOW METAL DOORS AND FRAMES

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section Includes:
  - 1. Exterior standard steel doors and frames.
  - 2. See drawings for door hardware.

##### 1.2 ACTION SUBMITTALS

- A. Product Data:
  - 1. Interior standard steel doors and frames.
  - 2. Exterior standard steel doors and frames.
  - 3. Interior custom hollow-metal doors and frames.
  - 4. Exterior custom hollow-metal doors and frames.
- B. Product Data Submittals: For each product.
- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

##### 1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  - 1. Provide additional protection to prevent damage to factory-finished units.

#### PART 2 - PRODUCTS

##### 2.1 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B. At locations indicated in the Door and Frame Schedule on Drawings.



1. Doors:
  - a. Type: As indicated on Drawings.
  - b. Thickness: 1-3/4 inches.
  - c. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A60 coating.
  - d. Edge Construction: Model 1, Full Flush.
  - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
  - f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
  - g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
  - h. Core: Manufacturer's standard.
2. Frames:
  - a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A60 coating.
3. Exposed Finish: Factory.

## 2.2 FRAME ANCHORS

- A. Jamb Anchors:
  1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
  2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.
- C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
  1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized in accordance with ASTM A153/A153M, Class B.

## 2.3 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized in accordance with ASTM A153/A153M.
- E. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

## 2.4 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
  - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
  - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
    - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping in accordance with ANSI/SDI A250.6, the Door Hardware Schedule on Drawings, and templates.
  - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
  - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.

## 2.5 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
  - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.
- B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with ANSI/SDI A250.3.
  - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

## 2.6 LOUVERS

- A. Provide louvers for interior doors, where indicated, which comply with SDI 111, with blades or baffles formed of 0.020-inch- thick, cold-rolled steel sheet set into 0.032-inch-thick steel frame.
- B. Form corners of moldings with hairline joints. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.

### 3.2 REPAIR

- A. Factory-Finish Touchup: Clean abraded areas and repair with same material used for factory finish in accordance with manufacturer's written instructions.
- B. Touchup Painting: Cleaning and touchup painting of abraded areas of paint are specified in painting Sections.

END OF SECTION 081113

**SECTION 09 91 13**  
**EXTERIOR PAINTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Surface preparation.
- B. Field application of paints and sealers.
- C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
  - 1. Exposed surfaces of steel lintels and ledge angles.
  - 2. Mechanical and Electrical:
- D. Do Not Paint or Finish the Following Items:
  - 1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
  - 2. Items indicated to receive other finishes.
  - 3. Items indicated to remain unfinished.
  - 4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
  - 5. Non-metallic roofing and flashing.
  - 6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
  - 7. Marble, granite, slate, and other natural stones.
  - 8. Floors, unless specifically indicated. Basketball Court concrete floor to be finished as specified herein.
  - 12. Concealed pipes, ducts, and conduits.

**1.02 DEFINITIONS**

- A. Comply with ASTM D16 for interpretation of terms used in this section.

**1.03 REFERENCE STANDARDS**

- A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; current edition.
- B. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications; 2016.
- C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2005 (Reapproved 2012).
- D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition, [www.paintinfo.com](http://www.paintinfo.com).
- E. SSPC-SP 1 - Solvent Cleaning; 2015.
- F. SSPC-SP 2 - Hand Tool Cleaning; 1982 (Ed. 2004).
- G. SSPC-SP 6 - Commercial Blast Cleaning; 2007.
- H. SSPC-SP 13 - Surface Preparation of Concrete; (Reaffirmed 2015); 2003.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide complete list of products to be used, with the following information for each:
  - 1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
  - 2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
  4. If proposal of substitutions is allowed under submittal procedures, explanation of substitutions proposed.
- C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.
  2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
  3. Allow 30 days for approval process, after receipt of complete samples by Architect.
  4. Paint color submittals will not be considered until color submittals for major materials not to be painted, such as masonry, have been approved.
- D. Manufacturer's Instructions: Indicate special surface preparation procedures.
- E. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
  2. Extra Paint and Finish Materials: 1 gallon (4 L) of each color; from the same product run, store where directed.
  3. Label each container with color in addition to the manufacturer's label.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer's instructions.

#### **1.06 FIELD CONDITIONS**

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
- C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
- D. Minimum Application Temperatures for Latex Paints: 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
  1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
  2. Substitution of MPI-approved products by a different manufacturer is preferred over substitution of unapproved products by the same manufacturer.

3. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.
- B. Paints:
1. PPG Paints: [www.ppgpaints.com/#sle](http://www.ppgpaints.com/#sle).
  2. Sherwin-Williams Company: [www.sherwin-williams.com/#sle](http://www.sherwin-williams.com/#sle).
  3. Benjamin Moore & Co.: [www.benjaminmoore.com](http://www.benjaminmoore.com).
  4. Glidden Professional: [www.gliddenprofessional.com](http://www.gliddenprofessional.com)
- C. Primer Sealers: Same manufacturer as top coats.
- D. Substitutions: See Section 01 6000 - Product Requirements.

## 2.02 PAINTS AND FINISHES - GENERAL

- A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
  2. Supply each paint material in quantity required to complete entire project's work from a single production run.
  3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
- B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
    - a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
  2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
- C. Flammability: Comply with applicable code for surface burning characteristics.
- D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
- E. Colors: To be selected by Architect from manufacturer's full line.
1. Allow for minimum of three colors for each system, unless otherwise indicated, without additional cost to Owner.
  2. Extend colors to surface edges; colors may change at any edge as directed by Architect.

## 2.03 PAINT SYSTEMS - EXTERIOR

- A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including stucco, concrete, concrete masonry units, and primed metal. See Section 2.03.A for Basketball Court concrete floor paint.
1. Two top coats and one coat primer.
  2. Top Coat(s): Exterior Latex; MPI #10, 11, 15, 119, or 214.
  3. Top Coat(s): Exterior Light Industrial Coating, Water Based; MPI #161, 163, or 164.
    - a. Products:
      - 1) Behr Premium Interior/Exterior Direct-To-Metal Paint Gloss [No. 8200]. (MPI #164)
      - 2) Behr Premium Interior/Exterior Direct-To-Metal Paint Semi-Gloss [No. 3200]. (MPI #163)
      - 3) PPG Paints Advantage 900 Interior/Exterior Latex, 919-10 Series, Semi-Gloss.
      - 4) PPG Paints Advantage 900 Interior/Exterior Latex, 919-10 Series, Gloss.
      - 5) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1110 Series, Satin. (MPI #161)
      - 6) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1210 Series, Semi-Gloss. (MPI #163)

- 7) PPG Paints Pitt-Tech Plus WB DTM Industrial Enamel, 90-1310 Series, Gloss. (MPI #164)
- 8) Rodda EcoLogic Waterbased Gloss Enamel, 70603. (MPI #164)
- 9) Rodda Multi Master DTM Acrylic Satin Enamel, 528901. (MPI #161)
- 10) Rodda Multi Master DTM Acrylic Semi-Gloss Enamel, 548901. (MPI #163)
- 11) Vista Paint Corporation; 9700 Protec Satin: [www.vistapaint.com/#sle](http://www.vistapaint.com/#sle).
- 12) Vista Paint Corporation; 9900 Protec Gloss: [www.vistapaint.com/#sle](http://www.vistapaint.com/#sle).
- 13) Substitutions: Section 01 6000 - Product Requirements.

**B. Basketball Court concrete floor.**

1. Two top coats over one bond coat. Delineate with line marking paint.
2. Top coats: 100% acrylic emulsion coating, highly pigmented with prime color and reinforcing pigments specifically formulated for sports courts and imparting a skid-resistant surface.
  - a. Basis of design: Benjamin Moore Tru-Flex Smooth Colored Finish Coat (TRC-08X)
3. Bond coat: Acrylic polymer especially designed for promoting adhesion of top coat to portland cement based concrete.
  - a. Basis of design: Benjamin Moore Tru-flex Concrete Bond Coat (TRC-007).
4. Line marking paint: 100% acrylic emulsion.
  - a. Basis of design: Benjamin Moore Line Marking Paint (TRC-038).

**C. Concrete Sealer.**

1. Clear, water-based, acrylic-copolymer-emulsion sealer formulated for oil, gasoline, alkali, and water resistance and for use on exterior, concrete traffic surfaces.

**2.04 PRIMERS**

- A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Alkali Resistant Water Based Primer; MPI #3.
  2. Anti-Corrosive Alkyd Primer for Metal; MPI #79.
  3. Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
  4. Dry Fall: Metals; exposed structure and overhead-mounted services in utilitarian spaces, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
    - a. Shop primer by others.
    - b. One top coat.
    - c. Top Coat: Alkyd Dry Fall; MPI #55, 89, or 225.
    - d. Flat: MPI gloss level 1; use this sheen at all locations.

**2.05 ACCESSORY MATERIALS**

- A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

**PART 3 EXECUTION**

**3.01 INSTALLERS**

- A. Acceptable Applicators:

**3.02 EXAMINATION**

- A. Do not begin application of paints and finishes until substrates have been properly prepared.
- B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
  1. Basketball Court concrete floor to cure 30 days before painting.
- C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

- D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- E. Test shop-applied primer for compatibility with subsequent cover materials.
- F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
  1. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
  2. Concrete Floors and Traffic Surfaces: 8 percent.

### 3.03 PREPARATION

- A. Clean surfaces thoroughly and correct defects prior to application.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Remove or repair existing paints or finishes that exhibit surface defects.
- D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
- E. Seal surfaces that might cause bleed through or staining of topcoat.
- F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- G. Concrete:
  1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
  2. Clean surfaces with pressurized water. Use pressure range of 1,500 to 4,000 psi (10,350 to 27,580 kPa) at 6 to 12 inches (150 to 300 mm). Allow to dry.
  3. Clean concrete according to ASTM D4258. Allow to dry.
  4. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
- I. Concrete Floors, Basketball Court, and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
- J. Galvanized Surfaces:
  1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
  2. Prepare surface according to SSPC-SP 2.
- K. Ferrous Metal:
  1. Solvent clean according to SSPC-SP 1.
  2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
  3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.

### 3.04 APPLICATION

- B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
- C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
- D. Apply each coat to uniform appearance.
- E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.
- F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.



G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

A. Basketball Court Line Marking: Delineate basketball court per NCAA requirements.

**3.05 CLEANING**

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

**3.06 PROTECTION**

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

**END OF SECTION**

**SECTION 11 68 33**  
**ATHLETIC FIELD EQUIPMENT**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Outdoor, ceiling mounted basketball equipment and all support and bracing materials needed to suspend equipment from building structure.
- B. Coated Steel Benches
- C. Scoring Tables
- D. Picnic Tables
- E. Electronic Scoreboard

**1.02 RELATED REQUIREMENTS**

- A. Section 09 91 13 - Exterior Painting.
- B. Section 31 22 00 - Grading: Shaping subgrade to specified grade levels; removal of excess soil and rocks.

**1.03 ABBREVIATIONS**

- A. NCAA - National Collegiate Athletic Association; [www.ncaa.org](http://www.ncaa.org).

**1.04 REFERENCE STANDARDS**

- A. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2020.
- B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.
- C. ASTM A135/A135M - Standard Specification for Electric-Resistance-Welded Steel Pipe; 2009 (Reapproved 2014).
- D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2020.
- E. ASTM A513/A513M - Standard Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing; 2020a.
- F. ASTM B26/B26M - Standard Specification for Aluminum-Alloy Sand Castings; 2018, with Editorial Revision.
- G. ASTM B108/B108M - Standard Specification for Aluminum-Alloy Permanent Mold Castings; 2019.
- H. ASTM B179 - Standard Specification for Aluminum Alloys in Ingot and Molten Forms for Castings from All Casting Processes; 2018.
- I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- J. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2013.
- K. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2020.
- L. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
- M. ASTM D648 - Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position; 2018.
- N. ASTM D3363 - Standard Test Method for Film Hardness by Pencil Test; 2020.

- O. ASTM D6662 - Standard Specification for Polyolefin-Based Plastic Lumber Decking Boards; 2017.
- P. AWPA U1 - Use Category System: User Specification for Treated Wood; 2018.

### **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures..
- B. Product Data: Provide athletic field equipment manufacturer's product data indicating materials of construction, compliance with specified standards, installation procedures, and necessary safety limitations.
- C. Shop Drawings: Submit detailed scale drawings showing athletic field equipment and perimeter layout.
  - 1. Indicate locations and dimensions of footings and anchorage points.
  - 2. Identify mounting elevations in relation to fixed survey point on site, and subgrade elevation.
  - 3. Indicate location of underground utilities, storm drainage system, and irrigation system.
  - 4. Indicate location of metal building and extent of concrete slab.
- D. Samples: Submit color chart for each item that color must be selected showing full range of colors and finishes.
- E. Maintenance Data: Submit manufacturer's recommended maintenance instructions and list of replaceable parts for each athletic field equipment item, along with supplier's address and phone number.
- F. Manufacturer's Field Report.
- G. Manufacturer's Qualification Statement.
- H. Installer's Qualification Statement.
- I. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

### **1.06 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience

### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver, handle, and store equipment on project site in accordance with manufacturer's recommendations.
- B. Store materials in a dry, covered area, and elevated above grade.

### **1.08 WARRANTY**

- A. Provide minimum 5 year manufacturer warranty for athletic field equipment.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Athletic Field Equipment:
  - 1. ADP Lemco, Inc; [www.adplemco.com/#sle](http://www.adplemco.com/#sle).
  - 2. Grand Slam Safety, LLC; [www.grandslamsafety.com/#sle](http://www.grandslamsafety.com/#sle).
  - 3. Belson Outdoors, Inc.; [www.belson.com](http://www.belson.com)
  - 4. Anthem Sports; [www.anthem-sports.com](http://www.anthem-sports.com)
  - 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Electronic Scoreboard and Wheel Cart
  - 1. Everson Model 9408 [www.eversan.com](http://www.eversan.com)
  - 2. Substitutions: See Section 01 60 00 - Product Requirements.

## **2.02 ATHLETIC FIELD EQUIPMENT - GENERAL**

- A. Collegiate Sports: Provide equipment that complies with NCAA requirements.
- B. Provide all necessary supports to mount equipment to roof structure at proper height above finished grade.
- C. Coordinate field grading as required for proper placement and arrangement of equipment, refer to Section 31 22 00 for additional information.

## **2.03 OUTDOOR BASKETBALL EQUIPMENT**

- A. Manufacturers:
  - 1. Produnk; [www.produnk.com](http://www.produnk.com).
  - 2. American Eagle; [www.aegoals.com](http://www.aegoals.com).
- B. Support and bracing structure: Galvanized and painted per 09 91 13 Exterior Painting.
  - 1. Configured and attached to building structure as needed to support the submitted goal's frame assembly and resist the anticipated loads.
- C. Frame Assembly: Galvanized and painted per 09 91 13 Exterior Painting. Manufacturer's standard configuration for stationary, suspended basketball goal.
- D. Backboard: Anchored to support structure or extension arms.
  - 1. Rectangular steel sheet with tubular steel full surround, 72" x 42".
  - 2. Color and Finish: White with high gloss gel coat finish, with contrast colored target and border lines.
- E. Goal: Anchored to mounting plate through backboard to support post or extension arms.
  - 1. Heavy duty stationary goal with nylon net.
  - 2. Fabric Net: White braided nylon.
- F. Goal Post Pads: Provide padding for 6 inch thick polyethylene foam with weather resistant lace and grommet attachment and vinyl cover; 6 feet high.

## **2.04 MATERIALS**

- A. Steel Pipe and Tube: Complying with ASTM A135/A135M, ASTM A500/A500M, or ASTM A513/A513M; hot-dip galvanized and free of excess weld and spatter.
  - 1. Tensile Strength: 45,000 psi, minimum.
  - 2. Yield Point: 33,000 psi, minimum.
  - 3. Galvanizing: Hot-dip metal components in zinc after fabrication, in accordance with ASTM A123/A123M; remove tailings and sharp protrusions and burnish edges.
- B. Extruded Aluminum: ASTM B221 or ASTM B221M, Alloy 6061, 6062, or 6063.
  - 1. Tensile Strength: 39,000 psi, minimum.
  - 2. Yield Point: 36,500 psi, minimum.
- C. Cast Aluminum: ASTM B26/B26M, ASTM B108/B108M, or ASTM B179.
- D. Hardware: Provide design without hazardous protrusions, corners, or finishes, and requiring tools for removal after installation; countersunk fasteners are preferred.
  - 1. Use stainless steel for metal-to-metal connections; select type to minimize galvanic corrosion of materials connected by hardware.
  - 2. Use stainless steel with plastic components.
  - 3. Bearings: Self lubricating.
  - 4. Hooks, Including S-Hooks: Closed loop; maximum gap 0.04 inches.
  - 5. Rails and Loops: Same metal as item is mounted on.
  - 6. Anchors: In accordance with manufacturer's recommendations.
- E. Powder Coating for Steel: Electrostatically applied and oven cured polyester powder over electrostatic zinc coating.

- F. Polyvinyl Chloride (PVC) Coating: Ultraviolet (UV) stabilized and mold-resistant; slip-resistant finish; prime coated parts with clear acrylic thermosetting solution and ensure they are preheated prior to dipping in liquid PVC.
  - 1. Thickness: 0.08 inch, minimum, plus/minus 0.02 inch.
  - 2. Hardness: 85 durometer, when tested in accordance with ASTM D3363.
- G. Concrete: As specified in Section 03 30 00.

## **2.05 COATED STEEL BENCHES**

- A. 3/4" #9 Flattened Expanded Metal
- B. 2-3/8" Galvanized Tubing Frame with Powder-Coat Finish
- C. 8-foot length
- D. Belson Model BSNB8P-ES or approved equal
  - 1. Portable
  - 2. No back
  - 3. Color to be selected by architect from manufacturer's standard colors

## **2.06 SCORING TABLES**

- A. 7.5' Portable Outdoor Aluminum Scorer's Table & Bench
- B. 7.5' x 10" table & bench
- C. All aluminum construction
- D. "Ribbed" aluminum table top (20" wide)
- E. Weighs 68 lbs
- F. Model # BEST08 Anthem Part # A07-263 or approved equal

## **2.06 PICNIC TABLES AND ADA PICNIC TABLES**

- A. Diamond pattern expanded metal 30" wide table top and 12" wide bench seats
- B. Reinforced with 1" O.D. braces and supported by traditionally styled 1-5/8" O.D. 'J' frame legs.
- C. Powder-coated with the top and seats finished with a polyethylene coating.
- D. Color to be selected from manufacturer's standard range. available in the colors as shown.
- E. Belson Model 158-V6 - 72"L x 64-3/4"W x 30"H or approved equal.
- F. ADA Picnic Table – provide double sided ADA compliant overhangs utilizing 6' seats with 8' table tops.

## **2.05 ELECTRONIC SCOREBOARD AND WHEEL CART**

- A. DIMENSIONS: Height 30", Width 4', Depth 3" Weight 40lb.
- B. POWER REQUIREMENTS: 120VAC @ 1.5 Amp, Max Power 180 W.
- C. CONSTRUCTION: Aluminum alloy 5052, conforms to Federal specification QQ-A-250/8.
- D. DIGITS: The nominal digit size is 8" (152mm) high. All digits are 7-segment Ultra bright outdoor LED. Digits can be dimmed for night viewing. Digit colors are red or amber.

- E. CAPTIONS: HOME and GUEST captions are 4" (102mm) high. PERIOD caption is 3.5" (89mm) high. Stripe is 1/2" (13mm) in width. Captions, colon, and stripe are white vinyl, applied directly to the display face. Other caption colors are available upon request.
- F. CABINET FINISH: All cabinets are finished with the highest UV protected powder coat in the industry to ensure minimal fading for the life of the scoreboard.
- G. Provide 2.4GHz spread spectrum radio control.
- H. Provide Logo/ sponsor panels – coordinate with the CITY for names.
- I. Provide Electronic message display.
- J. Provide Durable carrying case for control console.
- K. Provide 12V rechargeable battery for scoreboard operation.
- L. Provide Protective cage.
- M. Provide Eversan Model 755W Wheel Cart or similar compatible with scoreboard and approved by scoreboard manufacturer.

### **PART 3 EXECUTION**

#### **3.01 VERIFICATION OF CONDITIONS**

- A. Verify that athletic field equipment area has been graded to subgrade elevations required and that excess soil, rocks, and debris has been removed as necessary for installation of footings.
- B. Verify that athletic field equipment footings have been installed in proper locations and at proper elevations.
- C. Verify location of underground utilities and facilities in athletic field equipment area; damage to underground utilities and facilities will be repaired at Contractor's expense.

#### **3.02 PREPARATION**

- A. Stake location of athletic field equipment elements, including necessary athletic field perimeters, surfacing, access and egress points, hard surfaces, walls, and/or structures.
- B. Stake layout of athletic field equipment perimeter in accordance with approved shop drawings before starting any work.
  - 1. Verify that athletic field perimeters do not overlap hard surfaces, whether currently installed or not.
  - 2. Verify that athletic fields are free of obstructions.
  - 3. If conflicts or obstructions are found, notify Architect.
  - 4. Do not proceed with this work until revised drawings have been provided, showing corrected layout, and that any obstructions have been removed or corrections to layout have been made.

#### **3.03 INSTALLATION**

- A. Install concrete footings with top surface a minimum of 1/2 inch below required subgrade elevation and slope top to drain, unless otherwise indicated.
- B. Install athletic field equipment in accordance with manufacturer's instructions, and rules and regulations of specified athletic association indicated for this work.
- C. Install backboards and goal posts plumb, level, and rigid using manufacturer provided attachment hardware, and ensure backstops are accurately positioned and free of vibrations.
- D. Install athletic field equipment without sharp points, edges, or protrusions; entanglement hazards or pinch, crush, or shear points.

#### **3.04 CLEANING**

- A. Clean athletic field equipment of construction materials, dirt, stains, filings, and blemishes due to shipment or installation; clean in accordance with manufacturer's instructions, using cleaning agents as recommended by manufacturer.

- B. Clean athletic field area of excess construction materials, debris, and waste.
- C. Remove excess and waste material and dispose of off-site in accordance with requirements of authorities having jurisdiction.

**3.05 PROTECTION**

- A. Protect installed products until Date of Substantial Completion.
- B. Replace damaged products before Date of Substantial Completion.

**END OF SECTION**

## SECTION 13 12 50

### ALUMINUM ANGLE FRAME BLEACHERS

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. Design and fabrication of angle frame bleachers.

##### 1.02 SECTION INCLUDES

- A. Manufacturer Qualifications: Minimum of ten years' experience in the design and manufacture of bleachers.
- B. Welders must conform to AWS standards.
- C. Source Quality Control: Mill Test Certifications.
- D. Codes and Standards: Most current Florida Building Code.

##### 1.03 WARRANTY

- A. Warranty shall guarantee bleachers to be free from defect in materials and workmanship for a period of 1 year under normal use. Warranty period shall begin on date of substantial completion.
- B. Anodized finish of plank extrusions shall be covered by a 5 year warranty against loss of structural strength or finish deterioration due to exposure to weather conditions or UV rays.

##### 1.04 ENGINEERING

- A. Provide engineering certifications and calculations by a Registered Professional Engineer in the State of Florida.

#### PART 2 PRODUCTS

##### 2.01 ACCEPTABLE MANUFACTURER

- A. National Recreation Systems, Inc.; [www.bleachers.net](http://www.bleachers.net)
- B. Belson Outdoors, Inc.; [www.belson.com](http://www.belson.com)
- C. Approved equal.

##### 2.02 DESIGN

- A. Applicable Codes: Most current version of Florida Building Code.
- B. Design Loads:
  - 1. Live Loads: Uniform loading – Structure = 100 psf  
Uniform loading – Seat and Foot plank = 120 plf
  - 2. Sway Loads: Perpendicular to seats = 10 plf  
Parallel to seats = 24 plf
  - 3. Wind Loads: Basic design wind speed = 150 mph (exposure "B"), anchored.

##### 2.03 ANGLE FRAME BLEACHERS

- A. Quantity and Size: Shall consist of 4 units 4 rows high x 21' long.  
Net seating capacity per unit 56 (based on 18" per seat).
- B. Framework: Prefabricated aluminum angle spaced at 6' – 0" intervals joined by means of aluminum angle cross bracing.
- C. Shop connections: Welded to meet AWS standards and local code requirements.
- D. Aluminum angle frames spaced and joined by cross bracing as required to satisfy design loading.
- E. The rise per row shall be 6", first row seat height to be 12" and tread depth per row of 24". Top row seat height shall not exceed 30".



## **2.04 MATERIALS / FINISHES**

- A. Aluminum angles: 6061-T6 alloy, mill finish.
- B. Seating/Planking:
  - 1. Seat and Riser Planks: Extruded aluminum alloy, 6063-T6, clear anodized 204R1 AA-M10C22A31, Class II.
  - 2. Tread Planks: Extruded aluminum alloy, 6063-T6, mill finish.
  - 3. Joint sleeve assembly: Extruded aluminum alloy, 6063-T6, mill finish.
- C. Accessories:
  - 1. Channel end caps: Aluminum alloy, 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.
  - 2. Hardware:
    - a. Bolts, Nuts: Hot dipped galvanized.
    - b. Tie down clip assembly: Aluminum alloy 6061-T6.
    - c. Structural hardware: Equal to or greater than hot-dipped galvanized ASTM-A307.

## **PARK 3 EXECUTION**

### **3.01 INSTALLATION**

- A. Anchor bleacher unit to concrete in accordance with manufacturer written instructions and shop drawings.

**Note: Building codes may vary from site to site. The customer is responsible for verification of local code requirements.**

**SECTION 13 34 19**  
**METAL BUILDING SYSTEMS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Manufacturer-engineered, shop-fabricated structural steel building frame.
- B. Non Insulated roof panels including soffits and gutters and downspouts.

**1.02 RELATED REQUIREMENTS**

- A. Section 05 50 00 - Metal Fabrications.
- B. Section 07 92 00 - Joint Sealants: Sealing joints between accessory components and wall system.

**1.03 REFERENCE STANDARDS**

- A. AISC 360 - Specification for Structural Steel Buildings
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
- F. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
- H. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality
- I. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
- J. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- K. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
- L. ASTM A992/A992M - Standard Specification for Structural Steel Shapes
- M. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
- N. ASTM C827/C827M - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
- O. ASTM C920 - Standard Specification for Elastomeric Joint Sealants
- Q. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
- R. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
- S. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials
- T. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
- U. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi

Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength

- V. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2012.
- W. AWS D1.1/D1.1M - Structural Welding Code - Steel
- X. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems
- Y. MBMA (MBSM) - Metal Building Systems Manual
- Z. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic")
- AA. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Current Edition, Including All Revisions.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene two weeks before starting work of this section.

#### **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on profiles, component dimensions, fasteners.
- C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections, attachments, openings, cambers, and loads; wall and roof system dimensions, panel layout, general construction details, anchors and methods of anchorage, and installation; framing anchor bolt settings, sizes, locations from datum, and foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.
- D. Samples: Submit two samples of precoated metal panels for each color selected, 4 by 4 inch in size illustrating color and texture of finish.
- E. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement.
- F. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.
- G. Designer's Qualification Statement.
- H. Manufacturer's Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472.
  - 1. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.
- I. Erector's Qualification Statement.
- J. Project Record Documents: Record actual locations of concealed components and utilities.

#### **1.06 QUALITY ASSURANCE**

- A. Designer Qualifications: Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this type of work.
  - 1. Design Engineer Qualifications: Licensed in Florida. Responsibility shall provide signed and sealed drawings, application to local governing jurisdiction.
  - 2. Comply with FBC for submission of design calculations, reviewed shop and erection drawings, and concrete foundation plans as required for acquiring permits.
  - 3. Cooperate with regulatory agency or authorities having jurisdiction (AHJ), and provide data as requested.
- B. Perform work in accordance with AISC 360 and MBMA (MBSM).
  - 1. Maintain one copy on site.

- C. Perform welding in accordance with AWS D1.1/D1.1M.
- D. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
  - 1. Not less than three years of experience.
  - 2. Accredited by IAS in accordance with IAS AC472.
- E. Erector Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

### 1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for water tightness.
  - 1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

- A. Metal Buildings Systems:
  - 1. Rhino Steel Building Systems; [www.rhinobldg.com](http://www.rhinobldg.com)
  - 2. Ceco Building Systems; [www.cecobuildings.com/#sle](http://www.cecobuildings.com/#sle).
  - 3. Nucor Building Systems; [www.nucorbuildingsystems.com/#sle](http://www.nucorbuildingsystems.com/#sle).
  - 4. VP Buildings; [www.vp.com/#sle](http://www.vp.com/#sle).
  - 5. Or equal.

### 2.02 ASSEMBLIES

- A. Single span rigid frame; Continuous beam frame.
- B. Bay Spacing: As indicated on drawings.
- C. Primary Framing: Rigid frame of rafter beams and columns, and wind bracing.
- D. Secondary Framing: Purlins, Girts, Eave struts, Flange bracing, Sill supports, and Clips, and other items detailed.
- E. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, and accessory components.
- F. Roof Slope: 2 inches in 12 inches.

### 2.03 PERFORMANCE REQUIREMENTS

- A. Design structural members to withstand 20 psf live load.
- B. Design structural members to withstand Class 90 wind uplift in accordance with UL 580.
- C. Roof system shall withstand imposed loads with maximum allowable deflection of 1/180.
- D. Provide drainage to exterior for water entering or condensation occurring within roof system.
- E. Size and fabricate roof system free of distortion or defects detrimental to appearance or performance.

### 2.04 MATERIALS - FRAMING

- A. Structural Steel Members: ASTM A36/A36M.
- B. Structural Tubing: ASTM A500/A500M, Grade B cold-formed.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.
- D. Anchor Bolts: ASTM A307, Grade A.
- E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1; galvanized to ASTM A153/A153M.
- F. Welding Materials: Type required for materials being welded.

- G. Primer: SSPC-Paint 20, zinc rich.
- H. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
  - 1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
  - 2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

## **2.05 MATERIALS**

- A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M.
- B. Joint Seal Gaskets: Manufacturer's standard type.
- C. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M.
- D. Bituminous Paint: Asphaltic type.
- E. Sealant: Manufacturer's standard type.
- F. Sealant: ASTM C920, elastomeric sealant with movement capability of at least plus/minus 50 percent; 100 percent silicone; for exposed applications, match adjacent colors as closely as possible.
- G. Metal Mesh: Galvanized steel wire, woven.
- H. Trim, Closure Pieces, Caps, Flashings, Gutters, Downspouts. Same material, thickness and finish as exterior sheets; brake formed to required profiles.

## **2.07 FABRICATION - FRAMING**

- A. Fabricate members in accordance with AISC 360 for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with straight shank, assembled with template for casting into concrete.

## **2.08 FABRICATION**

- B. Roofing: Minimum 26 gauge profile lapped fitted with continuous gaskets.
- C. Soffit Panels: Minimum 26 Gauge.
- D. Girts/Purlins: Rolled formed structural shape to roofing sheet.
- E. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles.
- F. Expansion Joints: Same material and finish as adjacent material where exposed.
- G. Flashings, Closure Pieces, Fascia; Infills; Caps: Same material and finish as adjacent material, profile to suit system; or formed as detailed.
- H. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

## **2.09 FABRICATION - GUTTERS AND DOWNSPOUTS**

- A. Fabricate of same material and finish as roofing metal.
- B. Form gutters and downspouts to collect and remove water. Fabricate with connection pieces.
- C. Form sections in maximum possible lengths. Hem exposed edges.
- D. Fabricate support straps of same material and finish as roofing metal, color as selected.

## **2.10 FINISHES**

- A. Framing Members: Clean, prepare, and galvanize to ASTM A123/A123M.
- B. Exterior Surfaces of Roof Components and Accessories: Precoated enamel on steel color as selected from manufacturer's standard range.
- C. Interior Surfaces of Components and Accessories: Precoated enamel on steel of fluoropolymer; as selected from manufacturer's standard range.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.

### **3.02 ERECTION - FRAMING**

- A. Erect framing in accordance with AISC 360.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Do not field cut or alter structural members without approval.
- E. After erection, prime welds, abrasions, and surfaces not galvanized.

### **3.03 ERECTION**

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Locate end laps over supports. End laps minimum 2 inches. Place side laps over bearing.
- E. Provide expansion joints as recommended by the manufacturer.
- F. Use exposed fasteners.
- G. Install sealant and gaskets, providing weather tight installation.

### **3.04 ERECTION - GUTTERS AND DOWNSPOUTS**

- A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- B. Apply bituminous paint on surfaces in contact with cementitious materials.
- C. Slope gutters minimum 1/8 inch/ft.
- D. Install splash pads.

### **3.07 TOLERANCES**

- A. Framing Members: 1/4 inch from plumb.
- B. Roofing: 1/8 inch from true position.

**END OF SECTION**

SECTION 221116  
DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Copper tube and fittings - domestic water.
  - 2. Piping joining materials - domestic water.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Piping layout, or BIM model, drawn to scale, showing the items described in this Section, and coordinated with all building trades.
- B. System purging and disinfecting activities report.
- C. Field quality-control reports.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installers of pressure-sealed joints are to be certified by pressure-seal joint manufacturer as having been trained and qualified to join piping with pressure-seal pipe couplings and fittings.

1.5 FIELD CONDITIONS

- A. Interruption of Existing Water Service: Do not interrupt water service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary water service in accordance with requirements indicated:
  - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of water service.
  - 2. Do not interrupt water service without Construction Manager's written permission.

## 1.6 WARRANTY

- A. Polypropylene (PP-R and PP-RCT) Pipe and Fittings Manufacturer's Warranty: Manufacturer agrees to repair or replace PP-R and PP-RCT pipe and fittings that fail in materials or workmanship within 10 years from date of Substantial Completion.
  - 1. Warranty is to cover labor and material costs of repairing and/or replacing defective materials and repairing any incidental damage caused by failure of piping system due to defects in materials or manufacturing.
  - 2. Warranty is to be in effect only upon submission by Contractor to manufacturer of valid pressure/leak documentation indicating that the system was tested and passed manufacturer's pressure/leak test.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Domestic water piping, tubing, fittings, joints, and appurtenances intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act, with requirements of authorities having jurisdiction, and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

### 2.2 PIPING MATERIALS

- A. Potable-water piping and components are to comply with NSF 14, NSF 61, and NSF 372. Include marking "NSF-pw" on piping.

### 2.3 COPPER TUBE AND FITTINGS - DOMESTIC WATER

- A. Drawn-Temper Copper Tube: **ASTM B88, Type K.**
- B. Annealed-Temper Copper Tube: **ASTM B88, Type K.**
- C. Copper-Tube, Mechanically Formed Tee Fitting - Domestic Water: For forming T-branch on copper water tube.
  - 1. Description: Tee formed in copper tube in accordance with ASTM F2014.

### 2.4 PIPING JOINING MATERIALS - DOMESTIC WATER

- A. Solder Filler Metals: ASTM B32, lead-free alloys.
- B. Flux: ASTM B813, water flushable.
- C. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for



general-duty brazing unless otherwise indicated.

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
- B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.
- D. Under-building-slab, domestic water, building-service piping, NPS 3 (DN 80) and smaller is to be the following:
  - 1. Annealed-temper copper tube, [**ASTM B88, Type K**] [**ASTM B88, Type L**]; [**wrought-copper, solder-joint fittings; and brazed**] [**copper pressure-seal fittings; and pressure-sealed**] joints.
  - 2. PVC, [**Schedule 40**] [**Schedule 80**]; socket fittings; and solvent-cemented joints.
  - 3. Polypropylene (PP-R and PP-RCT), [**SDR 7.4**] [**SDR 11**] pipe and socket fusion, butt fusion, fusion outlet, or electrofusion fittings and joints.
- E. Under-building-slab, domestic water piping, NPS 2 (DN 50) and smaller is to be the following:
  - 1. Drawn-temper copper tube, **ASTM B88, Type L**; wrought-copper, solder-joint fittings; and brazed, copper pressure-seal-joint fittings; and pressure-sealed joints.
- F. Aboveground domestic water piping, NPS 2 (DN 50) and smaller is to be the following:
  - 1. Galvanized-steel pipe and nipples; galvanized, gray-iron threaded fittings; and threaded joints.
  - 2. Drawn-temper copper tube, **ASTM B88, Type L**; cast-copper, solder-joint fittings; and soldered joints.

### 3.2 EARTHWORK

- A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

### 3.3 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and

calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

- B. Install copper tubing under building slab in accordance with CDA's "Copper Tube Handbook."
- C. Install underground copper tube in PE encasement in accordance with ASTM A674 or AWWA C105/A21.5.
- D. Install valves in accordance with Section 220523 "General-Duty Valves for Plumbing Piping."
- E. Install domestic water piping level [**with 0.25 percent slope downward toward drain**] [**without pitch**] and plumb.
- F. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- G. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- H. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.
- I. Install piping to permit valve servicing.
- J. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- K. Install piping free of sags and bends.
- L. Install fittings for changes in direction and branch connections.
- M. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

### 3.4 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. Soldered Joints for Copper Tubing: Apply ASTM B813, water-flushable flux to end of tube. Join copper tube and fittings in accordance with ASTM B828 or CDA's "Copper Tube Handbook."
- D. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with

materials of both piping systems.

### 3.5 INSTALLATION OF TRANSITION FITTINGS

- A. Install transition couplings at joints of dissimilar piping.
- B. Transition Fittings in Underground Domestic Water Piping:
  - 1. Fittings for NPS 1-1/2 (DN 40) and Smaller: Fitting-type coupling.
  - 2. Fittings for NPS 2 (DN 50) and Larger: Sleeve-type coupling.
- C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 (DN 50) and Smaller: Plastic-to-metal transition fittings, or, .

### 3.6 INSTALLATION OF DIELECTRIC FITTINGS

- A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.
- B. Dielectric Fittings for NPS 2 (DN 50) and Smaller: Use dielectric couplings or nipples.

### 3.7 PIPING CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.
- C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.
- D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:
  - 1. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.

### 3.8 CLEANING

- A. Clean and disinfect potable domestic water piping as follows:
  - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
  - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
    - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.

- b. Fill and isolate system in accordance with either of the following:
    - 1) Fill system or part thereof with water/chlorine solution with at least **50 ppm** of chlorine. Isolate with valves and allow to stand for 24 hours.
    - 2) Fill system or part thereof with water/chlorine solution with at least **200 ppm** of chlorine. Isolate and allow to stand for three hours.
  - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
  - d. Repeat procedures if biological examination shows contamination.
  - e. Submit water samples in sterile bottles to authorities having jurisdiction.
- B. Clean non-potable domestic water piping as follows:
- 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
  - 2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
    - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    - b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- C. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.
- D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

### 3.9 FIELD QUALITY CONTROL

- A. Tests and Inspections:
- 1. Piping Inspections:
    - a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
    - b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
      - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after installation and before setting fixtures.
      - 2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
    - c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for

reinspection.

- d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

- a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
- b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
- c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
- d. Cap and subject piping to static water pressure of **50 psig** above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
- e. Hydrostatic testing and documentation of test results for polypropylene (PP-R and PP-RCT) pipe to be in accordance with manufacturer's written instructions and submitted to manufacturer upon successful completion per warranty requirements.
- f. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
- g. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

END OF SECTION 221116

## SECTION 22 13 16

### SANITARY WASTE AND VENT PIPING

#### PART 1 - GENERAL

##### 1.1 SUMMARY

###### A. Section Includes:

1. PVC pipe and fittings.
2. Specialty pipe fittings.
3. Encasement for underground metal piping.

##### 1.2 ACTION SUBMITTALS

###### A. Product Data:

1. PVC pipe and fittings.

##### 1.3 FIELD CONDITIONS

###### A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service in accordance with requirements indicated:

1. Notify Construction Manager no fewer than two days in advance of proposed interruption of sanitary waste service.
2. Do not proceed with interruption of sanitary waste service without Construction Manager's written permission.

##### 1.4 WARRANTY

###### A. Listed manufacturers to provide labeling and warranty of their respective products.

#### PART 2 - PRODUCTS

##### 2.1 PERFORMANCE REQUIREMENTS

###### A. Components and installation are capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: **10 ft. head of water.**

## 2.2 PIPING MATERIALS

- A. Piping materials to bear label, stamp, or other markings of specified testing agency.
- B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

## 2.3 PVC PIPE AND FITTINGS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Charlotte Pipe and Foundry Company
- B. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.
- C. Solid-Wall PVC Pipe: ASTM D2665 drain, waste, and vent.
- D. Cellular-Core PVC Pipe: ASTM F891, Schedule 40.
- E. PVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
- F. Adhesive Primer: ASTM F656.
- G. Solvent Cement: ASTM D2564.

## PART 3 - EXECUTION

### 3.1 EARTH MOVING

- A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

### 3.2 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.
  - 1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
  - 2. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in

equipment rooms and service areas.

- C. Install piping free of sags and bends.
- D. Install fittings for changes in direction and branch connections.
- E. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.
  - 1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
  - 2. Use long-turn, double Y-branch, and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.
    - a. Straight tees, elbows, and crosses may be used on vent lines.
  - 3. Do not change direction of flow more than 90 degrees.
  - 4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.
    - a. Reducing size of waste piping in direction of flow is prohibited.
- F. Lay buried building waste piping beginning at low point of each system.
  - 1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
  - 2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
  - 3. Maintain swab in piping and pull past each joint as completed.
- G. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:
  - 1. Building Sanitary Waste: Two percent downward in direction of flow for piping **NPS 2-1/2** and smaller; 1 percent downward in direction of flow for piping **NPS 3** and larger.
  - 2. Vent Piping: **[One]** <Insert number> percent down toward vertical fixture vent or toward vent stack.
- H. Install aboveground PVC piping in accordance with ASTM D2665.
- I. Install underground PVC piping in accordance with ASTM D2321.
- J. Install engineered soil and waste and vent piping systems as follows:
  - 1. Combination Waste and Vent: Comply with standards of authorities having jurisdiction.
  - 2. Reduced-Size Venting: Comply with standards of authorities having jurisdiction.
- K. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.



### 3.3 JOINT CONSTRUCTION

- A. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:
  - 1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. PVC Piping: Join in accordance with ASTM D2855 and ASTM D2665 appendixes.

### 3.4 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect waste and vent piping to the following:
  - 1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
  - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
  - 3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

### 3.5 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping.

### 3.6 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
  - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
  - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

- D. Test sanitary waste and vent piping in accordance with procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
    - a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
  2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.
    - a. Expose work that was covered or concealed before it was tested.
  3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.
    - a. Close openings in piping system and fill with water to point of overflow, but not less than **10 ft. head of water**.
    - b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
    - c. Inspect joints for leaks.
  4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.
    - a. Inspect plumbing fixture connections for gas and water leaks.
  5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
  6. Prepare reports for tests and required corrective action.

### 3.7 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.
- D. Repair damage to adjacent materials caused by waste and vent piping installation.

### 3.8 PIPING SCHEDULE

- A. Flanges and unions may be used on aboveground pressure piping unless otherwise indicated.
- B. Aboveground, soil and waste piping NPS 4 (DN 100) and smaller are to be the

following:

1. **[Solid-wall] [Cellular-core]** PVC pipe, PVC socket fittings, and solvent-cemented joints.
- C. Aboveground, vent piping NPS 4 (DN 100) is to be the following:
1. **[Solid-wall] [Cellular-core]** PVC pipe, PVC socket fittings, and solvent-cemented joints.
- D. Underground, soil, waste, and vent piping NPS 4 (DN 100) and smaller are to be the following:
1. **[Solid-wall] [Cellular-core]** PVC pipe, PVC socket fittings, and solvent-cemented joints.

END OF SECTION 221316

SECTION 224713  
DRINKING FOUNTAINS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Drinking fountains.
2. Bottle filling stations.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of drinking fountain and bottle filling station.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include operating characteristics, and furnished specialties and accessories.

B. Sustainable Design Submittals:

1. Plumbing Fixtures: Provide the following:
  - a. Manufacturer cut sheet indicating water consumption.

1.3 CLOSEOUT SUBMITTALS

A. Maintenance Data: For drinking fountains, and, bottle filling stations to include in maintenance manuals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Standards:

1. Drinking fountains and bottle filling stations intended to convey or dispense water

for human consumption are to comply with the U.S. Safe Drinking Water Act (SDWA), requirements of the Authority Having Jurisdiction (AHJ), and with NSF 61 or NSF 372, or be certified in compliance with NSF 61 or NSF 372 by an ANSI-accredited third-party certification body, that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

2. Comply with ASME A112.19.3/CSA B45.4 for stainless steel drinking fountains and bottle filling stations.
3. Comply with ICC A117.1 for accessible drinking fountains and bottle filling stations.

## 2.2 DRINKING FOUNTAINS

### A. Drinking Fountains - Pedestal, Concrete: P100, P101.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Haws Corporation
  - b. Elkay
2. Source Limitations: Obtain pedestal, concrete drinking fountains from single source from single manufacturer.
3. Type: Vandal resistant, freeze resistant.
4. Pedestal: Round.
5. Receptor(s):
  - a. Shape: Round.
  - b. Bubbler: One for each receptor, with adjustable stream regulator, located on deck.
  - c. Bottle Filler: Push-button activation.
  - d. Drain: Grid type with **NPS 1-1/4** tailpiece.
6. Maximum Water Flow: **0.5 gpm.**
7. Controls: Push button.
8. Access to Internal Components: Panel in pedestal.
9. Supply: **NPS 3/8** with shutoff valve.
10. Drain Piping: **NPS 1-1/2** minimum trap and waste.
11. Drinking Fountain Height: High/low - standard/accessible in accordance with ICC A117.1.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine roughing-in for water-supply and sanitary drainage and vent piping systems to verify actual locations of piping connections before fixture installation.

- B. Examine walls and floors for suitable conditions where fixtures will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Install fixtures level and plumb according to roughing-in drawings. For fixtures indicated for children, install at height required by authorities having jurisdiction.
- B. Set pedestal drinking fountains and bottle filling stations on flat surface in accordance with manufacturer's written installation instructions.
- C. Install water-supply piping with shutoff valve on supply to each fixture to be connected to domestic-water distribution piping. Use ball[ **or gate**] valve. Install valves in locations where they can be easily reached for operation. Valves are specified in Section 220523 "General-Duty Valves for Plumbing Piping."
- D. Install trap and waste piping on drain outlet of each fixture to be connected to sanitary drainage system.

### 3.3 PIPING CONNECTIONS

- A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.
- B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."
- C. Install ball[ **or gate**] shutoff valve on water supply to each fixture.[ **Install valve upstream from filter for drinking fountain.**] Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."
- D. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

### 3.4 ADJUSTING

- A. Adjust fixture flow regulators for proper flow and stream height.

### 3.5 CLEANING

- A. After installing fixtures, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.
- B. Clean fixtures, on completion of installation, according to manufacturer's written instructions.
- C. Provide protective covering for installed fixtures.

- D. Do not allow use of fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION 224713

## SECTION 32 18 23

### TENNIS & RACQUETBALL COURT SURFACES

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Asphalt tennis court cushioned surface color coating system and racquetball court markings.

##### 1.2 REFERENCE STANDARDS

- A. American Sports Builders Association (ASBA).
- B. United States Tennis Association (USTA) Rules of Tennis.
- C. International Tennis Federation (ITF).

##### 1.3 SUBMITTALS

- A. Comply with Section 01310 (Section 1.05) – Submittal Requirements.
- B. Product Data: Submit manufacturer's product data, including surface and crack preparation and application instructions for tennis courts.
- C. Samples: Submit manufacturer's color samples of color coating.
- D. Test Reports:
  - 1. Submit independent test results for solar reflectance index.
  - 2. Submit independent test results for 2000 Hour ASTM G154, accelerated weathering UV test, to demonstrate long-term durability and fade resistance.
  - 3. Submit independent test results for 2000 Hour, accelerated weathering ASTM G155 Xenon Arc test, to demonstrate long-term fade resistance and quality of pigment.
- E. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
- F. Manufacturer's Project References: Submit manufacturer's list of successfully completed asphalt tennis court cushioned surface color coating system projects, including project name, location, and date of application.
- G. Applicator's Project References: Submit applicator's list of successfully completed asphalt tennis court cushioned surface color coating system projects, including project name, location, type and quantity of color coating system applied, and date of application.
- H. Warranty Documentation: Submit manufacturer's standard warranty.
- I. Authorized Installer Certificate: Submit manufacturer's authorized installer certificate.



## **1.4 QUALITY ASSURANCE**

### **A. Manufacturer's Qualifications:**

1. Manufacturer regularly engaged, for past 5 years, in manufacture of asphalt tennis court surface color coating systems of similar type to that specified.
2. United States owned company.
3. Member: ASBA.
4. Manufacturer has surfaces that are classified by the ITF's (International Tennis Federation) pace classification program.

### **B. Applicator's Qualifications:**

1. Applicator regularly engaged, for past 3 years, in application of tennis court cushioned surface color coating systems of similar type to that specified.
2. Employ persons trained for application of tennis court surface cushioned color coating systems.
3. Applicator must be authorized installer of the surfacing brand used.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

### **A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.**

### **B. Storage and Handling Requirements:**

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until application.
3. Store materials in clean, dry area indoors.
4. Store materials out of direct sunlight.
5. Keep materials from freezing.
6. Protect materials during storage, handling, and application to prevent contamination or damage.
7. Close containers when not in use.
8. Retain manufacturer batch codes on each container and application dates, for warranty purposes.

## **1.6 AMBIENT CONDITIONS**

### **A. Do not apply asphalt tennis court cushioned surface color coating system when air or surface temperatures are below 50°F (10°C) during application or within 24 hours after application.**

### **B. Do not apply asphalt tennis court cushioned surface color coating system when rain is expected during application or within 24 hours after application.**

## **PART 2 PRODUCTS**

## 2.1 MANUFACTURER

- A. Basis of Design: SportMaster Sport Surfaces, PO Box 2277, 2520 South Campbell Street, Sandusky, Ohio 44870. Toll Free 800-326-1994. Fax 877-825-9226. Website [www.sportmaster.net](http://www.sportmaster.net). E-mail [moreinfo@sportmaster.net](mailto:moreinfo@sportmaster.net).

Equal products will be considered for the project.

## 2.2 MATERIALS

- A. Asphalt Tennis Court Cushioned Surface Color Coating System: SportMaster ProCushion System.
- B. Crack Sealant: SportMaster “Crack Magic”.
1. 100 percent acrylic emulsion elastomeric crack sealant.
  2. Seals cracks up to 1/2 inch wide in asphalt pavement.
  3. Weight per Gallon at 77 Degrees F: 8.8 lbs., plus or minus 0.5 lbs.
  4. Non-Volatile Material: 61 percent, plus or minus 5 percent.
- C. Crack Filler: SportMaster “Acrylic Crack Patch”.
1. 100 percent acrylic emulsion trowel-grade crack filler.
  2. Fills cracks in asphalt pavement up to 1 inch wide.
  3. Chemical Characteristics, by Weight, Minimum:
    - a. Acrylic Emulsion: 10.0 percent.
    - b. Hiding Pigment: 0.2 percent.
    - c. Mineral Inert Fillers: 78.0 percent.
    - d. Film Formers, Additives: 1.8 percent.
    - e. Water: 8.5 percent.
  4. Weight per Gallon at 77 Degrees F: 15.2 lbs., plus or minus 1.0 lbs.
  5. Non-Volatile Material: 80 percent, plus or minus 5 percent.
  6. Color: [Green] [Neutral] [Red] [Blue].
- D. Patch Binder: SportMaster “Acrylic Patch Binder”.
1. 100 percent acrylic emulsion liquid binder.
  2. Mix on-site with sand and cement.
  3. Levels and repairs low spots and depressions up to 3/4 inch deep in asphalt pavement.
  4. Weight per Gallon at 77 Degrees F: 8.8 lbs., plus or minus 0.5 lbs.
- E. Filler Course: SportMaster “Acrylic Resurfacer”.
1. 100 percent acrylic emulsion resurfacer.
  2. Mix on-site with silica sand.
  3. Apply to asphalt surfaces or previously colored acrylic surfaces in preparation of cushioned color coating system.
  4. Chemical Characteristics, by Weight, Minimum:
    - a. Acrylic Emulsion: 44.0 percent.
    - b. Hiding Pigment: 2.0 percent.
    - c. Mineral Inert Fillers: 5.0 percent.
    - d. Film Formers, Additives: 0.2 percent.
    - e. Water: 45.0 percent.

5. Weight per Gallon at 77 Degrees F: 8.5 lbs., plus or minus 0.5 lbs.
  6. Non-Volatile Material: 27.5 percent, plus or minus 5.0 percent.
  7. Color: [Black] [Neutral].
- F. Base Cushion: CushionMaster II
1. 100 percent acrylic emulsion coating.
  2. Mix on-site with water.
  3. Coating with coarse rubber particles for higher cushion build.
  4. Weight per gallon at 77 Degrees F: 9.59 lbs., plus or minus.5 lbs.
  5. Non-Volatile Material: 55.92 percent, plus or minus 5 percent.
- G. Finish Cushion: CushionMaster I
1. 100 percent acrylic emulsion coating
  2. Mix on-site with water.
  3. Coating with fine rubber particles for smooth texturing.
  4. Weight per gallon at 77 Degrees F: 9.59 lbs., plus or minus.5 lbs.
  5. Non-Volatile Material: 55.92 percent, plus or minus 5 percent.
- H. Color Coating: SportMaster “Flexible Concentrate ColorPlus System”.
1. 100 percent acrylic elastomeric coating.
  2. Mix on-site with silica sand and water.
  3. Color coats tennis courts & maintains long-term flexibility for cushioning.
  4. Weight per Gallon at 77 Degrees F: 9.2 lbs., plus or minus 0.5 lbs.
  5. Color: [Beige] [Blue] [Brown] [Dark Green] [Dove Gray] [Forest Green] [Gray] [Ice Blue] [Light Blue] [Light Green] [Maroon] [Red] [Sandstone] [\*Tournament Purple] [\*Orange] [Yellow] [\*Brite red] [Black] \*Indicates premium cost colors.
- I. Line Markings Primer: SportMaster “Stripe-Rite”.
1. 100 percent acrylic emulsion primer, clear drying.
  2. Primes line markings and prevents bleed-under for sharp lines.
  3. Chemical Characteristics, by Weight, Nominal:
    - a. Acrylic Emulsion: 38.0 percent.
    - b. Hiding Pigment: 0.0 percent.
    - c. Mineral Inert Fillers: 7.0 percent.
    - d. Film Formers, Additives: 1.5 percent.
    - e. Water: 50.0 percent.
  4. Weight per Gallon at 77 Degrees F: 8.9 lbs., plus or minus 0.5 lbs.
  5. Non-Volatile Material: 29 percent, plus or minus 5 percent.
- J. Line Paint: SportMaster “Textured Line Paint”.
1. Pigmented, 100 percent acrylic emulsion line paint.
  2. Line marking on asphalt tennis and racquetball courts.
  3. Chemical Characteristics, by Weight, Nominal:
    - a. Acrylic Emulsion: 25.89 percent.
    - b. Pigment: 14.90 percent.
    - c. Mineral Inert Fillers: 13.12 percent.
    - d. Additives: 4.73 percent.
    - e. Water: 41.36 percent.
  4. Weight per Gallon at 77 Degrees F: 10.65 lbs., plus or minus 0.75 lbs.

5. Non-Volatile Material: 45.17 percent, plus or minus 5 percent.
6. Color: White.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine asphalt tennis court surfaces to receive cushioned color coating system.
- B. Verify asphalt tennis courts meet ASBA requirements.
- C. Notify Architect of conditions that would adversely affect application or subsequent use.
- D. Do not begin surface preparation or application until unacceptable conditions are corrected.

#### **3.2 SURFACE PREPARATION**

- A. Protection of In-Place Conditions: Protect adjacent surfaces and landscaping from contact with asphalt tennis court cushioned surface color coating system.
- B. Prepare surfaces in accordance with manufacturer's instructions.
- C. Cure new asphalt surfaces a minimum of 14 to 30 days before application of asphalt tennis court cushioned surface color coating system.
- D. Remove dirt, dust, debris, oil, grease, vegetation, loose materials, and other surface contaminants which could adversely affect application of asphalt tennis court cushioned surface color coating system. Pressure wash entire surface.
- E. Repair cracks, depressions, and surface defects in accordance with manufacturer's instructions before application of filler course.
- F. Level depressions 1/8 inch and deeper with patch binder in accordance with manufacturer's instructions.
- G. Apply 1 or 2 coats of filler course as required by surface roughness and porosity to provide smooth underlayment for application of cushion layers and color coatings.
- H. Ensure surface repairs are flush and smooth to adjoining surfaces.

#### **3.3 APPLICATION**

- A. Apply asphalt tennis court cushioned surface color coating system in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Mix materials in accordance with manufacturer's instructions.

- C. Apply Filler Course, Cushion Layers, and Color Coating with a 50-60 durometer, soft rubber squeegee.
- D. Filler Course:
  - 1. Apply 2 coats on new asphalt or existing acrylic surfaces with extensive cracks or low spot repair.
  - 2. Apply 1 coat on existing acrylic surfaces with minimal repairs.
- E. Cushion Layers: Apply 3 coats of the base layer (coarse granule) cushion, followed by 2 coats of the finish layer (fine granule) cushion in accordance with the manufacturer's instructions.
- F. Color Coating: Apply a minimum of 2 coats of color coating to prepared surfaces in accordance with manufacturer's instructions.
- G. Allow material drying times in accordance with manufacturer's instructions before applying other materials or opening completed surface to foot traffic.

### **3.4 LINE MARKINGS**

- A. Lay out tennis court line markings in accordance with USTA Rules of Tennis.
- B. Apply line markings primer, after masking tape has been laid, to seal voids between masking tape and tennis court surface to prevent bleed-under when line paint is applied.
- C. Apply a minimum of 1 coat of line paint in accordance with manufacturer's instructions.

### **3.5 PROTECTION**

- A. Allow a minimum of 24 hours curing time before opening tennis courts for play.
- B. Protect applied asphalt tennis court cushioned surface color coating system to ensure that, except for normal weathering, coating system will be without damage or deterioration at time of Substantial Completion.

**END OF SECTION**

## SECTION 32-84-23

### IRRIGATION SYSTEM

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Scope of Work:

The work consists of installing a complete underground irrigation system as shown on the Drawings and as hereinafter specified, including the furnishing of all labor, equipment, materials and supervision in performing all operations in connection with construction of the irrigation system.

###### B. General Description:

1. The irrigation system shall be constructed using the sprinkler heads, valves, piping, fittings, controllers, wiring, etc., of sizes and types as shown on the Drawings and as called for in these specifications. The system shall be constructed to grade and conform to areas and locations as shown on the Drawings.
2. Sprinkler lines shown on the Drawings are essentially diagrammatic. The locations of all sprinkler heads, valves, piping, wiring, etc., shall be established by the Contractor, in coordination with the landscaping, at the time of construction. Spacing of the sprinkler heads, valves, etc., are shown on the Drawings and shall be exceeded only with written permission of the Owner's authorized representative.
3. Unless otherwise specified or indicated on the Drawings, the construction of the sprinkler system shall include the furnishing, installing and testing of all mains, laterals, risers, fittings, sprinkler heads, gate valves, control valves, controllers, electric wire and all necessary accessories, the removal and/or restoration of existing improvements, excavation and backfill, and all other work in accordance with the plans and specifications as required for a complete system.

###### C. Relationship of the documents:

1. The Drawings for this project and these written Specifications are to be considered totally integral, with neither considered complete without the other. The Bidders shall thoroughly examine and familiarize themselves with all the information contained in the Documents, and by submitting a bid for this work, agree to accept and be bound by all the provisions made in the Documents.
2. Should a conflict arise between the information contained in the Drawings and these Specifications, the Drawings shall control, unless the item in question is part of an Addendum, dated later than the Drawings. The Owner or his chosen Representative shall be notified immediately of any such discrepancies and shall take any corrective action deemed necessary.

3. All work shall conform to the most recent issue of the Documents.

**D. Alternate Products and Methods**

1. Specific equipment, performances, installation methods, and other such criteria have been selected for use in the design of this project, and these shall be considered the basis for the Base Bid. The use of alternate equipment and/or methods shall not be acceptable without prior approval. Consideration shall be given only for those materials and methods whose performance most closely matches that which is contained in the original Documents, and most reasonably serves the intent of this design.
2. Any modifications or other impact to this design which may be necessitated by the submission of alternate equipment and/or methods shall be clearly noted within the submittal, and subsequently acted upon by the Owner. The Bidders shall warrant that any bid submitted for any equipment shall include all materials and work necessary for the proper and fully warranted installation of that equipment, including, but not limited to, increased pipe or wire size, fittings, concrete, gravel, or any other associated materials and/or labor.
3. It may be requested that the Bidders provide recommendations and alternate pricing for value engineering items. A request for such alternatives does not constitute approval by the Owner or Architect for implementation of these items. All changes will require written approval.

- E. Related Work Specified Elsewhere:** Consult the Owner for documents pertaining to other trades relative to this work.

**1.02 SUBMITTALS**

**A. Requirements:**

1. Prior to commencement of work under this Contract, the Contractor shall submit six sets of submittal data on all proposed materials and equipment, including, but not limited to, sprinklers, valves, pipe, valve boxes, controllers, PVC cement and cleaner, wire and connectors, fittings, swing joints, and P.O.C. equipment. The data shall include copies of all manufacturers' warranty information, including documentation of any extended warranties, if applicable to this project.
2. Submittals shall be in bound sets, with various sections tabbed and properly indexed. Each item shall be marked as acceptable to the General Contractor before it shall be considered for approval by the Engineer, Landscape Architect-or Engineer, or the Consultant.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

**A. General:** The Contractor shall supply all Material and equipment. No substitutions shall be allowed without the prior written approval of the Owner/Landscape Architect or Engineer. The Contractor shall inspect all materials and equipment prior to installation; any defective materials and equipment shall be replaced with the proper materials and equipment. Those items used in the installation found to be defective, improperly installed or not as specified shall be removed and the proper materials and equipment installed in the proper manner, as interpreted by the Owner/Landscape Architect or Engineer.

**B. Pipe:** shall be delivered to the site in full 20-foot lengths and clearly marked with the manufacturer's name and classification.

1. Main: IPS Class 200 SDR 21 PVC pipe, ASTM D-2241, D-1785. All mainline 1" – 2.5" shall be solvent-weld. All mainline 4" and larger shall be PVC gasketed type. All mainline fittings up to 2.5" shall be Sch-80 ASTM D-2467. Use only IPS705 PVC Clear Median-body, medium setting cement (ASTM D2564) with purple primer for fittings. Apply solvent weld and primer as per manufactures instructions and guidelines. Fittings 3" and above shall be Harco ductile iron fittings with fitting restraints. All mainline directional changes shall be thrust blocked. When pipe ends are cut, the Irrigation Contractor shall remove burrs from cut and clean pipe end as per manufactures installation procedures. Installed mainline pipe up to 4-inches with minimum 24"cover, 6" and above with minimum 30" measured from finished grade to top of pipe. All pipes using non-potable water sources must be distinguished from potable by the use of light purple color.

2. Lateral: IPS Class 200 SDR 21 PVC pipe, ASTM D-2241, D-1785 solvent weld. All lateral pipe fittings up to 2.5" shall be Sch-80 ASTM D-2467. Use IPS 725 solvent weld (ASTM D2564) Blue cement with purple primer for welding sch-80 PVC joints/fittings up to 3". When pipe ends are cut, the Irrigation Contractor shall remove burrs from cut and clean pipe ends as per manufactures installation procedures. Apply solvent-weld as per manufactures instructions and guidelines. Install lateral pipe with a minimum 12" cover, measured from finished grade to top of pipe. All pipes using non-potable water sources must be distinguished from potable by the use of light purple color

**C. Fittings:**

1. Main line and Lateral pipe fittings shall be of the proper type and class for use with the above specified pipe and shall have either solvent weld or IPS threaded connections according to the requirements of the connection being made for pipe sizes 3-inches and smaller. Fittings shall be Sch. 40 PVC, of domestic manufacture for pipe sizes 3-inches and smaller.

2. Both the fittings and the solvent cement and cleaner used in their installation shall be approved by the manufacturer of the pipe on which they are to be used. Both the pipe manufacturer and the Contractor shall guarantee the pipe, fittings, cement, and cleaner utilized in this work are all-compatible with one another and are proper and suitable for and in this work.



3. Expansion Joints shall be installed every three hundred (300) feet of straight run.
4. The Irrigation Contractor shall run a Detectable Purple Recycled/Reclaimed Water Marking Tape 12" above the mainline. The tape shall be 2" purple color coded and permanently printed on both sides with a repeating warning message "Caution Recycled/Reclaimed Water Line Below".

**D. Mechanical Joint Restraints:**

1. Mechanical Joint restraints shall be used at all connections along the mainline according to the requirements of the connection being made for pipe sizes 4-inches and larger.
2. Fitting to Pipe Restraints shall meet the requirements of UNI-B-13-94. Grip ring serrations shall be machined. As cast serrations are not permitted. Restraint rods, bolts and nuts shall be of ductile iron to ASTM A563 or low alloy steel to AWWA/ANSI C111/A21.11.
3. Fitting to Valve to Pipe restraint shall consist of ductile iron (ASTM A536) grip rings with machined serrations and ductile iron restraint rods. The ring that grips the pipe shall meet the requirements of Uni-B-13-94. The restraint rods / nuts shall be made from low alloy steel to AWWA/ANSI C111/A21.1 or ductile iron to ASTM A536.
4. Joint Restraint shall be knuckle type. The grip ring shall be one piece residing within a ductile iron housing having machined serrations and shall be activated by one bolt. Housing and grip ring shall be of ductile iron to ASTM A536. Bolt and nut shall be Type 304 stainless steel.
5. Pipe to Pipe Restraints shall meet the requirements of UNI-B-13-94. Grip ring serrations shall be machined, as cast serrations are not permitted. Restraint rods, bolts and nuts shall be of low alloy steel to AWWA/ANSI C111/A21.11.

**E. Threaded Pipe Connections**

Threaded Pipe Connections between main pipe and sprinkler control valve shall be made using threaded pipe and fittings. PVC Schedule 80 threaded pipe and fittings are herein specified for this use.

**F. Gate Valves:**

1. All mainline valves shall be resilient wedge and conform to AWWA C153 standards. Material shall be ductile iron per ASTM A536, Grade 65-45-12. Epoxy coating on all interior and exterior surfaces shall be fusion bonded epoxy, 12-14 mil thickness. The epoxy coating shall pass 90-Day immersion tests per CSA Z245.20-98. Gate valves shall be available in spigot x bell and bell x bell models to mechanically connect to fittings or plastic pipe. The valve bell end shall be deep bell, gasket and equipped with cast joint restraint clamps to

securely fasten to plastic pipe. Restraints shall have blunt cast serrations. Machined threaded restraints will not be allowed. Valves shall have a shroud around the 2" operating nut to accept IPS PVC sleeve which provides dirt-free access to actuate the valve. All mainline valves shall be as manufactured by Leemco, Inc., U.S.A.

## **G. Sprinkler Heads:**

1. Pop-Up Spray Sprinklers with HE-VAN Nozzle:
  1. The sprinkler shall be a 6" fixed spray type designed for in-ground installation. The nozzle shall elevate 6 inches when in operation. The body of the sprinkler shall be constructed of non-corrosive material. A filter screen shall be in the nozzle piston. All sprinkler parts shall be removable through the top of the unit by removal of a threaded cap. The sprinkler cap shall be marked lavender indicating the use of reclaimed water.
  2. Preferred Nozzle: Standard precipitation, high-efficiency adjustable nozzles shall be the Rain Bird HE-VAN nozzles for improved wind resistance and shortened run-times on flat areas or where infiltration rates allow. Provide Rain Bird HE-VAN 8', 10', 12' or 15' spray nozzles Spacing of 8 to 15 feet (DU of 73% to 78% respectively). Arc adjustment from 0 to 360 degrees. Use MPR Strip Series nozzles for SST, CST, CST & EST applications. For use on RD1800 Series with P30 option spray bodies.
  3. Heads shall be as indicated on the Drawings. It shall be the responsibility of the Contractor to provide these heads complete with any options or special features specified on the Drawings, which may include pressure regulation, anti-drain mechanisms, rubber covers, side inlets, etc. Sprinkler performance shall be equal to, or greater than, the design performance indicated on the Drawings. Refer to the Drawings for additional information.
2. Tree Bubblers:
  1. Provide Rain Bird 1402 Series, pressure compensating bubblers. Provide 2 per tree, 7 gal per day per 1" diam. trunk, dictated by water requirements or directed by Owner.
3. Intermediate Rotors:
  1. The full or part circle sprinkler shall be Rain Bird 5000 Plus Series (NP for non-potable) utilizing the MPR Nozzle sets. Sprinkler shall be a single stream, water lubricated, gear drive type capable of covering the areas between 25 and 35 feet at a minimum base pressure of 45 PSI. The wiper seal shall be pressure-activated triple-blade multi-function to protect internals from debris and assure positive pop-up and retraction. The sprinkler shall have a standard rubber cover, tapered stem for positive flushing, and a strong stainless steel retract spring for positive pop down. The part circle sprinkler shall have adjustable arc coverage of 40 to 360 degrees. Pop-up height shall be 6".

4. Large Turf Rotor:
  1. The full or part circle shall be a Rain Bird 6504NP Series (NP for non-potable), single stream, water lubricated, gear drive type capable of covering a radius of 39"-65" at a minimum base pressure of 60 PSI. The part circle sprinkler shall have adjustable arc coverage of 40 to 360 degrees.
    - a. The sprinkler shall be capable of full circle (360 degree) operation in either the single direction mode (FC) or the bi-directional mode (PC). The sprinkler shall have a pressure activated, multi-function, soft elastomeric wiper seal that will clean debris from the pop-up stem as it retracts. Arc adjustment can be performed with or without the rotor in operation and shall require only a flat blade screwdriver. The sprinkler shall have a rotating nozzle turret independent of the riser stem.
    - b. The sprinkler shall have eight color-coded nozzles and a front-load nozzle assembly which will allow the nozzle to be installed without a stator bushing change. The sprinkler shall have a standard rubber cover and a strong stainless steel retracting spring for positive pop-down. The sprinkler shall have a standard Seal-A-Matic™ (SAM) device capable of holding up to 10 feet of head. Pop-up height shall be 4 inches.
    - c. All rotor heads shall be connected to the lateral line by pre-assembled Rain Bird Swing TJSJ-12 Series Swing Joints.

5.

## H. Drip Tubing

1. The flexible polyethylene tubing shall have factory installed pressure-compensating; inline emitters installed every 12-24 inches. The flow rate from each installed inline emitter shall be 0.4, 0.6 or 0.9 gallons per hour when inlet pressure is between 8.5 and 60 psi.
2. The inline emitter diaphragm shall have a pressure-regulating diaphragm with a spring action allowing it to self-rinse if there is a plug at the outlet hole. The bend radius shall be 3 inches whether bending the tubing with the natural bend of the coil or against it. The inline emitter inlet shall be raised off the inside tube wall to minimize dirt intrusion.
3. Drip tubing is to be marked for reclaimed water use
4. For on-surface or under mulch installations, 6" metal wire staples shall be installed 3' - 5' on center, (depending on soil type) and two staples shall be installed over every change-of-direction fitting.
6. Drip Valve Control Kit  
Operating Range  
 Flow: 15.0 to 40.0 gpm  
 Inlet Pressure: 20 to 150 psi  
 Regulating Pressure: 40 psi  
 Filtration: 200 mesh (75 micron) stainless steel

Temperature: Up to 150° F

7. Dripline Insert Fittings  
Insert fittings are to be 17mm

Operating Range

Pressure: 0 to 50 psi (1.0 to 3.5 bar); if using 60 psi (4.1 bar) clamps will be required

**I. Automatic Control Valves:**

1. The electric remote-control valve shall be a normally closed 26.5 Vrms 50/60 Hz (cycles/ sec) solenoid actuated globe pattern design.
  - a. The valve pressure rating shall not be less than 200 psi (13.80 bar). The valve body shall be constructed of heavy-duty glass-filled UV-resistant nylon and have stainless steel studs and flange nuts; diaphragm shall be of nylon reinforced nitrile rubber.
  - b. The valve shall house a fully encapsulated, one-piece solenoid. The solenoid shall have a captured plunger with a removable retainer for easy servicing and a leverage handle for easy turning. This 26.5 Vrms 50/60 Hz latching solenoid shall open between 15.6 and 29.2 Vrms with an inrush current less than 40mA.
  - c. The PESBIVM valve shall have a self-cleaning stainless-steel screen designed for use in dirty water applications.
  - d. All valves shall be sized as shown on plans. Valve shall have a five-year trade warranty. Valve shall be marked for the use of reclaimed water.
  - e. The valve shall have a purple flow control handle to indicate to the user that non-potable water is being used. There shall be no difference between the black and purple handles except for the color.

**J. Two-Wire Electrical Wiring:**

1. All wire used for communication between the controller and the decoders shall be double-jacketed, two (2) conductor cable specifically designed by Paige Electric Model # P7072D for use with two-wire control systems. The cable shall be suitable for direct burial, or for installation in ducts or conduits.
2. The distance of the farthest decoder from the ESP-IVM controller shall not exceed 1.65 miles. The layout shall be STAR configuration (Loop Configuration not accepted) with each two-wire leg having a different color.
3. The conductors shall be #14 AWG tin-coated, soft drawn, annealed, solid copper conforming to ASTM 33 with 4/64" thick PVC (polyvinyl chloride) insulation, conforming to UL Standard #493 for thermoplastic insulated style UF (Underground Feeder), rated at 60 degrees.
4. The two insulated conductors shall be laid parallel and encased in a single outer jacket of 3/64" thick, high density, sunlight resistant polyethylene conforming to ICEA S-61-402 and NEMA WC5, having a minimum wall thickness of .045". The outer jacket shall be pressure extruded to completely fill the interstices between the two insulated wires or may have tube jacketing or form an envelope over the two insulated UF conductors lying in parallel at the discretion of the manufacturer. The two conductors shall be color coded with one conductor black and the other red.

Both conductors shall be the SAME SIZE.

5. Use Rain Bird UF Strippers for stripping the outer jacket of the Maxi-Wire #10, #12 and #14 2-wire cable for best results.
6. Any wire splices outside of the valve box shall be enclosed in a Rain Bird VB-10RNDPL valve box. Leave an additional 30-inch of loose wire (measured from top of valve box), rolled up to the side in all splice boxes and valve boxes.
7. All splices and connections in this wiring shall be made using Rain Bird WR20 or 3M-DBR/Y-6 waterproof splice connector kits. Any other type of wire connector will NOT be accepted. Care shall be taken with each wire connection to assure a tight, waterproof connection. IT IS ESSENTIAL THAT ALL CONNECTIONS BE ABSOLUTELY WATERTIGHT WITH NO LEAKAGE TO GROUND NOR SHORTING BETWEEN CONDUCTORS.

#### **K. Rain Sensor**

1. The rain sensor shall employ an electro-mechanical actuating device designed to cause a circuit interruption that temporarily disables the irrigation controller during periods of significant rainfall. The device shall automatically restore the controller to a normal operating condition after a period of time subsequent to the rainfall. The device shall be suitable to be wired to a normally closed (N.C.) controller sensor port or in series with the valve common.
2. The device shall be of rugged construction to withstand the elements, including exposure to sunlight.
3. The device shall include a U.L. listed, 3A @ 125/250VAC rated electrical switch. The device shall be of sufficient capacity to be used with a maximum of three 24 VAC, 7 VA solenoid valves per station, plus one master valve.
4. The rain sensor shall incorporate a provision that allows the installer to select from several rainfall settings. The setting increments shall be displayed in both English and metric units. The device shall include a vent ring to help control drying time of the mechanical components.

#### **L. Sprinkler Control System(s):**

1. The automatic sprinkler controller locations shall be as indicated on the Plans. The irrigation system controller shall be located within a metal cabinet on a stainless-steel metal pedestal. shall be of a hybrid type that combines electro-mechanical and microelectronic circuitry capable of fully automatic or manual operation.
2. The controller shall operate on a minimum of 120 VAC  $\pm$  10%, 60Hz. The controller shall have a power back-up for the full design life of 10 year, the Lithium coin-cell battery maintains time and date while nonvolatile memory maintains programs.
3. Each controller station shall have a time setting knob capable of being set for incrementally variable timing from 0 minutes to 12 hours or set to omit station

from the irrigation cycle.

4. The controller shall have a flow smart module with learn flow utility and flow usage totalizer.
5. The controller shall be so constructed that all internal parts are accessible through the controller door without disturbing the cabinet installation.
6. The controller shall have programmable seasonal adjust.
7. The controller shall have ten independent programs.
8. The controller shall have 8 start times per program.
9. The controllers must be installed on a concrete base.
10. Proper grounding and surge protection is essential for 2-Wire installations. A 2-Wire path must be surge protected and grounded every 400 feet or every 8 devices, whichever is smaller. The IVM-SD Line Surge Protector is used for this purpose.

**M. Valve Box:**

1. Valve access boxes for sprinkler remote control valves shall have a 12-inch diameter and an 18-inch depth.
2. Valve boxes housing wire splices shall be in a 12"x 18" rectangular glass-filled plastic, with snap-lock cover. Lids shall be permanently marked "Irrigation Wire Splice".
3. Valve boxes housing controller ground rods shall be 7" round plastic type.
4. Valve boxes are to have lavender lids and marked for the use of reclaimed water.

**N. Tools and Spare Parts**

1. Prior to final acceptance, the Contractor shall provide for the Owner's use the following items:
  - a. Twenty of each type of spray sprinkler, and a representative
  - b. Assortment of replacement nozzles.
  - c. Four full sets of service tools for use with the sprinkler heads.
  - d. Four valve operator wrenches for each type of gate valve.
2. Two complete sets of parts list, operations, and maintenance manuals for all equipment, including sprinkler heads, valves, control equipment and any other maintainable items used in construction of the system.
3. Three copies of an owner's/operator's manual shall be provided. The manufacturer's model and part numbers, along with a breakdown of all sprinkler

heads, remote control valves, control timers, and master controller, shall be submitted along with instructions for their operation and repair.

## **PART 3 - EXECUTION**

### **3.01 SUBSTITUTIONS**

- A.** The substituted product or method shall be equal or superior in all respects to the specified product or method and shall provide the same or exceed the warranty of the specified product or method and must be compatible with all other components of the project.
- B.** In the event that a less, costly type of equipment is accepted for use on the project, or any equipment is omitted from the work, the Contractor shall fully refund the difference to the Owner, regardless of whether the action was initiated by the Owner or the Contractor.
- C.** The Contractor shall submit, with the bid, a request for substitution. Such requests must include complete data substantiating compliance of the proposed substitutions with the contract documents. The Contractor shall also supply the following:
  - a. Product identification, including manufacturer's name and address.
  - b. Manufacturer's literature, including product description, performance, test data and reference standards.
  - c. Samples where appropriate.
  - d. Names and addresses of similar projects on which product was used and date of installation.
  - e. Manufacturer's service policy including replacement policy and repair policy.
  - f. Itemized comparison of the proposed substitutions with the specified product.
  - g. Cost difference per item whether it be an add or deduct and the exact amount.

### **3.02 INSTALLATION**

#### **A. General:**

- 1. The Contractor shall install the irrigation system to provide a fully operational automatic system. The Contractor shall install all materials specified and implied by the Drawings and specifications.
- 2. The Contractor shall obtain all the necessary permits and inspections for this work and shall be responsible for penalties or damages which may result from his failure to do so.
- 3. The content and enforcement of codes and regulations may vary from job to job. Information contained in these documents is for reference purposes ONLY and shall not be considered an absolute interpretation of prevailing requirements. The responsibility for researching code requirements, and for conformance thereto, shall remain solely with that of the Contractor.

4. The Contractor shall review any associated land use or environmental permits and shall adhere to any special conditions therein.

**B. Design Considerations:**

1. All spray heads adjacent to walkways, patios or other paved areas shall be 12" pop-ups. In any area where raising the head above grade is unavoidable, the heads shall be inset directly into the closest shrub, and complete concealment and protection shall be provided. All spray heads in turf areas shall be 6" pop-ups.
2. Although due diligence has been given to the design of the system, it shall be understood that the Drawings are entirely diagrammatic in nature, and conflicts may appear due to field variables or other factors. It shall be the responsibility of the Contractor to field-coordinate the entire installation, including rock work, tree locations, bed lines, etc., and make the appropriate adjustments so that all plant material receives the proper coverage, and in the manner set forth in the Documents.

**C. Trenching and Backfilling:**

1. The Contractor shall be responsible for flagging or staking out the head locations on the project. When grading has been established in a particular area, the Contractor shall, prior to beginning any excavation in the area, cause staking to be performed, and shall secure the approval of the Owner or Landscape Architect or Engineer of the finished staking.
2. Excavation shall be open vertical construction sufficiently wide to allow free working space around the work installed and allow ample space for backfilling and tamping. Trenches for piping shall be cut to required grade lines and compacted to provide accurate grade and uniform bearing for the full length of the piping. Bottoms of trenches shall be free of rocks and other sharp objects. The minimum depth of cover shall be 18" on mainline piping, and 12" on lateral piping. Minimum depth of cover on low-voltage wiring shall be as provided by the electrical codes in effect. Intersecting pipes and those sharing a common ditch shall have a minimum of three inches clearance from each other, and from other utilities.
3. Initial backfill shall be pulverized native soil, free of foreign matter. Within four inches of the pipe shall be clean soil or sand. Remaining backfill shall be compacted to dry density equal to that of adjacent undisturbed soil, and shall conform to adjacent grades without depressions, lumps, or other irregularities.

**D. Existing Conditions:**

1. Drawings show conditions as they are believed to exist, but it is not intended or to be inferred that the conditions as shown constitute a representation by or on behalf of the Owner that such conditions exist. The Contractor shall inspect the job site prior to the bid submittal and shall accept full responsibility for any loss sustained because of any differences between the conditions shown on the Drawings and any actual



condition revealed during the completion of the work. (EXCEPTION: Rock Clause; See Section 3.02.E)

2. The Contractor shall, prior to excavation, verify the location of all existing underground improvements, and shall take any action necessary to protect said improvements during his work, and eliminate service outages. This may include, but not be limited to, existing irrigation within, or adjacent to, the work area. It shall be solely the responsibility of the Contractor to obtain the necessary locates and dig permits for the work area.
3. If the site contains areas of protected wetland or other environmentally sensitive areas, the Contractor shall fully acquaint himself with the actual limits of these areas and any corresponding buffer zones and shall make sure that the progress and/or result of his work shall not impact these areas. Generally, these areas shall not be excavated, drained, thrown into by sprinklers, used for equipment access or storage, or otherwise disturbed in any way whatsoever. The Contractor shall confirm any restrictions and react accordingly. The Contractor will pay any fees or penalties assessed upon the Owner because of violations by the Contractor.

**E. Rock Clause:** Should the ground be such that large rocks, debris, buried garbage, building materials, or other obstructions cannot be dug through with a trencher, the Owner should be immediately notified and a cost for excavation and backfill with selected materials shall be negotiated.

**F. Pipes:**

1. Pipe sizes 3" and under shall have solvent-weld joints. Pipe shall be installed in a manner to provide for expansion and contraction as recommended by the manufacturer.
2. PVC pipe shall be cut with a hand saw or hack saw with the assistance of a square in-sawing vice, or in a manner to ensure a square cut. Burrs at cut ends shall be removed prior to installation so that a smooth unobstructed flow will be obtained.
3. Only the solvent recommended by the pipe manufacturer shall be used. All PVC pipe and fittings shall be installed as outlined and instructed by the pipe manufacturer, and it shall be the Contractor's full responsibility to make arrangements with the pipe manufacturer for any field assistance that may be necessary. The Contractor shall assume full responsibility for the correct installation. Connections to flex PVC shall be made with cement specifically rated for this use.
4. Pipe sizes 3" and under with associated fittings shall be solvent-weld type. Pipe shall be installed in such a manner to provide for expansion and contraction in accordance with the manufacturer's published recommendations. Spigot ends of the pipe shall be firmly and completely seated in the fittings. Angular deflections in the joints shall not exceed manufacturer's recommendations. Debris shall be removed from the pipe prior to installation, and lines shall be flushed before installation of heads. Heating and bending the pipe is not permitted. Thrust Blocks: If solvent-weld piping is used,

thrust blocks will only be required at directional fittings where the surrounding soil density will not restrain the joint. If gasketed pipe and/or fittings are used, poured-in-place concrete thrust blocks will be used on all push-on fittings. Thrust blocks will be of the size and configuration conforming to the recommendations made by the fitting manufacturer for that size and type of fitting. Thrust blocks may be formed by excavation in UNDISTURBED surrounding soil, or by forms constructed from suitable material. Fittings shall be wrapped with visqueen prior to pouring, and wires shall not be entrapped in the thrust blocks. In no case shall precast blocks, cinder blocks, wood blocking, or similar unapproved methods be utilized.

5. All PVC to metal joints shall be made with PVC male adapters. The solvent weld joints shall be made in the following manner:
  - a. Thoroughly clean the mating pipe and fitting with a clean dry cloth.
  - b. Apply a uniform coat of solvent to the outside of the pipe with an approved applicator.
  - c. Apply solvent to the fitting in a similar manner.
  - d. Re-apply a light coat of solvent to the pipe and quickly insert it into the fitting.
  - e. Give the pipe or fitting a quarter turn to ensure even distribution of solvent and make sure the pipe is inserted to the full depth of the fitting socket.
  - f. Hold in position for 15 seconds.
  - g. Wipe off excess solvent that appears at the outer shoulder of the fitting.
  - h. Care should be taken not to use an excess amount of solvent, thereby causing an obstruction to form on the inside of the pipe.
  - i. The joints shall be allowed to set at least 24 hours before pressure is applied to the system on PVC pipe.
  - j. As pipe is laid, installed pieces shall be restrained, so that slippage does not occur in previous joints. The Contractor shall monitor previous joints for slippage, until joints are set.

**G. Sprinkler Heads:**

1. Pop-up spray sprinkler heads shall be set flush with finish grade. Heads installed at curb or edge of walk shall have 4 inches between perimeter of head and concrete. Pop-up spray heads shall be connected to rigid PVC using barbed fittings with 12-18 inches of 1/2-inch flexible tubing.

2. The Contractor shall be responsible for the proper adjustment of all sprinkler heads and shall immediately inform the Owner of any head whose location or performance may interfere with the intent of the design.
3. Sprinkler heads are to be located in a fashion similar to that shown on the Drawings. However, the Contractor shall be expected in the course of the work to exercise the necessary judgment to make location and type adjustments based on actual site conditions and coordination with tree locations, bed lines, or other landscape variables. No additional compensation will be given to the Contractor for changing head types, raising or lowering heads, or other work necessary due to failure to properly and completely coordinate with the landscaping work.
4. Unless noted otherwise, coverage will be provided for all new planting indicated on the Landscape Drawings.
5. Riser-mounted shrub heads shall be installed plumb, and at the proper height with respect to the landscaping. All heads shall be inset a minimum of 36" into the plant material and coordinated with the plant locations so that each head is concealed and protected within the planting. Risers shall be staked with steel angle and rustproof/sunlight resistant clamps. Both the risers and the stakes shall be painted with a durable flat black paint.
6. Tree spray heads shall be installed within the mulch ring of the tree, at a level close to the top of the mulch, so that the head does not pose a trip hazard and will not be damaged during mowing or other maintenance operations. Piping feeding the tree spray shall be installed in such a manner that no damage to the tree roots will occur.

#### **H. Automatic Remote-Control Valves:**

1. Control valves shall be installed in specified valve boxes. The valve shall have 6 inches of pea gravel installed below the bottom of the valve. If the valve box does not extend to base of valve a valve box extension shall be installed.
2. Electrical connections to remote control valves shall be Rain Bird WR20 or 3M-DBR/Y-6 waterproof splice connector kits. Slack shall be left in wire so that the connection will extend 2 feet above finish grade.
3. Irrigation valves and valve boxes must be located in landscape beds or groundcover areas whenever possible.
4. Label remote boxes with one-inch alpha numeric notation corresponding to the applicable alpha controller and numeric station.
5. Zone control valves and gate valves shall be installed in valve boxes as described in Section 2.01.I and in the Details.
6. All valves and valve boxes shall be installed plumb and at the proper height with respect to grade, having a minimum clearance from handle to shut valve box lid of no less than 3".

7. Valve boxes shall be lined at the bottom with a 3" layer of pea gravel.
8. All assembly bolts and stem packings shall be checked for proper tightness, and the valves shall be visually checked for leakage.

**I. Electrical Wiring:**

1. Control wire installed by this Contractor shall be installed with the main pipe line. The wire shall be laid in the trench prior to installing the pipe being careful to install wire beneath, and 6 inches to the side of, the main pipe line.
2. Any wire splices, which cannot be practically made in a valve box or controller cabinet, shall be housed in a splice box, and appropriately labeled.
3. All electrical work shall be performed in such a manner to conform to any and all prevailing building codes and regulations, and by persons whose qualifications and licensure are consistent with it.
4. Wire shall be buried in the ground at depths and clearances as prescribed by prevalent codes and shall be snaked in the trench to allow for expansion and contraction. All wiring shall be as prescribed in Section 2.01-F.2. and on the Drawings, and identified at 150' intervals.
5. Low voltage wiring shall be installed with adequate slack and surge/ expansion loops. Use Direct Bury Silicone filled connectors and sealant.
6. Unless otherwise noted, it shall be assumed that the Electrical Contractor shall furnish power feeds to the controller locations, but that connection to the equipment shall be the responsibility of the Irrigation Contractor

**J. Lightning Protection:**

1. The Contractor shall furnish and properly install all applicable lightning protection devices for the control system and shall see that the system is prepared for operation in a lightning-intensive environment. This equipment shall include (for each controller), but not be limited to, an approved 3-wire type 120-VAC primary arrestor, such as the Intermatic #AG2401, and controller valve output protection on the individual zone circuits, if not already included internally in the controller circuit.
2. In addition to the bonded ground wire installed with the power wiring, the Contractor shall provide at each field controller location an earth ground, having a measured resistance to earth of ten ohms or less. Ground resistance shall be measured and approved by a representative of the controller manufacturer, or by an independent tester mutually agreed upon by the parties and paid by the Contractor. The use of grounds shared with other equipment, power supply grounds, building structure grounds or cold-water piping shall not be acceptable for the discharge from the arrestor equipment.

3. Each grounding unit shall consist of a minimum of two 8'x 5/8" copper-clad iron electrodes, installed coupled and stacked one on top of the other. If this does not result in an acceptable ground resistance level, the Contractor shall negotiate with the Owner to improve the grounds by further stacking or a grid of additional rods, or by running a minimum of 150' bare copper wire into the irrigated area and staking a rod at the end. The latter method should be done by trenching, or by plowing in a snaked pattern and pulling tight, to imbed the wire in the earth on either side of the puller hole.
4. Wire for grounding electrodes shall be solid bare copper, of the same size or larger than the largest power or neutral wire feeding the location. The minimum size for ground wire shall be #8AWG. Grounding wire shall be connected to the rods with suitable copper-clad or brass grounding clamps, and separate clamps shall be used for each wire being connected.

**K. Automatic Controllers:**

1. Controller(s) shall be installed as specified on accompanying detail drawing. It shall be equipped with valve output and primary input lightning protection and grounded to a standard 5/8-inch copper clad steel ground rod or rods driven a minimum of 8 feet into the ground and clamped. Ground rod earth resistance shall not exceed fifteen (10) ohms.
2. All stations should run in sequence from the closest to the clock and in order around the site.
3. Provide separate earth ground lug based on regional requirements for additional surge and lightning protection and the irrigation specifications. Grounding requirements must meet the American Society of Irrigation Consultants, ASCI, grounding specifications for irrigation control products.
4. Controller locations shall be determined using the Drawings as a guide, but shall be coordinated and confirmed in the field with the Landscape Architect or Engineer.
5. The Contractor shall make sure that controller cabinets are properly sealed to keep out weather and pests.
6. No modifications shall be made to the controller equipment, which may adversely affect the product warranties.
7. The Contractor, based on recommendations provided by the Landscape Architect or Engineer shall perform initial programming of the controllers.
8. Each controller shall be furnished with a legible laminated diagram, showing a sketch of the area covered by the controller, and the locations of the various zones. This diagram shall be affixed to the inside of the controller door.

9. The installation of the wiring inside the controllers shall be clean and neat, with slack left coiled and tied. Extra wires shall be wire-nutted and moved aside. The wiring shall be arranged in such a manner that the controller panel remounts easily without being "stuffed" back into the cabinet. The Owner reserves the right to correct unsafe or unserviceable wiring and back charge the Contractor.
10. Wire nuts used for connections within the cabinet shall have metallic threads. Those with plastic threads are unacceptable.
11. All unused accessories, hardware and paperwork furnished with the controller(s) shall be turned over to the Owner, and a minimum of two cabinet keys shall be furnished.

**L. Road Crossings:**

1. Exact locations of road crossings shall be pre-determined on-site. As long as resulting depth will be in accordance with applicable codes, the road crossings shall be buried to a depth equal to the mainline piping, so no offsets will be required in the main. Absolutely NO cutting of pavement or soil cement will be permitted without the prior approval of the Owner.
2. Sleeves shall be sealed at each end after all utilities are run through.
3. If road crossings have been installed by others, the contractor shall verify the existence and location of same at his earliest involvement in the project and shall advise the Owner's Representative IMMEDIATELY if a required sleeve cannot be located or is undersized, damaged, too short, obstructed or otherwise unusable.
4. The locations of all sleeves used by the Contractor shall be marked on the curbs in a permanent but unobtrusive manner to be agreed upon by the parties and shall be shown with accurate measurements on the "As-Built" Drawings. This shall be done even if someone installed the sleeves other than the Contractor.

**3.03 RECORD DRAWINGS**

**A. Required Daily Information:**

1. On site "as builds" shall be kept up to date daily and be accessible upon demand by Owner/Landscape Architect or Engineer. All piping shall be dimensioned and drawn to scale. Remote control valves and isolation valves shall have two measurements from fixed objects.
2. The Contractor shall at the time of final inspection furnish to the Owner/Landscape Architect or Engineer one mylar and three blue line copies of finished "as builds." Such drawings shall include all approved field changes, dimensions legends, pipe sizes, valve numbers (corresponding to controller program), and Installer's name and phone number.

**B. Location and Accessibility**

1. The above information shall be kept on the job site in the possession of the Contractor and shall be made available for inspection by the Owner's Representative.

**C. Drawing Production:**

1. The Contractor shall be responsible for preparing, or causing to be prepared, reproducible "As-Built" Drawings from the record data, printed on archival quality media. These Drawings shall be surrendered to the Owner prior to final acceptance and payment for the work. Failure to do so may result in forfeiture of bonds or retainage held, and/or other reparations available to the Owner under the law.

**3.04 TESTING AND INSPECTION**

**A. On-Site Inspection:**

1. At any time during the installation of the irrigation system by the Contractor, the Owner/Landscape Architect or Engineer will visit the site to make official inspections.
2. Upon request, the Contractor will be required to uncover specified work as directed by the inspector without compensation.
3. Should the material, workmanship or method of installation not meet the standards specified herein, the Contractor shall replace the work at his own expense.

**B. Testing:**

1. Pipeline testing shall be done as work progresses. Hydrostatic tests will be performed in the mainlines and witnessed by the Owner's Representative. The Contractor may elect to perform the test prior to installation of the zone valves, and the system mainline network may be tested in sections or as a whole. The test pressure shall be 100 PSI, which shall be maintained for a period of not less than one hour.
2. All other piping will be inspected visually for leaks. The Contractor shall repair any leaks found, and any subsequent damage, at no cost to the Owner.

**C. Adjustment of System:**

1. The Contractor shall balance and adjust all components of the system so that they are operating at optimum levels of performance and efficiency.
2. At such time as designated by the Owner, the Contractor shall return to the job and readjust the heights of sprinkler heads to conform to the finished sod and planting.

**D. Final Inspection and Acceptance:**

1. Within ten days of completion of the work under this contract, the Contractor shall notify the Owner's Representative, who shall schedule a meeting on-site of all interested parties, for the purpose of making a final inspection of the system.

2. The Contractor shall demonstrate the system, and his conformance to the Drawings, Specifications, and all subsequent addenda.
3. If any work proves incomplete or unacceptable, a punch list shall be prepared, and all work required shall be performed by the Contractor to the satisfaction of the Owner before the work can be considered acceptable.
4. The Contractor is expected to know his responsibilities under this Contract and shall see that all work is complete before requesting the inspection. Repeated or otherwise useless inspections resulting in extra cost to the Owner and brought about due to by the failure of the Contractor to complete the work or react to punch lists in a timely fashion may result in chargebacks to the Contractor.

### **3.05 MAINTENANCE**

- A. Maintenance shall commence after each zone is completed and the maintenance period shall continue until 1 year after final acceptance accepted by the Owner. Extreme care shall be taken to instruct the Owner or his representatives in general maintenance and operation procedures.

### **3.06 WARRANTY**

- A. Submit a guarantee, for one year from final inspection and acceptance, against defects and malfunctions in equipment, and against faulty workmanship. The guarantee shall state the name of the Owner, provide full guarantee terms, effective and termination dates, name of contractor providing guarantee, and his address and telephone number. It shall be signed by the chief executive of the company and notarized.

**END OF SECTION**



## **SECTION 32-92-23**

### **TURF AND GRASSES**

#### **PART 1 GENERAL**

##### **1.01 Section Includes**

- A. Soil preparation, sodding, fertilizing, watering, and maintenance of grassed areas other than sport fields.

##### **1.02 References**

- A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest implemented edition.

##### **1.03 Warranty**

- A. All seeding and sod shall be warranted by the General Contractor to be true to name and in a vigorous growing condition through one growing cycle including one summer and one winter season.

##### **1.04 Maintenance During Construction**

- A. Begin maintenance immediately after sodding or seeding. Sod and/or seed shall be watered, sprayed, fertilized, cultivated, mowing and otherwise maintained and protected until acceptance by Owner. Correct defective work as soon as possible after it becomes apparent and weather and season permit. Continue to maintain lawns for 1 year after Owner acceptance and close out of the construction period. Make weekly inspections to determine moisture content of soil and adjust watering schedule established by irrigation system installer to fit conditions. After grass growth has started, areas that fail to show uniform stand of grass for any reason whatsoever shall be re-sodded in accordance with Construction Drawings and as specified herein. Such areas shall be re-sodded repeatedly until areas are covered with satisfactory growth of grass at no additional cost to Owner. Topsoil conditioning or removal and replacement shall be performed if required to facilitate establishment of grass at no cost to Owner. Watering shall be done in such manner and as frequently as is deemed necessary by Owner to assure continued growth of vigorous, healthy grass. Water areas of site in such a manner as to prevent erosion due to excessive quantities applied over small areas and to avoid damage to finished surface due to watering equipment. Water for execution and maintenance will be provided by Contractor at no expense to Owner. Contractor shall furnish portable tanks, pumps, hose, pipe, connections, nozzles, and any other equipment required to transport water from available outlets and apply it to sodded areas in approved manner. Initiate mowing of sodded areas when grass has attained height of 4 inches. Maintain grass height to 3" for Bahia. Not more than 1/3 of grass leaf shall be removed at any cutting and cutting shall not occur less than 10 days apart. Heavy cuttings shall be removed to prevent destruction of

underlying turf. If weeds or other undesirable vegetation threatened to smother planted species, such vegetation shall be mowed, or in case of rank growths, shall be uprooted, raked and removed from area by methods approved by Owner. Contractor shall repair damage resulting from trespass, erosion, washout settlement, or other causes at their expense.

## **PART 2 PRODUCTS**

### **2.01 Lime**

- A. Lime shall be agricultural grade dolomitic limestone, ground sufficiently fine so that at least 80 percent will pass through a No. 8 sieve, and it shall contain not less than 80 percent calcium carbonate equivalent. Moisture content at time of delivery shall not exceed 8 percent.

### **2.02 Fertilizer**

- A. Refer to Section 029300 Part 2 Paragraph J.

### **2.03 Water**

- A. Water shall be free from oil, acid, alkali, salts, and other harmful substances.

### **2.04 Topsoil**

- A. In-situ natural, friable, fertile, fine sandy-loamy soil possessing characteristics of representative topsoil in the vicinity that produces heavy growth. Topsoil shall have a pH range of 5.5 to 7.4 percent, free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1-inch in diameter, stumps, roots, trash, herbicides, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. Top soil shall contain a minimum of five percent organic material and maximum of twenty percent.
- B. Topsoil shall be tested for ph, nutrients, and percent organics.
- C. Salvaged or Existing Topsoil: Reuse suitable topsoil stockpiled on-site or existing topsoil undisturbed by grading or excavation operations. Clean topsoil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
- D. Imported Topsoil: Supplement salvaged topsoil with imported topsoil from off-site sources when existing quantities are insufficient. Imported topsoil shall match the requirements of the in-situ topsoil described above. Additionally:
  - 1. Obtain topsoil displaced from naturally well-drained sites where topsoil occurs at least 6 inches deep; do not obtain from agricultural land, bogs, or marshes. Muck soil will not be accepted.
  - 2. Verify borrow and disposal sites are permitted as required by state and local regulations. Obtain written confirmation that permits are current and active.
  - 3. Obtain permits required by state and local regulations for transporting topsoil. Permits shall be current and active.
- F. Amend existing and imported topsoil as directed by testing company.

### **2.05 Organic Soil Amendments**

- A. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.
- B. Back to Nature Cotton Burr Compost or approved equivalent.
- C. Compost: Decomposed organic material including leaf litter, manure, sawdust, plant trimmings and/or hay, mixed with soil.
- D. Pecan Hulls: Composted pecan hulls for local source.
- E. Biosolids: Use Grade 1 containing lower pathogen levels.
- F. Worm Castings: Earthworms.

## **2.06 For Inorganic Soil Amendments**

- A. Lime: ASTM C602, Class O agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent with a minimum of 95 percent passing No. 8 sieve and minimum of 55 percent passing No. 60 sieve.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing No. 6 sieve and a maximum of 10 percent passing No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

## **2.07 Sod**

- A. Sod shall be either field or nursery grown sod true to the species specified on the drawings. The Contractor shall obtain Landscape Architect's approval of the source of the sod prior to cutting the sod.
- B. Sod grown on soil high in organic matter, such as peat or muck, will not be acceptable. The consistency of sod shall be such that it will not break, crumble or tear during handling and placing. Sod shall be reasonably free of stones, crab grass, noxious weeds, and other objectionable plants or substances injurious to plant growth.
- C. Sod shall have at least 1 inch of soil adhering firmly to the roots and cut in rectangular pieces with the shortest side not less than 12 inches. At the time of cutting sod the grass shall be mowed to a height not less than 2 inches nor more than 4 inches.
- D. Sod cut for more than 48 hours shall not be used without the approval of the Landscape Architect.

## **PART 3 EXECUTION**

### **3.01 Regrading of Topsoil**

- A. Topsoil shall be graded reasonably smooth and level after final settlement. All humps shall be removed and depressions or eroded areas filled in and compacted, with additional topsoil before proceeding with seeding or sodding.

### **3.02 Sod**

1. Newly Graded Subgrades:
  - a. Do not place topsoil until subgrade has been approved by the Landscape Architect or Engineer.
  - b. Before placing topsoil, rake subsoil surface clear of stones, debris, and roots. Disk, drag, harrow, or hand rake subgrade to depth of 4 inches and remove stones larger than 1 -1/2 inches to provide bond for topsoil.
  - c. Spread topsoil to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Adjust depth of topsoil in areas adjacent to paved surfaces or curbs to allow for the placement of sod.
2. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface as follows:
  - a. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
  - b. Disk, drag, or harrow surface soil to a depth of at least 6 inches.
  - c. Remove stones larger than 1 -1/2 inch in any dimension and sticks, roots, trash, and other extraneous matter.
  - d. Legally dispose of waste material, including grass, vegetation, and turf.
  - e. Adjust depth of topsoil in areas adjacent to paved surfaces or curbs to allow for the placement of sod.
3. Incorporate soil amendments and commercial fertilizer into the top 6 inches of topsoil to achieve the specified topsoil requirements. Till soil to a homogenous mixture of fine texture.
4. Grade areas to finish grades, filling as needed or removing surplus topsoil. Float areas to smooth, uniform grade as indicated on the Drawings. Lawn areas shall slope to drain.
5. Where no grades are shown, areas shall have a smooth and continual grade between existing or fixed controls, such as walks, curbs, catch basin, steps, or buildings. Roll, scarify, rake, and level as necessary to obtain true, even lawn surfaces. Finish grades shall meet approval of Owner.
6. Sod beds shall be firmed by rolling before seeding begins.

### **3.03 Sodding**

- A. Provide sod in areas indicated on the Drawings and in all disturbed areas from irrigation trenching, and/or construction operations. Sodding shall also be used in un-stabilized ditches and drainage swales and on all un-stabilized embankment slopes steeper than 3 to 1.
- B. Place sod with the edges in close contact and alternate courses staggered. Lightly tamp or roll to eliminate air pockets. On slopes 2 to 1 or steeper, stake sod with not less than 4 stakes per square yard and with at least one stake for each piece of sod. Stakes shall be driven with the flat side parallel to the slope. Do not place sod when the ground surface is frozen or when air temperature may exceed 90 degrees F. Water the sod thoroughly within 8 hours after placement and as often as necessary to become well established.
- C. In ditches, the sod shall be placed with the longer dimension perpendicular to the flow of water in the ditch. On slopes, starting at the bottom of the slope,

the sod shall be placed with the longer dimension parallel to the contours of the ground.

D. All exposed edges of sod shall be buried flush with the adjacent turf.

### **3.04 Watering**

A. Immediately begin watering and continually keep moist until the sod has firmly knit itself to the topsoil.

### **3.05 Protection of Work**

A. Protect newly seeded and sodded areas from all traffic by erecting temporary fences and signs. Protect slopes from erosion. Properly and promptly repair all damaged work when required.

### **3.06 Application of Fertilizer**

A. Apply fertilizer to grass or sodded areas in 2 applications with thorough watering immediately following. First application shall be 1 week before sodding at rate of 35 pounds per 1,000 square feet harrowed into top 2 inches of soil. Second application shall be done at rate of 25 pounds per 1,000 square feet, immediately following second mowing. Peg sodded slopes greater than 3:1 to hold in place.

### **3.07 Clean-Up**

A. At the time of final inspection of work, but before final acceptance, remove from seeded and sodded areas all debris, rubbish, excess materials, tools, and equipment.

B. Refer to section 029300.

### **3.08 Lawn Replacement**

A. Lawns not showing a close uniform stand of healthy specified grasses at the end of the guaranty period shall be replaced and maintained until acceptance. Scattered bare spots, none of which is larger than one square foot, will be allowed up to a maximum of 3% of the total area.

**END OF SECTION**

## SECTION 32-93-00

### PLANTS

#### PART 1 - GENERAL

##### 1.01 Section Includes

- A. Materials, installation, maintenance of trees, ground cover, and shrubs

##### 1.02 Related Sections

- A. Section 029200 - Turf and Grasses
- B. Section 029600 – Irrigation System
- C. FDOT 580 – Landscape Specification

##### 1.03 General Requirements

- A. Furnish all labor, materials, equipment, and incidentals required to install trees, ground cover, and shrubs, to place accessory planting materials and to maintain and guarantee all planted areas, in areas as shown on the Drawings. All work shall be in strict adherence with sound nursery practice and shall include maintenance and watering of all the work of this Contract until final completion and acceptance by the Owner. The landscaping shall be performed by a contractor who is fully experienced in projects of this scope within FDOT ROW, is an approved service provider to FDOT and whose main business is landscaping. The subcontractor shall be subject to the approval of the Landscape Architect.
- B. Provide under this Section all landscaping appurtenances as shown on the landscaping drawings and specifications.

##### 1.04 Submittals

- A. Submit to the Landscape Architect for approval, complete written maintenance instructions for each type of plant furnished under the Contract.
- B. Submit soil test from within each median section and on both sides of the roads where there are planting beds. Test soil to insure compliance with ASTM D5268 for topsoil. Soil samples shall be taken a minimum of 6" deep in turf areas and 12" deep in planting beds.
- C. Submit representative samples or photographs of all of the required plant materials specified by the Landscape Architect. Photographs must include a readable measuring stick to confirm plant sizes.

##### 1.05 Warranty

- A. All plant materials shall be guaranteed for one (1) year from the time of final inspection and interim acceptance shall be alive, established and in thriving condition for each specific kind of plant at the end of the guaranteed period.

- B. At the end of the guarantee period, any plant required under this contract that is dead or not in satisfactory growth, as determined by the Landscape Architect, shall be removed and replaced. Replacement plants shall have an extended guarantee, as noted above, from time of replacement.

## **1.06 Maintenance**

- A. Maintenance shall commence after each plant is planted and the maintenance period shall continue until 1 year after final acceptance accepted by the Owner. Extreme care shall be taken to instruct the Owner or his representatives in general maintenance procedures. Refer to FDOT specification 580 for further requirements.

## **PART 2 - PRODUCTS**

### **2.01 Materials**

- A. Plant species and size shall conform to those indicated in the Plant List and in plant locations shown on the Drawings. All plants shall be Florida Grade No. 1, or better in accordance with Florida Grades and Standards for Nursery Stock, 2015 edition.
- B. Plants shall be sound, healthy, vigorous, free from plant diseases, insects, pest, or their eggs, and shall have healthy normal root systems. Plants shall be nursery grown stock, freshly dug or container grown. No heeled in, cold storage or collected stock will be acceptable.
- C. Shape and Form:
  - 1. Plant material shall be symmetrical, typical for the variety and species, and shall conform to the measurements specified in the Plant List.
  - 2. Plants used where symmetry is required shall be matched as nearly as possible.
  - 3. Plants shall not be pruned prior to delivery except as authorized.
  - 4. All trees shall have been transplanted or root pruned at least once in the past 3 years.
  - 5. Shrubs shall have been twice transplanted, have fully developed root systems, be heavily canned with foliage to base, fulfill dimensions required, and be typical of the species.
  - 6. Ground covers shall have sturdy fibrous root systems and shall be heavily leafed.
- D. Measurement: The height and/or width of trees shall be measured from the ground or across the normal spread of branches with the plants in their normal position. The measurement shall not include the immediate terminal growth.
- E. Substitutions in plant species or size shall be made only with the written approval of the Landscape Architect.
- F. Ground cover plants shall be planted in beds which receive 12 inches of approved topsoil, thoroughly disced into the soil. The finished surface, compacted and settled, shall conform generally with and at all points to the required grade. Plants shall be spaced as shown, and in accordance with the best practices of the trade.
- G. Planting Soil/Topsoil:

1. If in place soil is unsuitable for planting (not meeting ASTM D5268 standards) as determined by laboratory soil testing. Supply topsoil as needed from naturally well-drained sites conforming to ASTM D5268. Remove the unsuitable soil and replace with approved topsoil at least 12 inches deep in planting beds and 6 inches deep in turf areas. Do not obtain topsoil from bogs or marshes. Recommended soil amendments to the insitu soil from the testing laboratory may be considered as an alternate to replacement
2. Soil for backfilling around plants and planting beds shall be a good grade of garden loam as approved. Soil shall be free of heavy clay, coarse sand, stones, lumps, sticks or other foreign material. The soil shall not be delivered or used in a muddy condition.
3. There shall be a slight acid reaction to the soil with no excess of calcium or carbonate. The soil shall be free from excess weeds or other objectionable material.
4. Soil for trees and shrubs shall be delivered in a loose, friable condition. All trees should average approximately 1 cubic yard per tree. There will be 12-inches of planting soil in ground cover areas and 1/8 cubic yard per shrub or vine.
5. No marl shall be used in ground cover planting beds.

H. Any required landscaping stone shall be inert, nonleaching material as specified on the Drawings. Provide physical samples for approval before purchase. No crushed limerock shall be used.

I. Soil mixture should be the following mixture:

1. 25% Perlite or Course Sand
2. 25% Vamiculite
3. 25% Canadian peat Moss
4. 25% Organic Compost
5. Incorporate Terra Sorb at the rate of 1 lb. per 100 sq. ft. per mandatory instructions.

J. Fertilizer:

1. Deliver fertilizer, mixed as specified, in original unopened standard size bags showing weight, analysis and name of manufacturer. Containers shall bear manufacturer's guaranteed statement of analysis, or manufacturer's certificate of compliance covering analysis shall be furnished to Owner. Store fertilizer in such manner that it shall be kept dry.
2. Base percentages of nitrogen, phosphorus, and potash on laboratory test recommendations as approved by Owner. For bidding assume 10 percent nitrogen, 6 percent phosphorus, and 4 percent potash by weight. At least 50 percent of total nitrogen shall contain no less than 3 percent water-insoluble nitrogen. At least 60 percent of nitrogen content shall be derived from super-phosphate containing not less than 18 percent phosphoric acid or bone meal containing 25 - 30 percent phosphoric acid and 2 - 3 percent nitrogen. Potash shall be derived from muriate of potash containing 55 - 60 percent potash.

K. Peat Moss:



1. Peat moss shall be Michigan peat moss or approved equal in color and consistency.
2. Peat moss shall be moss peat, finely shredded to pass 1/2-inch mesh and shall be no less than 90 percent organic material by weight, with ash content by ignition of no more than 10 percent.
3. Material shall contain 35 - 66 percent moisture by weight, but shall have water-holding capacity of 150 - 200 percent.
4. Material shall have pH value of 4 to 5.
5. Material may be imported supplied in bales or domestic furnished in bulk. If furnished in bulk, material and its source shall be acceptable to Owner.

L. Mulch:

1. Shredded hardwood mulch shall be used as mulching material. Cypress Wood shall not be used.

## **PART 3 EXECUTION**

### **3.01 Planting Bed Preparation**

- A. Prior to preparing planting beds, the area shall conform to the lines and grades shown on the plans and the condition of the subsoil shall be approved by the Owner.
- B. Contractor shall verify the location of any underground utilities on site.
- C. Planting beds where existing subsoil is determined by Owner to be unsuitable for plant growth in accordance paragraph Unsuitable Subsoil herein shall be excavated to a depth of 12 inches or as needed to provide adequate drainage. Replace excavated soil with approved topsoil.
- D. Planting beds where existing subsoil is acceptable by Owner, the beds shall be prepared as follows:
  1. Seven days prior to commencing establishment of the planting areas, apply non selective herbicide. Remove dead vegetation.
  2. Loosen subsoil to a depth of 12 inches. Remove stones larger than 1 inch in any dimension, sticks, roots, rubbish, and other extraneous matter and legally dispose of them off site.
  3. Spread 3 inches of soil conditioner over the surface of the planting area and incorporate into the top 12 inches of the soil. Prior to spreading soil conditioner, add or remove topsoil as needed to accommodate addition of soil conditioner and to achieve finish grade.
  4. Till planting soil mix to a homogenous mixture of fine texture.
  5. Float areas to smooth, uniform grade providing positive drainage out of planting beds and away from structures or as indicated on the Drawings.

### **3.02 Planting Procedures**

- A. Plant Locations: All plants shall be located as shown on the Drawings, to dimensions if shown, to scale if not dimensioned. Large areas or beds shall be scaled and the plants spaced evenly as specified on the plant list. Layout of the

trees and shrub beds shall be approved by the Landscape Architect or Engineer is required before any plants may be installed. Field adjustments may be recommended prior to planting for utility or aesthetic purposes by the Landscape Architect without additional costs as long as plant quantities and or species do not change. If the contractor does not call the Landscape Architect to approve the layout of the plant material prior to planting, the cost to relocate plant material for utilities or aesthetic purposes shall be bared by the contractor.

- B. Tree Staking: All tree staking and bracing shall be included herein in accordance with sound nursery practice and shall generally be in accordance with the details shown. Furnish all materials required for staking and bracing as approved.
- C. Tree Pits: Pits for trees shall be at least 2 feet greater in diameter than the specified diameter of the root ball. Other specifications for tree pits shall be as shown on the tree planting detail.
- D. Digging and Handling:
  - 1. Plants shall be handled at all times so that roots or balls are adequately protected from sun or drying winds. Tops or roots of plants allowed to dry out will be rejected.
  - 2. Balled or burlapped plants shall be moved with firm, natural balls of soil, in sizes specified by Florida Grading and Standard for Nursery Stock, 2015 edition. No plant shall be accepted when the ball of earth surrounding its roots has been cracked or broken. All trees, except palm and seedling pines, shall be dug with ball and burlapped. Root pruning shall have been done a minimum of four weeks before planting at the job.
  - 3. Plants too large for 2 persons to lift in and out of holes shall be placed with sling. Do not rock trees in holes to rise.
- E. When balled and burlapped plants are set, planting soil shall be carefully tamped under and around the base of the balls to prevent voids. All burlap, rope, wires, etc., shall be removed from the sides and tops of balls, but no burlap shall be pulled from underneath. Roots of bare rooted plants shall be properly spread out and planting soil carefully worked in among them.
- F. Before plants are backfilled with planting soil, fertilizer tables, Agriform 20-10-5 or equal, shall be placed in each pit. Provide three tablets for each tree and one for each shrub or vine.
- G. All plants shall be set straight or plumb, in locations shown on the Drawings. Except as otherwise specified, plants shall be planted in pits and shall be set at such level that, after settlement, they bear the same relation of the finished grade or surrounding ground as they bore to the grade of the soil from which they are taken, unless otherwise indicated in the planting details.
- H. Pruning shall be carefully done by experienced horticulturalist or arborist. Prune immediately upon acceptance by the Landscape Architect, including any broken branches, thinning all small branches and tipping back main branches (except main leaders).
- I. Excess soil and debris shall be disposed of off the project site unless ordered stockpiled by the Landscape Architect.

### **3.03 Obstructions Below Ground**

- A. If underground construction utilities or obstructions are encountered in excavation of the planting areas, or pits, other locations for the plant material may be selected by the Landscape Architect.
- B. Such changes shall be done without additional compensation.

### **3.04 Tree and Plant Protection**

- A. The Contractor shall remove only those trees selected for removal by the Landscape Architect. Prior to removal of said trees, the Contractor shall obtain a tree removal permit, if required. All other trees in the vicinity of the work shall be protected against damage by the Contractor until all work under the Contract has been completed. Removal of any unapproved trees shall result in a fine to the Contractor of \$500/inch trunk diameter of that tree that is removed.
- B. Consult with the Landscape Architect, and remove agreed-on roots and branches which interfere with construction. Employ qualified tree surgeon to remove, and to treat cuts.
- C. Provide temporary barriers in accordance with the provided detail, around each, or around each group of trees and plants.
- D. Protect root zones of trees and plants:
  - 1. Do not allow vehicular traffic or parking.
  - 2. Do not store materials or products.
  - 3. Prevent dumping of refuse or chemically injurious materials or liquids.
  - 4. Prevent puddling or continuous running water.
- E. Carefully supervise excavating, grading and filling, and subsequent construction operations, to prevent damage.
- F. In case of inadvertent damage to any tree, by the Contractor or any of his subcontractors or employees, the Contractor shall provide replacement of each size tree with a new tree of acceptable type, size and quality, subject in each case to the approval of the Owner.
- G. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by the Landscape Architect.
- H. Clean and repair damage caused by installation, fill and grade the areas of the site to required elevations and slopes, and clean the area, in accordance with the tree protection notes.
- I. Cover plants transported to project in open vehicles with tarpaulins or other suitable covers securely fastened to body of vehicle to prevent injury to plants. Closed vehicles shall be adequately ventilated to prevent overheating of plants. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage shall be cause for rejection. Plants shall be kept moist, fresh, and protected. Such protection shall encompass entire period during which plants are in transit, being handled, or are in temporary storage.

### **3.05 Clean Up**

During landscape work, store materials and equipment where directed. Keep pavements clean and work area in an orderly condition.

Protect plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged planting.

Keep all planted areas free of debris, weeds, and insects. Cultivate, weed, and water until final substantial completion of the work.

Upon completion, remove all excess subsoil, cordage, wrappings, and other extraneous materials from the site.

Remove all tools, equipment, and other materials, except those necessary for maintenance work.

Remove litter or other debris occurring from maintenance operations.

### **3.06 Acceptance**

Inspection of the entire project or designated portions thereof shall be made upon written request of the Contractor.

A substantial completion inspection shall be conducted with all deficiencies noted and given to the Contractor as a list of items to be corrected. Substantial completion acceptance will not be issued until all punch list items have been completed and a re-inspection by the Owner finished.

For the purpose of establishing an "Acceptance" standard, all plant material shall be healthy, thriving, well rooted, evenly colored, variable, and free of weeds and disease.

Perform other operations necessary to complete maintenance and ensure that plants are healthy, vigorous, visually pleasing and undamaged.

Perform all maintenance tasks as specified in this Section.

Once the re-inspection for compliance with the punch list requirements has been conducted and barring any new deficiencies being noted during the re-inspection, written acceptance will be given for all work of this Section, exclusive of possible replacement of plant material subject to warranty.

If any deficiencies of requirements exist, they will be noted in writing.

Upon written notice of final completion, the Contractor will assume all responsibilities for maintenance of landscape work for a period of one year. The Contractor is responsible for all maintenance as specified in this Section from the day of installation until one year after final acceptance by the Owner.

At the conclusion of the warranty period, an inspection will be made to determine the condition of warranted plant material.

Remove all plant material noted as not being in a healthy growing condition.

At no additional cost, replace plant material during the following season with material of like kind and size, in accordance with specification for original plant materials.

Warranty period also applies to replaced material.

Remove all tree staking and guys and dispose of the material off-site.

### **3.07 Replacement**

A. At the end of the 1 year warranty period, any plant required under this Contract that is dead or not in satisfactory growth as determined by the Landscape Architect shall be removed. Plants replaced shall be guaranteed for 90 days after date of replacement.

B. Replacement of plants necessary during the guarantee period shall be the responsibility of the Contractor, except for possible replacements of plants resulting from removal, vandalism, acts of neglect on the part of others, or acts of nature.

- C. All replacements shall be plants of the same kind and size as specified in the landscape drawings. They shall be furnished and planted as herein specified. The cost shall be the responsibility of the Contractor.

**END OF SECTION**

SECTION 329400

SPORTS FIELD TOPSOIL

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. Provide all labor, material, services and equipment necessary to completely furnish and install the work as specified.

**1.02 RELATED WORK**

- A. Section 329500 Tiftway Sodding

**1.03 REFERENCED STANDARDS**

- A. USGA

**1.04 SUBMITTALS**

- A. Test reports shall be provided for gradation, infiltration rate, total porosity, capillary porosity, non-capillary porosity, organic content nutrient levels and ph.
- B. Testing of Topsoil.
- C. Test results shall be provided by an accredited USGA testing laboratory. All costs for sampling and testing shall be included in the Topsoil price.

**PART 2 MATERIALS**

**2.01 TOPSOIL**

- A. The topsoil shall be stored topsoil material from the site. The contractor shall sample from areas of the stored topsoil pile at minimum 15' spacing. The sample shall be blended and sent to a qualified laboratory for testing in accordance with 1.04 submittals.
- B. The topsoil shall have physical and performance characteristics as specified below.

1. Particle Size Distribution for the Topsoil:

<u>Fraction size Name</u>	<u>Sieve Size (mm)</u>	<u>Allowable Range % Retained</u>
Very Coarse	1.00 – 2.00	7% to 10%
<b>Coarse</b>	<b>0.50 – 1.00</b>	<b>Minimum of 60% Coarse</b>
<b>and</b>		
<b>Medium</b>	<b>0.25 – 0.50</b>	<b>Medium Combined</b>
Fine	0.15 – 0.25	20% Maximum
Very Fine	0.05 – 0.15	5% Maximum

Silt	0.002 – 0.05	5% Maximum
Clay	<0.002	3% Maximum

2. Physical Performance Requirements for the Rootzone Mix:

<u>Test</u>	<u>Allowable Ranges</u>
Infiltration Rate per Lab Test Results	8 to 15 inches/hour
Total Porosity	35 – 55%
Capillary Porosity	15 – 25%
Non-Capillary Porosity	15 – 30%

- C. PH of the topsoil mix shall be 6.0 to 7.0.
- D. Organic content shall not be less than 5% or more than 20%.
- E. Topsoil shall be sterilized to eliminate nematodes, nutgrass, common bermudagrass and other perennial grasses and weeds.

**PART 3 EXECUTION**

**3.01 INSPECTION**

- A. Examine the area to receive soil preparation and assure that the initial grading by the site contractor is correct and true to the plans.
- B. Do not proceed with the soil preparation until any necessary corrective actions are completed.

**3.02 Site Preparation**

- A. Grading: The Site Contractor shall laser grade all field areas to within a tolerance of plus or minus 0.25 inches with automatically controlled laser guided equipment and a dual slope actuated soil plane. Contractor shall laser grade all field areas to within a tolerance of plus or minus 1/4 inch with automatically controlled laser-guided equipment with a dual slope hydraulic actuated soil plane. Equipment shall be pulled with tractors with high-flotation turf tires. Contractor shall own his own equipment and provide proof of calibration of laser equipment.
- B. All areas shall be maintained in a true and even condition. All areas shall be positively drained to existing drainage structure and properly compacted to prevent the formation of depressions where water will stand. All undulations and irregularities in the surface resulting from tillage, grading or application of soil amendments not meeting the required tolerances shall be leveled prior to initiating planting of the Tiftway 419 sod.
- C. After placing six inches of topsoil, the contractor shall rototill the area to mix three inches of existing soil using a reverse tine tiller for a total root zone depth of seven inches. The root zone area will then be fine graded with turf equipment to the grades shown on the grading plan, minus the

thickness of the sod.

- D. The contractor shall incorporate lime fertilizer and amendments as per laboratory recommendations and apply a final float finish and do all preparation to the surface to receive sod.

**End of Section**



SECTION 329500  
TIFTWAY 419 SODDING

**PART 1 GENERAL**

**1.01 DESCRIPTION**

- A. The work specified in this section consists of the establishing of a stand of grass, within the areas indicated on the Drawings, by the furnishing and placing of grass sod, watering and maintaining the grassed areas to assure a healthy stand of grass. It is the intent of this specification that damaged areas are to be replaced in kind, with sod to be used for all maintained field areas.

**1.02 RELATED WORK AND REFERENCES**

- A. Section 329400: Topsoil
- B. ASPA (American Sod Producers Association) Guidelines to Sodding
- C. FS O-F-241 Fertilizers, Mixed, Commercial

**1.03 SUBMITTALS/QUALITY ASSURANCE**

- A. Contractor shall submit Blue Tag certification of Tiftway 419 sand based wide roll sod including location of sod source.
- B. Contractor shall submit certification that the sod is fire ant free.

**1.04 DELIVERY STORAGE AND PROTECTION**

- A. Deliver sod in rolls. Protect exposed roots from dehydration.
- B. All sod delivered to the site, shall be laid within eight (8) hours.

**PART 2 MATERIALS**

**2.01 TIFTWAY 419 SOD**

- A. Contractor shall provide Blue Tag Certified Tiftway 419 sand based wide roll sod.
- B. Sod: Minimum age of 18 months, with root development that will support its own weight without tearing.
- C. All sod delivered to the site, shall be laid within eight (8) hours.
- D. Sod shall contain no weed of any type.
- E. Sod shall be free from fungus, vermin and other diseases.
- F. Sod shall have been mowed no more than 4 days before being cut.

**PART 3 EXECUTION**

**3.01 CONTRACTOR'S VERIFICATION**

- A. Excavation

Prior to the placing of any materials, examine the site for the grades, lines, and levels required to receive the new work. Ascertain that all site grades are adequate to receive

the new work. Correct all defects and deficiencies before proceeding with the work.

**B. Finish Grade Conditions**

Prior to the placing of any materials, examine the Finished Grade to ascertain that it is adequate to receive the new work.

**C. Existing Improvements**

Investigate and verify locations of existing improvements, including structures, with which the new work will be in contact.

Necessary adjustments in line and grade to align the new work with the existing improvements must be approved by the DESIGN PROFESSIONAL, prior to any changes.

**3.02 Sod Installation**

**A. Final Plant Bed Preparation**

1. Prior to sodding, the surface shall be cleared of all trash, debris, stones larger than 2" in diameter, roots, brush, wire, grade stakes, and other objects that would interfere with planting or maintenance.
2. Flooded, washed out or otherwise damaged areas shall be reconstructed and all grades re-established by the CONTRACTOR.
3. Any undulations or irregularities in the surface resulting from tire tracks, tilling, or other causes shall be leveled and raked smooth prior to sodding.
4. Care shall be taken to avoid damage to fencing or other improvements (if applicable) during all phases of work. Any repairs required by such damage in sodding operations shall be at the Contractor's expense.
5. Final plant bed preparation shall be inspected and be subject to acceptance by the OWNER, prior to commencement of laying sod.

**B. Placement of Sod**

1. After final plant bed preparation the soil shall be lightly irrigated and be in a moist, not wet, condition immediately prior to laying sod.
2. Tiftway 419 sand based sod shall be installed using special wide-roll installation equipment. Contractor shall roll the sod after installation with a double-drum smooth 3- 5 ton steel roller to ensure full contact between the sod and the rootzone surface over the entire soccer field. Remove netting as sod is placed.
3. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to insure that the sod is not stretched or overlapped and that all joints are butted tight. Open joints

and gaps shall be plugged with sod cut to the size and shape of the opening.

4. Hauling of wide roll sod from trucks to the sod laying equipment shall be done with low ground pressure (less than 5 psi) Multi-Terrain track equipment with rubber treads.
5. CONTRACTOR shall water sod immediately after installation to prevent excessive drying during progress of the work. As sodding is completed in any one section, the entire area shall be rolled. It shall then be thoroughly irrigated to a depth sufficient that the underside of the new sod pad and soil immediately below the sod are thoroughly wet. The CONTRACTOR shall be responsible for obtaining a source of water prior to and during installation of the sod.

#### C. Grow-In

1. Contractor shall do the initial grow-in for minimum of 4 weeks until sod is smooth, uniform and knitted down at the playing field areas. This shall include fertilization, monitoring irrigation, herbicides, pesticides, fungicides and laboratory testing.

#### D. Fertilizer Application

1. Fertilizer shall be distributed evenly over the sodded area at the rate of 400 lbs./acre by mechanical spreader. CONTRACTOR shall notify the OWNER of the fertilization schedule at least 48 hours prior to application.

#### E. Establishment

1. CONTRACTOR shall irrigate sodded area, as necessary, to maintain sufficient moisture in the upper 4" of soil necessary for the promotion of root growth.
2. Coordinate the installation of the project irrigation system with sodding operations.
3. The OWNER may make periodic inspections to determine soil moisture content. If it is determined that watering is required upon notification by the OWNER, the CONTRACTOR shall begin watering within 48 hours with sufficient labor and equipment and continue to water where and as directed, without delays or interruptions, to insure that dryness within the root zone does not occur at any time.
4. Water shall be applied at a rate of 310 gallons per 1,000 square feet per watering. For estimating purposes, it is anticipated that the equivalent of one complete watering will be required during installation and two complete waterings will be required during establishment period.
5. Establishment period shall continue until Substantial Completion and project acceptance.

#### F. Notification

1. The CONTRACTOR shall notify THE OWNER of his intended schedule to apply sod, fertilizer, or water, during installation and establishment, a minimum of 48 hours prior to application.

G. Consultation

1. Contractor shall provide unlimited consultation by telephone, fax or e-mail for a period of one year after the initial grow-in period. This will include four site inspection visits at times requested by owner.

H. Replacement

1. Contractor shall guarantee all sod work up until the end of the maintenance period. Contractor shall replace any defective or distressed grass materials at no additional cost to the owner. During the guarantee period, it shall be the Contractor's responsibility to immediately replace any dead material.

**END OF SECTION**

## APPENDIX A

### Permits

- Southwest Florida Water Management District App I.D. / Permit No. 863525 / 43024404.003, dated April 1, 2023.
- Florida Department of Environmental Protection Water Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
- Florida Department of Environmental Protection Sewer Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
- Sumter County Right-of-way Utilization Permit No. \_\_\_\_\_, dated \_\_\_\_\_.
- Sumter County Driveway Permit No. \_\_\_\_\_, dated \_\_\_\_\_.



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# Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899  
(352) 796-7211 or 1-800-423-1476 (FL only)  
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)  
On the Internet at: [WaterMatters.org](http://WaterMatters.org)

**Bartow Service Office**  
170 Century Boulevard  
Bartow, Florida 33830-7700  
(863) 534-1448 or  
1-800-492-7862 (FL only)

**Sarasota Service Office**  
78 Sarasota Center Boulevard  
Sarasota, Florida 34240-9770  
(941) 377-3722 or  
1-800-320-3503 (FL only)

**Tampa Service Office**  
7601 Highway 301 North  
Tampa, Florida 33637-6759  
(813) 985-7481 or  
1-800-836-0797 (FL only)

April 01, 2023

City of Wildwood  
Attn: Jeremy Hockenbury  
100 North Main Street  
Wildwood, FL 34785

Subject: **Notice of Agency Action - Approval  
ERP Individual Construction Major Modification**

Project Name: Millennium Park Phase 1 & 2  
App ID/Permit No: 863525 / 4302440.003  
County: Sumter  
Sec/Twp/Rge: S08/T19S/R23E

Dear Permittee(s):

The Southwest Florida Water Management District (District) is in receipt of your application for the Environmental Resource Permit modification. Based upon a review of the information you submitted, the application is approved.

Please refer to the attached Notice of Rights to determine any legal rights you may have concerning the District's agency action on the permit application described in this letter.

If approved construction plans are part of the permit, construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at [www.WaterMatters.org/permits](http://www.WaterMatters.org/permits).

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notices of agency action, as well as a noticing form that can be used, are available from the District's website at [www.WaterMatters.org/permits/noticing](http://www.WaterMatters.org/permits/noticing). If you publish notice of agency action, a copy of the affidavit of publication provided by the newspaper should be sent to the District's Tampa Service Office for retention in this permit's File of Record.

If you have any questions or concerns regarding your permit or any other information, please contact the Environmental Resource Permit Bureau in the Tampa Service Office.

Sincerely,

David Kramer, P.E.  
Bureau Chief  
Environmental Resource Permit Bureau  
Regulation Division

Enclosures:   Approved Permit w/Conditions Attached  
                  [As-Built Certification and Request for Conversion to Operation Phase](#)  
                  Notice of Authorization to Commence Construction  
                  Notice of Rights

cc:             Universal Engineering Sciences, LLC  
                  Leopoldo Ayala, P.E., CPH, LLC.

**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT  
ENVIRONMENTAL RESOURCE  
INDIVIDUAL CONSTRUCTION MAJOR MODIFICATION  
PERMIT NO. 43024404.003**

**EXPIRATION DATE:** April 01, 2028

**PERMIT ISSUE DATE:** April 01, 2023

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapter 62-330, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

**PROJECT NAME:** Millennium Park Phase 1 & 2

**GRANTED TO:** City of Wildwood  
Attn: Jeremy Hockenbury  
100 North Main Street  
Wildwood, FL 34785

**OTHER PERMITTEES:** N/A

**ABSTRACT:** This permit authorization is for the modification of a constructed stormwater management system approved under Environmental Resource Permit (ERP) No. 44024404.000, serving a 95.49-acre park and recreation facility. The proposed activities include:

1. Construction of infrastructure, recreation, and building improvements.
  
2. Construction of five (5) new treatment ponds that will treat the first half inch of runoff before discharging into system authorized under ERP No. 43045719.000. Two (2) new ponds are proposed to will fully retain the 100-year 24-hour storm.

This Permit Modification No. 43024404.003, amends the previously issued Permit No. 44024404.000, and adds conditions. All other original permit conditions remain in effect.

The site is located south of Huey Street, west of Powell Road, in Sumter County.

**OP. & MAIN. ENTITY:** City of Wildwood

**OTHER OP. & MAIN. ENTITY:** N/A

**COUNTY:** Sumter

**SEC/TWP/RGE:** S08/T19S/R23E



**TOTAL ACRES OWNED  
OR UNDER CONTROL:** 95.49  
**PROJECT SIZE:** 95.49 Acres  
**LAND USE:** Government  
**DATE APPLICATION FILED:** January 23, 2023  
**AMENDED DATE:** N/A

**I. Water Quantity/Quality**

POND No.	Area Acres @ Top of Bank	Treatment Type
Pond 1	0.17	ON-LINE RETENTION
Pond 2	0.31	ON-LINE RETENTION
Pond 3	0.13	ON-LINE RETENTION
Pond 4	0.27	ON-LINE RETENTION
Pond 5	0.10	ON-LINE RETENTION
Pond 6	0.39	ON-LINE RETENTION
Pond 7	0.41	ON-LINE RETENTION
	<b>Total: 1.78</b>	

Water Quantity/Quality Comments: In order to meet closed basin criteria the post-development discharge volume will not exceed the pre-development discharge volume for the 100-year, 24-hour storm event. Although mapped within the boundary of an impaired waterbody, Little Jones Creek (1344), discharges from the site are to a closed basin and do not actually reach the impaired water.

The plans and calculations reflect the North American Vertical Datum of 1988 (NAVD 88).

A mixing zone is not required.

A variance is not required.

**II. 100-Year Floodplain**

Encroachment (Acre-Feet of fill)	Compensation (Acre-Feet of excavation)	Compensation Type	Encroachment Result* (feet)
0.00	0.00	No Encroachment	N/A

Floodplain Comments: The project proposes no fill placement within a known 100-year riverine floodplain or depression storage areas associated with 100-year riverine floodplain.

\*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

**III. Environmental Considerations**

No wetlands or other surface waters exist within the project area.

## Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit may be terminated, unless the terms of the permit are modified by the District or the permit is transferred pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. The Permittee shall retain the design professional registered or licensed in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the design professional so employed. This information shall be submitted prior to construction.
3. For dry bottom retention systems, the retention area(s) shall become dry within 72 hours after a rainfall event. If a retention area is regularly wet, this situation shall be deemed to be a violation of this permit.
4. This Permit Modification No. 43024404.003, amends the previously issued Permit No. 44024404.000, and adds conditions. All other original permit conditions remain in effect.
5. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.
6. If limestone bedrock is encountered during construction of the stormwater management system, the District must be notified and construction in the affected area shall cease.
7. The Permittee shall notify the District of any sinkhole development in the stormwater management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.
8. The Permitted Plan Set for this project includes: the set received by the District on January 23, 2023.
9. The operation and maintenance entity shall provide for the inspection of the permitted project after conversion of the permit to the operation and maintenance phase. For systems utilizing retention or wet detention, the inspections shall be performed five (5) years after operation is authorized and every five (5) years thereafter.

The operation and maintenance entity must maintain a record of each inspection, including the date of inspection, the name and contact information of the inspector, whether the system was functioning as designed and permitted, and make such record available upon request of the District.

Within 30 days of any failure of a stormwater management system or deviation from the permit, an inspection report shall be submitted using Form 62-330.311(1), "Operation and Maintenance Inspection Certification" describing the remedial actions taken to resolve the failure or deviation.

10. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.
11. Off-site discharges during construction and development shall be made only through the facilities authorized by

this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.

12. The permittee shall complete construction of all aspects of the stormwater management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
13. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
  - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
  - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
  - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.
14. All stormwater management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.
15. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
16. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
17. This permit does not authorize the Permittee to cause any adverse impact to or "take" of state listed species and other regulated species of fish and wildlife. Compliance with state laws regulating the take of fish and wildlife is the responsibility of the owner or applicant associated with this project. Please refer to Chapter 68A-27 of the Florida Administrative Code for definitions of "take" and a list of fish and wildlife species. If listed species are observed onsite, FWC staff are available to provide decision support information or assist in obtaining the appropriate FWC permits. Most marine endangered and threatened species are statutorily protected and a "take" permit cannot be issued. Requests for further information or review can be sent to [FWCConservationPlanningServices@MyFWC.com](mailto:FWCConservationPlanningServices@MyFWC.com).
18. Construction of the improvements approved under this permit authorization shall be concurrent with construction of the stormwater management system authorized under Permit No. 43045719.000. This permit authorization, Permit No. 44024404.003, shall not have beneficial occupancy or be transferred into the operation phase, prior to Permit No. 43045719.000.

#### **GENERAL CONDITIONS**

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

**David Kramer, P.E.**

---

Authorized Signature

## EXHIBIT A

### GENERAL CONDITIONS:

- 1 The following general conditions are binding on all individual permits issued under this chapter, except where the conditions are not applicable to the authorized activity, or where the conditions must be modified to accommodate, project-specific conditions.
  - a. 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., or the permit may be revoked and the permittee may be subject to enforcement action.
  - b. 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.
  - c. 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(8)(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.
  - d. 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,"[effective date], incorporated by reference herein (<http://www.flrules.org/Gateway/reference.asp?No=Ref-02505> ), 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. However, for activities involving more than one acre of construction that also require a NPDES stormwater construction general permit, submittal of the Notice of Intent to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities, DEP Form 62-621.300(4)(b), shall also serve as notice of commencement of construction under this chapter and, in such a case, submittal of Form 62-330.350(1) is not required.
  - e. 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.
  - f. 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:
    1. 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
    2. For all other activities - "As-Built Certification and Request for Conversion to Operation Phase" [Form 62-330.310(1)].
    3. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.
  - g. If the final operation and maintenance entity is a third party:

1. 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 12.3.4 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.
  2. 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 and Maintenance 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.
- h. 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.
- i. This permit does not:
1. 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.;
  2. Convey to the permittee or create in the permittee any interest in real property;
  3. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
  4. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.
- j. 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.
- k. 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.
- l. The permittee shall notify the Agency in writing:
1. Immediately if any previously submitted information is discovered to be inaccurate; and
  2. 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.
- m. 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.
- n. 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. (2012).

- o. 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.
  - p. 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.
  - q. 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.
  - r. A 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.
2. In addition to those general conditions in subsection (1) above, the Agency shall impose any additional project-specific special conditions necessary to assure the permitted activities will not be harmful to the water resources, as set forth in Rules 62-330.301 and 62-330.302, F.A.C., Volumes I and II, as applicable, and the rules incorporated by reference in this chapter.

SOUTHWEST FLORIDA  
WATER MANAGEMENT DISTRICT

**NOTICE OF  
AUTHORIZATION  
TO COMMENCE CONSTRUCTION**

Millennium Park Phase 1 & 2

PROJECT NAME

Government

PROJECT TYPE

Sumter

COUNTY

S08/T19S/R23E

SEC(S)/TWP(S)/RGE(S)

City of Wildwood

PERMITTEE

APPLICATION ID/PERMIT NO: 863525 / 43024404.003

DATE ISSUED: April 01, 2023



David Kramer, P.E.

Issuing Authority

**THIS NOTICE SHOULD BE CONSPICUOUSLY  
DISPLAYED AT THE SITE OF THE WORK**



## Notice of Rights

### ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of state-owned submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28-106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at [www.flrules.org](http://www.flrules.org) or at the District's website at [www.WaterMatters.org/permits/rules](http://www.WaterMatters.org/permits/rules).
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 Highway 301 North, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 367-9776. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at [www.WaterMatters.org/about](http://www.WaterMatters.org/about).

## **JUDICIAL REVIEW**

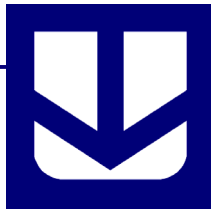
1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.



## **APPENDIX B**

### **Geotechnical Data**

- Millennium Park Improvements - Pavement and Stormwater Management System, prepared by Universal Engineering Sciences (UES), Project No. 0230.2200011.0000, Report No. 1937594, dated March 9, 2022
- Millennium Park Improvements - Phase II, prepared by Universal Engineering Sciences (UES), Project No. 0230.2200116.0000, Report No. 1975132, dated September 15, 2022



# **UNIVERSAL ENGINEERING SCIENCES**

## **REPORT OF GEOTECHNICAL CONSULTING SERVICES**

**Millennium Park Improvements  
Pavement and Stormwater Management System  
6500 Powell Road  
Wildwood, Sumter County, FL**

**UES Project No. 0230.2200011.0000  
UES Report No. 1937594**

**Prepared for:**

CPH Corp.  
500 West Fulton Street  
Sanford, Florida 32771  
(407) 322-6841

**Prepared by:**

Universal Engineering Sciences, LLC  
4475 SW 35<sup>th</sup> Terrace  
Gainesville, Florida 32608  
(352) 372-3392

March 9, 2022



# UNIVERSAL ENGINEERING SCIENCES

Consultants in: Geotechnical Engineering • Environmental Engineering  
Construction Materials Testing • Threshold Inspection • Private Provider Inspection

LOCATIONS:  
Atlanta  
Daytona Beach  
Fort Myers  
Fort Pierce  
Gainesville  
Jacksonville  
Kissimmee  
Leesburg  
Miami  
Ocala  
Orlando (Headquarters)  
Palm Coast  
Panama City  
Pensacola  
Rockledge  
Sarasota  
Tampa  
West Palm Beach

March 9, 2022

CPH Corp.  
500 West Fulton Street  
Sanford, Florida 32771

Attention: Mr. Tyler Fitzgerald, E.I.

Reference: **Report of Geotechnical Consulting Services**  
Millennium Park Improvements  
Pavement & Stormwater Management System  
6500 Powell Road  
Wildwood, Sumter County, Florida  
UES Project No. 0230.2200011.0000 UES Report No. 1937594

Dear Mr. Fitzgerald:

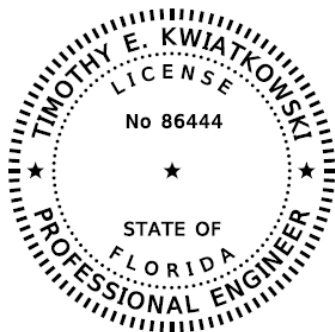
Universal Engineering Sciences, LLC (UES) has completed the geotechnical exploration program for this project in accordance with the authorized scope of services as summarized in UES Proposal No. 1920509, dated December 20, 2021.

This report presents the results of our subsurface field exploration and laboratory soil testing programs, and recommendations for the proposed stormwater management system and pavement design.

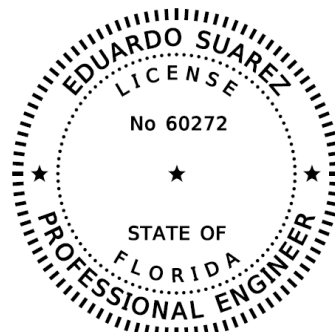
We appreciate the opportunity to have assisted you on this project and look forward to a continued association. Please do not hesitate to contact our office if you should have any questions, or to assist your office with the remaining phases of project design and construction.

Respectfully submitted,

**UNIVERSAL ENGINEERING SCIENCES, LLC**  
Certificate of Authorization 549



Timothy E. Kwiatkowski, P.E.  
Project Geotechnical Engineer  
Florida P.E. No. 86444



Eduardo Suarez  
2022.03.09 17:52:17  
-05'00'

Eduardo Suarez, P.E.  
Senior Geotechnical Engineer  
Florida P.E. No.60272

This item has been electronically signed and sealed by Eduardo Suarez, PE on the date adjacent to the seal using Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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## **1.0 INTRODUCTION**

### **1.1 GENERAL**

In this report, we have presented the results of the subsurface exploration of the site for the proposed parking/access driveway improvements, and stormwater management system for the existing Millennium Park in Wildwood, Sumter County, Florida. We have divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we found
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- APPENDICES - Presents support materials referenced in this report

## **2.0 SCOPE OF SERVICES**

### **2.1 PROJECT DESCRIPTION**

The project consists of proposed parking/access driveway improvements, and stormwater management areas of the existing Millennium Park, located at 6500 Powell Road in Wildwood, Sumter County, Florida.

Project information was provided by CPH Corp., and included the Concept Plan with the locations of the proposed improvements and soil borings, and contours across the existing site. Site topography along the project site is typically gently rolling to rolling, with elevations ranging from approximately +80 to +50 feet.

Our office was not provided with any other construction-related information other than that discussed herein. If our understandings and assumptions of project issues are incorrect, our conclusions and recommendations will not be considered valid until we have had the opportunity to review all pertinent issues. If our assumptions are incorrect, we should be advised so that we may review our engineering evaluations, conclusions and recommendations. The above constitutes all of the project information provided to our office at the time of this Report preparation.

### **2.2 PURPOSE**

The purpose of this exploration was:

- To explore the prevailing site subsurface conditions within the proposed parking/access driveway areas, and stormwater management system,
- To perform a series of laboratory tests on selected subsurface soil specimens, recovered from the field exploration program to assist with engineering soil classifications, relevant soil strength and engineering properties,
- To classify and stratify the various soil strata encountered in the soil test borings,
- To evaluate and discuss the groundwater level in the area of the exploration and make appropriate recommendations,

- To discuss technical suitability of subgrade soils for pavement section support and provide parameters for pavement design,
- Recommend appropriate subsurface soil design parameter values for the design of the on-site stormwater management system.

This report presents an evaluation of site conditions based on traditional geotechnical procedures for site characterization. The recovered samples were not examined, visually or analytically, either for chemical composition or for environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

Our exploration was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for surface expression of deep geological conditions, such as sinkholes. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an investigation to evaluate the probable effect of the regional geology upon the proposed construction, if you desire.

## **2.3 FIELD EXPLORATION**

The field-testing activities started on February 24, 2022 and were completed on February 25, 2022. Our field exploration consisted of performing nine (9) soil test borings advanced to depths of 10 feet along the parking and access driveway improvement areas, and five (5) soil test borings to depths of 15 feet below the proposed stormwater management areas. The subsurface conditions within the proposed stormwater management areas were explored with Standard Penetration Test (SPT) borings in accordance with ASTM D-1586, and the proposed roadway construction borings were performed with auger borings in accordance with the procedures of ASTM D-1452.

The actual tests locations shown are approximate and were staked in the field by UES personnel using existing landmarks and site features. The boreholes were backfilled to grade upon field work completion. The approximate locations of the borings are shown in the Report of Borings, **Appendix A**. It should be noted that soil conditions may vary between soil test boring locations, and between the subsurface soil strata interfaces, which have been presented on the Report of Borings. The soil test boring data reflect information from the specific test locations only. All boreholes were backfilled upon fieldwork completion. The subsurface soil conditions found in the soil test borings are presented in **Appendix A**.

### **2.3.1 Standard Penetration Test (SPT) Borings**

Penetration tests were performed in accordance with ASTM Procedure D-1586, Penetration Test and Split-Barrel Sampling of Soils. This test procedure generally involves driving a 1.4-inch I.D. split-tube sampler into the soil profile in six inch increments for a minimum distance of 18 inches using a 140-pound hammer free-falling 30 inches. The total number of blows required to drive the sampler the second and third 6-inch increments is designated as the N-value, and provides an indication of in-place soil strength, density and consistency.

### **2.3.2 Roadway Auger Borings**

The auger borings were performed by advancing a solid stem auger into the subgrade in a manner that reduces soil disturbance. The soil profile is determined by inspecting the cuttings recovered on the auger flights.

Representative portions of the subsurface soil samples recovered were transported to our Gainesville soils laboratory. The soil samples were visually classified by an experienced geotechnical engineer. Samples obtained from the soils encountered are kept in containers and will be held in our laboratory for your inspection for 60 days and then discarded, unless we are notified otherwise. The results of the classification and stratification have been shown on the attached Report of Borings and summarized later in this Report. It should be noted that soil conditions might vary between soil test boring locations, and between the subsurface soil strata interfaces, which have been shown on the Report of Borings. The soil test boring data reflect information from the specific test locations only.

## **2.4 LABORATORY SOIL TESTING**

### **2.4.1 Visual Classification**

The soil samples recovered from the soil test borings were returned to our Gainesville soils laboratory, where a geotechnical engineer visually examined them and reviewed the field descriptions in accordance with ASTM D-2488. We then selected representative soil samples for laboratory testing. Using the results of the laboratory soil tests, our visual examination, and review of field Boring Logs we classified the roadway borings in accordance with the current AASHTO Soil Classification System.

### **2.4.2 Index Testing**

Laboratory testing was performed on selected samples of the soils encountered in the field exploration to better define soil composition and properties. Testing performed in accordance with ASTM procedures determined the percent fines (ASTM D-1140), Permeability (ASTM D-2434), Atterberg Limits (ASTM D-4318), and Natural Moisture Contents (ASTM D-2216). The results of the laboratory tests are presented in **Appendix B**, Summary of Laboratory Test Results.

## **3.0 FINDINGS**

### **3.1 LITERATURE REVIEW**

We reviewed commonly available references for general information about the property along the possible roadway alignment.

#### **3.1.1 Regional Geology**

The general geology of Sumter County is characterized by a surface veneer of Pleistocene and Pliocene sands and sandy clays overlying the Miocene-age Hawthorn Group. The Hawthorn Group includes a highly variable mixture of interbedded quartz sands, clays, carbonates, pebbles and grains occurring with thicknesses of up to 150 feet. The surface of the upper Floridan Aquifer in the general project site area is estimated in the elevation range of +50 to +60 feet, NGVD.

#### **3.1.2 Topography**

Site topography within the project site is typically gently rolling to rolling, with elevations ranging from approximately +80 to +50 feet, sloping towards the southwest side of the project site.

### **3.1.3 General Area Soils Information**

The United States Department of Agriculture (USDA) *Soil Survey of Sumter County Area, Florida* describes the near-surface soil profile at the locations of the proposed parking improvements and stormwater management areas as Millhopper, Kendrick, EauGallie, and Apopka sands. Relevant characteristics for the soils are provided in Table 1 below.

<b>Table 1 – Relevant Engineering Index Properties</b>					
Soil Type	Unified Soil Classification	Plasticity Index	Seasonal High Water Table	Shrink-Swell Potential	Soil Permeability (in/hr)
Millhopper Sand	(0-50") SP-SM, SM (50-80") SM, SM-SC, SC	Non-plastic Non-plastic to 10	3.5 to 6 feet (Perched)	Low Low	6.0 to 20 0.06 to 2.0
Kendrick Sand	(0-33") SP-SM, SM (33-68") SM-SC, SC (68-80") SC	Non-plastic 4 to 18 9 to 20	> 6 feet	Low Low Low	6.0 to 20 0.6 to 6.0 0.06 to 2.0
EauGallie Sand	(0-8") SP (8-25") SP (25-36") SP-SM, SM (36-57") SP, SP-SM (57-80") SM, SM-SC, SC	Non-plastic Non-plastic Non-plastic Non-plastic Non-plastic to 16	0 to 1 (Apparent)	Low Low Low Low Low	6.0 to 20 6.0 to 20 0.6 to 6.0 6.0 to 20 0.2 to 0.6
Apopka Sand	(0 – 54") SP, SP-SM (54 – 80") SM-SC, SC	Non-plastic 4 to 20	> 6 feet	Low Low	6.0 to 20 0.6 to 2.0

### **3.1.4 Potentiometric Map Information**

Information obtained from the USGS Potentiometric Surface Map dated May 2009 suggests the potentiometric level of the Floridan Aquifer in the general area of the project site to be in the elevation range of +50 to +60 feet, NGVD.

### **3.2 SURFACE CONDITIONS**

Our on-site observations have been summarized as follows. At the time of our exploration, the project parcel was developed with existing park facilities. Exposed surface soils were observed to be sandy and dry. Surface organic soils, surface debris, or rock outcroppings were not observed on the project site.

### **3.3 SUBSURFACE CONDITIONS**

The soil test borings performed within the proposed roadway construction and proposed stormwater management areas were reviewed to evaluate the subsurface soil strata lateral continuity and uniformity. Soil classifications and descriptions for this geotechnical study are based both on the results of the laboratory soil testing programs and on visual examinations of soil specimens by the Geotechnical Engineer.

#### **3.3.1 Proposed Stormwater Management Areas**

Five (5) soil test borings, were performed within the limits of the proposed stormwater management areas, and were advanced to a depth of 15 feet below existing grades. The soil test borings generally encountered loose sand to sand with silt [SP/SP-SM]/[A-3] to depths of 2.5 to 4 feet below existing grades, followed by clayey sand [SC]/[A-2-6] to sandy clay [CH]/[A-7] to the maximum boring termination depth of 15 feet below ground surface.

### **3.3.2 Roadway Construction**

Nine (9) soil test borings were performed within the limits of the proposed roadway areas, and were advanced to a depth of 10 feet below existing grades. The soil test borings encountered sand to sand with silt [SP/SP-SM]/[A-3] to depths of 0 to 6 feet followed by silty-clayey sands [SM-SC/SC]/[A-2-4/A-2-6] to sandy clay [CH]/[A-7] to the boring termination depths of 10 feet below existing grades.

### **3.4 MEASURED GROUNDWATER LEVELS**

The groundwater level was not encountered in the soil test boring locations at the time of the field exploration program. Fluctuations of groundwater level conditions along the project alignment should be expected to occur seasonally as result of rainfall, surface runoff, nearby construction activities, and other factors. Absence of groundwater level data in the test borings implies that no groundwater was apparent within the explored depths at the time of soil test boring work completion, but does not necessarily mean that groundwater will not be encountered at these locations or within the vertical reaches of these boring locations in the future. It is possible that insufficient time was allowed for groundwater recharge into the open boreholes, in light of the prevailing soil conditions.

### **3.5 LABORATORY TESTING**

The soil samples recovered from the field exploration program were placed in plastic containers and returned to our soils laboratory, where the Geotechnical Engineer visually examined and classified the samples. Laboratory soil tests were performed to aid in the classification of the soils, and to help in the evaluation of engineering characteristics of the soils. Representative soil samples were selected for percent fines determination, moisture content, Atterberg Limits, and permeability testing.

#### **3.5.1 Percent Passing U.S. No. 200 Sieve**

Certain recovered soil samples were selected to determine the percentage of fines. In these tests the soil sample was dried and washed over a U.S. No. 200 mesh sieve. The percent of soil by weight passing the sieve was the percentage of fines or portion of the sample in the silt and clay size range. This test was conducted in accordance with ASTM Procedure D-1140, *Standard Test Methods for Amount of Material in Soils Finer than the No. 200 Sieve*.

#### **3.5.2 Moisture Content**

Certain recovered soil samples were selected to determine the moisture content. These tests were conducted in accordance with ASTM Procedure D-2216. The soil moisture content was the ratio of the weight of water in the soil mass to the dry weight of the soil mass. Moisture content was measured by drying the moist material to a constant mass in a drying oven controlled at 105 degrees Celsius and to use this value as the mass of water in the test specimen. The moisture content was expressed as a percent of the oven dried soil mass.

#### **3.5.3 Permeability-Index Testing**

Representative soil samples were selected to determine the permeability rates of the soil. Constant head permeability tests were performed on representative samples of the near surface soils from the proposed stormwater management area. These tests were conducted following

the concepts outlined in ASTM D-2434, *Standard Test Method for Permeability of Granular Soils* (Constant Head).

### **3.5.4 Atterberg Limits**

Certain recovered soil samples were selected for Atterberg Limits testing to evaluate the soil plasticity characteristics. The soil's Plasticity Index (PI) is the range of moisture content over which the soil deforms as a plastic material. It is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The LL is the moisture content at which the soil will flow as a heavy viscous fluid. The PL is the lowest moisture content at which the soil is sufficiently plastic so as to be manually rolled into a 1/8-inch diameter thread. These tests were conducted in accordance with *ASTM Procedure D-4318, Standard Test Methods for LL, PL and Plasticity Index of Soils*.

## **4.0 EVALUATION AND RECOMMENDATIONS**

### **4.1 GENERAL**

The following recommendations are made based upon a review of our site observations, the attached soil test data, our understanding of the proposed construction and experience with similar projects and subsurface conditions. If the project information is incorrect or should the alignment of the roadway, embankment elevations or pond areas change, please contact us so we can review our recommendations. The discovery of any site or subsurface conditions during construction, which deviate from the data obtained during this geotechnical exploration, should also be reported to us for our evaluation.

### **4.2 SOIL SUITABILITY FOR ROADWAY EMBANKMENT**

The results of our exploration indicate the soil conditions encountered in the borings are suitable for construction and support of the proposed roadway with the exceptions listed below.

#### **A-2-6 & A-6 (SC) Soils**

These soils are plastic materials and should be removed as required by FDOT Standard Plans Index 120-002.

#### **A-7 (CH) Soils**

These soils are highly plastic materials and should be removed as required by FDOT Standard Plans Index 120-002.

### **4.3 GROUNDWATER CONSIDERATIONS**

#### **4.3.1 Existing Groundwater Level**

The groundwater level was not encountered in the soil test boring locations at the time of the field exploration program. It should be noted that the groundwater levels may not have been fully stabilized in the boreholes when the readings were taken upon boring work completion. Fluctuations of groundwater level conditions on this project parcel should be expected to occur seasonally as a result of rainfall, surface runoff, nearby construction activities, and other factors.

#### **4.3.2 Estimated Seasonal High Groundwater Level**

The typical wet season groundwater level is defined as the highest groundwater level sustained for a period of 2 to 4 weeks during the "wet" season of the year, for existing site conditions, in a year with average normal rainfall amounts. Based on historical data, the rainy season in North Central Florida typically occurs between June and September.

As mentioned previously, we found shallow deposits of clayey sands and sandy clays across the site during our site exploration. Due to the poor permeability characteristics of these clayey soils, these soils tend to act as an aquiclude (a sediment through which groundwater cannot pass) to the natural infiltration of the rainwater. Therefore, surface water will most likely temporarily perch on top of these relatively impermeable soils causing isolated areas with temporary groundwater levels significantly higher during periods of heavy rainfall or artificial irrigation.

Based upon our review of regional hydrogeology and the Sumter County Soil Survey, we estimate the normal seasonal high groundwater level will occur, perched on the underlying silty-clayey soils at the boring locations. The perched groundwater will be a transient condition, directly related to rainfall and site grading. Isolated areas with a transient perched groundwater should be expected.

It is important to note that the pre-development and post-development transient perched seasonal high groundwater levels will be a function of the elevation location of the top of the aquiclude (SC, CH) and will generally occur above the top of the aquiclude, where present or where created by site grading. Perched groundwater levels can generally be expected to occur at the ground surface above the top of the hydraulically restrictive soils, where present, if the groundwater level is unable to drain and/or percolate into a more pervious layer. It should be noted that undercutting of the hydraulically restrictive materials will impact the depth of the perched water level. The potential for groundwater to perch will be directly related to rainfall and irrigation amounts, as well as site grading. The potential for transient perched groundwater levels must be considered during the design of the site grades and during construction.

It should be noted however that peak stage elevations immediately following various intense storm events, may be somewhat higher than the estimated typical wet season levels. Further, it should be understood that changes in the surface hydrology and subsurface drainage from on-site or off-site improvements could have significant effects on the normal and seasonal high groundwater levels.

#### **4.4 ROADWAY CONSTRUCTION CONSIDERATIONS**

We recommend positive drainage be established and maintained on the site during construction. During construction, due to possible high groundwater levels, temporary dewatering may be required for earthwork pipe fill as well as embankment construction along the length of the project. We recommend the groundwater table be maintained a minimum of 2 feet below all earthwork surfaces.

Roadway construction should be performed in general accordance with the appropriate section of the current edition of the FDOT Standard Specifications for Road and Bridge Construction. The removal of unsuitable soils and embankment construction should be performed in accordance with FDOT Standard Plans Indices 120-002 and 120-001, respectively.

Soils identified as A-3 (SP/SP-SM) materials are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001.

Soils identified as A-2-4 (SP-SM/SM) materials are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001. However, the material is likely to retain excess moisture and be difficult to dry and compact.

Soils identified as A-2-6 and A-6 (SC) materials, are plastic soils and are not considered suitable for roadway support. These soils are moisture sensitive, difficult to compact, and should be removed in accordance with FDOT Standard Plans Index 120-002. However, the material may be used as fill material in embankments when utilized in accordance with FDOT Standard Plans Index 120-001.

Soils identified as A-7 (CH) materials are highly plastic soils and are not considered suitable for roadway support. These soils are moisture sensitive, difficult to compact, and should be removed in accordance with FDOT Standard Plans Index 120-002.

## **4.5 PAVEMENTS**

### **4.5.1 General**

A rigid or flexible pavement section could be used on this project. Flexible pavement combines the strength and durability of several layer components to produce an appropriate and cost-effective combination of available construction materials. Concrete pavement has the advantage of the ability to “bridge” over isolated soft areas, it requires less security lighting, and it typically has a longer service life than asphalt pavement. Disadvantages of rigid pavement include an initial higher cost and more difficult patching of distressed areas than occurs with flexible pavement.

We assume that a combination of flexible asphaltic and rigid concrete pavement sections will be used for the new pavement areas on this project. Our recommendations for both pavement types are listed in the following sections. The following recommendations are based on the pavement areas being prepared as recommended in this report.

At the time of this exploration, specific traffic loading information was not provided to us. We have assumed the following conditions for our recommended minimum pavement design.

- the subgrade soils are prepared as described in this report
- a twenty (20) year design life
- terminal serviceability index ( $P_t$ ) of 2.5
- reliability level of 95 percent
- total equivalent 18 kip single axle loads ( $E_{18}SAL$ ) up to 100,000 for light duty pavements – primarily car and pickup truck traffic (parking stalls)
- total equivalent 18 kip single axle loads ( $E_{18}SAL$ ) up to 250,000 for heavy duty pavements – occasional heavy truck traffic (entrance drives, services lanes, etc.)

The available subsurface data suggests that the subgrade soils in these areas consist of relatively clean sands followed by clayey sands to sandy clays in the shallow subsurface profile. Soil materials classified as sand to sand to sand with silt [SP/SP-SM]/[A-3] are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with



FDOT Standard Plans Index 120-001. Soil materials classified as silty sand [SM]/[A-2-4] are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001. However, the material is likely to retain excess moisture and be difficult to dry and compact.

We recommend removing clayey materials [A-2-6/A-6/A-7] in accordance with FDOT Standard Plans Index 120-002. We recommend proof-rolling of the exposed subgrade to help determine area that may need to be undercut. Positive drainage around the roadway/driveway areas should be established to prevent irrigation and stormwater from migrating into the pavement area.

#### **4.5.2 Asphalt (Flexible) Pavements**

Based on the results of our soil borings, the assumed traffic loading information and review of the FDOT Flexible Pavement Design Manual, our minimum recommended pavement component thicknesses for new construction are presented in Table 2.

<b>Table 2 – Minimum Asphaltic Pavement Component Thickness</b>				
<b>Service Level</b>	<b>Maximum Traffic Loading</b>	<b>Layer Component</b>		<b>Estimated Structural Number *</b>
		<b>Surface Course (inches)</b>	<b>Base Course (inches)</b>	
Light Duty	up to 100,000 E <sub>18</sub> SAL	1½	6	2.54
Heavy Duty	up to 250,000 E <sub>18</sub> SAL	2	8	3.12

\* Estimated structural number is based on 10 inches of stabilized subgrade below the base course.

##### **4.5.2.1 Stabilized Subgrade**

We recommend that subgrade materials be compacted in place according to the requirements in the “Site Preparation for the New Pavement Areas” section of this report. Further, beneath the limerock base course, stabilize the subgrade materials to a minimum Limerock Bearing Ratio (LBR) of 40, as specified by Florida Department of Transportation (FDOT) requirements for Type B Stabilized Subgrade. The subgrade material should be compacted to at least 98 percent of the modified Proctor maximum dry density (AASHTO T-180).

The stabilized subgrade can be a blend of existing soil and imported material such as limerock. If a blend is proposed, we recommend that the Contractor perform a mix design to find the optimum mix proportions.

The primary function of stabilized subgrade beneath the base course is to provide a stable and firm subgrade so that the limerock can be properly and uniformly placed and compacted. Depending upon the soil type, the subgrade material may have sufficient stability to provide the needed support without additional stabilizing material. Generally, sands with silt or clay should have sufficient stability and may not require additional stabilizing material. Conversely, relatively “clean” sand will not provide sufficient stability to adequately construct the limerock base course. Universal Engineering Sciences should observe the soils exposed on the finish grades to evaluate whether or not additional stabilization will be required beneath the base course.

##### **4.5.2.2 Base Course**

We recommend the base course consist of limerock. The limerock base course should have a minimum Limerock Bearing Ratio (LBR) of 100 and should be compacted to 98 percent of the modified Proctor maximum dry density (AASHTO T-180).

As an alternative base course, crushed concrete could be used. An advantage to using crushed concrete is a lower sensitivity to water than what occurs with limerock. The main disadvantage is that crushed concrete may not be available at the time of construction.

Crushed concrete should be supplied by an FDOT approved plant with appropriate quality control procedures. The crushed concrete stockpile should be free of sandy pockets, foreign materials, or uncrushed particles. We recommend the following specifications be enforced.

1. Crushed concrete shall not contain extremely hard pieces, lumps, balls or pockets of sand or clay sized material in sufficient quantity as to be detrimental to the proper binding, finishing or strength of the crushed concrete base.
2. Samples of base course materials shall be supplied to the Engineer prior to use in the work. Additional samples shall be furnished during construction, as necessary.
3. At least 97 percent (by weight) of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. The fine material shall consist entirely of dust or fracture. All crushing or breaking-up which might be necessary in order to meet such size requirements shall be done before the material is placed within the area to be paved.
4. The base shall be bladed and shaped to conform to the typical sections shown on the plans. Then the base shall be compacted by rolling with a combination of steel wheel and rubber tired rollers until a minimum density of at least 98 percent of the maximum density obtainable under AASHTO T-180 is reached. The base shall have an average LBR of not less than 100. The LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.
5. Testing shall be performed at the following frequencies:
  - Perform in-place density on crushed concrete base at a frequency of 1 test per 300 linear foot of roadway or 5,000 square feet of pavement.
  - Perform Limerock Bearing Ratio tests at a frequency of 1 test per visual change in material and a minimum of 1 test per 15,000 square feet of pavement.
  - Engineer should perform a final visual base inspection prior to placement of prime or tack coat and paving.

Regardless of the base type selected, a minimum of 2 feet separation should be maintained between the bottom of the base course and the clayey soils. If necessary, the minimum separation can be obtained by undercutting the clays or filling the site.

#### **4.5.2.3 Wearing Surface**

The wearing surface should consist of Florida Department of Transportation (FDOT) Type SP asphaltic concrete. Specific requirements for Type SP asphaltic concrete wearing surface are outlined in the Florida Department of Transportation (FDOT), *Standard Specifications for Road and Bridge Construction, current Edition*.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and to perform laboratory densities. Cores should be obtained at frequencies of at least one core per 10,000 square feet of placed pavement or a minimum of two cores per day's production.

#### **4.5.3 Effects of Groundwater**

One of the most critical factors influencing pavement performance in North Central Florida is the relationship between the pavement subgrade and the normal seasonal high groundwater level. Many roadways and parking areas have been damaged as a result of deterioration of the base conditions and/or the base/surface course bond. We recommend that the normal seasonal high groundwater level and the bottom of the flexible pavement limerock base course be separated by at least 24 inches. We recommend a separation of at least 18 inches below the bottom of a flexible pavement with a crushed concrete base. If this separation cannot be established and maintained by grading and surface drainage improvements, permanent groundwater control measures (underdrains) will be required.

#### **4.5.4 Curbing**

Typical curbing is extruded and placed atop the asphaltic concrete surface. This type of curbing does not act as a horizontal cutoff for lateral migration of storm and irrigation water into the base material and as a result of this it is not uncommon for base and subgrade materials adjacent to these areas to become saturated, promoting subsequent localized pavement deterioration. Consequently, we recommend that most pavements abutting irrigated landscape areas be equipped with an underdrain system that penetrates a minimum depth equivalent to the bottom of the stabilized subgrade to intercept trapped shallow water and discharge it into a closed system or other acceptable discharge point.

Alternatively, curbing around landscaped sections adjacent to the parking lots and driveways could be constructed with full-depth curb sections to reduce horizontal water migration. However, underdrains may still be recommended dependent upon the soil type and spatial relationships. UES should review final grading plans to evaluate the need and placement of pavement and landscape underdrains.

#### **4.5.5 Concrete (Rigid) Pavement**

Concrete pavement is a rigid pavement that is strong, durable and handles the heavy loads more effectively than asphalt pavement.

We recommend using the existing surficial sands [SP-SM] or approved structural fill densified to at least 95 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization under concrete pavement, with the following stipulations:

1. Prior to placement of concrete, the subgrade soils should be densified as recommended in Section 4.5.7 of this report.
2. The surface of the subgrade soils must be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.
3. The subgrade soils must be moistened prior to placement of concrete.

4. Concrete pavement thickness should be uniform throughout, with exception to the thickened edges (curb or footing).
5. The bottom of the pavement should be separated from the seasonal high groundwater level by at least 12 Inches.
6. We do not recommend the use of a limerock base course directly below the concrete pavement area.

Based on review of the FDOT Rigid Pavement Design Manual and provided that the site is prepared as recommended in this report, we recommend using the minimum design shown in Table 3 for concrete pavements.

<b>Table 3 – Minimum Concrete Pavement Thickness</b>			
<b>Maximum Traffic Loading</b>	<b>Minimum Pavement Thickness</b>	<b>Maximum Control Joint Spacing</b>	<b>Recommended Saw Cut Depth</b>
up to 250,000 E <sub>18</sub> SAL	6 inches	12 feet x 12 feet	2 inches

For loading conditions greater than those presented in Table 3, we recommend that you have a complete pavement design performed based on projected traffic data.

We recommend using concrete with a minimum 28-day compressive strength of at least 4000 pounds per square inch. Layout of the saw cut control joints should form square panels, and the depth of Saw cut joints should be made to a depth of 1/3 of the concrete slab thickness. We recommend allowing Universal to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing of Non-Reinforced Concrete Pavements" published by the Florida Concrete and Products Association, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

Specimens should be obtained to verify the compressive strength of the pavement concrete at least every 50 cubic yards, or at least once for each day's placement, whichever is greater.

**4.5.6 Construction Traffic**

Light duty roadways and incomplete pavement sections will not perform satisfactorily under construction traffic loadings. We recommend that construction traffic (construction equipment, concrete trucks, sod trucks, garbage trucks, dump trucks, etc.) be re-routed away from these roadways or that the pavement section is designed for these loadings.

**4.5.7 Site Preparation for the New Pavement Areas**

Following is a list of our recommended site preparation procedures to prepare the new pavement areas for the proposed construction.

1. Strip the pavement areas of any roots, vegetation, debris, organics, etc. Stripping should be performed at least 3 feet beyond pavement edges. We recommend that the stripped surface be observed and probed by representatives of Universal.

2. Following site clearing, grubbing and rough grading, the pavement areas should be proof-rolled using a large, fully loaded rubber-tired vehicle (dump truck) or similar equipment. Proof-rolling will help locate any surficial zones of especially loose or soft or unsuitable soils not encountered in the soil test borings, and should help provide more uniformity in the sandy subsurface soil profile. Unusual or unanticipated conditions identified during this process must be immediately brought to the attention of the UES Geotechnical Engineer. Field density testing is not required during proof-rolling operations.
3. We recommend undercutting clayey soils to a depth of 24 inches below the bottom of the base course in accordance with FDOT Standard Plans Index 120-002. Within the pavement areas, compact the exposed soils to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557) to a depth of at least 1 foot below the stripped surface and full depth of fill, or at least 2 feet below the bottom of base course (or concrete pavement) level, whichever is greater. Please note that the surficial soils within the new parking and roadway areas may contain varying quantities of silt and clay. These silty/clayey soils tend to readily hold moisture and may require more stringent compactive efforts than clean fine sands.
4. Soil density testing to verify the uniformity of compactive efforts should be performed at a frequency of at least one (1) test for every 5,000 square feet per foot of compacted increment, or at a minimum of two test locations, whichever is greater.
5. Prior to the placement of the base course within the asphaltic pavement areas, stabilize the subgrade to a depth of 10 inches by "pounding" limerock into the soils to provide a stable and firm surface so that the base course can be properly and uniformly placed. The subgrade should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557).

Positive drainage around the roadway, parking areas must be established to prevent irrigation and stormwater from migrating into the pavement area. If needed underdrains should be installed to prevent water from migrating beneath the pavement.

Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause distress to adjacent structures if not properly regulated. Provisions should be made to monitor these vibrations so that any necessary modifications in the compaction operations can be made in the field before potential damages occur.

#### **4.6 STORMWATER MANAGEMENT AREAS**

The laboratory test data indicates that the surficial sandy soils in the proposed stormwater management area for this project generally has permeability rates of 1 to 13 feet per day at the boring locations. Based upon the above findings, we recommend that you consider the soil parameters presented in Table 4 for design of the stormwater management system on the subject project site. It should be noted that the above referenced values are measured values and do not incorporate factor of safety. In addition, modeling of the ponds should include consideration of the influence of adjacent ponds and the difference in elevations.

<b>Table 4 – Stormwater Management Area Soil Design Parameters</b>					
Corresponding Soil Boring Test Locations	P-1	P-2	P-3	P-4	P-5
Approximate Average Ground Surface Elevations, feet	65	64	70	73	75
Estimated Average Depth to Confining/Restrictive Layer, feet <sup>2</sup>	2.5	2.5	4	4	4
Average Elevation of base of mobilized or effective aquifer, feet	62.5	61.5	66	69	71
Unsaturated Vertical Infiltration Rate, feet per day	8	0.8	9	8	10
Estimated Horizontal Hydraulic Conductivity, feet per day <sup>2</sup>	13	1.3	14	13	17
Estimated Fillable Porosity, percentage	25	20	25	25	25
Estimated Average Depth of Seasonal High Water Table, feet <sup>1</sup>	63	62	66.5	69.5	71.5
Estimated Average Elevation of Seasonal High Water Table, feet <sup>1</sup>	2	2	3.5	3.5	3.5

<sup>1</sup>Normal seasonal high water table (SHWT) will be the result of perched conditions caused by the underlying clayey soils.

<sup>2</sup>It should be noted that over-excavation of the clayey soils will result in a deeper restrictive layer and consequently a deeper seasonal high groundwater level. The extent of the clayey sandy soils should become apparent at the time of the construction of the stormwater management facilities. Undercutting the clayey soils and backfilling with native sandy soils may result in an increase in vertical hydraulic conductivity; however horizontal conductivity will not be increased unless the extent of the undercutting will reach the clean sandy zones. Any kind of improvement operations must be field verified.

#### **4.7 SOIL DESIGN PARAMETER RECOMMENDATIONS**

The geotechnical information presented in Table 5 below is provided to aid the construction, and design process in the retaining wall areas, and is a representation of the soil conditions encountered.

<b>Table 5 – Soil Design Parameters Recommended<sup>1</sup></b>							
Depth Below Site Grade (ft)		Soil Description	Saturated/ Submerged Unit Weight (pcf)	Friction Angle (degrees)	Shear Strength Cohesion (psf)	Earth Pressure Coefficients	
From	To					Active K <sub>A</sub>	Active K <sub>P</sub>
<b>Soil Boring P-1</b>							
0	2.5	Loose Sand, with silt [SP-SM]	105/42.6	29	0	0.35	2.88
2.5	15 <sup>2</sup>	Very stiff Clay [CH]	115/52.6	0	875	1.00	1.00
<b>Soil Boring P-2</b>							
0	2.5	Loose Silty Sand [SM]	105/42.6	29	0	0.35	2.88
2.5	8.5	Medium dense Clayey Sand [SC]	115/52.6	32	0	0.31	3.25
8.5	13.5	Stiff Clay [CH]	120/57.6	0	1,500	1.00	1.00
13.5	15 <sup>2</sup>	Loose very Clayey Sand [SC/CH]	110/47.6	0	750	1.00	1.00

<sup>1</sup> It should be noted that the soil parameters presented above in Table 5 are ultimate values and that an appropriate factor of safety should be applied.

<sup>2</sup> Indicates strata encountered at boring termination, total thickness undetermined.

<sup>3</sup> It should be noted that the zero values represent marginal/residual values.

#### **4.8 LATERAL EARTH PRESSURES**

Earth pressures on retaining walls are influenced by structural design of walls, conditions of wall restraint, construction methods, and the strength of the materials being restrained. The most common conditions assumed for earth retaining wall design are the active and at-rest conditions.

Active conditions apply to relatively flexible earth retention structures, where some movement and rotation may occur to mobilize shear strength. Walls which are rigidly restrained, such as loading dock or service pits walls, should be designed for the at-rest condition. However, if the walls will be backfilled before they are braced by the floor slabs, they should also be designed to withstand active earth pressures as self supporting cantilever walls.

Development of the full active earth pressure case requires a magnitude of horizontal wall movement that often cannot be tolerated or cannot occur due to the rigidity of the wall and other design restrictions such as the impact on adjacent structures. In such cases, walls are often designed for either the at-rest condition or a condition intermediate of the active and at-rest conditions, depending on the amount of permissible wall movement. Passive earth pressure represents the maximum possible pressure when a structure is pushed against the soil, and is used in wall foundation design to help resist active or at-rest pressures. Because significant wall movements are required to develop the passive pressure, the total calculated passive pressure is usually reduced by one-half for design purposes.

We recommend that retaining walls be backfilled with materials deemed suitable by the retaining wall designer. Typical sandy soils [SP, SP-SM, SP-SC] have been satisfactorily used as fill for this purpose. We recommend that the soils selected for use as backfill be tested as specified by the retaining wall designer prior to commencement of wall construction.

Recommended soil parameters for design of low retaining walls for landscape features (less than 4 feet) using soils such as those found on site, are shown in Table 6.

<b>Table 6 – Lateral Earth Pressure Design Parameters (Level Backfill)*</b>	
<b>Design Parameter</b>	<b>Recommended Value</b>
At-rest Earth Pressure Coefficient, $K_0$	0.5
Active Earth Pressure Coefficient, $K_a$	0.33
Passive Earth Pressure Coefficient, $K_p$	3.0
Wet Unit Soil Weight (pounds per cubic foot - pcf)	115
Submerged Unit Weight of Soil (pcf)	52
Coefficient of Friction (sliding)	0.4
Angle of Internal Friction, $\phi$	30 degrees

\* For sloping backfill or backfill with clayey sands the table values must be adjusted.

\*\*Hydrostatic pressure should be accounted for based on seasonal high water table estimates and other site drainage considerations

The recommended lateral earth pressure coefficients do not consider the development of hydrostatic pressure behind earth retaining wall structures. As such, positive wall drainage must be provided for all earth retaining structures. These drainage systems can be constructed of open-graded washed stone isolated from the soil backfill with a geosynthetic filter fabric and

drained by perforated pipe, or with one of several wall drainage products made specifically for this application. In addition, the walls will need to be waterproofed.

Our recommendations assume that the ground surface above the wall is level and that native or imported soils consisting of clean sands will be used for wall backfill. Lateral earth pressures arising from surcharge loading should be added to the above earth pressures to determine the total lateral pressure. Additional consideration must also be given for sloped backfill at the top of the wall. In each circumstance the earth pressure coefficients for active and at-rest conditions will increase based upon the amount of surcharge and angle above horizontal of the sloped backfill.

#### **4.9 FILL SUITABILITY**

We understand that fill material resulting from the excavation activities may be reused as backfill material. We believe the onsite soils resulting from excavations will vary significantly, in terms of their suitability for use as engineered backfill and fill. The recovered soil samples were classified using visual and textural means, and limited laboratory testing. We offer the following ***preliminary guidelines*** for the use of on-site soils, such as those excavated from the proposed shallow retention areas, as fill material for the project.

Soil materials excavated and classified as fine sands to sand with silts and sand with clay [SP, SP-SM, SP-SC]/(A-3), with typically 12% fines or less (silt/clay fraction), may be considered suitable for use as utility trench backfill and pavement structural fill, provided said materials are properly dried, placed, and compacted.

Soil materials excavated and classified as silty to silty clayey fine sands [SM, SM-SC]/(A-2-4), with typically 12% to 25% fines, may also be considered suitable for use as utility trench backfill and structural fill, after significant drying and some mixing with the fine sand material described above. Proper placement, proof rolling and compaction must also be performed.

Soil materials excavated and classified as clayey sand, silt or clay [SC, ML, MH, CL, and CH]/(A-2-6 to A-7) and any organic-laden soils (5% or greater organics by weight) should not be reused as fill. These materials could be used in green areas, if applicable and in non-structural applications where excessive ground subsidence will not create functional or aesthetic problems. It should be noted that silt and clay materials will retain water and if used may become saturated and soft for a significant period of time following a rain event.

Soil borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services ***specifically*** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.



## **5.0 REPORT LIMITATIONS**

This Report has been prepared for the exclusive use of the CPH Corp., and other members of the Design/Construction Team for the specific project discussed in this Report. This Report has been prepared in accordance with generally accepted local engineering practices; no other warranty is expressed or implied.

The evaluation and recommendations submitted in this Report are based in part upon the data collected from the shallow, limited field exploration and the provided traffic data. The nature or extent of variations throughout the subsurface profile may not be fully reflected in the findings. If any changes in the design or location or elevation of the proposed construction as outlined in this Report are planned, or if any structures are included or added that are not discussed in the Report, the conclusions and recommendations contained in this Report shall not be considered valid unless the changes are reviewed and the conclusions modified or confirmed by Universal Engineering Sciences.

Because of the natural limitations inherent in working with the subsurface, it is not possible for geotechnical/geologic professionals to anticipate and predict all possible subsurface variations and their potential affect on the subject of this study. A GBA publication, "Important Information about Your Geotechnical Engineering Report" appears in **Appendix C**, and will help explain the nature of geotechnical issues. Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

# **APPENDIX A**

**Boring Location Plan**


**Boring Logs**

**Key to Boring Logs**



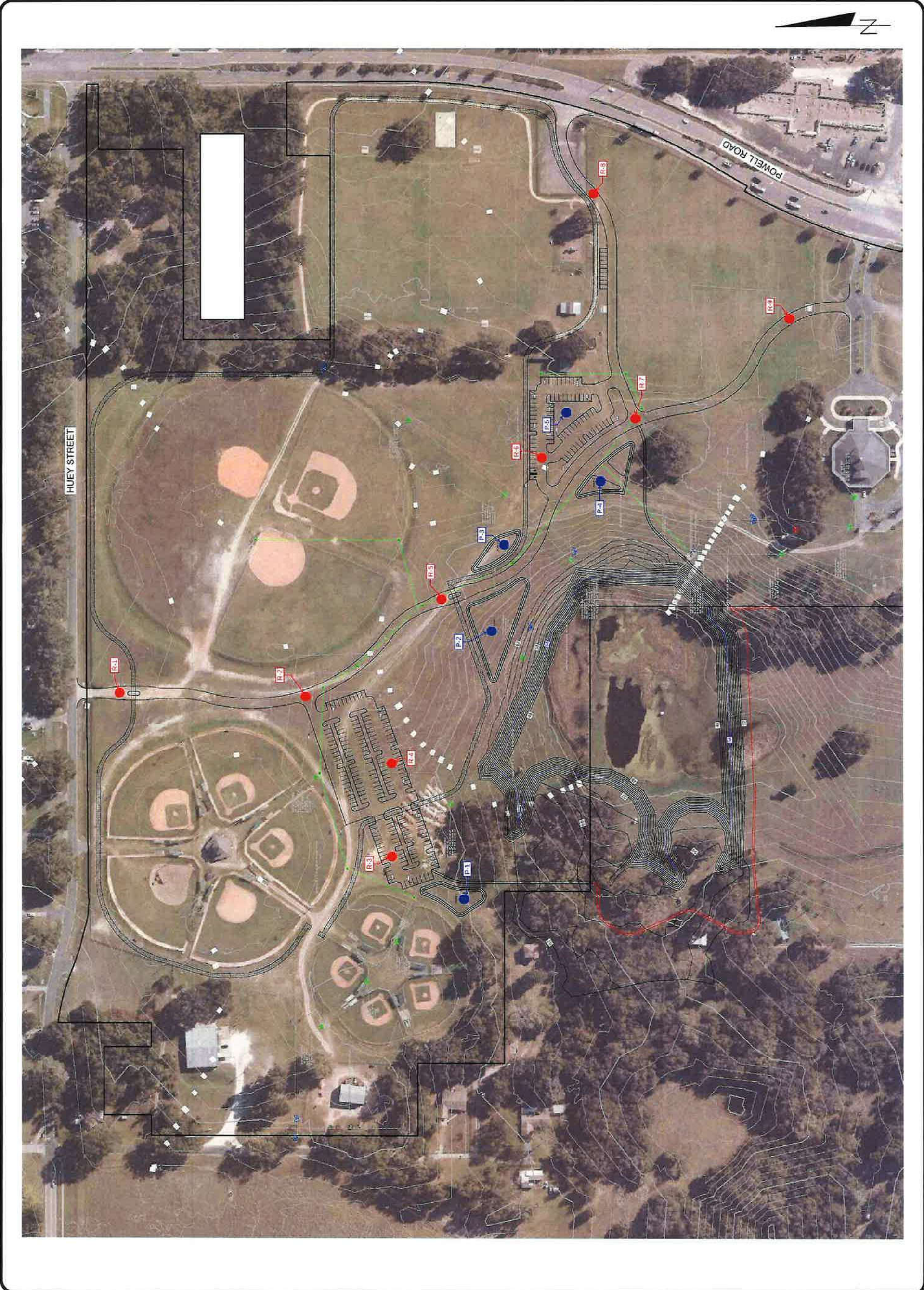
CPH, INC.	
DATE: 3/8/22	DRAWN BY: KD
DATE: 3/8/22	CHECKED BY: ES
ACADFILE: 0230.2200011-A	SCALE: NTS
REPORT NO: 1937594	PROJECT NO: 0230.2200011.0000

MILLENNIUM PARK IMPROVEMENTS  
 6500 POWELL ROAD  
 WILDWOOD, FLORIDA  
 BORING LOCATION PLAN



UNIVERSAL  
 ENGINEERING SCIENCES

PAGE NO: A-1







# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-2

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **P-1**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/24/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/24/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Loose dark brown SAND, with silt [SP-SM]						
1												
2		2-2-3	5				10	6			10	
3						Firm gray sandy CLAY [CL], with trace of limestone fragments						
4		3-3-3	6									
5												
6		3-3-3	6									
7		6-3-3	6									
8												
9		3-3-3	6			Firm to stiff green and orange CLAY [CH], with trace of limestone fragments						
10		3-2-3	5									
11												
12												
13												
14												
15		5-5-4	9			Boring Terminated at 15'						

BORING MILLENIUM PARK IMPROVEMENTS.GPJ GAINESVILLE TEMPLATE.GDT 3/8/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-3

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **P-2**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/24/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/24/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R, PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Loose dark brown silty SAND [SM]						
1												
2		2-2-2	4			Loose tan and orange clayey SAND [SC]	12	7			1	
3												
4		5-4-5	9			Medium dense light gray clayey SAND [SC]	25	17				
5												
6		6-7-9	16									
7		7-10-10	20									
8												
9		11-13-14	27			Stiff green and orange CLAY [CH]						
10		5-6-6	12									
11												
12												
13												
14						Loose gray and tan very clayey SAND [SC]						
15		3-3-3	6			Boring Terminated at 15'						

BORING MILLENIUM PARK IMPROVEMENTS.GPJ GAINESVILLE TEMPLATE GDT 3/8/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-4

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **P-3**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/24/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/24/22

REMARKS: HAND AUGERED UPPER 4'

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Dark brown SAND, with silt [SP-SM]						
1												
2												
3						Tan SAND, with silt [SP-SM]	9	5			11	
4					Medium dense gray and orange very clayey SAND [SC]							
5		5-6-6	12									
6												
7		7-7-8	15									
8												
9		7-8-9	17			Stiff gray sandy CLAY [CL], with trace of cemented sand						
10		5-6-6	12									
11												
12												
13												
14						Stiff orange and green CLAY [CH]						
15		4-4-5	9			Boring Terminated at 15'						

BORING - MILLENIUM PARK IMPROVEMENTS GPJ GAINESVILLE TEMPLATE GDT 3/8/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0230.2200011.0000
REPORT NO.:	1937594
PAGE:	A-5

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **P-4**  
SECTION:

TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/24/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/24/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Loose light brown SAND, with silt [SP-SM]						
1												
2		3-3-3	6				10	5			10	
3												
4		3-4-4	8			Loose brown clayey SAND [SC]						
5												
6		4-5-5	10			Medium dense gray and orange clayey SAND [SC]	27	13				
7		6-7-7	14									
8												
9		7-7-9	16									
10		5-5-6	11									
11												
12												
13												
14												
15		5-6-7	13			Boring Terminated at 15'						

BORING MILLENIUM PARK IMPROVEMENTS GP.1 GAINESVILLE TEMPLATE GDT 3/8/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-6

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **P-5**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/24/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/24/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Loose tan SAND, with silt [SP-SM]						
1												
2		2-2-2	4									
3												
4		2-2-2	4			Loose brown and gray clayey SAND [SC]	8	6			13	
5		5-5-5	10									
6						Medium dense to loose gray very clayey SAND [SC], with limestone fragments						
7		5-6-7	13									
8		6-6-7	13									
9												
10		5-5-5	10									
11												
12												
13												
14						Stiff green and orange CLAY [CH]						
15		4-5-4	9			Boring Terminated at 15'						

BORING - MILLENIUM PARK IMPROVEMENTS.GPJ GAINESVILLE TEMPLATE GDT 3/8/22





# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0230.2200011.0000
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PAGE:	A-7

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-1**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0												
1	X					Orange and gray very clayey SAND to sandy CLAY [SC/CH] (A-6)						
2												
3							45		30	19		
4												
5	X					Gray and orange CLAY [CH], with limestone fragments (A-7)						
6												
7												
8												
9	X					Gray and orange CLAY [CH] (A-7)						
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000
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PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-2**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 2/25/22  
WATER TABLE (ft): NE DATE FINISHED: 2/25/22  
DATE OF READING: NA DRILLED BY: R. PEREZ  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0					[SP-SM]	Light brown SAND, with silt [SP-SM] (A-3)						
1	X											
2	X				[SM-SC]	Orange silty clayey SAND [SM-SC] (A-2-4)						
3					[CH]							
4					[CH]		24	15				
5					[CH]							
6	X				[CH]	Green and orange CLAY [CH] (A-7)						
7					[CH]							
8					[CH]							
9					[CH]							
10					[CH]	Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-9

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-3**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Light brown SAND, with silt [SP-SM] (A-3)						
1	X											
2	X					Tan SAND, with silt [SP-SM] (A-3)						
3												
4	X					Orange very clayey SAND to sandy CLAY [SC/CH] (A-6)						
5												
6												
7	X					Brown and gray sandy CLAY [CH], with limestone fragments (A-7)						
8												
9												
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

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PAGE: A-10

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-4** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft): DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0	X					Dark brown SAND, with silt [SP-SM] (A-3)						
1												
2	X					Light gray SAND, with silt [SP-SM] (A-3)	10	5				
3	X					Light gray and orange clayey SAND [SC] (A-2-4)						
4												
5												
6												
7												
8												
9												
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-11

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-5** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft): DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Dark brown SAND, with silt [SP-SM] (A-3)						
1	X											
2	X					Light tan SAND, with silt [SP-SM] (A-3)						
3												
4												
5												
6	X					Gray and orange CLAY [CH], with limestone fragments (A-7)						
7												
8												
9												
10						Boring Terminated at 10'						

BORING MILLENIUM PARK IMPROVEMENTS GPJ GAINESVILLE TEMPLATE GDT 3/9/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-12

PROJECT: MILLENIUM PARK IMPROVEMENTS  
8500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-6**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft):  
WATER TABLE (ft): NE  
DATE OF READING: NA  
EST. W.S.W.T. (ft):

DATE STARTED: 2/25/22  
DATE FINISHED: 2/25/22  
DRILLED BY: R. PEREZ  
TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Dark brown SAND, with silt [SP-SM] (A-3)						
1	X											
2	X					Tan SAND, with silt [SP-SM] (A-3)						
3												
4	X					Gray and orange clayey SAND [SC] (A-2-6)						
5												
6												
7												
8												
9												
10						Boring Terminated at 10'						

BORING MILLENIUM PARK IMPROVEMENTS.GPJ GAINESVILLE TEMPLATE.GDT 3/9/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-13

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-7**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Dark brown SAND, with silt [SP-SM] (A-3)						
1	X											
2												
3												
4												
5	X					Tan silty clayey SAND [SM-SC] (A-2-4)						
6	X					Gray and orange very clayey SAND [SC] (A-6)						
7												
8												
9												
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-14

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-8**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.

G.S. ELEVATION (ft):

DATE STARTED: 2/25/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 2/25/22

REMARKS:

DATE OF READING: NA

DRILLED BY: R. PEREZ

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0	X					Dark brown SAND, with silt [SP-SM] (A-3)						
1												
2	X					Tan SAND, with silt [SP-SM] (A-3)						
3												
4							8	4				
5	X					Tan and orange clayey SAND [SC] (A-2-6)						
6												
7	X					Gray, green and orange CLAY [CH] (A-7)						
8												
9												
10						Boring Terminated at 10'						





# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200011.0000

REPORT NO.: 1937594

PAGE: A-15

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **R-9**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, INC.  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft):  
WATER TABLE (ft): NE  
DATE OF READING: NA  
EST. W.S.W.T. (ft):

DATE STARTED: 2/25/22  
DATE FINISHED: 2/25/22  
DRILLED BY: R. PEREZ  
TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N (BLOWS/ FT.)	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Dark brown SAND, with silt [SP-SM] (A-3)						
1	X						7	6				
2	X					Light gray SAND, with silt [SP-SM] (A-3)						
3												
4												
5												
6	X					Orange and gray silty clayey SAND [SM-SC] (A-2-4)						
7												
8	X					Gray very clayey SAND to sandy CLAY [SC/CH] (A-6)						
9												
10						Boring Terminated at 10'						

BORING MILLENIUM PARK IMPROVEMENTS GPJ GAINESVILLE TEMPLATE GDT 3/9/22



**KEY TO BORING LOGS**

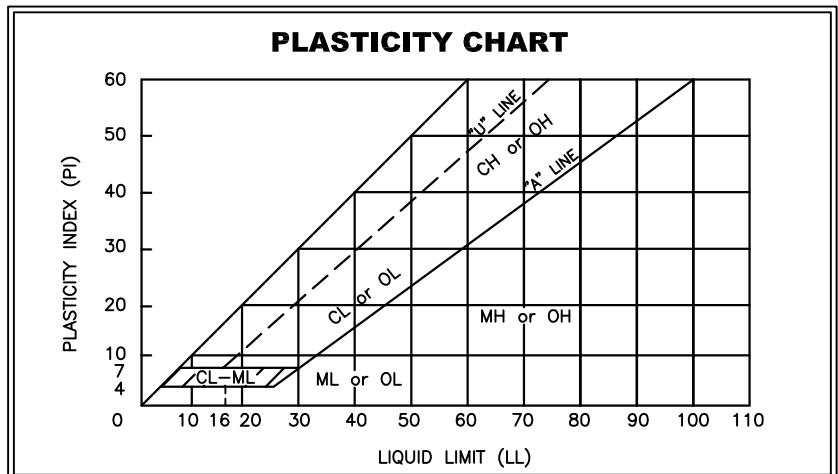
SYMBOLS	
	Number of Blows of a 140-lb Weight Falling 30 in. Required to Drive Standard Spoon One Foot
	Weight of Drill Rods
	Thin-Wall Shelby Tube Undisturbed Sampler Used
	Percent Core Recovery from Rock Core-Drilling Operations
	Sample Taken at this Level
	Sample Not Taken at this Level
	Change in Soil Strata
	Free Ground Water Level
	Seasonal High Ground Water Level

UNIFIED CLASSIFICATION SYSTEM			
MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 200 sieve	CLEAN GRAVELS	GW Well-graded gravels and gravel-sand mixtures, little or no fines
		CLEAN GRAVELS	GP Poorly graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM Silty gravels, gravel-sand-silt mixtures
		GRAVELS WITH FINES	GC Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW Well-graded sands and gravelly sands, little or no fines
		CLEAN SANDS	SP Poorly graded sands and gravelly sands, little or no fines
SANDS WITH FINES		SM Silty sands, sand-silt mixtures	
FINE-GRAINED SOILS 50% or more passes No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less		ML Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			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
	SILTS AND CLAYS Liquid limit greater than 50%		MH Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH Inorganic clays or high plasticity, fat clays
			OH Organic clays of medium to high plasticity
Highly organic Soils		PT	Peat, muck and other highly organic soils

\* Based on the material passing the 3-in. (75mm) sieve.

GRANULAR MATERIALS		
	Safety Hammer SPT N (Blows/Ft.)	Automatic Hammer SPT N (Blows/Ft.)
Very Loose	Less than 4	Less than 3
Loose	4-10	3-8
Medium Dense	10-30	8-24
Dense	30-50	24-40
Very Dense	>50	>40

COHESIVE MATERIALS		
	Safety Hammer SPT N (Blows/Ft.)	Automatic Hammer SPT N (Blows/Ft.)
Very Soft	Less than 2	Less than 1
Soft	2-4	1-3
Firm	4-8	3-6
Stiff	8-15	6-12
Very Stiff	15-30	12-24
Hard	>30	>24



# **APPENDIX B**

## **Summary of Laboratory Test Results**



# SUMMARY OF LABORATORY RESULTS

UNIVERSAL  
ENGINEERING SCIENCES

PROJECT: Millenium Park Improvements –  
Pavement & Stormwater Management System

REPORT: 1937594

CLIENT: CPH Corp.

March 7, 2022

BORING NO.	SAMPLE DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE*	NATURAL MOISTURE (%)	ATTERBERG LIMITS		PERMEABILITY (FT/DAY)	SIEVE ANALYSIS (% PASSING)						AASHTO SOIL CLASSIFICATION	UNIFIED SOIL CLASSIFICATION
					LIQUID LIMIT (%)	PLASTICITY INDEX (%)		No. 4	No. 10	No. 40	No. 60	No. 100	No. 200		
P-1	1.5	Dark Brown Sand, with silt	SS	6			10						10		SP-SM
P-2	1.5	Dark Brown Silty Sand	SS	7			1						12		SM
P-2	3	Tan/Orange Clayey Sand	SS	17									25		SC
P-3	3	Tan Sand, with silt	SS	5			14						9		SP-SM
P-4	3	Light Brown Sand, with silt	SS	5			10						10		SP-SM
P-4	4.5	Brown Clayey Sand	SS	13									27		SC
P-5	3	Tan Sand, with silt	SS	6			13						8	A-3	SP-SM
R-1	1	Orange/Gray very Clayey Sand	A	-	30	19							45	A-6	SC
R-2	2	Orange Silty-Clayey Sand	A	15									24	A-2-4	SM-SC
R-4	1	Dark Brown Sand, with silt	A	5									10	A-3	SP-SM
R-8	2	Tan Sand, with silt	A	4									8	A-3	SP-SM
R-9	2	Dark Brown Sand, with silt	A	6									7	A-3	SP-SM

SS-Split-Spoon  
A-Auger  
ST-Shelby Tube

## **APPENDIX C**

**Important Information About Your Geotechnical Engineering Report  
Constraint and Restrictions**

# Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## This Report May Not Be Reliable

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

## This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

## This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

## Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

## Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

## Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



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# CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

## WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

## UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

## CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

## MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

## CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

## USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

## STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

## OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

## WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

## LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

## TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.





**Universal Engineering Sciences, LLC**  
**GENERAL CONDITIONS**

**SECTION 1: RESPONSIBILITIES** 1.1 Universal Engineering Sciences, LLC, and its subsidiaries and affiliated companies ("UES"), is responsible for providing the services described under the Scope of Services. The term "UES" as used herein includes all of UES's agents, employees, professional staff, and subcontractors. 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys, plans and specifications, and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product. 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties in writing.

**SECTION 2: STANDARD OF CARE** 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made. 2.2 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the work is to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.

**SECTION 3: SITE ACCESS AND SITE CONDITIONS** 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Scope of Services. 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 4: BILLING AND PAYMENT** 4.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications. 4.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts. 4.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

**SECTION 5: OWNERSHIP AND USE OF DOCUMENTS** 5.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES. Neither Client nor any other entity shall change or modify UES's instruments of service. 5.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose. 5.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report or completion of the Scope of Services, during which period the records will be made available to the Client in a reasonable time and manner. 5.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other entity, or used or relied upon by any other entity, without the express written consent of UES. Client is the only entity to which UES owes any duty or duties, in contract or tort, pursuant to or under this Agreement.

**SECTION 6: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS** 6.1 Client represents that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site. 6.2 Under this agreement, the term hazardous materials include hazardous materials, hazardous wastes, hazardous substances (40 CFR 261.31, 261.32, 261.33), petroleum products, polychlorinated biphenyls, asbestos, and any other material defined by the U.S. EPA as a hazardous material. 6.3 Hazardous materials may exist at a site where there is no reason to believe they are present. The discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. The discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials. 6.4 UES will notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client will make any disclosures required by law to the appropriate governing agencies. Client will hold UES harmless for all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials. 6.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

**SECTION 7: RISK ALLOCATION** 7.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission, or professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. If Client prefers a \$2,000,000.00 limit on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$2,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$800.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance. 7.2 Client shall not be liable to UES and UES shall not be liable to Client for any incidental, special, or consequential damages (including lost profits, loss of use, and lost savings) incurred by either party due to the fault of the other, regardless of the nature of the fault, or whether it was committed by Client or UES, their employees, agents, or subcontractors; or whether such liability arises in breach of contract or warranty, tort (including negligence), statutory, or any other cause of action. 7.3 As used in this Agreement, the terms "claim" or "claims" mean any claim in contract, tort, or statute alleging negligence, errors, omissions, strict liability, statutory liability, breach of contract, breach of warranty, negligent misrepresentation, or any other act giving rise to liability.

**SECTION 8: INSURANCE** 8.1 UES represents it and its agents, staff and consultants employed by UES, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 7, whichever is less. The Client agrees to defend, indemnify, and save UES harmless for loss, damage or liability arising from acts by Client, Client's agents, staff, and others employed by Client. 8.2 Under no circumstances will UES indemnify Client from or for Client's own actions, negligence, or breaches of contract. 8.3

To the extent damages are covered by property insurance, Client and UES waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance.

**SECTION 9: DISPUTE RESOLUTION** **9.1** All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to mediation or non-binding arbitration, before and as a condition precedent to other remedies provided by law. **9.2** If a dispute arises and that dispute is not resolved by mediation or non-binding arbitration, then: (a) the claim will be brought in the state or federal courts having jurisdiction where the UES office which provided the service is located; and (b) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, expert witness fees, and other claim related expenses.

**SECTION 10: TERMINATION** **10.1** This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof, or in the case of a force majeure event such as terrorism, act of war, public health or other emergency. Such termination shall not be effective if such substantial failure or force majeure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses. **10.2** In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records, and reports.

**SECTION 11: REVIEWS, INSPECTIONS, TESTING, AND OBSERVATIONS** **11.1** Plan review, private provider inspections, and building inspections are performed for the purpose of observing compliance with applicable building codes. Threshold inspections are performed for the purpose of observing compliance with an approved threshold inspection plan. Construction materials testing ("CMT") is performed to document compliance of certain materials or components with applicable testing standards. UES's performance of plan reviews, private provider inspections, building inspections, threshold inspections, or CMT, or UES's presence on the site of Client's project while performing any of the foregoing activities, is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.2** If UES is retained to provide construction monitoring or observation, UES will report to Client any observed work which, in UES's opinion, does not conform to the plans and specifications provided to UES. UES shall have no authority to reject or terminate the work of any agent or contractor of Client. No action, statements, or communications of UES, or UES's site representative, can be construed as modifying any agreement between Client and others. UES's performance of construction monitoring or observation is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.3** Neither the activities of UES pursuant to this Agreement, nor the presence of UES or its employees, representatives, or subcontractors on the project site, shall be construed to impose upon UES any responsibility for means or methods of work performance, superintendence, sequencing of construction, or safety conditions at the project site. Client acknowledges that Client or its contractor is solely responsible for project jobsite safety. **11.4** Client is responsible for scheduling all inspections and CMT activities of UES. All testing and inspection services will be performed on a will-call basis. UES will not be responsible for tests and inspections that are not performed due to Client's failure to schedule UES's services on the project, or for any claims or damages arising from tests and inspections that are not scheduled or performed.

**SECTION 12: ENVIRONMENTAL ASSESSMENTS** Client acknowledges that an Environmental Site Assessment ("ESA") is conducted solely to permit UES to render a professional opinion about the likelihood or extent of regulated contaminants being present on, in, or beneath the site in question at the time services were conducted. No matter how thorough an ESA study may be, findings derived from the study are limited and UES cannot know or state for a fact that a site is unaffected by reportable quantities of regulated contaminants as a result of conducting the ESA study. Even if UES states that reportable quantities of regulated contaminants are not present, Client still bears the risk that such contaminants may be present or may migrate to the site after the ESA study is complete.

**SECTION 13: SUBSURFACE EXPLORATIONS** **13.1** Client acknowledges that subsurface conditions may vary from those observed at locations where borings, surveys, samples, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed or provided by UES. **13.2** Subsurface explorations may result in unavoidable cross-contamination of certain subsurface areas, as when a probe or boring device moves through a contaminated zone and links it to an aquifer, underground stream, or other hydrous body not previously contaminated. UES is unable to eliminate totally cross-contamination risk despite use of due care. Since subsurface explorations may be an essential element of UES's services indicated herein, Client shall, to the fullest extent permitted by law, waive any claim against UES, and indemnify, defend, and hold UES harmless from any claim or liability for injury or loss arising from cross-contamination allegedly caused by UES's subsurface explorations. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 14: SOLICITATION OF EMPLOYEES** Client agrees not to hire UES's employees except through UES. In the event Client hires a UES employee within one year following any project through which Client had contact with said employee, Client shall pay UES an amount equal to one-half of the employee's annualized salary, as liquidated damages, without UES waiving other remedies it may have.

**SECTION 15: ASSIGNS** Neither Client nor UES may delegate, assign, sublet, or transfer its duties or interest in this Agreement without the written consent of the other party.

**SECTION 16: GOVERNING LAW AND SURVIVAL** **16.1** This Agreement shall be governed by and construed in accordance with the laws of the jurisdiction in which the UES office performing the services hereunder is located. **16.2** In any of the provisions of this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired and will survive. Limitations of liability and indemnities will survive termination of this agreement for any cause.

**SECTION 17: INTEGRATION CLAUSE** **17.1** This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein. **17.2** This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

**SECTION 18: WAIVER OF JURY TRIAL** Both Client and UES waive trial by jury in any action arising out of or related to this Agreement.

**SECTION 19: INDIVIDUAL LIABILITY PURSUANT TO FLORIDA STAT. 558.0035, AN INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**



# **UNIVERSAL ENGINEERING SCIENCES**

## **REPORT OF GEOTECHNICAL CONSULTING SERVICES**

**Millennium Park Improvements – Phase II  
6500 Powell Road  
Wildwood, Sumter County, FL**

**UES Project No. 0230.2200116.0000  
UES Report No. 1975132**

**Prepared for:**

CPH, LLC  
500 West Fulton Street  
Sanford, Florida 32771  
(407) 322-6841

**Prepared by:**

Universal Engineering Sciences, LLC  
4475 SW 35<sup>th</sup> Terrace  
Gainesville, Florida 32608  
(352) 372-3392

September 15, 2022



# UNIVERSAL ENGINEERING SCIENCES

Consultants in: Geotechnical Engineering • Environmental Engineering  
Construction Materials Testing • Threshold Inspection • Private Provider Inspection

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Fort Myers  
Fort Pierce  
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Miami  
Ocala  
Orlando (Headquarters)  
Palm Coast  
Panama City  
Pensacola  
Rockledge  
Sarasota  
Tampa  
West Palm Beach

September 15, 2022

CPH, LLC  
500 West Fulton Street  
Sanford, Florida 32771

Attention: Mr. Tyler Fitzgerald, E.I.

Reference: **Report of Geotechnical Consulting Services**  
Millennium Park Improvements – Phase II  
6500 Powell Road  
Wildwood, Sumter County, Florida  
UES Project No. 0230.2200116.0000 UES Report No. 1975132

Dear Mr. Fitzgerald:

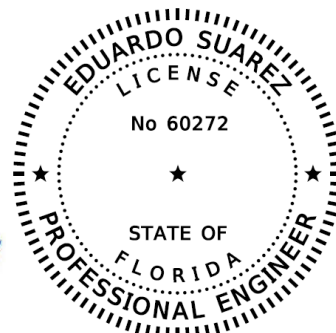
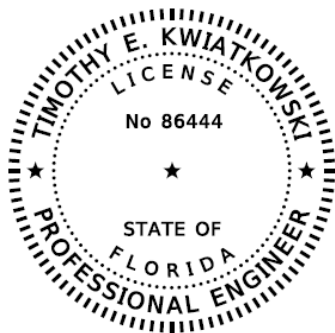
Universal Engineering Sciences, LLC (UES) has completed the geotechnical exploration program for this project in accordance with the authorized scope of services as summarized in UES Proposal No. 1957690, dated June 3, 2022.

This report presents the results of our subsurface field exploration and laboratory soil testing programs, and recommendations for building foundation design and construction, the proposed stormwater management system and pavement design.

We appreciate the opportunity to have assisted you on this project and look forward to a continued association. Please do not hesitate to contact our office if you should have any questions, or to assist your office with the remaining phases of project design and construction.

Respectfully submitted,

**UNIVERSAL ENGINEERING SCIENCES, LLC**  
Certificate of Authorization 549



Eduardo Suarez  
2022.09.15  
17:48:17 -04'00'

Timothy E. Kwiatkowski, P.E.  
Project Geotechnical Engineer  
Florida P.E. No. 86444

Eduardo Suarez, P.E.  
Senior Geotechnical Engineer  
Florida P.E. No.60272

This item has been electronically signed and sealed by Eduardo Suarez, PE on the date adjacent to the seal using Digital Signature. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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## **INTRODUCTION**

### **1.1 GENERAL**

In this report, we have presented the results of the subsurface exploration of the site for the proposed building structures, parking/access driveway improvements, and stormwater management system for the existing Millennium Park in Wildwood, Sumter County, Florida. We have divided this report into the following sections:

- SCOPE OF SERVICES - Defines what we did
- FINDINGS - Describes what we found
- RECOMMENDATIONS - Describes what we encourage you to do
- LIMITATIONS - Describes the restrictions inherent in this report
- APPENDICES - Presents support materials referenced in this report

## **2.0 SCOPE OF SERVICES**

### **2.1 PROJECT DESCRIPTION**

The project consists of construction of enclosed basketball and racquetball structures, a concession stand, turn lane and associated parking and stormwater management areas at the existing Millennium Park, located at 6500 Powell Road in Wildwood, Sumter County, Florida.

Project information was provided by CPH Corp., and included the Concept Plan with the locations of the proposed improvements and soil borings, and contours across the existing site. Site topography along the project site is typically gently rolling to rolling, with elevations ranging from approximately +80 to +50 feet.

Our office was not provided with any other construction-related information other than that discussed herein. If our understandings and assumptions of project issues are incorrect, our conclusions and recommendations will not be considered valid until we have had the opportunity to review all pertinent issues. If our assumptions are incorrect, we should be advised so that we may review our engineering evaluations, conclusions and recommendations. The above constitutes all of the project information provided to our office at the time of this Report preparation.

### **2.2 PURPOSE**

The purpose of this exploration was:

- To explore the prevailing site subsurface conditions within the proposed building structures, parking/access driveway areas, and stormwater management system,
- To perform a series of laboratory tests on selected subsurface soil specimens, recovered from the field exploration program to assist with engineering soil classifications, relevant soil strength and engineering properties,
- To classify and stratify the various soil strata encountered in the soil test borings,
- To evaluate and discuss the groundwater level in the area of the exploration and make appropriate recommendations,

- To discuss technical suitability of subgrade soils for pavement section support and provide parameters for pavement design,
- Recommend appropriate subsurface soil design parameter values for the design of the on-site stormwater management system,
- Prepare foundation design and construction recommendations for the proposed structures.

This report presents an evaluation of site conditions based on traditional geotechnical procedures for site characterization. The recovered samples were not examined, visually or analytically, either for chemical composition or for environmental hazards. Universal Engineering Sciences would be pleased to perform these services, if you desire.

Our exploration was confined to the zone of soil likely to be stressed by the proposed construction. Our work did not address the potential for surface expression of deep geological conditions, such as sinkholes. This evaluation requires a more extensive range of field services than performed in this study. We will be pleased to conduct an investigation to evaluate the probable effect of the regional geology upon the proposed construction, if you desire.

## **2.3 FIELD EXPLORATION**

The field-testing activities started on August 16, 2022 and were completed on August 18, 2022. Our field exploration consisted of performing four (4) soil test borings advanced to depths of 20 feet within the proposed building/structural areas, four (4) soil test borings advanced to depths of 15 feet along the parking and access driveway improvement areas, and four (4) soil test borings to depths of 10 feet below the proposed stormwater management areas. The subsurface conditions within the proposed stormwater management areas were explored with Standard Penetration Test (SPT) methods (ASTM D-1586), and Auger Borings procedures (ASTM D-1452).

The actual tests locations shown are approximate and were staked in the field by UES personnel using existing landmarks and site features. The boreholes were backfilled to grade upon field work completion. The approximate locations of the borings are shown in the Report of Borings, **Appendix A**. It should be noted that soil conditions may vary between soil test boring locations, and between the subsurface soil strata interfaces, which have been presented on the Report of Borings. The soil test boring data reflect information from the specific test locations only. All boreholes were backfilled upon fieldwork completion. The subsurface soil conditions found in the soil test borings are presented in **Appendix A**.

### **2.3.1 Standard Penetration Test (SPT) Borings**

Penetration tests were performed in accordance with ASTM Procedure D-1586, Penetration Test and Split-Barrel Sampling of Soils. This test procedure generally involves driving a 1.4-inch I.D. split-tube sampler into the soil profile in six inch increments for a minimum distance of 18 inches using a 140-pound hammer free-falling 30 inches. The total number of blows required to drive the sampler the second and third 6-inch increments is designated as the N-value, and provides an indication of in-place soil strength, density and consistency.



### **2.3.2 Auger Borings**

The auger borings were performed by advancing a solid stem auger into the subgrade in a manner that reduces soil disturbance. The soil profile is determined by inspecting the cuttings recovered on the auger flights.

Representative portions of the subsurface soil samples recovered were transported to our Gainesville soils laboratory. The soil samples were visually classified by an experienced geotechnical engineer. Samples obtained from the soils encountered are kept in containers and will be held in our laboratory for your inspection for 60 days and then discarded, unless we are notified otherwise. The results of the classification and stratification have been shown on the attached Report of Borings and summarized later in this Report. It should be noted that soil conditions might vary between soil test boring locations, and between the subsurface soil strata interfaces, which have been shown on the Report of Borings. The soil test boring data reflect information from the specific test locations only.

## **2.4 LABORATORY SOIL TESTING**

### **2.4.1 Visual Classification**

The soil samples recovered from the soil test borings were returned to our Gainesville soils laboratory, where a geotechnical engineer visually examined them and reviewed the field descriptions in accordance with ASTM D-2488. We then selected representative soil samples for laboratory testing. Using the results of the laboratory soil tests, our visual examination, and review of field Boring Logs we classified the roadway borings in accordance with the current AASHTO Soil Classification System.

### **2.4.2 Index Testing**

Laboratory testing was performed on selected samples of the soils encountered in the field exploration to better define soil composition and properties. Testing performed in accordance with ASTM procedures determined the percent fines (ASTM D-1140), Permeability (ASTM D-2434), and Natural Moisture Contents (ASTM D-2216). The results of the laboratory tests are presented in **Appendix B**, Summary of Laboratory Test Results.

## **3.0 FINDINGS**

### **3.1 LITERATURE REVIEW**

We reviewed commonly available references for general information about the property along the possible roadway alignment.

#### **3.1.1 Regional Geology**

The general geology of Sumter County is characterized by a surface veneer of Pleistocene and Pliocene sands and sandy clays overlying the Miocene-age Hawthorn Group. The Hawthorn Group includes a highly variable mixture of interbedded quartz sands, clays, carbonates, pebbles and grains occurring with thicknesses of up to 150 feet. The surface of the upper Floridan Aquifer in the general project site area is estimated in the elevation range of +50 to +60 feet, NGVD.

### **3.1.2 Topography**

Site topography within the project site is typically gently rolling to rolling, with elevations ranging from approximately +80 to +50 feet, sloping towards the southwest side of the project site.

### **3.1.3 General Area Soils Information**

The United States Department of Agriculture (USDA) *Soil Survey of Sumter County Area, Florida* describes the near-surface soil profile at the locations of the proposed parking improvements and stormwater management areas as Millhopper, Kendrick, Mabel, and Apopka sands. Relevant characteristics for the soils are provided in Table 1 below.

<b>Table 1 – Relevant Engineering Index Properties</b>					
Soil Type	Unified Soil Classification	Plasticity Index	Seasonal High Water Table	Shrink-Swell Potential	Soil Permeability (in/hr)
Millhopper Sand	(0-50") SP-SM, SM (50-80") SM, SM-SC, SC	Non-plastic Non-plastic to 10	3.5 to 6 feet (Perched)	Low Low	6.0 to 20 0.06 to 2.0
Kendrick Sand	(0-33") SP-SM, SM (33-68") SM-SC, SC (68-80") SC	Non-plastic 4 to 18 9 to 20	> 6 feet	Low Low Low	6.0 to 20 0.6 to 6.0 0.06 to 2.0
Mabel Sand	(0-16") SP, SP-SM, SM (16-24") SC, CL, CH (24-30") MH, CH (30-80") SC, CL, CH	Non-plastic 15 to 40 20 to 50 15 to 40	1.5 to 3 feet (Perched)	Low Moderate High High	2.0 to 20 0.06 to 0.2 0.06 to 0.2 0.06 to 0.2
Apopka Sand	(0 – 54") SP, SP-SM (54 – 80") SM-SC, SC	Non-plastic 4 to 20	> 6 feet	Low Low	6.0 to 20 0.6 to 2.0

### **3.1.4 Potentiometric Map Information**

Information obtained from the USGS Potentiometric Surface Map dated May 2009 suggests the potentiometric level of the Floridan Aquifer in the general area of the project site to be in the elevation range of +50 to +60 feet, NGVD.

### **3.2 SURFACE CONDITIONS**

Our on-site observations have been summarized as follows. At the time of our exploration, the project parcel was developed with existing park facilities. Exposed surface soils were observed to be sandy and dry. Surface organic soils, surface debris, or rock outcroppings were not observed on the project site.

### **3.3 SUBSURFACE CONDITIONS**

The soil test borings performed within the proposed roadway construction and proposed stormwater management areas were reviewed to evaluate the subsurface soil strata lateral continuity and uniformity. Soil classifications and descriptions for this geotechnical study are based both on the results of the laboratory soil testing programs and on visual examinations of soil specimens by the Geotechnical Engineer.

### **3.3.1 Proposed Stormwater Management Areas**

Four (4) soil test borings, were performed within the limits of the proposed stormwater management/swale areas, and were advanced to a depth of 10 feet below existing grades. The soil test borings generally encountered loose sand to sand with silt [SP/SP-SM] to depths of 0 to 6 feet below existing grades, followed by silty-clayey sands [SM-SC/SC] to clay [CH] to the boring termination depth of 10 feet below ground surface.

### **3.3.2 Roadway Construction**

Four (4) soil test borings were performed within the limits of the proposed roadway areas, and were advanced to a depth of 15 feet below existing grades. The soil test borings encountered very loose to medium dense sand to sand with silt [SP/SP-SM] to depths of 3.5 to 8 feet followed by silty-clayey sands [SM-SC/SC] to clay [CH] to the boring termination depths of 15 feet below existing grades.

### **3.3.3 Structural Areas**

Four (4) soil test borings were performed within the limits of the proposed structures, and were advanced to a depth of 20 feet below existing grades. The soil test borings encountered very loose to medium dense sand to sand with silt [SP/SP-SM] to depths of 4 to 5.5 feet followed by silty-clayey sands [SM-SC/SC] to clay [CH] to the boring termination depths of 20 feet below existing grades.

## **3.4 MEASURED GROUNDWATER LEVELS**

The groundwater level was not encountered in the soil test boring locations at the time of the field exploration program. Fluctuations of groundwater level conditions along the project alignment should be expected to occur seasonally as result of rainfall, surface runoff, nearby construction activities, and other factors. Absence of groundwater level data in the test borings implies that no groundwater was apparent within the explored depths at the time of soil test boring work completion, but does not necessarily mean that groundwater will not be encountered at these locations or within the vertical reaches of these boring locations in the future. It is possible that insufficient time was allowed for groundwater recharge into the open boreholes, in light of the prevailing soil conditions.

## **3.5 LABORATORY TESTING**

The soil samples recovered from the field exploration program were placed in plastic containers and returned to our soils laboratory, where the Geotechnical Engineer visually examined and classified the samples. Laboratory soil tests were performed to aid in the classification of the soils, and to help in the evaluation of engineering characteristics of the soils. Representative soil samples were selected for soil sieve analysis/percent fines determination, moisture content, and permeability testing.

### **3.5.1 Grain Sieve Analysis-Percent Passing U.S. No. 200 Sieve**

Certain recovered soil samples were selected to determine the distribution of particle sizes in the soils. The distribution of particle sizes larger than 75 micrometers (retained on the US No. 200 sieve) is determined by sieving, while the distribution of particle sizes smaller than 75 micrometers is determined by a sedimentation process using a hydrometer. These tests are

conducted in accordance with ASTM Procedure D-1140, *Standard Test Methods for Amount of Material in Soils Finer than the No. 200 Sieve*, and ASTM Procedure D-422, *Standard Test Method for Particle-Size Analysis of Soils*.

### **3.5.2 Moisture Content**

Certain recovered soil samples were selected to determine the moisture content. These tests were conducted in accordance with ASTM Procedure D-2216. The soil moisture content was the ratio of the weight of water in the soil mass to the dry weight of the soil mass. Moisture content was measured by drying the moist material to a constant mass in a drying oven controlled at 105 degrees Celsius and to use this value as the mass of water in the test specimen. The moisture content was expressed as a percent of the oven dried soil mass.

### **3.5.3 Permeability-Index Testing**

Representative soil samples were selected to determine the permeability rates of the soil. Constant head permeability tests were performed on representative samples of the near surface soils from the proposed stormwater management area. These tests were conducted following the concepts outlined in ASTM D-2434, *Standard Test Method for Permeability of Granular Soils (Constant Head)*.

## **4.0 EVALUATION AND RECOMMENDATIONS**

### **4.1 GENERAL**

The following recommendations are made based upon a review of our site observations, the attached soil test data, our understanding of the proposed construction and experience with similar projects and subsurface conditions. If the project information is incorrect or should the alignment of the roadway, embankment elevations or pond areas change, please contact us so we can review our recommendations. The discovery of any site or subsurface conditions during construction, which deviate from the data obtained during this geotechnical exploration, should also be reported to us for our evaluation.

### **4.2 GEOTECHNICAL CONSIDERATIONS**

Recommendations for foundation design are dependent, among other factors, on the amount of total settlement and more importantly differential settlement between various structural elements that can be safely tolerated by the individual structures.

If the anticipated total and differential settlements estimated herein exceed the tolerable limits as set forth by the Structural Engineer, we should be so advised so that we may consider other foundation system alternatives.

Based on our exploration, the geotechnical consideration for the design and construction of the proposed structure is the presence of near-surface very loose sands. Our local experience has found that clayey soils are often laterally discontinuous, which makes it more difficult to ascertain their presence on a given project parcel with a few soil test borings. If at the time of construction, the contractor encounters or suspects that clay soils may be near the grade slab or foundation bearing elevations, UES should be contacted to prepare appropriate recommendations. If encountered, these shallow deposits of clay soils must be addressed through site grading, over-excavation and replacement, site drainage and stiffened foundation.

The clayey sand soils may require stringent moisture control during compaction, particularly during rainy periods. Footings that are excavated through the upper layer of compacted sand fill soils into the native clayey sands, should be visually inspected and tested to verify the in-place density and condition of the subgrade bearing soils.

Due to the presence of near surface clayey soil it is important that the foundation design incorporate factors to minimize water seepage around the proposed foundation. The design factors should include undercutting around the perimeter of the structure, positive drainage such that water flows away from the structure, use of low permeability fill, gutters tied into the drainage system, use of drought tolerant landscaping, and limiting irrigating around the structure.

We recommend that we be provided the opportunity to review the project plans and specifications to confirm that our recommendations have been properly interpreted and implemented. If the structural loadings or the building locations change significantly from those discussed previously, we request the opportunity to review and possibly amend our recommendations with respect to those changes. The discovery of any subsurface conditions during construction which deviate from those encountered in the borings should be reported to us immediately for observation, evaluation, and recommendations.

#### **4.3 SOIL SUITABILITY FOR ROADWAY EMBANKMENT**

The results of our exploration indicate the soil conditions encountered in the borings are suitable for construction and support of the proposed roadway with the exceptions listed below.

##### **A-2-6 (SC) Soils**

These soils are plastic materials and should be removed as required by FDOT Standard Plans Index 120-002.

##### **A-7 (CH) Soils**

These soils are highly plastic materials and should be removed as required by FDOT Standard Plans Index 120-002.

#### **4.4 GROUNDWATER CONSIDERATIONS**

##### **4.4.1 Existing Groundwater Level**

The groundwater level was not encountered in the soil test boring locations at the time of the field exploration program. It should be noted that the groundwater levels may not have been fully stabilized in the boreholes when the readings were taken upon boring work completion. Fluctuations of groundwater level conditions on this project parcel should be expected to occur seasonally as a result of rainfall, surface runoff, nearby construction activities, and other factors.

##### **4.4.2 Estimated Seasonal High Groundwater Level**

The typical wet season groundwater level is defined as the highest groundwater level sustained for a period of 2 to 4 weeks during the "wet" season of the year, for existing site conditions, in a

year with average normal rainfall amounts. Based on historical data, the rainy season in North Central Florida typically occurs between June and September.

As mentioned previously, we found shallow deposits of clayey sands and sandy clays across the site during our site exploration. Due to the poor permeability characteristics of these clayey soils, these soils tend to act as an aquiclude (a sediment through which groundwater cannot pass) to the natural infiltration of the rainwater. Therefore, surface water will most likely temporarily perch on top of these relatively impermeable soils causing isolated areas with temporary groundwater levels significantly higher during periods of heavy rainfall or artificial irrigation.

Based upon our review of regional hydrogeology and the Sumter County Soil Survey, we estimate the normal seasonal high groundwater level will occur, perched on the underlying silty-clayey soils at the boring locations. The perched groundwater will be a transient condition, directly related to rainfall and site grading. Isolated areas with a transient perched groundwater should be expected.

It is important to note that the pre-development and post-development transient perched seasonal high groundwater levels will be a function of the elevation location of the top of the aquiclude (SC, CH) and will generally occur above the top of the aquiclude, where present or where created by site grading. Perched groundwater levels can generally be expected to occur at the ground surface above the top of the hydraulically restrictive soils, where present, if the groundwater level is unable to drain and/or percolate into a more pervious layer. It should be noted that undercutting of the hydraulically restrictive materials will impact the depth of the perched water level. The potential for groundwater to perch will be directly related to rainfall and irrigation amounts, as well as site grading. The potential for transient perched groundwater levels must be considered during the design of the site grades and during construction.

It should be noted however that peak stage elevations immediately following various intense storm events, may be somewhat higher than the estimated typical wet season levels. Further, it should be understood that changes in the surface hydrology and subsurface drainage from on-site or off-site improvements could have significant effects on the normal and seasonal high groundwater levels.

#### **4.5 ROADWAY CONSTRUCTION CONSIDERATIONS**

We recommend positive drainage be established and maintained on the site during construction. During construction, due to possible high groundwater levels, temporary dewatering may be required for earthwork pipe fill as well as embankment construction along the length of the project. We recommend the groundwater table be maintained a minimum of 2 feet below all earthwork surfaces.

Roadway construction should be performed in general accordance with the appropriate section of the current edition of the FDOT Standard Specifications for Road and Bridge Construction. The removal of unsuitable soils and embankment construction should be performed in accordance with FDOT Standard Plans Indices 120-002 and 120-001, respectively.

Soils identified as A-3 (SP/SP-SM) materials are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001.

Soils identified as A-2-4 (SP-SM/SM) materials are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001. However, the material is likely to retain excess moisture and be difficult to dry and compact.

Soils identified as A-2-6 (SC) materials are plastic soils and are not considered suitable for roadway support. These soils are moisture sensitive, difficult to compact, and should be removed in accordance with FDOT Standard Plans Index 120-002. However, the material may be used as fill material in embankments when utilized in accordance with FDOT Standard Plans Index 120-001.

Soils identified as A-7 (CH) materials are highly plastic soils and are not considered suitable for roadway support. These soils are moisture sensitive, difficult to compact, and should be removed in accordance with FDOT Standard Plans Index 120-002.

## **4.6 PAVEMENTS**

### **4.6.1 General**

A rigid or flexible pavement section could be used on this project. Flexible pavement combines the strength and durability of several layer components to produce an appropriate and cost-effective combination of available construction materials. Concrete pavement has the advantage of the ability to “bridge” over isolated soft areas, it requires less security lighting, and it typically has a longer service life than asphalt pavement. Disadvantages of rigid pavement include an initial higher cost and more difficult patching of distressed areas than occurs with flexible pavement.

We assume that a combination of flexible asphaltic and rigid concrete pavement sections will be used for the new pavement areas on this project. Our recommendations for both pavement types are listed in the following sections. The following recommendations are based on the pavement areas being prepared as recommended in this report.

At the time of this exploration, specific traffic loading information was not provided to us. We have assumed the following conditions for our recommended minimum pavement design.

- the subgrade soils are prepared as described in this report
- a twenty (20) year design life
- terminal serviceability index ( $P_t$ ) of 2.5
- reliability level of 95 percent
- total equivalent 18 kip single axle loads ( $E_{18SAL}$ ) up to 30,000 for trails/very light duty pavements-Golf carts, light maintenance traffic)
- total equivalent 18 kip single axle loads ( $E_{18SAL}$ ) up to 100,000 for light duty pavements – primarily car and pickup truck traffic (parking stalls)
- total equivalent 18 kip single axle loads ( $E_{18SAL}$ ) up to 250,000 for heavy duty pavements – occasional heavy truck traffic (entrance drives, services lanes, etc.)

The available subsurface data suggests that the subgrade soils in these areas consist of relatively clean sands followed by clayey sands to sandy clays in the shallow subsurface profile. Soil materials classified as sand to sand to sand with silt [SP/SP-SM]/[A-3] are select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001. Soil materials classified as silty sand [SM]/[A-2-4] are

select soils and are satisfactory to use in the subgrade and embankment when utilized in accordance with FDOT Standard Plans Index 120-001. However, the material is likely to retain excess moisture and be difficult to dry and compact.

We recommend removing clayey materials [A-2-6/A-7] in accordance with FDOT Standard Plans Index 120-002. We recommend proof-rolling of the exposed subgrade to help determine area that may need to be undercut. Positive drainage around the roadway/driveway areas should be established to prevent irrigation and stormwater from migrating into the pavement area.

#### **4.6.2 Asphalt (Flexible) Pavements**

Based on the results of our soil borings, the assumed traffic loading information and review of the FDOT Flexible Pavement Design Manual, our minimum recommended pavement component thicknesses for new construction are presented in Table 2.

<b>Table 2 – Summary of Pavement Component Recommendations</b>					
<b>Service Level</b>	<b>Maximum Traffic Loading</b>	<b>Structural Number</b>	<b>Component Thickness (inches)</b>		
			<b>Stabilized Subgrade</b>	<b>Base Course</b>	<b>Surface Course</b>
Golf Cart- Maintenance – <b>Very Light duty</b>	up to 30,000 E <sub>18</sub> SAL	2.16	8	6	1
Automobile parking lots and driveways – <b>Light duty</b>	up to 100,000 E <sub>18</sub> SAL	2.70	12	6	1 ½
Truck parking lots and driveways - <b>Heavy duty</b>	up to 250,000 E <sub>18</sub> SAL	3.28	12	8	2.0

##### **4.6.2.1 Stabilized Subgrade**

We recommend that subgrade materials be compacted in place according to the requirements in the “Site Preparation for the New Pavement Areas” section of this report. Further, beneath the limerock base course, stabilize the subgrade materials to a minimum Limerock Bearing Ratio (LBR) of 40, as specified by Florida Department of Transportation (FDOT) requirements for Type B Stabilized Subgrade. The subgrade material should be compacted to at least 98 percent of the modified Proctor maximum dry density (AASHTO T-180).

The stabilized subgrade can be a blend of existing soil and imported material such as limerock. If a blend is proposed, we recommend that the Contractor perform a mix design to find the optimum mix proportions.

The primary function of stabilized subgrade beneath the base course is to provide a stable and firm subgrade so that the limerock can be properly and uniformly placed and compacted. Depending upon the soil type, the subgrade material may have sufficient stability to provide the needed support without additional stabilizing material. Generally, sands with silt or clay should have sufficient stability and may not require additional stabilizing material. Conversely, relatively “clean” sand will not provide sufficient stability to adequately construct the limerock base course. Universal Engineering Sciences should observe the soils exposed on the finish grades to evaluate whether or not additional stabilization will be required beneath the base course.



#### **4.6.2.2 Base Course**

We recommend the base course consist of limerock. The limerock base course should have a minimum Limerock Bearing Ratio (LBR) of 100 and should be compacted to 98 percent of the modified Proctor maximum dry density (AASHTO T-180).

As an alternative base course, crushed concrete could be used. An advantage to using crushed concrete is a lower sensitivity to water than what occurs with limerock. The main disadvantage is that crushed concrete may not be available at the time of construction.

Crushed concrete should be supplied by an FDOT approved plant with appropriate quality control procedures. The crushed concrete stockpile should be free of sandy pockets, foreign materials, or uncrushed particles. We recommend the following specifications be enforced.

1. Crushed concrete shall not contain extremely hard pieces, lumps, balls or pockets of sand or clay sized material in sufficient quantity as to be detrimental to the proper binding, finishing or strength of the crushed concrete base.
2. Samples of base course materials shall be supplied to the Engineer prior to use in the work. Additional samples shall be furnished during construction, as necessary.
3. At least 97 percent (by weight) of the material shall pass a 3-1/2 inch sieve and the material shall be graded uniformly down to dust. The fine material shall consist entirely of dust or fracture. All crushing or breaking-up which might be necessary in order to meet such size requirements shall be done before the material is placed within the area to be paved.
4. The base shall be bladed and shaped to conform to the typical sections shown on the plans. Then the base shall be compacted by rolling with a combination of steel wheel and rubber tired rollers until a minimum density of at least 98 percent of the maximum density obtainable under AASHTO T-180 is reached. The base shall have an average LBR of not less than 100. The LBR value of material produced at a particular source shall be determined in accordance with an approved quality control procedure.
5. Testing shall be performed at the following frequencies:
  - Perform in-place density on crushed concrete base at a frequency of 1 test per 300 linear foot of roadway or 5,000 square feet of pavement.
  - Perform Limerock Bearing Ratio tests at a frequency of 1 test per visual change in material and a minimum of 1 test per 15,000 square feet of pavement.
  - Engineer should perform a final visual base inspection prior to placement of prime or tack coat and paving.

Regardless of the base type selected, a minimum of 2 feet separation should be maintained between the bottom of the base course and the clayey soils. If necessary, the minimum separation can be obtained by undercutting the clays or filling the site.

#### **4.6.2.3 Wearing Surface**

The wearing surface should consist of Florida Department of Transportation (FDOT) Type SP asphaltic concrete. Specific requirements for Type SP asphaltic concrete wearing surface are outlined in the Florida Department of Transportation (FDOT), *Standard Specifications for Road and Bridge Construction, current Edition*.

After placement and field compaction, the wearing surface should be cored to evaluate material thickness and to perform laboratory densities. Cores should be obtained at frequencies of at least one core per 10,000 square feet of placed pavement or a minimum of two cores per day's production.

#### **4.6.3 Effects of Groundwater**

One of the most critical factors influencing pavement performance in North Central Florida is the relationship between the pavement subgrade and the normal seasonal high groundwater level. Many roadways and parking areas have been damaged as a result of deterioration of the base conditions and/or the base/surface course bond. We recommend that the normal seasonal high groundwater level and the bottom of the flexible pavement limerock base course be separated by at least 24 inches. We recommend a separation of at least 18 inches below the bottom of a flexible pavement with a crushed concrete base. If this separation cannot be established and maintained by grading and surface drainage improvements, permanent groundwater control measures (underdrains) will be required.

#### **4.6.4 Curbing**

Typical curbing is extruded and placed atop the asphaltic concrete surface. This type of curbing does not act as a horizontal cutoff for lateral migration of storm and irrigation water into the base material and as a result of this it is not uncommon for base and subgrade materials adjacent to these areas to become saturated, promoting subsequent localized pavement deterioration. Consequently, we recommend that most pavements abutting irrigated landscape areas be equipped with an underdrain system that penetrates a minimum depth equivalent to the bottom of the stabilized subgrade to intercept trapped shallow water and discharge it into a closed system or other acceptable discharge point.

Alternatively, curbing around landscaped sections adjacent to the parking lots and driveways could be constructed with full-depth curb sections to reduce horizontal water migration. However, underdrains may still be recommended dependent upon the soil type and spatial relationships. UES should review final grading plans to evaluate the need and placement of pavement and landscape underdrains.

#### **4.6.5 Concrete (Rigid) Pavement**

Concrete pavement is a rigid pavement that is strong, durable and handles the heavy loads more effectively than asphalt pavement.

We recommend using the existing surficial sands [SP-SM] or approved structural fill densified to at least 95 percent of Modified Proctor test maximum dry density (ASTM D 1557) without additional stabilization under concrete pavement, with the following stipulations:

1. Prior to placement of concrete, the subgrade soils should be densified as recommended in Section 4.6.7 of this report.
2. The surface of the subgrade soils must be smooth, and any disturbances or wheel rutting corrected prior to placement of concrete.
3. The subgrade soils must be moistened prior to placement of concrete.
4. Concrete pavement thickness should be uniform throughout, with exception to the thickened edges (curb or footing).
5. The bottom of the pavement should be separated from the seasonal high groundwater level by at least 12 Inches.
6. We do not recommend the use of a limerock base course directly below the concrete pavement area.

Based on review of the FDOT Rigid Pavement Design Manual and provided that the site is prepared as recommended in this report, we recommend using the minimum design shown in Table 3 for concrete pavements.

<b>Table 3 – Minimum Concrete Pavement Thickness</b>			
<b>Maximum Traffic Loading</b>	<b>Minimum Pavement Thickness</b>	<b>Maximum Control Joint Spacing</b>	<b>Recommended Saw Cut Depth</b>
up to 250,000 E <sub>18</sub> SAL	6 inches	12 feet x 12 feet	2 inches

For loading conditions greater than those presented in Table 3, we recommend that you have a complete pavement design performed based on projected traffic data.

We recommend using concrete with a minimum 28-day compressive strength of at least 4000 pounds per square inch. Layout of the saw cut control joints should form square panels, and the depth of Saw cut joints should be made to a depth of 1/3 of the concrete slab thickness. We recommend allowing Universal to review and comment on the final concrete pavement design, including section and joint details (type of joints, joint spacing, etc.), prior to the start of construction.

For further details on concrete pavement construction, please reference the "Guide to Jointing of Non-Reinforced Concrete Pavements" published by the Florida Concrete and Products Association, Inc., and "Building Quality Concrete Parking Areas", published by the Portland Cement Association.

Specimens should be obtained to verify the compressive strength of the pavement concrete at least every 50 cubic yards, or at least once for each day's placement, whichever is greater.

#### **4.6.6 Construction Traffic**

Light duty roadways and incomplete pavement sections will not perform satisfactorily under construction traffic loadings. We recommend that construction traffic (construction equipment, concrete trucks, sod trucks, garbage trucks, dump trucks, etc.) be re-routed away from these roadways or that the pavement section is designed for these loadings.

#### **4.6.7 Site Preparation for the New Pavement Areas**

Following is a list of our recommended site preparation procedures to prepare the new pavement areas for the proposed construction.

1. Strip the pavement areas of any roots, vegetation, debris, organics, etc. Stripping should be performed at least 3 feet beyond pavement edges. We recommend that the stripped surface be observed and probed by representatives of Universal.
2. Following site clearing, grubbing and rough grading, the pavement areas should be proof-rolled using a large, fully loaded rubber-tired vehicle (dump truck) or similar equipment. Proof-rolling will help locate any surficial zones of especially loose or soft or unsuitable soils not encountered in the soil test borings, and should help provide more uniformity in the sandy subsurface soil profile. Unusual or unanticipated conditions identified during this process must be immediately brought to the attention of the UES Geotechnical Engineer. Field density testing is not required during proof-rolling operations.
3. We recommend undercutting clayey soils to a depth of 24 inches below the bottom of the base course in accordance with FDOT Standard Plans Index 120-002. Within the pavement areas, compact the exposed soils to at least 95 percent of the Modified Proctor test maximum dry density (ASTM D 1557) to a depth of at least 1 foot below the stripped surface and full depth of fill, or at least 2 feet below the bottom of base course (or concrete pavement) level, whichever is greater. Please note that the surficial soils within the new parking and roadway areas may contain varying quantities of silt and clay. These silty/clayey soils tend to readily hold moisture and may require more stringent compactive efforts than clean fine sands.
4. Soil density testing to verify the uniformity of compactive efforts should be performed at a frequency of at least one (1) test for every 5,000 square feet per foot of compacted increment, or at a minimum of two test locations, whichever is greater.
5. Prior to the placement of the base course within the asphaltic pavement areas, stabilize the subgrade to a depth of, 8 inches for very light gold cart and maintenance traffic, and 12 inches for light and heavy duty, by "pounding" limerock into the soils to provide a stable and firm surface so that the base course can be properly and uniformly placed. The subgrade should be compacted to at least 98 percent of the Modified Proctor maximum dry density (ASTM D 1557).

Positive drainage around the roadway, parking areas must be established to prevent irrigation and stormwater from migrating into the pavement area. If needed underdrains should be installed to prevent water from migrating beneath the pavement.

Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause distress to adjacent structures if not properly regulated. Provisions should be made to monitor these vibrations so that any necessary modifications in the compaction operations can be made in the field before potential damages occur.

## **4.7 BUILDING FOUNDATION**

Based on the results of our exploration, we consider the subsurface conditions at the site adaptable for support of the proposed structures when constructed on a properly designed conventional shallow foundation system. A conventional shallow foundation system may be used for support of the proposed buildings construction on this project with the understanding that some aesthetic cracking and other minor architectural type nuisance issues may occur during the useful life of the structure. Provided the site preparation and earthwork construction recommendations outlined in Section 4.8 of this report are performed, the following parameters may be used for foundation design.

### **4.7.1 Bearing Pressure**

The net maximum allowable soil bearing pressure for use in shallow foundation design should not exceed 2,000 psf. Net bearing pressure is defined as the soil bearing pressure at the foundation bearing level in excess of the natural overburden pressure at that level. The foundations should be designed based on the maximum load which could be imposed by all loading conditions.

In designing foundations for canopies, special consideration must be given to the effect of wind loads on the foundations. The footings should be designed to provide adequate uplift resistance and stability against overturning. Should temporary wind load conditions causes footing edge pressure to exceed 30% or if any portion of the footings is in tension, additional evaluation will be required. For spread footings, bearing pressures up to 30% in excess of nominal bearing pressure is permitted.

### **4.7.2 Foundation Size**

The minimum widths recommended for any isolated column footings and continuous wall footings are 24 inches and 18 inches, respectively. The thickened sections of a monolithic slab should have a minimum width of 12 inches. Even though the maximum allowable soil bearing pressure may not be achieved, these width recommendations should control the minimum size of the foundations.

### **4.7.3 Bearing Depth**

The exterior foundations should bear at a depth of at least 18 inches below the finished exterior grades and the interior foundations should bear at a depth of at least 12 inches below the finish floor elevation to provide confinement to the bearing level soils. The thickened section of a monolithic slab/foundation system should be embedded a minimum of 12 inches. It is recommended that stormwater be diverted away from the building exteriors to reduce the possibility of erosion beneath the exterior footings.

### **4.7.4 Bearing Material**

The foundations may bear in either the compacted suitable existing soils or compacted structural fill. The bearing level soils, after compaction, should exhibit densities equivalent to at least 95 percent of the modified Proctor maximum dry density (ASTM D-1557) to a depth of at least **two feet** below the foundation bearing level. We recommend that the bottom of all footings be probed to confirm the suitability of the bearing soils.

#### **4.7.5 Settlement Estimates**

Post-construction settlement of the structure will be influenced by several interrelated factors, such as (1) subsurface stratification and strength/compressibility characteristics; (2) footing size, bearing level, applied loads, and resulting bearing pressures beneath the foundations; and (3) site preparation and earthwork construction techniques used by the Contractor. Our settlement estimates for the structure are based on the use of site preparation/earthwork construction techniques as recommended in Section 4.8 of this report. Any deviation from these recommendations could result in an increase in the estimated post-construction settlement of the structure.

Using the recommended allowable bearing pressure, the assumed maximum structural loads and the field data which we have correlated to geotechnical strength and compressibility characteristics of the subsurface soils, we estimate that total settlements of the structures could be on the order of one inch or less. Differential settlement result from differences in applied bearing pressures and variations in the compressibility characteristics of the subsurface soils. Based on field and laboratory testing data obtained, we anticipate that differential settlement of the structure should be within tolerable magnitudes ( $\frac{1}{2}$ " inch or less).

#### **4.7.6 Ground Floor Slab**

Conventional floor slabs may be supported upon the compacted fill and should be structurally isolated from other foundation elements or adequately reinforced to prevent distress due to differential movements. The floor slab can be constructed as a slab-on-grade provided the subgrade and subsequent lifts of structural backfill are compacted and tested in accordance with the recommendations included in this report. The floor slab can be designed using a modulus of subgrade reaction (K) of 100 pounds per cubic inch (pci). It is recommended the floor slab bearing soils be covered with an impervious membrane to reduce moisture entry and floor dampness. A 10-mil thick plastic membrane is commonly used for this purpose. Care should be exercised not to tear large sections of the membrane during placement of reinforcing steel and concrete.

### **4.8 BUILDING SITE PREPARATION**

We recommend normal, good practice site preparation procedures. These procedures include: demolition/stripping of the project site of concrete and other debris, existing vegetation and topsoil, compacting the subgrade and placing necessary fill or backfill to grade with selected engineered fill. We recommend that the bottom of all footings be probed to confirm the suitability of the bearing soils. A more detailed synopsis of this work is as follows:

1. Prior to construction, the location of any existing underground utility lines within the construction area should be established. Provisions should then be made to relocate interfering utilities to appropriate locations. It should be noted that if underground pipes are not properly removed or plugged, they may serve as conduits for subsurface erosion which may subsequently lead to excessive settlement of the overlying structure.
2. We recommend that existing structures in close proximity (within 100 feet) to the proposed structure should be monitored for cracks or signs of distress during adjacent new excavation and structure construction operations.

3. Strip the proposed construction limits of all grass, roots, topsoil, and other deleterious materials within 5 feet beyond the perimeter of the proposed construction areas. Expect typical stripping at this site to depths of 6 to 12 inches. Some isolated areas may require more than a foot of stripping or undercutting to remove tree roots.
4. Following site clearing, grubbing and rough grading, the same project areas should be proof-rolled using a large, fully loaded rubber-tired vehicle (dump truck) or similar equipment. Proof-rolling will help locate any surficial zones of especially loose or soft or unsuitable soils not encountered in the soil test borings, and should help provide more uniformity in the sandy subsurface soil profile. Unusual or unanticipated conditions identified during this process must be immediately brought to the attention of the UES Geotechnical Engineer. Field density testing is not required during proof-rolling operations.
5. Weak subgrade soils identified during proof-rolling operations should be excavated and removed from the site, and replaced with granular fill soils. We recommend that the bottom of all footings be probed to confirm the suitability of the bearing soils. Granular soils used for this purpose should meet the material and placement specifications outlined below.
6. Proof-rolling operations should be followed by backfill compaction operations. Compaction operations should be implemented with a compactor of appropriate size and must be used in static mode. Backfill compaction should be performed until an in-place soil density of 95 percent of the modified Proctor maximum dry density (ASTM D-1557) is achieved to a depth of 2 feet below the final subgrade, or foundation bearing elevations, whichever is greater. If necessary to achieve the recommended soil compaction at depth, the entire project area may be undercut, the exposed subgrade soils compacted, and then the areas backfilled using 6-inch lifts to final subgrade elevation. The subgrade beneath slabs should be compacted to a depth of 1 foot below the beginning grade prior to placing fill.
7. Compaction operations should extend to the limits of the cleared/grubbed project areas. Compaction of the existing, near-surface sandy soils will provide for uniformity of foundation/slab settlements and improve the soils' bearing capacity conditions. Typically, the soils should exhibit moisture contents within  $\pm 2$  percent of the modified Proctor optimum moisture content during compaction. A minimum of eight (8) complete coverages (in perpendicular directions) should be made in the building areas with the roller to improve the uniformity and increase the density of the underlying sandy soils. It should be anticipated that moisture will need to be added to the subgrade in order to achieve the required compaction.
8. Should the bearing level soils experience pumping and soil strength loss during the compaction operations, compaction work should be immediately terminated and (1) the disturbed soils removed and backfilled with dry structural fill soils which are then compacted, or (2) the excess pore pressures within the disturbed soils allowed to dissipate before recompacting.
9. Care should be exercised to avoid damaging any nearby structures while the compaction operation is underway. Prior to commencing compaction, occupants of adjacent structures should be notified and the existing conditions of the structures be documented with photographs and survey (if deemed necessary). Compaction should

cease if deemed detrimental to adjacent structures. Universal Engineering Sciences can provide vibration monitoring services to help document and evaluate the effects of the surface compaction operation on existing structures. In the absence of vibration monitoring it is recommended the vibratory roller remain a minimum of 100 feet from existing structures. Within this zone, use of a vibratory roller operating in the static mode is recommended.

10. Test the subgrade for compaction at a frequency of not less than one test per 2,500 square feet in the building/structural areas, or a minimum of three test locations per building/structure, whichever is greater.
11. Place fill material, as required. Offsite fill (import) material should contain less than 10 percent passing the No. 200 sieve. Place backfill and fill in uniform 10- to 12-inch loose lifts and compact each lift to a minimum density of 95 percent of the modified Proctor maximum dry density. Verification testing should be performed prior to the next lift being placed.
12. Additionally, we recommend that you test every column footing, and one test per every 100 lineal feet of wall footing, with a minimum of four tests. Footings should be visually inspected and probed with a static cone penetrometer to verify stability.

**Vibrations produced during vibratory compaction operations at the site may be significantly noticeable within 100 feet and may cause distress to adjacent structures if not properly regulated.** Provisions should be made to monitor these vibrations so that any necessary modifications in the compaction operations can be made in the field before potential damages occur.

#### **4.9 STORMWATER MANAGEMENT AREAS**

The laboratory test data indicates that the surficial sandy soils in the proposed stormwater management area for this project generally has permeability rates of 1 to 15 feet per day at the boring locations. Based upon the above findings, we recommend that you consider the soil parameters presented in Table 4 for design of the stormwater management system on the subject project site. It should be noted that the above referenced values are measured values and do not incorporate factor of safety. In addition, modeling of the ponds should include consideration of the influence of adjacent ponds and the difference in elevations.



<b>Table 4 – Stormwater Management Area Soil Design Parameters</b>				
Corresponding Soil Boring Test Locations	B-1	B-2	B-3	B-4
Estimated Ground Surface Elevations, feet	72	72	73	74
Estimated Average Depth to Confining/Restrictive Layer, feet <sup>2</sup>	2	2.5	3.5	6
Average Elevation of base of mobilized or effective aquifer, feet	70	69.5	69.5	68
Unsaturated Vertical Infiltration Rate, feet per day	8	0.8	9	12
Estimated Horizontal Hydraulic Conductivity, feet per day <sup>2</sup>	14	1.3	16	20
Estimated Fillable Porosity, percentage	25	20	25	25
Estimated Average Depth of Seasonal High Water Table, feet <sup>1</sup>	70.5	70	70	68.5
Estimated Average Elevation of Seasonal High Water Table, feet <sup>1</sup>	1.5	2	3	5.5

<sup>1</sup>Normal seasonal high water table (SHWT) will be the result of perched conditions caused by the underlying clayey soils.

<sup>2</sup>It should be noted that over-excavation of the clayey soils will result in a deeper restrictive layer and consequently a deeper seasonal high groundwater level. The extent of the clayey sandy soils should become apparent at the time of the construction of the stormwater management facilities. Undercutting the clayey soils and backfilling with native sandy soils may result in an increase in vertical hydraulic conductivity; however horizontal conductivity will not be increased unless the extent of the undercutting will reach the clean sandy zones. Any kind of improvement operations must be field verified.

#### **4.10 FILL SUITABILITY**

We understand that fill material resulting from the excavation activities may be reused as backfill material. We believe the onsite soils resulting from excavations will vary significantly, in terms of their suitability for use as engineered backfill and fill.

The recovered soil samples were classified using visual and textural means, and limited laboratory testing. We offer the following **preliminary guidelines** for the use of on-site soils, such as those excavated from the proposed shallow retention areas, as fill material for the project.

Soil materials excavated and classified as fine sands to sand with silts and sand with clay [SP, SP-SM, SP-SC]/(A-3), with typically 12% fines or less (silt/clay fraction), may be considered suitable for use as utility trench backfill and pavement structural fill, provided said materials are properly dried, placed, and compacted.

Soil materials excavated and classified as silty to silty clayey fine sands [SM, SM-SC]/(A-2-4), with typically 12% to 25% fines, may also be considered suitable for use as utility trench backfill and structural fill, after significant drying and some mixing with the fine sand material described above. Proper placement, proof rolling and compaction must also be performed.

Soil materials excavated and classified as clayey sand, silt or clay [SC, ML, MH, CL, and CH]/(A-2-6 to A-7) and any organic-laden soils (5% or greater organics by weight) should not be reused as fill. These materials could be used in green areas, if applicable and in non-structural applications where excessive ground subsidence will not create functional or aesthetic problems. It should be noted that silt and clay materials will retain water and if used may become saturated and soft for a significant period of time following a rain event.

Soil borings for a typical geotechnical report are widely spaced and generally not sufficient for reliably detecting the presence of isolated, anomalous surface or subsurface conditions, or reliably estimating unsuitable or suitable material quantities. Accordingly, UES does not recommend relying on our boring information to negate presence of anomalous materials or for estimation of material quantities unless our contracted services **specifically** include sufficient exploration for such purpose(s) and within the report we so state that the level of exploration provided should be sufficient to detect such anomalous conditions or estimate such quantities. Therefore, UES will not be responsible for any extrapolation or use of our data by others beyond the purpose(s) for which it is applicable or intended.

### **5.0 REPORT LIMITATIONS**

This Report has been prepared for the exclusive use of the CPH, LLC, and other members of the Design/Construction Team for the specific project discussed in this Report. This Report has been prepared in accordance with generally accepted local engineering practices; no other warranty is expressed or implied.

The evaluation and recommendations submitted in this Report are based in part upon the data collected from the shallow, limited field exploration and the provided traffic data. The nature or extent of variations throughout the subsurface profile may not be fully reflected in the findings. If any changes in the design or location or elevation of the proposed construction as outlined in this Report are planned, or if any structures are included or added that are not discussed in the Report, the conclusions and recommendations contained in this Report shall not be considered valid unless the changes are reviewed and the conclusions modified or confirmed by Universal Engineering Sciences.

Because of the natural limitations inherent in working with the subsurface, it is not possible for geotechnical/geologic professionals to anticipate and predict all possible subsurface variations and their potential affect on the subject of this study. A GBA publication, "Important Information about Your Geotechnical Engineering Report" appears in **Appendix C**, and will help explain the nature of geotechnical issues. Further, we present documents in Appendix C: Constraints and Restrictions, to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

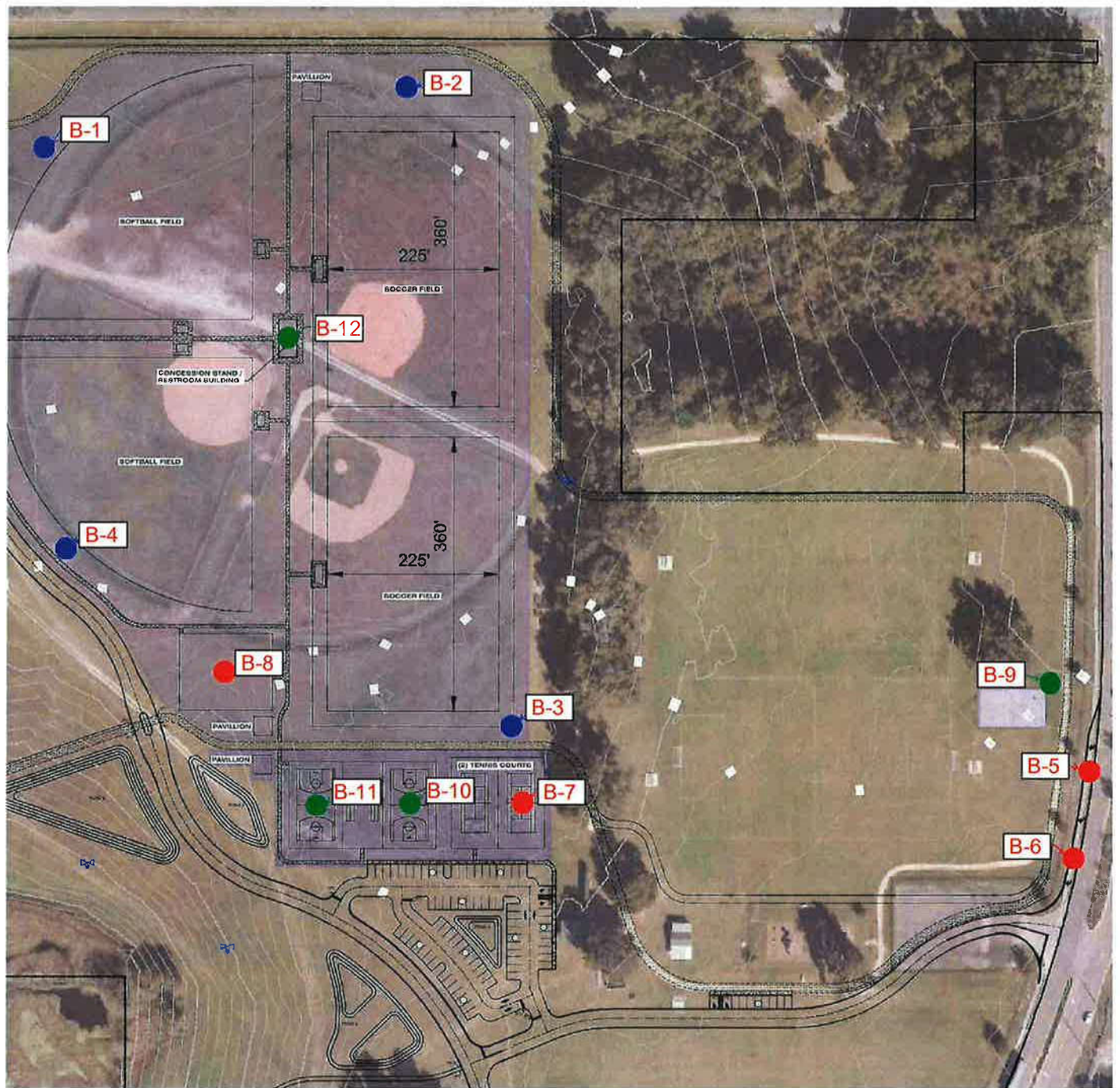
# **APPENDIX A**

**Boring Location Plan Boring Logs**

**Roadway Soil Survey Sheets**

**Boring Coordinates**

**Key to Boring Logs**



UNIVERSAL  
ENGINEERING SCIENCES

MILLENIUUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

**BORING LOCATION PLAN**

DRAWN BY: KD	DATE: 8/30/22	CHECKED BY: ES	DATE: 8/30/22
SCALE: 1"=200'	PROJECT NO:0230.2200116.0000	REPORT NO: 1975132	PAGE NO: A - 1

0230.2200116-A



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-1

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-1** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC

G.S. ELEVATION (ft): DATE STARTED: 8/18/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE DATE FINISHED: 8/18/22

REMARKS:

DATE OF READING: 8/18/22 DRILLED BY: M. BOATRIGHT

EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0												
1	X					Brown SAND, with silt [SP-SM] (A-3)	10	3			11	
2	X				Tan SAND, with silt [SP-SM] (A-3)							
3	X				Brown and orange clayey SAND [SC] (A-2-6)							
4												
5	X					Gray and orange very clayey SAND [SC] (A-2-6)						
6												
7												
8												
9												
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-2

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-2** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/18/22  
WATER TABLE (ft): NE DATE FINISHED: 8/18/22  
DATE OF READING: 8/18/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	SAMPLE	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0	X				[Diagonal Hatching]	Orange and light brown silty clayey SAND [SM-SC] (A-2-4)	17	5			1	
1	X					Gray and orange clayey SAND [SC] (A-2-6)						
2												
3	X				[Diagonal Hatching]	Green and orange CLAY [CH] (A-7)	79	40				
4	X											
5	X											
6												
7	X											
8												
9	X											
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-3

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-3**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC

G.S. ELEVATION (ft):

DATE STARTED: 8/18/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 8/18/22

REMARKS:

DATE OF READING: 8/18/22

DRILLED BY: M. BOATRIGHT

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0	X					Brown SAND, with silt [SP-SM] (A-3)	10	4			12	
1	X					Brown and light orange SAND, with silt [SP-SM] (A-3)						
2												
3												
4	X					Orange clayey SAND [SC] (A-2-6)						
5												
6	X					Orange and gray sandy CLAY [CH] (A-7)						
7												
8												
9	X					Orange and green CLAY [CH], with limestone fragments (A-7)						
10						Boring Terminated at 10'						



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-4

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-4** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/18/22  
WATER TABLE (ft): NE DATE FINISHED: 8/18/22  
DATE OF READING: 8/18/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1452

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./ DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Light brown and tan SAND, with silt [SP-SM] (A-3)						
1	X											
2							8	4			15	
3												
4	X					Tan SAND, with silt [SP-SM] (A-3)						
5												
6	X					Orange and brown very clayey SAND [SC] (A-2-6)						
7												
8	X					Gray and orange CLAY [CH] (A-7)						
9												
10	X					Boring Terminated at 10'						





# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-5

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-5**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC

G.S. ELEVATION (ft):

DATE STARTED: 8/17/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 8/17/22

REMARKS:

DATE OF READING: 8/17/22

DRILLED BY: M. BOATRIGHT

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Brown SAND, with silt [SP-SM] (A-3)						
1						Loose to medium dense tan and light orange SAND [SP] (A-3)						
2		2-5-4	9				4	4				
3												
4		3-3-3	6									
5												
6		2-3-3	6									
7						Medium dense orange silty clayey SAND [SM-SC] (A-2-4)						
8		3-5-9	14			Medium dense tan and orange clayey SAND [SC] (A-2-6)						
9		8-6-6	12									
10		8-7-8	15									
11												
12												
13												
14												
15		8-7-7	14			Boring Terminated at 15'						

BORING MILLENIUM PARK WILDWOOD GPJ GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-6

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-6** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/17/22  
WATER TABLE (ft): NE DATE FINISHED: 8/17/22  
DATE OF READING: 8/17/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Brown SAND, with silt [SP-SM] (A-3)						
1						Medium dense to loose tan and light orange SAND, with silt [SP-SM] (A-3)						
2		10-10-9	19									
3												
4		5-4-5	9									
5		2-2-3	5			Medium dense tan and orange clayey SAND [SC] (A-2-6)						
6												
7		2-3-3	6									
8		3-4-6	10									
9						Boring Terminated at 15'						
10		7-5-7	12				30	15				
11												
12												
13												
14												
15		7-7-10	17									

BORING MILLENIUM PARK WILDWOOD.GPJ GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

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PAGE: A-7

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-7**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft):  
WATER TABLE (ft): NE  
DATE OF READING: 8/18/22  
EST. W.S.W.T. (ft):  
DATE STARTED: 8/18/22  
DATE FINISHED: 8/18/22  
DRILLED BY: M. BOATRIGHT  
TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Brown SAND, with silt [SP-SM] (A-3)						
1						Very loose light brown and tan SAND, with silt [SP-SM] (A-3)						
2		1-2-1	3									
3												
4		2-1-1	2			Very loose to loose orange silty clayey SAND [SM-SC] (A-2-4)						
5		1-2-1	3				19	11				
6												
7		4-3-4	7									
8		4-3-5	8			Stiff green and orange CLAY [CH] (A-7)						
9												
10		5-5-5	10									
11												
12						Loose gray very clayey SAND [SC] (A-2-6)						
13												
14						Firm green and orange CLAY [CH], trace sand (A-7)						
15		2-3-4	7			Boring Terminated at 15'						

BORING MILLENIUM PARK WILDWOOD.GPJ GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-8

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-8**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft):  
WATER TABLE (ft): NE  
DATE OF READING: 8/16/22  
EST. W.S.W.T. (ft):  
DATE STARTED: 8/16/22  
DATE FINISHED: 8/16/22  
DRILLED BY: M. BOATRIGHT  
TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Brown SAND, with silt [SP-SM] (A-3)						
1						Loose tan and light orange SAND, with silt [SP-SM] (A-3)						
2		3-3-3	6									
3						Loose orange silty clayey SAND [SM-SC] (A-2-4)						
4		2-2-2	4									
5						Loose to medium dense light brown, gray and orange clayey SAND [SC] (A-2-6)						
6		3-2-3	5									
7						Stiff orange and green CLAY [CH] (A-7)						
8		3-3-3	6									
9						Boring Terminated at 15'						
10		4-3-4	7									
11												
12												
13												
14												
15		5-6-7	13									

BORING MILLENIUM PARK WILDWOOD.GPJ - GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-9

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-9** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/17/22  
WATER TABLE (ft): NE DATE FINISHED: 8/17/22  
DATE OF READING: 8/17/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Brown SAND, with silt [SP-SM] (A-3)						
1						Loose light brown and tan SAND [SP] (A-3)						
2		2-3-2	5			Loose tan and light orange SAND [SP] (A-3)						
3												
4		2-2-2	4									
5		2-2-3	5									
6						Medium dense orange and light brown silty clayey SAND [SM-SC] (A-2-4)						
7		4-5-7	12			Medium dense tan and orange clayey SAND [SC] (A-2-6)	19	10				
8		6-5-7	12									
9												
10		6-7-9	16									
11												
12												
13												
14												
15		7-8-8	16									
16						Stiff green and orange CLAY [CH] (A-7)						
17												
18												
19												
20		3-4-7	11			Boring Terminated at 20'						

BORING MILLENIUM PARK WILDWOOD GPJ GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.:	0230.2200116.0000
REPORT NO.:	1975132
PAGE:	A-10

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-10** SHEET: **1 of 1**  
SECTION: TOWNSHIP: RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/18/22  
WATER TABLE (ft): NE DATE FINISHED: 8/18/22  
DATE OF READING: 8/18/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	SAMPLING	BLOWS PER 6" INCREMENT	N VALUE	W.T.	SYMBOL	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)		
									LL	PI				
0						Brown SAND, with silt [SP-SM] (A-3)								
1														
2		5-7-6	13			Medium dense light brown and tan SAND [SP] (A-3)								
3						Loose tan and light orange SAND [SP] (A-3)								
4		4-4-3	7											
5		3-2-2	4			Loose orange clayey SAND [SC] (A-2-4)								
6														
7		3-2-3	5			Loose to medium dense gray and orange very clayey SAND to sandy CLAY [SC/CH] (A-2-6)	21	13						
8		3-4-6	10											
9														
10		4-6-6	12											
11														
12						Stiff green and orange CLAY [CH] (A-7)								
13														
14														
15		3-5-6	11											
16														
17														
18														
19						Loose gray and green very clayey SAND [SC] (A-2-6)								
20		3-3-4	7			Boring Terminated at 20'								

BORING MILLENIUM PARK WILDWOOD.GPJ GAINESVILLE TEMPLATE.GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-11

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-11**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC  
LOCATION: SEE BORING LOCATION PLAN  
REMARKS:

G.S. ELEVATION (ft): DATE STARTED: 8/18/22  
WATER TABLE (ft): NE DATE FINISHED: 8/18/22  
DATE OF READING: 8/18/22 DRILLED BY: M. BOATRIGHT  
EST. W.S.W.T. (ft): TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Light brown SAND, with silt [SP-SM] (A-3)						
1						Very loose tan and light orange SAND, with silt [SP-SM] (A-3)						
2		1-1-1	2									
3												
4		1-1-2	3									
5						Loose orange silty clayey SAND [SM-SC] (A-2-4)						
6		1-2-2	4				20	13				
7		2-3-3	6									
8						Medium dense tan and orange very clayey SAND [SC], with lenses of clay (A-2-6)						
9		4-4-6	10									
10		5-5-6	11									
11												
12												
13												
14												
15		5-6-6	12									
16												
17						Stiff green and orange CLAY [CH], trace sand (A-7)						
18												
19												
20		4-5-5	10			Boring Terminated at 20'						

BORING MILLENIUM PARK WILDWOOD GPJ GAINESVILLE TEMPLATE GDT 9/15/22



# UNIVERSAL ENGINEERING SCIENCES BORING LOG

PROJECT NO.: 0230.2200116.0000

REPORT NO.: 1975132

PAGE: A-12

PROJECT: MILLENIUM PARK IMPROVEMENTS  
6500 POWELL ROAD  
WILDWOOD, FLORIDA

BORING DESIGNATION: **B-12**  
SECTION: TOWNSHIP:

SHEET: **1 of 1**  
RANGE:

CLIENT: CPH, LLC

G.S. ELEVATION (ft):

DATE STARTED: 8/18/22

LOCATION: SEE BORING LOCATION PLAN

WATER TABLE (ft): NE

DATE FINISHED: 8/18/22

REMARKS:

DATE OF READING: 8/18/22

DRILLED BY: M. BOATRIGHT

EST. W.S.W.T. (ft):

TYPE OF SAMPLING: ASTM D-1586

DEPTH (FT.)	S A M P L E	BLOWS PER 6" INCREMENT	N VALUE	W.T.	S Y M B O L	DESCRIPTION	-200 (%)	MC (%)	ATTERBERG LIMITS		K (FT./DAY)	ORGANIC CONTENT (%)
									LL	PI		
0						Light brown SAND, with silt [SP-SM] (A-3)						
1						Loose tan and light orange SAND, with silt [SP-SM] (A-3)						
2		3-3-3	6									
3												
4		2-2-2	4									
5		3-3-4	7			Medium dense orange and light brown clayey SAND [SC] (A-2-6)						
6												
7		6-6-7	13				30	16				
8		4-5-6	11			Loose light brown and orange very clayey SAND [SC] (A-2-6)						
9												
10		4-5-5	10									
11												
12						Firm green, gray and orange CLAY [CH], with limestone fragments (A-7)						
13												
14												
15		3-2-4	6									
16												
17												
18												
19												
20		2-2-3	5			Boring Terminated at 20'						

BORING MILLENIUM PARK WILDWOOD.GPJ GAINESVILLE TEMPLATE GDT 9/15/22



CROSS SECTION SOIL SURVEY FOR THE DESIGN OF ROAD AND POND

REPORT OF TESTS OF MATERIALS FROM ROADWAY FOR USE IN EMBANKMENT AND SUBGRADE

STRATUM NO.	MOISTURE CONTENT		SIEVE ANALYSIS RESULTS % PASSING			ATTERBERG LIMITS ( % )			MATERIAL DESCRIPTION		
	NO. OF TESTS	% ORGANIC	NO. OF TESTS	10 MESH	40 MESH	200 MESH	NO. OF TESTS	LIQUID LIMIT		PLASTIC INDEX	AASHTO GROUP
1.	4	-	3-1	100	88	4-10	-	-	-	A-3	TAN AND BROWN SAND TO SAND, WITH SILT
2.	4	-	5-13	-	-	17-20	-	-	-	A-2-4	ORANGE AND BROWN SILTY TO SILTY CLAYEY SAND
3.	3	-	13-16	-	-	21-30	-	-	-	A-2-6	GRAY, TAN AND ORANGE CLAYEY SAND
4.	1	-	40	-	-	79	-	-	-	A-7	GRAY, ORANGE AND GREEN SANDY CLAY TO CLAY

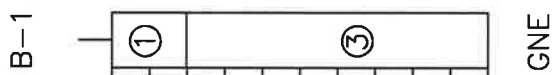
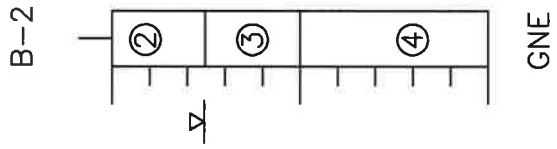
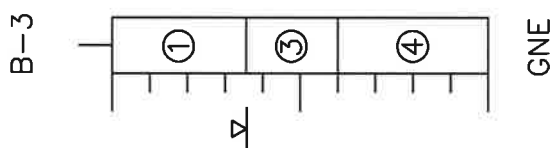
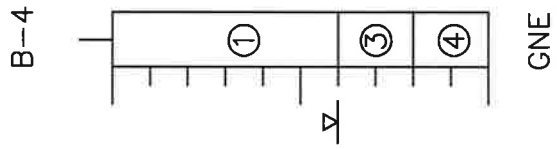
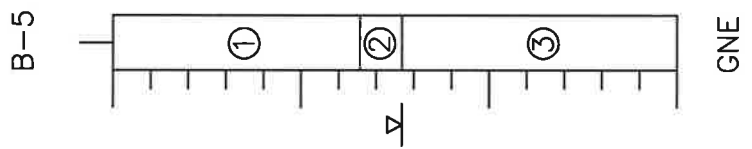
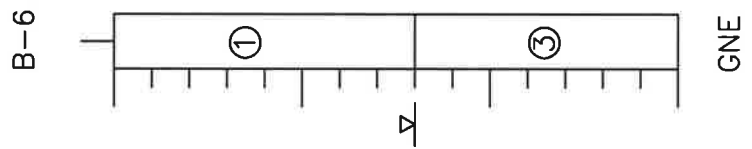
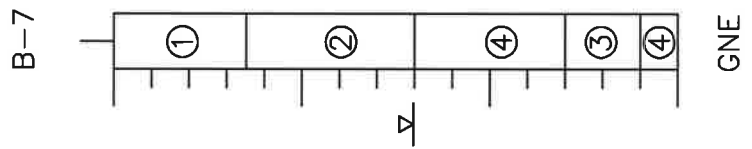
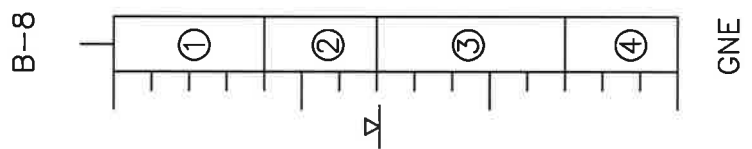
APPROXIMATE AND REPRESENT SOIL STRATA AT EACH TEST HOLE LOCATION ONLY. MAKE FINAL CHECK AFTER GRADING  
 PLASTIC MATERIAL OCCURRING WITHIN THE ROADWAY SHALL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-002 AND THE MATERIAL UTILIZED IN THE EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001.

EMBANKMENT AND SUBGRADE MATERIAL  
 NONE GROUNDWATER NOT ENCOUNTERED  
 LOW GROUNDWATER TABLE  
 SEASONAL HIGH GROUNDWATER

ONLY FOR SOIL SAMPLES TAKEN FROM THE BORINGS SHOWN IN THESE PLANS AND ARE NOT TO BE CONSIDERED AS A GUARANTEE OF SOIL CONDITIONS OTHER THAN AT THE EXACT LOCATIONS OF THOSE BORINGS. FROM SAMPLES TAKEN FROM ONE OR MORE OF THE BORINGS AND ARE NOT INTENDED TO GUARANTEE ANY TEST VALUES OTHER THAN AN APPROXIMATION AT THE LOCATIONS OF THE BORINGS. TEST VALUES MAY NOT INCLUDE THE HIGH AND/OR LOW VALUES FOR A SPECIFIC STRATUM. DURING THE PROCESS OF THE WORK, THE CONTRACTOR MIGHT ENCOUNTER SOILS HAVING TEST VALUES WHICH DIFFER FROM THOSE SHOWN ON THESE PLANS. IF THERE ARE ANY QUESTIONS CONCERNING THE PREVAILING SUBSURFACE CONDITIONS, OR ANY OF THE TEST VALUES SHOWN FOR ANY SOIL STRATUM, IT IS THE RESPONSIBILITY OF THE INDIVIDUAL RAISING THE QUESTION TO CONTACT THE ENGINEER IMMEDIATELY.  
 NO. 4 ARE PLASTIC TO HIGHLY PLASTIC MATERIAL AND WHEN UTILIZED IN THE EMBANKMENT AND SUBGRADE WILL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001.

ERIAL.  
 MATERIAL AND APPEARS SATISFACTORY FOR USE IN THE EMBANKMENT WHEN UTILIZED IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001. HOWEVER THIS MATERIAL MAY RETAIN EXCESS MOISTURE AND SHOULD BE DRYED TO 15% MOISTURE BEFORE USE.  
 NO. 4 ARE PLASTIC TO HIGHLY PLASTIC MATERIAL AND WHEN UTILIZED IN THE EMBANKMENT AND SUBGRADE WILL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001.  
 ONLY FOR SOIL SAMPLES TAKEN FROM THE BORINGS SHOWN IN THESE PLANS AND ARE NOT TO BE CONSIDERED AS A GUARANTEE OF SOIL CONDITIONS OTHER THAN AT THE EXACT LOCATIONS OF THOSE BORINGS. FROM SAMPLES TAKEN FROM ONE OR MORE OF THE BORINGS AND ARE NOT INTENDED TO GUARANTEE ANY TEST VALUES OTHER THAN AN APPROXIMATION AT THE LOCATIONS OF THE BORINGS. TEST VALUES MAY NOT INCLUDE THE HIGH AND/OR LOW VALUES FOR A SPECIFIC STRATUM. DURING THE PROCESS OF THE WORK, THE CONTRACTOR MIGHT ENCOUNTER SOILS HAVING TEST VALUES WHICH DIFFER FROM THOSE SHOWN ON THESE PLANS. IF THERE ARE ANY QUESTIONS CONCERNING THE PREVAILING SUBSURFACE CONDITIONS, OR ANY OF THE TEST VALUES SHOWN FOR ANY SOIL STRATUM, IT IS THE RESPONSIBILITY OF THE INDIVIDUAL RAISING THE QUESTION TO CONTACT THE ENGINEER IMMEDIATELY.  
 NO. 4 ARE PLASTIC TO HIGHLY PLASTIC MATERIAL AND WHEN UTILIZED IN THE EMBANKMENT AND SUBGRADE WILL BE IN ACCORDANCE WITH STANDARD PLANS INDEX 120-001.

EXPECTED TO FLUCTUATE DUE TO SEASONAL CLIMATIC VARIATIONS AND SURFACE RUN-OFF.



### Boring Coordinates

<b>Boring #</b>	<b>Lat (DMS)</b>	<b>Long (DMS)</b>
B-1	28° 51' 27.00" N	82° 1' 30.25" W
B-2	28° 51' 27.75" N	82° 1' 25.00" W
B-3	28° 51' 19.55" N	82° 1' 23.40" W
B-4	28° 51' 21.90" N	82° 1' 29.90" W
B-5	28° 51' 19.10" N	82° 1' 14.90" W
B-6	28° 51' 18.00" N	82° 1' 15.10" W
B-7	28° 51' 18.40" N	82° 1' 23.35" W
B-8	28° 51' 20.25" N	82° 1' 27.75" W
B-9	28° 51' 20.20" N	82° 1' 15.45" W
B-10	28° 51' 18.55" N	82° 1' 25.00" W
B-11	28° 51' 18.55" N	82° 1' 26.35" W
B-12	28° 51' 24.60" N	82° 1' 26.70" W



**KEY TO BORING LOGS**

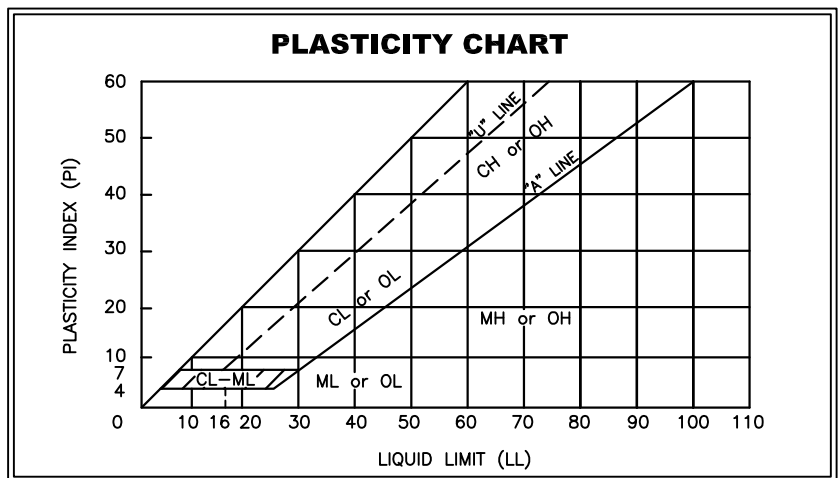
SYMBOLS	
	Number of Blows of a 140-lb Weight Falling 30 in. Required to Drive Standard Spoon One Foot
	Weight of Drill Rods
	Thin-Wall Shelby Tube Undisturbed Sampler Used
	Percent Core Recovery from Rock Core-Drilling Operations
	Sample Taken at this Level
	Sample Not Taken at this Level
	Change in Soil Strata
	Free Ground Water Level
	Seasonal High Ground Water Level

UNIFIED CLASSIFICATION SYSTEM			
MAJOR DIVISIONS		GROUP SYMBOLS	TYPICAL NAMES
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve*	GRAVELS 50% or more of coarse fraction retained on No. 200 sieve	CLEAN GRAVELS	GW Well-graded gravels and gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GP Poorly graded gravels and gravel-sand mixtures, little or no fines
		CLEAN SANDS	GM Silty gravels, gravel-sand-silt mixtures
		SANDS WITH FINES	GC Clayey gravels, gravel-sand-clay mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS	SW Well-graded sands and gravelly sands, little or no fines
		SANDS WITH FINES	SP Poorly graded sands and gravelly sands, little or no fines
FINE-GRAINED SOILS 50% or more passes No. 200 sieve*	SILTS AND CLAYS Liquid limit 50% or less	ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
		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
	SILTS AND CLAYS Liquid limit greater than 50%	MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
		CH	Inorganic clays or high plasticity, fat clays
		OH	Organic clays of medium to high plasticity
Highly organic Soils	PT	Peat, muck and other highly organic soils	

\* Based on the material passing the 3-in. (75mm) sieve.

GRANULAR MATERIALS		
	Safety Hammer SPT N (Blows/Ft.)	Automatic Hammer SPT N (Blows/Ft.)
Very Loose	Less than 4	Less than 3
Loose	4-10	3-8
Medium Dense	10-30	8-24
Dense	30-50	24-40
Very Dense	>50	>40

COHESIVE MATERIALS		
	Safety Hammer SPT N (Blows/Ft.)	Automatic Hammer SPT N (Blows/Ft.)
Very Soft	Less than 2	Less than 1
Soft	2-4	1-3
Firm	4-8	3-6
Stiff	8-15	6-12
Very Stiff	15-30	12-24
Hard	>30	>24



# **APPENDIX B**

**Summary of Laboratory Test Results**

**Grain Sieve Analysis Test Results**



# SUMMARY OF LABORATORY RESULTS

UNIVERSAL  
ENGINEERING SCIENCES

PROJECT: Millenium Park Improvements – Phase 2

REPORT: 1975132

CLIENT: CPH, LLC

September 7, 2022

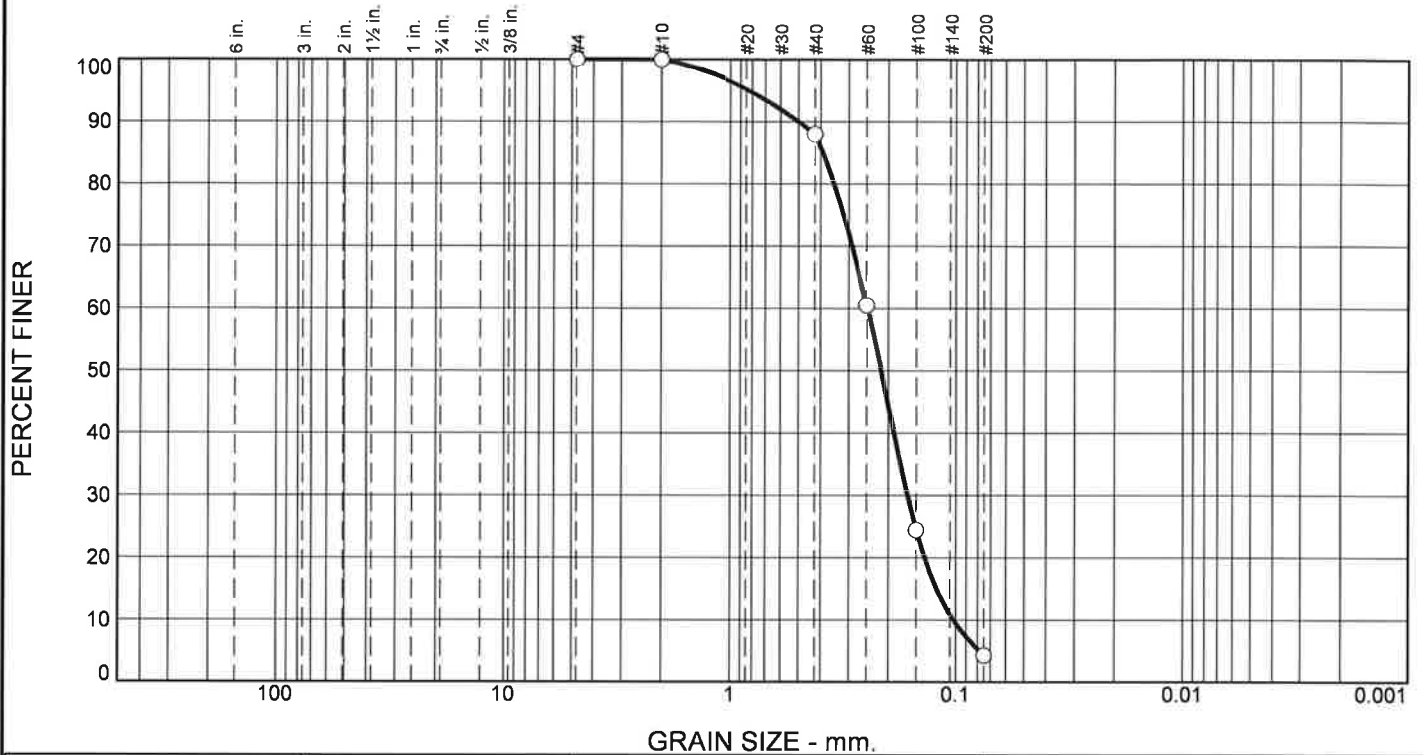
BORING NO.	SAMPLE DEPTH (FT)	SOIL DESCRIPTION	SAMPLE TYPE*	NATURAL MOISTURE (%)	ATTERBERG LIMITS		PERMEABILITY (FT/DAY)	SIEVE ANALYSIS (% PASSING)						AASHTO SOIL CLASSIFICATION	UNIFIED SOIL CLASSIFICATION
					LIQUID LIMIT (%)	PLASTICITY INDEX (%)		No. 4	No. 10	No. 40	No. 60	No. 100	No. 200		
B-1	1	Tan Sand, with silt	A	3			11						10	A-3	SP-SM
B-2	0.5	Orange/Light Brown Silty-Clayey Sand	A	5			1						17	A-2-4	SM-SC
B-2	5.5	Green Clay	A	40									79	A-7	CH
B-3	0.5	Brown Sand, with silt	A	4			12						10	A-3	SP-SM
B-4	2	Light Brown/Tan Sand, with silt	A	4			15						8	A-3	SP-SM
B-5	2	Tan/Light Orange Sand	SS	4				100	100	88	61	24	4	A-3	SP
B-6	9	Brown/Orange Clayey Sand	SS	15									30	A-2-6	SC
B-7	5	Orange Silty-Clayey Sand	SS	11									19	A-2-4	SM-SC
B-9	6.5	Orange/Light Brown Silty-Clayey Sand	SS	10									19	A-2-4	SM-SC
B-10	6.5	Orange Clayey Sand	SS	13									21	A-2-4	SC
B-11	5	Orange Silty-Clayey Sand	SS	13									20	A-2-4	SM-SC
B-12	6.5	Orange/Light Brown Clayey Sand	SS	16									30	A-2-6	SC

SS-Split-Spoon

A-Auger

ST-Shelby Tube

# Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	12.0	83.7	4.3	

TEST RESULTS			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	100.0		
#40	88.0		
#60	60.5		
#100	24.4		
#200	4.3		

**Material Description**

Tan/Light Orange Sand

**Atterberg Limits (ASTM D 4318)**

PL= \_\_\_\_\_ LL= \_\_\_\_\_ PI= \_\_\_\_\_

**Classification**

USCS (D 2487)= SP      AASHTO (M 145)= A-3

**Coefficients**

D <sub>90</sub> = 0.5008	D <sub>85</sub> = 0.3925	D <sub>60</sub> = 0.2481
D <sub>50</sub> = 0.2163	D <sub>30</sub> = 0.1644	D <sub>15</sub> = 0.1220
D <sub>10</sub> = 0.1028	C <sub>u</sub> = 2.41	C <sub>c</sub> = 1.06

Remarks

Date Received: \_\_\_\_\_ Date Tested: \_\_\_\_\_

Tested By: PH \_\_\_\_\_

Checked By: ES/TK \_\_\_\_\_

Title: P.E. \_\_\_\_\_

\* (no specification provided)

Location: B-5      Depth: 2  
 Sample Number: 1

Date Sampled: \_\_\_\_\_

**Universal  
Engineering  
Sciences**

Client: CPH, LLC  
 Project: Millennium Park Improvements - Phase 2

Project No: 0230.2200116.0000

Figure

## **APPENDIX C**

**Important Information About Your Geotechnical Engineering Report  
Constraint and Restrictions**



# Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

**The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.**

## Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

## Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

## You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

## This Report May Not Be Reliable

*Do not rely on this report* if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

## Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

## This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

## This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

## Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

## Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

## Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

## Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



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# CONSTRAINTS & RESTRICTIONS

The intent of this document is to bring to your attention the potential concerns and the basic limitations of a typical geotechnical report.

## WARRANTY

Universal Engineering Sciences has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices, and makes no other warranty either expressed or implied as to the professional advice provided in the report.

## UNANTICIPATED SOIL CONDITIONS

The analysis and recommendations submitted in this report are based upon the data obtained from soil borings performed at the locations indicated on the Boring Location Plan. This report does not reflect any variations which may occur between these borings.

The nature and extent of variations between borings may not become known until excavation begins. If variations appear, we may have to re-evaluate our recommendations after performing on-site observations and noting the characteristics of any variations.

## CHANGED CONDITIONS

We recommend that the specifications for the project require that the contractor immediately notify Universal Engineering Sciences, as well as the owner, when subsurface conditions are encountered that are different from those present in this report.

No claim by the contractor for any conditions differing from those anticipated in the plans, specifications, and those found in this report, should be allowed unless the contractor notifies the owner and Universal Engineering Sciences of such changed conditions. Further, we recommend that all foundation work and site improvements be observed by a representative of Universal Engineering Sciences to monitor field conditions and changes, to verify design assumptions and to evaluate and recommend any appropriate modifications to this report.

## MISINTERPRETATION OF SOIL ENGINEERING REPORT

Universal Engineering Sciences is responsible for the conclusions and opinions contained within this report based upon the data relating only to the specific project and location discussed herein. If the conclusions or recommendations based upon the data presented are made by others, those conclusions or recommendations are not the responsibility of Universal Engineering Sciences.

## CHANGED STRUCTURE OR LOCATION

This report was prepared in order to aid in the evaluation of this project and to assist the architect or engineer in the design of this project. If any changes in the design or location of the structure as outlined in this report are planned, or if any structures are included or added that are not discussed in the report, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions modified or approved by Universal Engineering Sciences.

## USE OF REPORT BY BIDDERS

Bidders who are examining the report prior to submission of a bid are cautioned that this report was prepared as an aid to the designers of the project and it may affect actual construction operations.

Bidders are urged to make their own soil borings, test pits, test caissons or other investigations to determine those conditions that may affect construction operations. Universal Engineering Sciences cannot be responsible for any interpretations made from this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which will affect construction operations.

## STRATA CHANGES

Strata changes are indicated by a definite line on the boring logs which accompany this report. However, the actual change in the ground may be more gradual. Where changes occur between soil samples, the location of the change must necessarily be estimated using all available information and may not be shown at the exact depth.

## OBSERVATIONS DURING DRILLING

Attempts are made to detect and/or identify occurrences during drilling and sampling, such as: water level, boulders, zones of lost circulation, relative ease or resistance to drilling progress, unusual sample recovery, variation of driving resistance, obstructions, etc.; however, lack of mention does not preclude their presence.

## WATER LEVELS

Water level readings have been made in the drill holes during drilling and they indicate normally occurring conditions. Water levels may not have been stabilized at the last reading. This data has been reviewed and interpretations made in this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, tides, and other factors not evident at the time measurements were made and reported. Since the probability of such variations is anticipated, design drawings and specifications should accommodate such possibilities and construction planning should be based upon such assumptions of variations.

## LOCATION OF BURIED OBJECTS

All users of this report are cautioned that there was no requirement for Universal Engineering Sciences to attempt to locate any man-made buried objects during the course of this exploration and that no attempt was made by Universal Engineering Sciences to locate any such buried objects. Universal Engineering Sciences cannot be responsible for any buried man-made objects which are subsequently encountered during construction that are not discussed within the text of this report.

## TIME

This report reflects the soil conditions at the time of exploration. If the report is not used in a reasonable amount of time, significant changes to the site may occur and additional reviews may be required.



**Universal Engineering Sciences, LLC**  
**GENERAL CONDITIONS**

**SECTION 1: RESPONSIBILITIES** 1.1 Universal Engineering Sciences, LLC, and its subsidiaries and affiliated companies ("UES"), is responsible for providing the services described under the Scope of Services. The term "UES" as used herein includes all of UES's agents, employees, professional staff, and subcontractors. 1.2 The Client or a duly authorized representative is responsible for providing UES with a clear understanding of the project nature and scope. The Client shall supply UES with sufficient and adequate information, including, but not limited to, maps, site plans, reports, surveys, plans and specifications, and designs, to allow UES to properly complete the specified services. The Client shall also communicate changes in the nature and scope of the project as soon as possible during performance of the work so that the changes can be incorporated into the work product. 1.3 The Client acknowledges that UES's responsibilities in providing the services described under the Scope of Services section is limited to those services described therein, and the Client hereby assumes any collateral or affiliated duties necessitated by or for those services. Such duties may include, but are not limited to, reporting requirements imposed by any third party such as federal, state, or local entities, the provision of any required notices to any third party, or the securing of necessary permits or permissions from any third parties required for UES's provision of the services so described, unless otherwise agreed upon by both parties in writing.

**SECTION 2: STANDARD OF CARE** 2.1 Services performed by UES under this Agreement will be conducted in a manner consistent with the level of care and skill ordinarily exercised by members of UES's profession practicing contemporaneously under similar conditions in the locality of the project. No other warranty, express or implied, is made. 2.2 Execution of this document by UES is not a representation that UES has visited the site, become generally familiar with local conditions under which the work is to be performed, or correlated personal observations with the requirements of the Scope of Services. It is the Client's responsibility to provide UES with all information necessary for UES to provide the services described under the Scope of Services, and the Client assumes all liability for information not provided to UES that may affect the quality or sufficiency of the services so described.

**SECTION 3: SITE ACCESS AND SITE CONDITIONS** 3.1 Client will grant or obtain free access to the site for all equipment and personnel necessary for UES to perform the work set forth in this Agreement. The Client will notify any possessors of the project site that Client has granted UES free access to the site. UES will take reasonable precautions to minimize damage to the site, but it is understood by Client that, in the normal course of work, some damage may occur, and the correction of such damage is not part of this Agreement unless so specified in the Scope of Services. 3.2 The Client is responsible for the accuracy of locations for all subterranean structures and utilities. UES will take reasonable precautions to avoid known subterranean structures, and the Client waives any claim against UES, and agrees to defend, indemnify, and hold UES harmless from any claim or liability for injury or loss, including costs of defense, arising from damage done to subterranean structures and utilities not identified or accurately located. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 4: BILLING AND PAYMENT** 4.1 UES will submit invoices to Client monthly or upon completion of services. Invoices will show charges for different personnel and expense classifications. 4.2 Payment is due 30 days after presentation of invoice and is past due 31 days from invoice date. Client agrees to pay a finance charge of one and one-half percent (1 ½ %) per month, or the maximum rate allowed by law, on past due accounts. 4.3 If UES incurs any expenses to collect overdue billings on invoices, the sums paid by UES for reasonable attorneys' fees, court costs, UES's time, UES's expenses, and interest will be due and owing by the Client.

**SECTION 5: OWNERSHIP AND USE OF DOCUMENTS** 5.1 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, as instruments of service, shall remain the property of UES. Neither Client nor any other entity shall change or modify UES's instruments of service. 5.2 Client agrees that all reports and other work furnished to the Client or his agents, which are not paid for, will be returned upon demand and will not be used by the Client for any purpose. 5.3 UES will retain all pertinent records relating to the services performed for a period of five years following submission of the report or completion of the Scope of Services, during which period the records will be made available to the Client in a reasonable time and manner. 5.4 All reports, boring logs, field data, field notes, laboratory test data, calculations, estimates, and other documents prepared by UES, are prepared for the sole and exclusive use of Client, and may not be given to any other entity, or used or relied upon by any other entity, without the express written consent of UES. Client is the only entity to which UES owes any duty or duties, in contract or tort, pursuant to or under this Agreement.

**SECTION 6: DISCOVERY OF UNANTICIPATED HAZARDOUS MATERIALS** 6.1 Client represents that a reasonable effort has been made to inform UES of known or suspected hazardous materials on or near the project site. 6.2 Under this agreement, the term hazardous materials include hazardous materials, hazardous wastes, hazardous substances (40 CFR 261.31, 261.32, 261.33), petroleum products, polychlorinated biphenyls, asbestos, and any other material defined by the U.S. EPA as a hazardous material. 6.3 Hazardous materials may exist at a site where there is no reason to believe they are present. The discovery of unanticipated hazardous materials constitutes a changed condition mandating a renegotiation of the scope of work. The discovery of unanticipated hazardous materials may make it necessary for UES to take immediate measures to protect health and safety. Client agrees to compensate UES for any equipment decontamination or other costs incident to the discovery of unanticipated hazardous materials. 6.4 UES will notify Client when unanticipated hazardous materials or suspected hazardous materials are encountered. Client will make any disclosures required by law to the appropriate governing agencies. Client will hold UES harmless for all consequences of disclosures made by UES which are required by governing law. In the event the project site is not owned by Client, Client it is the Client's responsibility to inform the property owner of the discovery of unanticipated hazardous materials or suspected hazardous materials. 6.5 Notwithstanding any other provision of the Agreement, Client waives any claim against UES, and to the maximum extent permitted by law, agrees to defend, indemnify, and save UES harmless from any claim, liability, and/or defense costs for injury or loss arising from UES's discovery of unanticipated hazardous materials or suspected hazardous materials including any costs created by delay of the project and any cost associated with possible reduction of the property's value. Client will be responsible for ultimate disposal of any samples secured by UES which are found to be contaminated.

**SECTION 7: RISK ALLOCATION** 7.1 Client agrees that UES's liability for any damage on account of any breach of contract, error, omission, or professional negligence will be limited to a sum not to exceed \$50,000 or UES's fee, whichever is greater. If Client prefers to have higher limits on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$1,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$400.00, whichever is greater. If Client prefers a \$2,000,000.00 limit on contractual or professional liability, UES agrees to increase the limits up to a maximum of \$2,000,000.00 upon Client's written request at the time of accepting UES's proposal provided that Client agrees to pay an additional consideration of four percent of the total fee, or \$800.00, whichever is greater. The additional charge for the higher liability limits is because of the greater risk assumed and is not strictly a charge for additional professional liability insurance. 7.2 Client shall not be liable to UES and UES shall not be liable to Client for any incidental, special, or consequential damages (including lost profits, loss of use, and lost savings) incurred by either party due to the fault of the other, regardless of the nature of the fault, or whether it was committed by Client or UES, their employees, agents, or subcontractors; or whether such liability arises in breach of contract or warranty, tort (including negligence), statutory, or any other cause of action. 7.3 As used in this Agreement, the terms "claim" or "claims" mean any claim in contract, tort, or statute alleging negligence, errors, omissions, strict liability, statutory liability, breach of contract, breach of warranty, negligent misrepresentation, or any other act giving rise to liability.

**SECTION 8: INSURANCE** 8.1 UES represents it and its agents, staff and consultants employed by UES, is and are protected by worker's compensation insurance and that UES has such coverage under public liability and property damage insurance policies which UES deems to be adequate. Certificates for all such policies of insurance shall be provided to Client upon request in writing. Within the limits and conditions of such insurance, UES agrees to indemnify and save Client harmless from and against loss, damage, or liability arising from negligent acts by UES, its agents, staff, and consultants employed by it. UES shall not be responsible for any loss, damage or liability beyond the amounts, limits, and conditions of such insurance or the limits described in Section 7, whichever is less. The Client agrees to defend, indemnify, and save UES harmless for loss, damage or liability arising from acts by Client, Client's agents, staff, and others employed by Client. 8.2 Under no circumstances will UES indemnify Client from or for Client's own actions, negligence, or breaches of contract. 8.3

To the extent damages are covered by property insurance, Client and UES waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance.

**SECTION 9: DISPUTE RESOLUTION** **9.1** All claims, disputes, and other matters in controversy between UES and Client arising out of or in any way related to this Agreement will be submitted to mediation or non-binding arbitration, before and as a condition precedent to other remedies provided by law. **9.2** If a dispute arises and that dispute is not resolved by mediation or non-binding arbitration, then: (a) the claim will be brought in the state or federal courts having jurisdiction where the UES office which provided the service is located; and (b) the prevailing party will be entitled to recovery of all reasonable costs incurred, including staff time, court costs, attorneys' fees, expert witness fees, and other claim related expenses.

**SECTION 10: TERMINATION** **10.1** This agreement may be terminated by either party upon seven (7) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof, or in the case of a force majeure event such as terrorism, act of war, public health or other emergency. Such termination shall not be effective if such substantial failure or force majeure has been remedied before expiration of the period specified in the written notice. In the event of termination, UES shall be paid for services performed to the termination notice date plus reasonable termination expenses. **10.2** In the event of termination, or suspension for more than three (3) months, prior to completion of all reports contemplated by the Agreement, UES may complete such analyses and records as are necessary to complete its files and may also complete a report on the services performed to the date of notice of termination or suspension. The expense of termination or suspension shall include all direct costs of UES in completing such analyses, records, and reports.

**SECTION 11: REVIEWS, INSPECTIONS, TESTING, AND OBSERVATIONS** **11.1** Plan review, private provider inspections, and building inspections are performed for the purpose of observing compliance with applicable building codes. Threshold inspections are performed for the purpose of observing compliance with an approved threshold inspection plan. Construction materials testing ("CMT") is performed to document compliance of certain materials or components with applicable testing standards. UES's performance of plan reviews, private provider inspections, building inspections, threshold inspections, or CMT, or UES's presence on the site of Client's project while performing any of the foregoing activities, is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.2** If UES is retained to provide construction monitoring or observation, UES will report to Client any observed work which, in UES's opinion, does not conform to the plans and specifications provided to UES. UES shall have no authority to reject or terminate the work of any agent or contractor of Client. No action, statements, or communications of UES, or UES's site representative, can be construed as modifying any agreement between Client and others. UES's performance of construction monitoring or observation is not a representation or warranty by UES that Client's project is free of errors in either design or construction. **11.3** Neither the activities of UES pursuant to this Agreement, nor the presence of UES or its employees, representatives, or subcontractors on the project site, shall be construed to impose upon UES any responsibility for means or methods of work performance, superintendence, sequencing of construction, or safety conditions at the project site. Client acknowledges that Client or its contractor is solely responsible for project jobsite safety. **11.4** Client is responsible for scheduling all inspections and CMT activities of UES. All testing and inspection services will be performed on a will-call basis. UES will not be responsible for tests and inspections that are not performed due to Client's failure to schedule UES's services on the project, or for any claims or damages arising from tests and inspections that are not scheduled or performed.

**SECTION 12: ENVIRONMENTAL ASSESSMENTS** Client acknowledges that an Environmental Site Assessment ("ESA") is conducted solely to permit UES to render a professional opinion about the likelihood or extent of regulated contaminants being present on, in, or beneath the site in question at the time services were conducted. No matter how thorough an ESA study may be, findings derived from the study are limited and UES cannot know or state for a fact that a site is unaffected by reportable quantities of regulated contaminants as a result of conducting the ESA study. Even if UES states that reportable quantities of regulated contaminants are not present, Client still bears the risk that such contaminants may be present or may migrate to the site after the ESA study is complete.

**SECTION 13: SUBSURFACE EXPLORATIONS** **13.1** Client acknowledges that subsurface conditions may vary from those observed at locations where borings, surveys, samples, or other explorations are made, and that site conditions may change with time. Data, interpretations, and recommendations by UES will be based solely on information available to UES at the time of service. UES is responsible for those data, interpretations, and recommendations, but will not be responsible for other parties' interpretations or use of the information developed or provided by UES. **13.2** Subsurface explorations may result in unavoidable cross-contamination of certain subsurface areas, as when a probe or boring device moves through a contaminated zone and links it to an aquifer, underground stream, or other hydrous body not previously contaminated. UES is unable to eliminate totally cross-contamination risk despite use of due care. Since subsurface explorations may be an essential element of UES's services indicated herein, Client shall, to the fullest extent permitted by law, waive any claim against UES, and indemnify, defend, and hold UES harmless from any claim or liability for injury or loss arising from cross-contamination allegedly caused by UES's subsurface explorations. In addition, Client agrees to compensate UES for any time spent or expenses incurred by UES in defense of any such claim with compensation to be based upon UES's prevailing fee schedule and expense reimbursement policy.

**SECTION 14: SOLICITATION OF EMPLOYEES** Client agrees not to hire UES's employees except through UES. In the event Client hires a UES employee within one year following any project through which Client had contact with said employee, Client shall pay UES an amount equal to one-half of the employee's annualized salary, as liquidated damages, without UES waiving other remedies it may have.

**SECTION 15: ASSIGNS** Neither Client nor UES may delegate, assign, sublet, or transfer its duties or interest in this Agreement without the written consent of the other party.

**SECTION 16: GOVERNING LAW AND SURVIVAL** **16.1** This Agreement shall be governed by and construed in accordance with the laws of the jurisdiction in which the UES office performing the services hereunder is located. **16.2** In any of the provisions of this Agreement are held illegal, invalid, or unenforceable, the enforceability of the remaining provisions will not be impaired and will survive. Limitations of liability and indemnities will survive termination of this agreement for any cause.

**SECTION 17: INTEGRATION CLAUSE** **17.1** This Agreement represents and contains the entire and only agreement and understanding among the parties with respect to the subject matter of this Agreement, and supersedes any and all prior and contemporaneous oral and written agreements, understandings, representations, inducements, promises, warranties, and conditions among the parties. No agreement, understanding, representation, inducement, promise, warranty, or condition of any kind with respect to the subject matter of this Agreement shall be relied upon by the parties unless expressly incorporated herein. **17.2** This Agreement may not be amended or modified except by an agreement in writing signed by the party against whom the enforcement of any modification or amendment is sought.

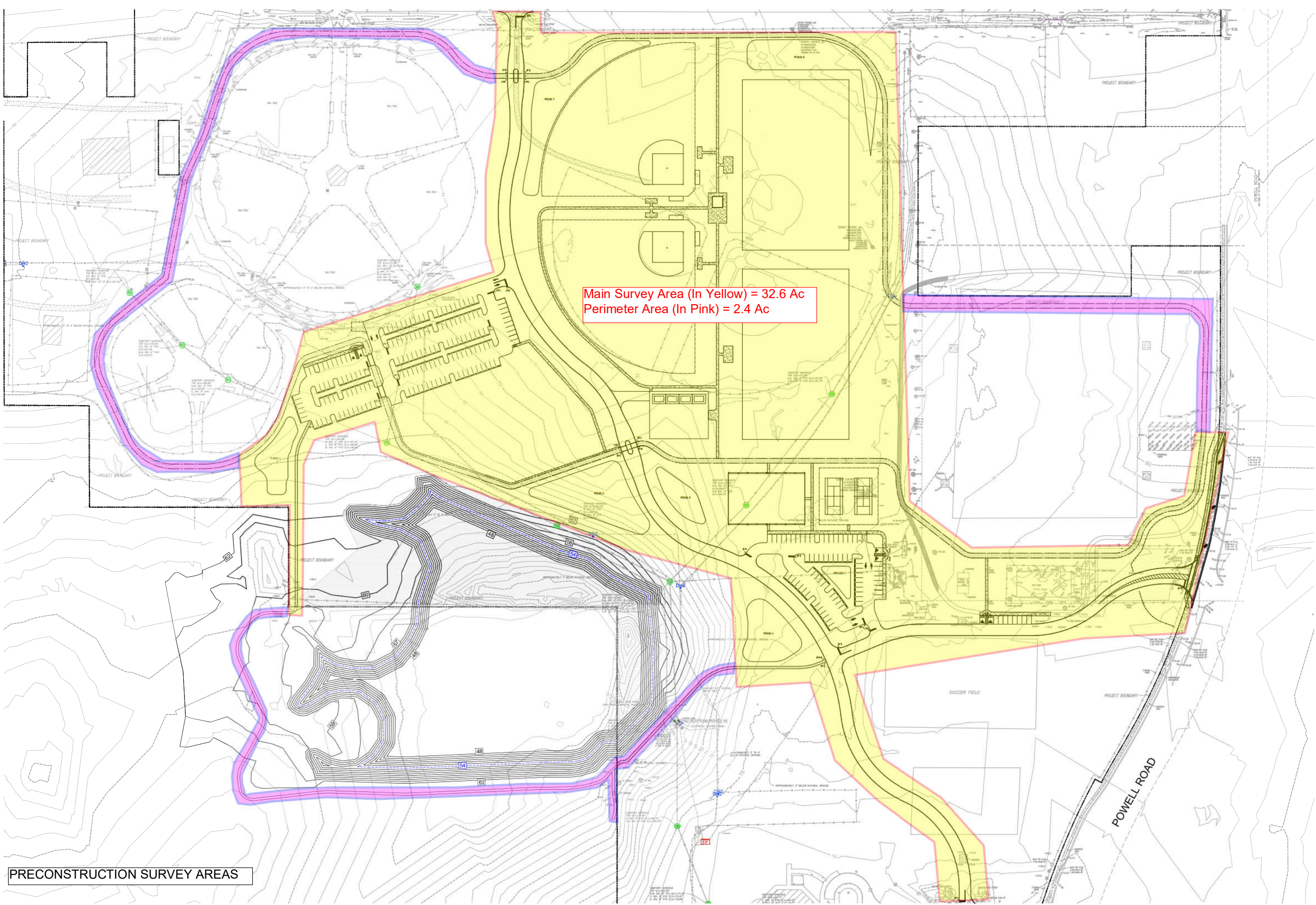
**SECTION 18: WAIVER OF JURY TRIAL** Both Client and UES waive trial by jury in any action arising out of or related to this Agreement.

**SECTION 19: INDIVIDUAL LIABILITY PURSUANT TO FLORIDA STAT. 558.0035, AN INDIVIDUAL EMPLOYEE OR AGENT OF UES MAY NOT BE HELD INDIVIDUALLY LIABLE FOR NEGLIGENCE.**

## **APPENDIX C**

### **Preconstruction Survey Areas**





Main Survey Area (In Yellow) = 32.6 Ac  
Perimeter Area (In Pink) = 2.4 Ac