

LAKES OF SARASOTA

**COMMUNITY DEVELOPMENT
DISTRICT**

October 12, 2022

**REGULAR
MEETING AGENDA**

LAKES OF SARASOTA

COMMUNITY DEVELOPMENT DISTRICT

AGENDA

LETTER

Lakes of Sarasota Community Development District
OFFICE OF THE DISTRICT MANAGER
2300 Glades Road, Suite 410W • Boca Raton, Florida 33431
Phone: (561) 571-0010 • Toll-free: (877) 276-0889 • Fax: (561) 571-0013

ATTENDEES:
Please identify yourself each time you speak to facilitate accurate transcription of meeting minutes.

October 5, 2022

Board of Supervisors
Lakes of Sarasota Community Development District

Dear Board Members:

The Board of Supervisors of the Lakes of Sarasota Community Development District will hold a Regular Meeting on October 12, 2022, at 12:00 P.M., at 5800 Lakewood Ranch Blvd, Sarasota, FL 34240. The agenda is as follows:

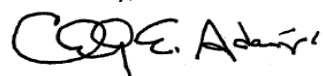
1. Call to Order/Roll Call
2. Public Comments: Agenda Items *(limited to 3 minutes per individual)*
3. Consideration of Grand Park - Ibis Street Agreement with Firethorn, Inc.
4. Acceptance of Unaudited Financial Statements as of August 31, 2022
5. Approval of August 17, 2022 Public Hearings and Regular Meeting Minutes
6. Staff Reports
 - A. District Counsel: *Vogler Ashton, PLLC*
 - B. District Engineer: *AM Engineering, Inc.*
 - C. District Manager: *Wrathell, Hunt and Associates, LLC*
 - UPCOMING MEETINGS
 - November 8, 2022 at 12:00 P.M. [LANDOWNERS MEETING: **BOARD IS NOT REQUIRED TO ATTEND**]
 - November 9, 2022 at 12:00 P.M. [REGULAR MEETING]
 - QUORUM CHECK

SEAT 1	JOHN LEINAWEAVER	<input type="checkbox"/> IN PERSON	<input type="checkbox"/> PHONE	<input type="checkbox"/> NO
SEAT 2	SANDY FOSTER	<input type="checkbox"/> IN PERSON	<input type="checkbox"/> PHONE	<input type="checkbox"/> NO
SEAT 3		<input type="checkbox"/> IN PERSON	<input type="checkbox"/> PHONE	<input type="checkbox"/> NO
SEAT 4		<input type="checkbox"/> IN PERSON	<input type="checkbox"/> PHONE	<input type="checkbox"/> NO
SEAT 5		<input type="checkbox"/> IN PERSON	<input type="checkbox"/> PHONE	<input type="checkbox"/> NO

7. Board Members' Comments/Requests
8. Public Comments: Non-Agenda Items (*limited to 3 minutes per individual*)
9. Adjournment

If you should have any questions or concerns, please do not hesitate to contact me directly at (239) 464-7114.

Sincerely,



Chesley (Chuck) E. Adams, Jr.
District Manager

FOR BOARD MEMBERS AND STAFF TO ATTEND BY TELEPHONE

CALL-IN NUMBER: 1-888-354-0094

PARTICIPANT PASSCODE: 229 774 8903

LAKES OF SARASOTA

COMMUNITY DEVELOPMENT DISTRICT

3

PROJECT MANUAL

FOR THE

GRAND PARK – IBIS STREET

FOR

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT**

AUGUST 2022

Sign-off Sheet

This document entitled Contract Documents and Technical Specifications for the Grand Park – Ibis Street project was prepared by AM Engineering, LLC. (“AME”) for the account of Lakes of Sarasota CDD (the “Client”).

Prepared by _____
(signature)

D. Shawn Leins, P.E.

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

Grand Park- Ibis Street
August 2022

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Grand Park- Ibis Street
August 2022

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**SECTION 00100
INVITATION TO BID**

**Lakes of Sarasota CDD
Request for Proposal for
GRAND PARK – PHASES 3, 4 & IBIS STREET**

Firms desiring to provide bids for this project must submit these bids no later than 10:00 a.m., on June 03, 2022, to Shawn Leins of AM Engineering, LLC. At sleins@amengfl.com. Bids received after the time and date stipulated above will not be considered. The bids will be opened publicly on June 03, 2022, at 1:00 p.m. at the offices of the AM Engineering, LLC at 8340 Consumer Court, Sarasota, FL 34240.

A pre-bid meeting will be held Thursday April 21, 2022, at 1:00pm at the office of AM Engineering, LLC located at 8340 Consumer Ct., Sarasota, FL 34240.

The owner reserves the right to reject any and all bids, with or without cause, to waive minor technical errors and informalities or to accept the bid which, in its judgment, is in their best interest.

Bids shall include earthwork, storm sewer, water, sanitary sewer, paving and performance bonds.

**SWORN STATEMENT PURSUANT TO SECTION 287.133(3)(N)
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to Lakes of Sarasota CDD
(print name of the public entity)

by _____
(print individual's name and title)

for _____
(print name of entity submitting sworn statement)

whose business address is

609 N. Hepburn Street, Suite 105

Jupiter, FL 33462

and (if applicable) its Federal Employer Identification Number (FEIN) is 82-3257401

(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement)

2. I understand that a "public entity crime" as defined in Paragraph 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 any agency or political subdivision of any other state or of 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.
3. 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 crime, with or without an adjudications 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, nonjury trial, or entry of a plea of guilty or nolo contendere.
4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:
 1. A predecessor or successor of a person convicted of a public entity crime; or
 2. An entity under the control of any natural person who is active in the management of the entity and who 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 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 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 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.

Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Indicate which statement applies.)

___ Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any 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 its officers, directors, executives, partners, shareholders, employees members or agents who are active in the 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 its officers, directors, executives, partners, shareholders, employees members or agents who are active in the 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 a Hearing Officer of the State of Florida, Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. (attach a copy of the final order)

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/VENDOR EXECUTING THIS PUBLIC ENTITY CRIME AFFIDAVIT TO VERIFY THAT NONE OF THE SUBCONTRACTORS/SUPPLIERS UTILIZED FOR THIS BID/QUOTE HAVE BEEN CONVICTED OF A PUBLIC ENTITY CRIME SUBSEQUENT TO JULY 1, 1989. IN THE EVENT IT IS LATER DISCOVERED THAT A SUBCONTRACTOR/SUPPLIER HAS BEEN CONVICTED OF A PUBLIC ENTITY CRIME, THE CONTRACTOR/VENDOR SHALL SUBSTITUTE THE SUBCONTRACTOR/ SUPPLIER WITH ANOTHER WHO HAS NOT RECEIVED A CONVICTION. ANY COST ASSOCIATED WITH THIS SUBSTITUTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR/VENDOR.

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY 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 PUBLIC ENTITY PRIOR TO ENTERING INTO 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.

(signature)

STATE OF FLORIDA

COUNTY OF _____

The foregoing instrument was signed and acknowledged before me this ____ day of _____, 2022 by:

who produced _____ as identification, and who (did) (did not)
(Type of Identification and Number)

take an oath.

Notary Public Signature

Printed Name of Notary

Notary Commission Number/Expiration _____

SECTION
00520
AGREEMENT

THIS AGREEMENT is by and between Lakes of Sarasota CDD (OWNER) and Firethorn, Inc. (CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants set forth herein, agree as follows:

ARTICLE 1 WORK

1.01 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as Grand Park – Ibis Street including all labor, materials and incidentals.

ARTICLE 2 THE PROJECT

2.01 The Project, Grand Park - Ibis Street, is as described in the construction plans consisting of Ibis Street. The project includes earthwork, cutting subgrade, paving and sod necessary to support the construction of the complete project.

ARTICLE 3 ENGINEER

3.01 The Project has been designed by AM Engineering, LLC (ENGINEER). AM Engineering, LLC who is to act as OWNER's representative, assumes all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 CONTRACT TIMES

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Days to Achieve Substantial Completion and Final Payment

B. The Work will be substantially completed by (03/23/2023) 73 calendar days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 73 days after the date when the Contract Times commence to run.

4.03 Liquidated Damages

- A. CONTRACTOR and OWNER recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed 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 day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the milestones agreed to between the OWNER and the CONTRACTOR until the Work is substantially complete for each milestone. No bonus at this time but the OWNER has the right to offer.

ARTICLE 5 CONTRACT PRICE

- 5.01 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the lump sum of One Million One Hundred Fifty Eight Thousand Nine Hundred and Five Dollars and Fifty Cents (\$1,158,905.50).

Unit prices as provided on the schedule of values in Exhibit "B", are provided solely for the purpose of changes in scope to the proposed work or adjustments to the Work by OWNER, or as described in the attached Exhibits "A" & "B".

ARTICLE 6 PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

- A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions and Article 3 of item 1 of Exhibit "A".

6.02 Progress Payments; Retainage

- B. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment on or about the 10th day of each month during performance of the Work (if approved Applications for Payment are provided to the OWNER by the 25th of the previous month) as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:
1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as

ENGINEER may determine or OWNER may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:

- a. Ninety percent of Work completed (with the balance being retainage).
2. Upon Substantial Completion, OWNER shall pay an amount sufficient to increase total payments to CONTRACTOR to 90 percent of the Work completed, less such amounts as ENGINEER shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions.

6.03 Final Payment

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 Of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said Paragraph 14.07.

ARTICLE 7 CONTRACTOR'S REPRESENTATIONS

7.01 In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. CONTRACTOR has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided in Paragraph 4.06 of the General Conditions.
- E. CONTRACTOR has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

- F. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.
- I. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.
- J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 CONTRACT DOCUMENTS

6.2 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement (also includes Exhibits "A", "B", "C", and "D")
 - 2. Other Bonds (Warranty Bonds)
 - 3. General Conditions
 - 4. Supplementary Conditions (and special provisions)
 - 5. Technical Specifications
 - 6. Drawings and Exhibits
 - 7. Addenda
 - 8. Geotechnical Report
 - 9. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a) Notice to Proceed

- b) Work Change Directives.
- c) Change Order(s).
- B. The documents listed in Paragraph 8.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 8.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 9 MISCELLANEOUS

9.01 Terms

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.02 Assignment of Contract

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.03 Successors and Assigns

- A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.04 Severability

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.05 Other Provisions

None.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER and CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or on their behalf.

This Agreement will be effective on _____ 2022 (which is the Effective Date of the Agreement).

OWNER:

Lakes of Sarasota CDD

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____ 2300 Glades Road, Suite 105

_____ Boca Raton, FL 33431

CONTRACTOR:

Firethorn, Inc.

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____ 609 N Hepburn Avenue, Unit 105

_____ Jupiter, FL 33458

License No.: _____

(Where applicable)

(If OWNER is a corporation, attach evidence of authority to sign. If OWNER is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of OWNER CONTRACTOR Agreement.)

Agent for service or process:

(If CONTRACTOR is a corporation or a partnership, attach evidence of authority to sign.)

EXHIBIT A

ADDITIONAL UNDERSTANDINGS ADDENDUM TO AGREEMENT BETWEEN OWNER AND CONTRACTOR

This Addendum is made and attached that certain Agreement Between Owner and Contractor (the "Agreement"), which Agreement is executed by and between **Lakes of Sarasota CDD** ("Owner"), and **Firethorn, Inc.** ("Contractor"), and states as follows:

1. The contractor has confirmed the topography of site, is aware of the soil conditions, and has confirmed the earthwork requirements through the bid, construction plans, geotechnical reports and recommendations, and on site investigations conducted by the CONTRACTOR
2. CONTRACTOR shall submit pay applications to the OWNER, ENGINEER OF RECORD AND NEAL COMMUNITIES for review.
3. Weekly job meetings to be held with NEAL COMMUNITIES and ENGINEER OF RECORD.
4. CONTRACTOR agrees to follow all safety regulations and laws, follows the Sarasota County noise ordinance regarding construction, and agrees to keep Ibis Road clean from debris. CONTRACTOR agrees to minimize disturbances to existing residents and will react promptly on all resident complaints.
5. Geotechnical observations and testing will be conducted by NEAL COMMUNITIES.
6. CONTRACTOR, if shell is found during the excavation, will use the material to construct the roads and pass on savings to OWNER.
7. CONTRACTOR will ensure project balances regarding cut and fill requirements.
8. The start date for construction and Schedule of Work (Exhibit C) is 01/09/23.
9. CONTRACTOR will inspect stormwater system (temp/ permanent outfalls, conveyances, etc.) weekly or after a significant rain event and before a known storm event (TS, Hurricane, etc.).
 - a. CONTRACTOR will notify LDM if a maintenance event is required before they are executed.
 - b. CONTRACTOR will remove all BMPs if a known severe weather event is approaching (TS, Hurricane, etc). LDM will be notified prior to removal.
 - c. CONTRACTOR will assist LDM in existing completed areas (onsite or off-site) should flooding occur (as a result of construction activities) in roads or yards. Emphasis is immediate reduction in flooding by any means necessary as well as assistance in conveying existing residents through flood hazard area.
10. Project/contract is lump sum except as specified:
 - a. Scope changes or additions will be initiated only by the OWNER.
 - b. Change orders for OWNER initiated scope changes shall utilize the unit pricing in the Schedule of Values (See Exhibit B)
 - c. All unit prices will be held for (1) year from contract date.

11. Liquidated Damages (in addition to Paragraph 4.03 of the Agreement)

- a. The CONTRACTOR agrees to complete all milestones indicated under the contract or within such extra time as may be allowed for delays and extra work, as herein provided, the OWNER will deduct and retain out of the monies which may be due the CONTRACTOR as liquidated damages, but not as penalty, the sum of (\$1,000.00) per day for each milestone that is not completed in accordance with the schedule of work (Exhibit C). If the CONTRACTOR is behind on more than one milestone, the greater amount will apply: Note that the milestones that have been selected by the OWNER and agreed to by the CONTRACTOR under Exhibit C.

IBIS STREET TASKS	Calendar Days to Complete	Completion Date
CUTTING SUBGRADE	69	03/18/23
PAVING	2	03/21/23
SOD	2	03/23/23

12. Florida Construction Lien Law (FS 713.04 – Subdivision Improvements). CONTRACTOR shall comply in all respects with the Florida Construction Lien Law (FS 713). No portion of the Work shall commence until all potential Lienor's are identified and provided to the OWNER.

- a. CONTRACTOR will supply the OWNER, prior to beginning any work, a list of all Subcontractors, material suppliers or any entity, under the direction of the CONTRACTOR, that enters the property who would potentially have lien rights on Exhibit "D" – SUBCONTRACTOR/VENDOR LIST. (FS 713.165)
- b. Exhibit "D" will list the following:
 - 1. Legal Name of entity
 - 2. Service/Material providing
 - 3. Address & phone number
 - 4. Range of value or work
- c. CONTRACTOR must update this information as necessary throughout the project construction. Any potential lienor must be identified prior to commencement of any their work.
- d. If a lien or claim is filed for work authorized by the CONTRACTOR by an entity not listed, it will be the CONTRACTOR'S responsibility to rectify the claim at no additional cost to the OWNER.

13. Mechanic's Lien Law. CONTRACTOR shall comply in all respects with the Florida Mechanic's Lien Law. No portion of the Work shall commence until a Notice of Commencement in proper form has been recorded in the Public Records of Manatee County, Florida.

14. Accounting Records. CONTRACTOR shall maintain accounting and cost records for all of the Work and shall provide OWNER full access to such records at reasonable times.

15. Time. Time is of the essence for each and every obligation of CONTRACTOR under the terms of this Agreement. CONTRACTOR shall maintain daily records associated with any force majeure event and provide those records to OWNER upon request.

- a. All Work must be substantially complete by 03/23/2023.

16. Conflict. The provisions of this Addendum shall control over the Agreement.

17. Conditions Precedent. No work shall commence under the Agreement until authorized by OWNER in writing. CONTRACTOR acknowledges (i) it has completely reviewed the plans, site plans and construction drawings associated with the Work (the "Plans") and has deemed them adequate and customary, (ii) it is fully informed as to the requirements of the Plans associated with the Work and the compensation due CONTRACTOR was established based upon a full and complete scope of Work as set forth in the Plans.

18. Litigation.

Governing Law

This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, without regard to principles of conflict of laws. The Parties hereto hereby declare that it is their intention that this Agreement shall be regarded as made under the laws of the State of Florida and that the laws of said State shall be applied in interpreting its provisions in all cases where legal interpretation shall be required.

Submission to Jurisdiction and Attorneys' Fees.

Each of the Parties hereto hereby irrevocably and unconditionally agrees (a) to be subject to the exclusive jurisdiction of the courts of Sarasota County, Florida and of the Federal courts sitting in such county, and (b) to the fullest extent permitted by applicable Law, service of process may also be made on such Party by prepaid certified mail with a proof of mailing receipt validated by the United States Postal Service constituting evidence of valid service, and that service made pursuant to (b) above shall, to the fullest extent permitted by applicable Law, have the same legal force and effect as if served upon such Party personally within Sarasota County, Florida. In the event that legal action is commenced with respect to this Agreement, the prevailing Party shall be entitled to recover reasonable attorneys' fees and expenses and other court costs and expenses from the non-prevailing Party.

OWNER and CONTRACTOR acknowledge their approval of the terms and provisions of this Addendum:

Owner: _____

Contractor: _____

**ADDENDUM TO AGREEMENT BETWEEN
COMMUNITY DEVELOPMENT DISTRICT AND
CONTRACTOR
(rev 7-6-2021)**

This Addendum to Agreement Between the Lakes of Sarasota Community Development District and Contractor, (the “Addendum” is made and entered into as of the _____ day of _____ 20, __, by and between the Lakes of Sarasota Community Development District, a local unit of special-purpose government established pursuant to Chapter 190, Florida Statutes, (hereinafter “District”); and Firethorn, Inc. (hereinafter, the “Contractor”).

WITNESSETH

WHEREAS, District and Contractor are parties to that certain contract, proposal and/or agreement, (collectively the “Agreement”), of even date herewith for construction, work, professional and/or related services, (collectively the “Work”), to be performed on lands owned and/or operated and maintained by the District, (the “Agreement”); and,

WHEREAS, Florida law requires specific contractual provisions apply to all Community Development Districts pursuant to Chapter 190, Florida Statutes; and,

WHEREAS, the parties desire for this Addendum to amend, modify, supplement and clarify the Agreement, such that the Agreement shall fully comply with the provisions of this Addendum, Chapter 190, Florida Statutes and other provisions of law pertaining to public bodies.

NOW THEREFORE, in consideration of the mutual covenants set forth herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. All payments pursuant to the Agreement, including any dispute regarding any payment or other monies owed to Contractor by District, shall be governed by the “Local Government Prompt Payment Act,” Chapter 218, Florida Statutes.

2. Contractor shall obtain, and thereafter at all times during the performance of the Work described in the Agreement, maintain a performance bond and a labor and material payment bond, as applicable, each in form and substance satisfactory to District. Such bonds shall comply with Section 255.05, Florida Statutes.

3. Contractor shall observe and abide by and perform all of its obligations hereunder and all other activities in connection with the Work and project contemplated by the Agreement in accordance with all applicable laws, rules and regulations of all governmental authorities having jurisdiction, including the District’s Resolutions, Rules and Regulations.

4. To the fullest extent permitted by law, and to the extent claims, damages, losses or expenses are not covered by insurance maintained by Contractor in accordance with the Agreement, Contractor hereby assumes entire responsibility and liability for any and all damage or injury of any kind or nature whatsoever (including death resulting therefrom) to all persons, whether employees of Contractor or its subcontractors, or otherwise, and to all property (real and personal), caused by, resulting from, arising out of or occurring in any manner whatsoever in connection with the execution of the Work and/or

performance of the Agreement. Contractor agrees to indemnify and save harmless District, its officers, Supervisors, agents, servants and employees from and against any and all such claims, losses, costs, expenses, liability, damages and/or injuries, including reasonable legal fees, that District, its officers, Supervisors, agents, servants or employees may directly or indirectly sustain, suffer or incur as a result thereof. Nothing herein shall be construed as or constitute a waiver of District's limitations on liability contained in Section 768.28, Florida Statutes, or other statute or law. The District shall have the right to withhold from any payments due or to become due to Contractor an amount sufficient in its judgment to protect and indemnify District, its officers, Supervisors, agents, servants and employees from and against any and all such claims, including legal fees and disbursements, or District in its discretion, may require Contractor to furnish a surety bond satisfactory to District guaranteeing such protection, which bond shall be furnished by Contractor within five (5) days after written demand has been made therefore.

5. The Contractor shall prepare and maintain complete records and comprehensive books relating to the Work and/or any other services performed on lands within and/or controlled by the District, (the "Records"), which Records shall be maintained by the Contractor for a period of at least five (5) years after the expiration of the Agreement; and, copies of all Records shall be timely given to the District upon request. The Records shall include, but not be limited to, documents and other information pertaining to all costs associated with the project and Work contemplated by the Agreement. The District, and/or its duly authorized representative, shall have the right to audit such Records at reasonable times upon prior notice to Contractor, and Contractor shall be required to prepare and maintain all Records on a basis of generally accepted accounting principles. If an audit reveals overcharges that exceed the total amount due Contractor under the Agreement, Contractor will reimburse District for the cost of the audit and pay 2.5 times the amount of the overcharges as liquidated damages.

6. The Contractor agrees and understands that District is a special purpose unit of local government and as such is subject to Chapter 119, Florida Statutes. Contractor agrees and covenants to fully cooperate with District, to District's full satisfaction, in responding to requests for public records pursuant to Chapter 119, Florida Statutes, as same pertain to the Records, the Work and the Agreement. Contractor further agrees and understands that the Records, Work and Agreement are public records, and Contractor shall fully comply with Florida law, and specifically the provisions of Chapter 119 Florida Statutes, as it pertains to same.

7. Contractor covenants, warrants and agrees that all work products of Contractor, Contractor's employees, suppliers and subcontractors, including drawings, designs, plans, reports, manuals, programs, tapes, electronic data and any other material prepared by Contractor or its employees, suppliers and subcontractors under the Agreement, including the Records, shall belong exclusively to, and may be used by, the District, free and clear of all liens and other encumbrances.

8. In addition to the terms of this Addendum, the Agreement shall be further subject to the "Terms and Conditions to CDD Addendum," attached hereto as Exhibit "A," and incorporated herein.

9. The parties agree that the Agreement shall be controlled and governed by the laws of the State of Florida, with venue situate in the County in which the CDD's property is located.

10. The Agreement, Addendum and Terms and Conditions to CDD Addendum constitute the entire agreement between the parties hereto with respect to the matters hereby. All prior negotiations, representations and agreements, whether oral or written, with respect hereto not incorporated herein are hereby cancelled, terminated and void. The Agreement can be modified or amended only by a written document duly executed on behalf of both parties hereto.

11. If any term of the Agreement, Addendum or Terms and Conditions to CDD Addendum is invalid or unenforceable under any statute, regulation, ordinance, executive order or other rule of law, such term shall be deemed reformed or deleted, but only to the extent necessary to comply with such statute, regulation, ordinance, order or rule and the remaining provisions of the Agreement, Addendum and Terms and Conditions to CDD Addendum shall remain in full force and effect.

12. The Agreement, Addendum and Terms and Conditions to CDD Addendum shall constitute one complete document and shall be referred to collectively as the "Agreement"; provided however, and notwithstanding anything to the contrary herein, in the event of any conflict between the terms of this Addendum [which specifically includes by incorporation the Terms and Conditions to CDD Addendum] and the terms of the Agreement, the terms of this Addendum shall at all times govern, control and prevail.

IN WITNESS WHEREOF, this Addendum is hereby executed as of the date first above set forth.

Contractor:

Firethorn, Inc.

By: _____

Name: _____

Title: _____

District:

Lakes of Sarasota Community Development District

By: _____

Name: _____

Title: _____

EXHIBIT "A"

TERMS AND CONDITIONS TO CDD ADDENDUM (rev 7-6-2021)

SECTION 1. WORK

The Contractor shall complete all Work as specified or indicated in the Agreement in a timely and professional manner; in accordance with all laws, rules and regulations of any governmental body with jurisdiction thereto; and in accordance with any and all schedules or other time frames for completion of the Work as set forth in the Agreement. TIME IS OF THE ESSENCE FOR COMPLETION OF THE WORK.

SECTION 2. DISTRICT ENGINEER AS REPRESENTATIVE

District Engineer will act as the representative for the District to review and inspect the Work. District Engineer shall at all times have access to review all plans, specifications, permits, approvals and all other matters of and associated with Contractor's Work and completion thereof.

SECTION 3. AUDIT

Contractor shall check all materials and labor entering into the Work and shall keep such full and detailed accounts as may be necessary to determine the Cost of the Work. District shall have access to the Work at all reasonable times and the right to audit all Contractor's books, records, correspondence, instructions, drawings, receipts, vouchers and memoranda, relating to the Work, and Contractor shall preserve such records for a period of not less than five (5) years after final payment.

SECTION 4. PAYMENTS

- A. All payments pursuant to the Agreement, including any dispute regarding any payment or other monies owed to Contractor by District, shall be governed by the "Local Government Prompt Payment Act," Chapter 218, Florida Statutes.
- B. Retainage: Five percent (5%) shall be retained from each payment made by District to Contractor until the Work has been fully completed in accordance with the Agreement and all provisions related to the Work have been fulfilled, as confirmed in writing by the District's Representative, and all provisions related to the Agreement have been fulfilled, as confirmed by the District's Board of Supervisors in writing; provided however, if District Engineer is a party to the Agreement, then District shall appoint an independent District Representative.
- C. Any provision hereof to the contrary notwithstanding, District shall not be obligated to make any payment to Contractor hereunder if Contractor has failed to perform its Work and any other obligations hereunder or otherwise is in default under the Agreement, (as amended, supplemented and modified by the Addendum and this Terms and Conditions to CDD Addendum).
- D. As a condition precedent to each payment under the Agreement, Contractor shall furnish to District a partial waiver and release of lien, in a form satisfactory to the District, from all subcontractors, materialmen and other parties furnishing labor, materials, or both in the performance of the Work. The Contractor agrees, and this Agreement is based upon the expressed condition, that no liens or rights in rem shall so lie or attach, and the Contractor shall indemnify and hold District harmless from and against such liens, claims, rights and any and all expenses incurred by the Contractor or District in discharging them.

E. As conditions precedent to any final payment under the Agreement, Contractor shall: (i) execute and deliver a final affidavit, wavier and release of all claims and liens Contractor may have against the District and the land and improvements upon which the Work is located; (ii) furnish written release and waivers of all rights to claim or file liens properly executed by any and all subcontractors, materialmen, suppliers, laborers, vendors or others furnishing work, labor, materials, machinery or fixtures in the performance of the Work in a form satisfactory to the District; (iii) furnish any manufacturers' guarantees or warranties for materials provided or equipment installed in the Work; (iv) have done and performed all other things required of it pursuant to the Agreement; (v) furnished District with the Certificate of Use or Occupancy, as the case may be (if applicable); (vi) warrant all workmanship as outlined in **Exhibit A-1**, attached; and (vii) deliver to the District a set of "as built" drawings and plans, (if applicable), reflecting all changes, modifications and additions thereto which occurred during performance of the Work. Acceptance of any Work or any possession taken by District shall not operate as a waiver of any provision of the Agreement or any right or power therein reserved to District including any right to damages provided therein at law or in equity.

SECTION 5. INSURANCE

During the entire term of this Agreement and any extensions thereof, Contractor shall obtain and maintain, at Contractor's expense, the insurances required herein, which insurance shall be kept in full force and effect until acceptance of the Work by District. Before proceeding with any Work, Contractor shall furnish to District and District's Representative, and any governmental agency designated by District, an original certificate of insurance or proof of insurance in a form reasonably acceptable to District.

The District shall be named as additional insured on all insurance policies required with the exception of worker's compensation and employer's liability insurance. All required insurance policies, except workers' compensation and employers' liability, shall be endorsed to be primary and non-contributory to any insurance otherwise carried by Contractor and District with respect to the Work. Such insurance shall not be modified, permitted to lapse, or canceled without written notice to District from such insurance companies, mailed to District, with copies to District's Representative, via Registered Mail thirty (30) days in advance of such modification, expiration, or cancellation. In the event of such cancellation notice, Contractor, at Contractor's expense, shall obtain replacement insurance coverage from other insurance companies prior to the cancellation of the original insurance coverage.

Insurance Coverage	Limits
a) Worker's Compensation	As required by Florida law.
b) Employers Liability	\$1,000,000 per occurrence.
c) Comprehensive General Liability (Occurrence Form) Including but not limited to: Premises, operations and elevators. Independent Contractors. Broad form property damage. Personal Injury. Blanket contractual liability. Blanket fire and explosion legal liability. Explosion, collapse and underground hazard included. Products liability.	\$1,000,000 combined single limit bodily injury and property damage per occurrence and project specific aggregate.

d) Automobile Liability	\$1,000,000 combined single limit bodily injury and property damage per occurrence. If Contractor, or any subcontractor, is a transporter of hazardous materials, such transporter's Automobile Liability policy shall have all pollution exclusions deleted.
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If Contractor subcontracts any of the Work, Contractor shall require each subcontractor to have the insurance coverage required by this Section or such other amount as agreed to by District and Contractor. Contractor shall furnish District evidence thereof before each subcontractor commences any of the Work. Contractor's obtaining of the insurance required by this Section shall in no manner lessen, diminish or affect Contractor's obligations set forth in any provisions of the Agreement. Contractor shall also carry such additional insurance as may be required by any law. All insurance policies required of Contractor and subcontractors shall contain a waiver of subrogation clause wherein no insurance company shall have any right of recovery against District.

All insurance required in this section shall be provided by financially responsible insurance carriers authorized or eligible to do business in the state of Florida and rated by A.M. Best Rating Service as A- or better.

District and Contractor acknowledge that the insurance requirements set forth in the Agreement may be required to be varied by District's insurance carrier and Contractor agrees to enter into suitable modifications of the provisions hereof upon the request of the District, provided District bears any additional cost occasioned thereby.

SECTION 6. INDEPENDENT CONTRACTOR

The Work shall be performed by Contractor as an independent contractor at its sole risk, cost and expense. District shall have the right to insist that all the provisions and requirements of the Agreement are carried out by Contractor.

SECTION 7. WAIVER

No consent or waiver, express or implied, by either party to this Agreement of any breach or default by the other in the performance of any obligations hereunder shall be deemed or construed to be a consent or waiver to or of any other breach or default by such party hereunder. Unless the Agreement specifies a time period for notice of a particular claim, failure on the part of any party hereto to complain of any act or failure to act of the other party or to declare the other party in default hereunder, irrespective of how long such failure continues, shall not constitute waiver of the rights of such party hereunder. Notwithstanding anything to the contrary in the Agreement, inspection or failure of District to perform any inspection hereunder, shall not release Contractor of any of its obligations hereunder.

SECTION 8. PROTECTION OF WORK

A. Contractor shall protect and prevent damage to all finished and unfinished portions of the Work, including but not limited to the protection thereof from damage by the elements, theft or vandalism. Restoration of such damage shall be the sole responsibility of Contractor and shall not be cause for an increase in amounts owed Contractor pursuant to the Agreement.

- B. If any property upon which the Work is completed or accessed in order to complete the Work, to include without limitation streams, waterways, existing trees and wetlands, are damaged to any extent by Contractor or its subcontractor(s), agents and/or assigns, then the Contractor shall repair and restore the property to the condition which exists on the date hereof. Such repair or restoration shall be the sole responsibility of Contractor and shall not be cause for an increase in amounts owed Contractor pursuant to the Agreement.

SECTION 9. COMPLIANCE WITH LAWS

Contractor shall observe and abide by and perform all of its obligations hereunder and all other activities in connection with the Work in accordance with all applicable laws, rules and regulations of all governmental authorities having jurisdiction, including the District.

SECTION 10. PERMITS AND LICENSES

- A. Contractor shall pay all taxes, including sales taxes, unless otherwise stated herein. Contractor shall obtain and pay for all construction permits and licenses, and all contributions imposed or required by any law for any employment insurance, pensions, age-related retirement funds, or similar purposes.
- B. Contractor accepts liability for all taxes and contributions required of it and its subcontractors by the Federal Social Security Act and the unemployment compensation law or any similar law of any state.

SECTION 11. TERMINATION

- A. District may immediately terminate the Agreement in the event of the happening of any of the following or any other comparable event: (a) insolvency of the Contractor, (b) filing of a voluntary petition in bankruptcy against Contractor, (c) filing of any involuntary petition in bankruptcy against Contractor, (d) appointment of a receiver or trustee for Contractor, (e) execution of an assignment, (f) failure of Contractor to commence the Work in accordance with the provisions of this Agreement, (g) failure of Contractor to prosecute the Work to completion thereof in a diligent, efficient, workmanlike, skillful and careful manner and in accordance with provisions of this Agreement, (h) failure of Contractor to use an adequate amount or quality of personnel or equipment to complete the Work without delay, (i) failure of Contractor to perform any of its obligations under this Agreement, or if Contractor otherwise repudiates or breaches any of the terms of this Agreement, including Contractor's warranties.
- B. District shall have the right to terminate this Agreement for any reason whatsoever at any time by giving Contractor thirty (30) days written notice thereof. Upon receipt of such notice, Contractor immediately shall terminate performance of the Work and make every reasonable effort to mitigate its losses and damages hereunder; provided, however, in connection with such termination, Contractor shall perform such acts as may be necessary to preserve and protect that part of the Work theretofore performed hereunder. Upon such termination, District shall pay to Contractor a sum of money equal to the cost of all Work properly performed (accepted and approved by District and District's Representatives) hereunder by Contractor for which payments have not theretofore been made hereunder, and District shall assume the obligations of Contractor under all its subcontracts and purchase orders covering the unperformed parts of the Work. In the event of such termination, the Contractor shall not be entitled to anticipated profits on any Work not yet performed; and the Agreement shall become terminated and of no further force nor effect; provided however, and notwithstanding anything to the contrary, all warranties of Contractor for Work completed prior to the termination of the Agreement shall continue in full force and effect and shall survive termination of the Agreement.

SECTION 12. ATTORNEY'S FEE'S

In the event of any action or proceeding between Contractor and District to enforce any provision of this Agreement, the losing party shall pay to the prevailing party all costs and expenses, including without limitation, reasonable attorneys' fees and expenses, incurred in such action or proceeding and in any appeal in connection by such prevailing party. This Section is intended to be severable from the other provisions of this Agreement, and the prevailing party's rights under this Section shall not merge into any judgment and any judgment shall survive until all such fees and costs have been paid.

SECTION 13. SPECIAL CONDITIONS

1. Contractor is to provide weekly progress reports delivered to the District's Representative by 3:00 pm, Friday for the current week of Work.
2. Contractor shall coordinate all inspections required by governmental agencies and the District's Representative. All construction methods, materials, and testing shall comply with the standards of the county in which the CDD's lands are located.
3. The Contractor acknowledges that the District is exempt from the Florida Sales and Use Tax (the "Sales Tax"). Accordingly, to minimize the cost of the Work to the District, the Contractor agrees to cooperate with the District and to allow the District, at its option, to purchase materials in its name in order to avoid the Sales Tax that would otherwise be due on such purchases. All savings realized by the District as a result of such direct purchases shall inure to the benefit of the District only.
4. E-Verify. The Contractor shall comply with and perform all applicable provisions of Section 448.095, *Florida Statutes*. Accordingly, beginning January 1, 2021, to the extent required by Florida Statute, Contractor shall register with and use the United States Department of Homeland Security's E-Verify system to verify the work authorization status of all newly hired employees. The District may terminate this Agreement immediately for cause if there is a good faith belief that the Contractor has knowingly violated Section 448.091, *Florida Statutes*.

EXHIBIT A-1

CONTRACTOR (OR SUBCONTRACTOR) WARRANTY-GUARANTEE

For purposes of this Exhibit A-1, when this form is used to provide subcontractor's warranty-guarantee, the term "Contractor" shall apply to the subcontractor.

WARRANTY GUARANTEE

("Contractor" or "Subcontractor") Firethorn, Inc. does hereby warrant and guarantee the Work in its entirety as defined in the agreement dated _____ shall be free and clear from defects for a period of one (1) year from the date of inspection and acceptance by the District or the District's Representative, (the "Guarantee Period").

Contractor agrees to repair or replace to the satisfaction of the District's Representative any or all Work that may prove defective in workmanship or materials within the Guarantee Period.

If Contractor fails to comply with the above-mentioned conditions within a reasonable time after being notified, Contractor hereby authorizes the District to proceed to have defects repaired and made good at Contractor's sole cost and expense, and Contractor shall pay the costs and charges therefore immediately upon demand to the District.

The warranty-guarantee rights afforded the District herein shall be in addition to all other rights afforded the District at law and equity, and shall in no way restrict, limit or impair those additional rights of the District.

CONTRACTOR (OR SUBCONTRACTOR):

(Name)

By: _____

Title: _____

Date: _____, 20____

EJCDC

**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR FOR
CONSTRUCTION CONTRACT (STIPULATED PRICE)**

THIS AGREEMENT is by and between Lakes of Sarasota CDD (Owner) and Firethorn, Inc. (Contractor) Owner and Contractor, in consideration of the mutual covenants set forth herein, agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Grand Park – Ibis Street

ARTICLE 2 - THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Grand Park - Ibis Street

ARTICLE 3 - ENGINEER

3.01 The Owner’s representative for the Project is:

Shawn Leins, P.E.,
District Engineer
AM Engineering, LLC.
8340 Consumer Court
Sarasota, Florida 34240

(Engineer), who is to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIMES

4.1 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.2 Days to Achieve Substantial Completion and Final Payment

A. The Work will be substantially completed within the below stated milestone dates after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within the date defined in Exhibit A, Section 00520 when Contract Times commence to run as shown on Exhibit “C”.

IBIS STREET TASKS	Calendar Days to Complete	Completion Date
CUTTING SUBGRADE	69	03/18/23
PAVING	2	03/21/23
SOD	2	03/23/23

4.03 Liquidated Damages

A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed 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 day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the milestone agreed between the OWNER and the CONTRACTOR until the work is substantially complete for each milestone. No bonus at this time but the OWNER has the right to offer.

ARTICLE 5 - CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the lump sum of (\$1,158,905.50) One Million One Hundred Fifty Eight Thousand Nine Hundred and Five Dollars and Fifty Cents

(words)

Unit prices as provided on the Schedule of Values in Exhibit "B" are provided solely for the purpose of changes in the scope of the proposed work or adjustments to the Work by OWNER, or as described in the attached "Exhibit A" or "B".

ARTICLE 6 - PAYMENT PROCEDURES

6.1 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.2 Progress Payments; Retainage

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 28th day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph

2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.2 of the General Conditions:

a. 90 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, Owner, on recommendation of Engineer, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage; and

b. 0 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – CONTRACTOR’S REPRESENTATIONS

7.01 In order to induce Owner to enter into this Agreement Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Proposal Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions and (2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the Supplementary Conditions as provided in Paragraph 4.06 of the General Conditions.

E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Proposal Documents, and safety precautions and programs incident thereto.

F. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

I. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

J. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 - CONTRACT DOCUMENTS

8.01 Contents

A. The Contract Documents consist of the following:

(See documents listed in Exhibit A, Amendment to Agreement)

ARTICLE 9 - MISCELLANEOUS

9.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 Successors and Assigns

A. Owner and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.4 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement in duplicate. One counterpart each has been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____, 2022 (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

Lakes of Sarasota CDD

Firethorn, Inc.

By: _____

By: _____

Title: _____

Title: _____

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: _____

Attest: _____

Title: _____

Title: _____

2300 Glades Road, Suite 105

Address for giving notices:

609 N Hepburn Avenue, Unit 105

Boca Raton, FL 33431

Jupiter, FL 33458

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-

License No.: (Where applicable)

Agent for service or process:

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

GRAND PARK - IBIS STREET
 LAKES OF SARASOTA CDD
 BID FORM

Item	Category	Category Total
1	General Conditions	\$ 106,730.00
2	Earthwork	\$ 222,570.00
3	Roadway Improvements	\$ 829,605.50
IBIS STREET Total		\$ 1,158,905.50

GRAND PARK - IBIS STREET
 LAKES OF SARASOTA CDD
 BID FORM

Ibis - General Conditions

<u>Item</u>	<u>Description:</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Price</u>	<u>Total Price</u>
1	Mobilization / NPDES Compliance	LS	1	\$ 14,000.00	\$ 14,000.00
2	Construction Stakeout / Record Survey	LS	1	\$ 44,800.00	\$ 44,800.00
3	Silt Fence	LF	5,600	\$ 2.80	\$ 15,680.00
4	Performance and Payment Bond	LS	1	\$ 32,250.00	\$ 32,250.00
			Ibis - General Conditions Total		\$ 106,730.00

GRAND PARK - IBIS STREET
 LAKES OF SARASOTA CDD
 BID FORM

Ibis - Earthwork

Item	Description:	Unit	Quantity	Unit Price	Total Price
1	Clearing & Grubbing	LS	1	\$ 53,500.00	\$ 53,500.00
2	Earthwork	LS	1	\$ 76,500.00	\$ 76,500.00
3	Final Grading (Fine Dress)	LS	1	\$ 53,500.00	\$ 53,500.00
4	Sod - Bahia	SY	4,400	\$ 2.80	\$ 12,320.00
5	Demo South End of Ibis - Phase 1	LS	1	\$ 26,750.00	\$ 26,750.00
				Ibis - Earthwork Total	\$ 222,570.00

GRAND PARK - IBIS STREET
LAKES OF SARASOTA CDD
BID FORM

Ibis - Roadway Improvements

Item	Description:	Unit	Quantity	Unit Price	Total Price
1	1" Type FC 9.5 Asphalt (Lift 1)	SY	10,356	\$ 12.50	\$ 129,450.00
2	1.5" Type SP 12.5 Asphaltic Concrete (Lift 2)	SY	10,356	\$ 13.75	\$ 142,395.00
3	1.5" Type SP 12.5 Asphaltic Concrete (Lift 3)	SY	10,356	\$ 14.25	\$ 147,573.00
4	Bituminous Prime Coat	SY	10,356	\$ 0.75	\$ 7,767.00
5	10" Thick Minimum, FDOT Optional Base Group #9	SY	10,643	\$ 16.00	\$ 170,288.00
6	12" Stabilized Subgrade (LBR-40), SCTP-160	SY	11,021	\$ 6.50	\$ 71,636.50
7	Type "F" Curb	LF	354	\$ 14.00	\$ 4,956.00
8	4" Concrete Sidewalk (MURT)	SF	25,882	\$ 4.50	\$ 116,469.00
9	ADA Handicap Ramp	EA	2	\$ 500.00	\$ 1,000.00
10	Pavement Markings	LS	1	\$ 25,200.00	\$ 25,200.00
11	Signs	LS	1	\$ 2,075.00	\$ 2,075.00
12	Truncated Domes	EA	4	\$ 350.00	\$ 1,400.00
13	6" Concrete Driveway	SF	1,392	\$ 6.75	\$ 9,396.00
					\$ 829,605.50

EXHIBIT C - Schedule

Task Name	Duration-Working Days	Start	Finish
Grand Park - Ibis Street	64d	01/09/23	03/23/23
Cutting Subgrade	60d	01/09/23	03/18/23
Paving	2d	03/20/23	03/21/23
Sod	2d	03/22/23	03/23/23

Calendar Days
73
69
2
2

EXHIBIT D

Subcontractor and Vendor List

Subcontractor/ Vendor Name	Address	Approximate Value of Work	Service Provided
Tate Transport Corp	9220 Bonita Beach Rd Bonita Springs, FL 34135	\$213,750	Road Base

Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment Change Order Summary

Approved Change Orders			
Number	Additions	Deductions	
			1. ORIGINAL CONTRACT PRICE..... \$ _____
			2. Net change by Change Orders..... \$ _____
			3. Current Contract Price (Line 1 ± 2)..... \$ _____
			4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate)..... \$ _____
			5. RETAINAGE:
			a. X _____ Work Completed..... \$ _____
			b. X _____ Stored Material..... \$ _____
			c. Total Retainage (Line 5a + Line 5b)..... \$ _____
			6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... \$ _____
			7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ _____
			8. AMOUNT DUE THIS APPLICATION..... \$ _____
			9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)..... \$ _____
TOTALS			
NET CHANGE BY CHANGE ORDERS			

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By: _____ Date: _____

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ (Engineer) _____ (Date)

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is approved by: _____ (Owner) _____ (Date)

Approved by: _____ Funding Agency (if applicable) _____ (Date)

Endorsed by the Construction Specifications Institute.

Progress Estimate

Contractor's Application

For (contract):				Application Number:				
Application Period:				Application Date:				
A		B	Work Completed		E	F		G
Item		Scheduled Value	C	D	Materials Presently Stored (not in C or D)	Total Completed and Stored to Date (C + D + E)	% (E) B	Balance to Finish (B - F)
Specification Section No.	Description		From Previous Application (C+D)	This Period				
Totals								

**Engineers Joint Documents Committee
Design and Construction Related Documents
Instructions and License Agreement**

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General:

You may not sublicense, assign, or transfer this license except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations hereunder is void.

This Agreement shall be governed by the laws of the State of Virginia. Should you have any questions concerning this Agreement, you may contact EJCDC by writing to:

Arthur Schwartz, Esq.
General Counsel
National Society of Professional
Engineers
1420 King Street
Alexandria, VA 22314

Phone: (703) 684-2845
Fax: (703) 836-4875
e-mail: aschwartz@nspe.org

You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between us which supersedes any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this agreement.

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

Project:	Owner:	Owner's Contract No.:
Contract:	Date of Contract:	
Contractor:	Engineer's Project No.:	

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments (list documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:
\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____
\$ _____

Contract Price prior to this Change Order:
\$ _____

[Increase] [Decrease] of this Change Order:
\$ _____

Contract Price incorporating this Change
\$ _____

CHANGE IN CONTRACT TIMES:

Original Contract Times: Working Calendar days
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:
Substantial completion (days): _____
Ready for final payment (days): _____

Contract Times prior to this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:
Substantial completion (days or date): _____
Ready for final payment (days or date): _____

RECOMMENDED:

By: _____
Engineer (Authorized Signature)

Date: _____
Approved by Funding Agency (if applicable):

ACCEPTED:

By: _____
Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: _____
Contractor (Authorized Signature)

Date: _____

Date: _____

Change Order

Instructions

A. GENERAL INFORMATION

This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Times. Changes that have been initiated by a Work Change Directive must be incorporated into a subsequent Change Order if they affect Price or Times.

Changes that affect Contract Price or Contract Times should be promptly covered by a Change Order. The practice of accumulating Change Orders to reduce the administrative burden may lead to unnecessary disputes.

If Milestones have been listed in the Agreement, any effect of a Change Order thereon should be addressed.

For supplemental instructions and minor changes not involving a change in the Contract Price or Contract Times, a Field Order should be used.

B. COMPLETING THE CHANGE ORDER FORM

Engineer normally initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from Owner, or both.

Once Engineer has completed and signed the form, all copies should be sent to Owner or Contractor for approval, depending on whether the Change Order is a true order to the Contractor or the formalization of a negotiated agreement for a previously performed change. After approval by one contracting party, all copies should be sent to the other party for approval. Engineer should make distribution of executed copies after approval by both parties.

If a change only applies to price or to times, cross out the part of the tabulation that does not apply.

**SECTION 00800
SUPPLEMENTARY CONDITIONS AND
SPECIAL PROVISIONS**

1. SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2002 ed.) and other provisions of the contract documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1. DEFINITIONS AND TERMINOLOGY

The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (EJCDC C-700, 2002 ed.) have the meanings assigned to them in the General Conditions. Additionally, the following definitions shall also apply:

OWNER: Neal Communities of Southwest Florida, LLC

ENGINEER: AM Engineering, LLC.

LANDSCAPE ARCHITECT: Stewart / Washmuth / Sollars

SC-2.02. COPIES OF DOCUMENTS

Amend 2.02A to state that the number of OWNER furnished Contract Documents shall be three.

SC-4.02. SUBSURFACE AND PHYSICAL CONDITIONS

Replace Subarticle 4.02.A.1 of the Standard General Conditions with the following:

4.2.A.1 SUBSURFACE CONDITIONS

In the preparation of Drawings and Specifications, the ENGINEER or ENGINEER'S CONSULTANTS have relied upon the following reports of exploration and tests of subsurface conditions at the site of the work:

Report of the Geotechnical Investigation for Grand Park – Phase 3

- 4.2.A.1.1 Report dated August 5, 2016 prepared by Native Geoscience, consisting of 20 pages and Report dated May 22, 2018 prepared by Driggers Engineering consisting of 20 pages. The technical data contained in such report upon which CONTRACTOR may rely is included.

4.2.A.2 PHYSICAL CONDITIONS

In the preparation of Drawings and Specifications, the ENGINEER or ENGINEER'S CONSULTANTS have relied upon the following drawings of physical conditions relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the site of the work.

- 4.2.A.2.1 Drawings dated May 05, 2018 prepared by King Engineering, entitled: Topographic Survey, consisting of 12 sheets, numbered to inclusive. All information in such drawings constitutes technical data on which CONTRACTOR may rely.

SC-4.04. UNDERGROUND FACILITIES

Revise the title of Section 4.04 of the Standard General Conditions to read "Physical Conditions-Underground Facilities and Otherwise".

Add the following paragraph to this Subarticle 4.04

- 4.04.A.3 Notification of Utility Companies: The CONTRACTOR shall be responsible for notification of and cooperation with utility companies and agencies when the CONTRACTOR's operations are close to existing facilities in order to provide time for the utilities to stake the location of their existing facilities. This coordination effort shall be done in compliance with Florida Statutes Chapter 556, "Underground Facility Damage Prevention and Safety Act," latest revision. The CONTRACTOR shall cooperate with the utility company and provide schedules, etc., when requested.

Add the following paragraph to this Subarticle 4.04

4.04.C EXISTING FACILITIES AND NOTIFICATIONS

The drawings may indicate or may not indicate the presence of existing utilities or facilities in the project area. Existing above or underground utilities, structures, or facilities that are shown on the plans are based on the information made available to the ENGINEER. The existing facilities may be in locations different than those shown on the drawings. It shall be the responsibility of the CONTRACTOR to acquaint himself with the exact location and to avoid conflict with all existing facilities. CONTRACTOR shall provide actual depth and location of said facilities to the ENGINEER to evaluate their impact on the project. Where underground or aboveground utilities, structures, or facilities are damaged, they shall be immediately repaired to the specifications of the OWNER of the utility. If the OWNER of the utility elects to make such repairs with his own forces, CONTRACTOR

shall make arrangements as to protect the OWNER from all damages. Where such conflicts are unavoidable, every effort shall be made to construct the work so as to cause as little interference as possible with services rendered by the structure disturbed.

SC-5.01. PERFORMANCE, PAYMENT, AND OTHER BONDS

Add the following text after Subarticle 5.01.C. of the Standard General Conditions:

5.1.D .Bid Security **is to be provided** by each CONTRACTOR in the amount of five percent of the maximum Bid price and will be in the form of:

- i. A Bid Bond is required.

SC-5.04. CONTRACTORS LIABILITY INSURANCE

The limits of liability for the insurance required by paragraph 5.04.A of the Standard General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations.

- A. Workers' Compensation, etc. under paragraphs 5.04.A.1. and 5.04.A.2. of the Standard General Conditions:

- i. State: Statutory
- ii. Applicable Federal Statutory
(e.g. Longshoreman, Jones Act):
- iii. Employer's Liability: \$ 1,000,000

- B. CONTRACTOR's Liability Insurance under paragraphs 5.04.A.3., 5.04.A.4. and 5.04.A.5. of the Standard General Conditions which shall also include personal injury and advertising liability, contractual liability, completed operations and product liability coverages.

- i. General Aggregate (Except Products - Completed Operations) \$ 1,000,000
- ii. Products - Completed Operations Aggregate \$ 1,000,000
- iii. Personal and Advertising Injury (Per Person/Organization) \$ 1,000,000
- iv. Each Occurrence (Bodily Injury and Property Damage) \$ 1,000,000
- v. Limit Per Person Medical Expense \$ 1,000,000
- vi. Personal Injury Liability coverage **WILL INCLUDE** Claims Arising Out of Employment

- vii. General Aggregate **WILL BE** Applicable Per Project
- viii. Property Damage Liability Insurance **WILL PROVIDE**
Coverage for Explosion, Collapse and
Underground Damage

C. 5.04.A.6 Automobile Liability

Automobile Liability, including owned, non-owned, and hired automobiles under Paragraph 5.04.A.6 of the Standard General Conditions
Bodily Injury

\$ 1,000,000 Each Person

\$ 1,000,000 Each Accident

Property Damage:

\$ 1,000,000 Each Accident

- D. Liability coverage for the OWNER, ENGINEER, ENGINEER's Consultants and others listed in the Supplementary Conditions will be provided (subject to customary exclusions for professional liability).

The following other persons (in addition to OWNER, ENGINEER and ENGINEER's Consultants) or entities are identified below in these Supplementary Conditions as additional insured under the required Liability Policies:

NAME	ADDRESS
_____	_____
_____	_____
_____	_____
_____	_____

SC-5.06. PROPERTY INSURANCE

- A. Property insurance to the full insurable value of the work in accordance with paragraph 5.06 of the Standard General Conditions will be provided by CONTRACTOR and will be in the form of Completed Value. An installation floater can be used to satisfy this requirement.
- B. Such Insurance will be subject to the following deductible amounts \$__ in accordance with Paragraph 5.06.D of the Standard General Conditions.
- C. The same persons or entities shall be identified as named insured under Property Insurance Policies as under the liability policies.

SC-6.08. PERMITS

Add the following subarticles after paragraph 6.08.A:

6.8.B. The OWNER has obtained the following project permits or approvals as follows:

Agency	Permit Name	Permit No.	Comments/Status
SWFWMD	ERP	43001552.006	Approved

6.8.C. ADDITIONAL PERMIT REQUIREMENT INFORMATION

The CONTRACTOR is responsible for obtaining all local, state and federal construction permits and licenses not furnished by the OWNER.

6.8.D. STORMWATER POLLUTION PREVENTION PLAN

The CONTRACTOR shall abide by all requirements of the Stormwater Pollution Prevention Plan as well as all applicable local, state and federal requirements. The OWNER has been provided a copy of the Stormwater Pollution Prevention Plan. The CONTRACTOR and all applicable subcontractors must sign CONTRACTOR's certification in the Stormwater Pollution Prevention Plan. The OWNER/Developer will submit the FDEP Notice of Intent (NOI) to Use Generic Permit for Stormwater Discharge from Large and Small Construction Activities Permits Application.

The OWNER/Developer has also submitted to the Southwest Florida Water Management District a Best Management Plan/Construction Surface Water Management Plan (CSWMP) in accordance with Section 2.8.4 of the SWFWMD Basis of Review.

Any modification required to the Stormwater Pollution Prevention Plan or CSWMP will be the CONTRACTOR's responsibility if changes in the field or to the plan are proposed by the CONTRACTOR.

SC-6.09. LAWS AND REGULATIONS

Add the following Subarticles after Paragraph 6.09.C:

SC-6.09.D. UTILITY REQUIREMENTS

All utility construction in the Sarasota County service area or to be connected to their service area shall be in accordance with Sarasota County standards, latest revision. All costs associated with compliance with these standards shall be borne by the CONTRACTOR and shall be incidental to construction.

SC-6.13. SAFETY AND PROTECTION

Add a new paragraph immediately after paragraph 6.13.A.3 of the Standard General Conditions which is to read as follows:

6.13.A.4 MAINTENANCE OF TRAFFIC WITHIN THE CONTRACT AREA

6.13.A.4.a The CONTRACTOR shall maintain both vehicular and pedestrian traffic, protect the public from all damage to person and property and minimize inconveniences to the residents and businesses adjacent to the contract area for the duration of the contract. The CONTRACTOR's attention is directed to the various requirements of the State, County and municipal agencies that govern the work to be performed in their respective rights-of-way. The CONTRACTOR will be required to contact each governing agency prior to bidding in order to ascertain their requirements for the maintenance and protection of vehicular and pedestrian traffic through the respective work areas, and to conform to said requirements thereto.

6.13.A.4.b Traffic shall be maintained over a reasonably smooth travel way, which shall be so marked by signs, delineators and/or other methods that a person who has no knowledge of conditions can safely, and with a minimum of discomfort and inconvenience, ride, drive or walk over all or any portion of the work under construction where traffic is to be maintained.

6.13.A.4.c The CONTRACTOR shall provide adequate signs, barricades, flashing lights, flagmen and watchmen and take all necessary precautions for the protection of the work and the safety of the public. Traffic control warning signs and barricades shall comply with the provisions of the Florida Department of Transportation, Manual on Traffic Controls and Safe Practices for Street and Highway Construction, Maintenance and Utility Operations, latest revision. All barricades and obstructions shall be protected at night by flashing signal lights which shall be kept burning from sunset to sunrise. Barricades shall be sturdily constructed and suitable for night visibility. Suitable warning signs shall be so placed and illuminated at night as to show in advance where construction, barricades or detours exist.

SC-6.17. SHOP DRAWINGS AND SAMPLES

Replace Subarticle 6.17.A.1.a. with the following:

- a. Refer to technical specification 01300 for the number of shop drawings required to be submitted and additional requirements.

2. SPECIAL PROVISIONS

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

SP-1 Test reports for all items underlying pavement shall be submitted to and approved by the ENGINEER prior to any asphalt pavement being approved for payment.

SP-2 Draft Record Drawings for water, sanitary sewer, irrigation, and drainage shall be submitted to the ENGINEER prior to any asphalt being approved for payment.

END OF SECTION

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
a practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

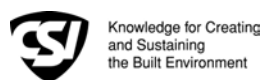
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Construction Specifications Institute

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1015 15th Street, N.W., Washington, DC 20005

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

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

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

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

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 Before Starting Construction

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 Preconstruction Conference

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 Initial Acceptance of Schedules

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

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

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. reviewing and checking all such information and data,
- b. locating all Underground Facilities shown or indicated in the Contract Documents,
- c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
- d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. 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 Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order .

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

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

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

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

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

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

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples*: Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed 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 Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK;
ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

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

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

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

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

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

**SECTION 01001-UM
SUPPLEMENTARY TECHNICAL SPECIFICATIONS
(UNSUITABLE MATERIALS)**

PART 1 GENERAL

1.1 SUMMARY

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

1.2 CHANGES

- A. Delete paragraphs 3.06, Unsuitable Materials and 3.07, Replacement Materials of Section 02703 in their entirety and replace with the following:

1.3 UNSUITABLE MATERIAL ABOVE PIPE ZONE

- A. When material within the area to be excavated is deemed unsuitable by the Soils Testing Laboratory and/or the ENGINEER, and on the specific instruction of the ENGINEER, said material shall be removed to the limits designated and replaced with material as described below.
- B. If rock, boulders, other hard and unyielding materials, muck, clayey materials or other unsuitable materials are encountered in the area from an even plane 12 inches above the top of proposed pipe to the existing ground surface, these materials shall be removed and disposed of and replaced by suitable, clean fill material.

Soil materials for use in backfill shall be free of rock or gravel larger than two inches in any dimension and shall contain no measurable amount of debris, waste, vegetation and other deleterious matter. Backfill in this zone shall be placed and compacted in conformance with Section 02703 of these specifications, including but not limited to, labor, machinery, pumps, equipment, transportation and disposal charges.

- C. When muck, bog, clays or other unsuitable materials are encountered, the CONTRACTOR shall make every effort to remove all groundwater from the excavated area to confirm that the materials are unsuitable in nature and not unworkable due to excessive groundwater.
- D. Measurement for payment of unsuitable material shall be field measured by the cubic yard of the average depth and length of unsuitable material removed from the excavation. Compensation shall include the replacement of suitable material compacted to the densities specified herein. Said payment shall include all costs for the work, including, but not limited to, labor, machinery, pumps, equipment, suitable fill brought in and compacted in place and unsuitable material properly disposed of off site.

1.4 UNSUITABLE MATERIALS IN OR BELOW PIPE ZONE

- A. When material within the area to be excavated is deemed unsuitable by the Soils Testing Laboratory and/or the ENGINEER, and on the specific instruction of the ENGINEER, said material shall be removed to the limits designated and replaced with material as described below.
- B. If rock, boulders, other hard and unyielding materials, muck, clayey materials or other unsuitable materials are encountered in the area from an even plane 12 inches above the top of proposed pipe to a depth of at least one-fourth of the pipe diameter, [for a minimum of six inches below the bottom of the pipe] such materials shall be excavated and replaced with acceptable bedding material as described in Section 02703, Paragraph 3.09.
- C. When muck, bog, clays or other unsuitable materials are encountered, the CONTRACTOR shall make every effort to remove all groundwater from the excavated area to confirm that the materials are unsuitable in nature and not unworkable due to excessive groundwater.
- D. The CONTRACTOR shall, when directed, provide assurance to the ENGINEER that suitable, adequate bedding material cannot be secured from the upper layers or sidewalls of the excavated trench.
- E. In pipe laying operations, the bedding material shall be placed in areas where unsuitable materials have been removed, the zone which is described herein. This zone shall be limited in width to a total of the outside diameter of the pipe plus two feet. The CONTRACTOR will not be compensated for excavation and replacement of materials outside of the zone.
- F. Bedding material shall be placed and compacted in conformance with the earthwork requirements of these specifications.
- G. Measurement and payment for the work identified in this section shall be field measured by the cubic yard of the average depth and length of unsuitable material removed from the excavation in the specified zone. Said payment shall include all costs for the work, including, but not limited to, labor, machinery, pumps, equipment, suitable bedding material brought in and compacted in place and unsuitable materials excavated and properly disposed of off-site.

END OF SECTION 01001-UM

**SECTION 01027
APPLICATIONS FOR PAYMENT**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of Applications for Payment.

1.2 FORMAT

- A. AM Engineering, LLC Consulting Services Inc. Standard Application for Payment or as otherwise approved by ENGINEER.

1.3 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products. If CONTRACTOR submits for stored products, copies of invoices shall be submitted as back-up. Sum of values listed shall equal contract price.
- D. List each authorized change order as an extension on continuation sheet, listing change order number and dollar amount as for an original item of work.

1.4 SUBMITTAL PROCEDURES

- A. Submit six copies of each Application for Payment. Prior to submittal of the first application, an approved Schedule of Values shall be obtained from ENGINEER.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Draft Record Drawings shall be submitted to and approved by the engineer prior to the approval of payment beyond 75% of the total sum for "WATER", "SANITARY SEWER", "IRRIGATION" AND "DRAINAGE". Draft Record Drawings shall include pipe slopes and depths to evaluate proper clearance at crossings.
- D. Payment Period: Submit at intervals stipulated in the agreement.

1.5 SUBSTANTIATING DATA

- A. When ENGINEER requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01027

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

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Survey requirements for the project.

1.2 QUALITY CONTROL

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

1.3 SUBMITTALS

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

1.4 PROJECT RECORD DOCUMENTS

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

1.5 EXAMINATION

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

1.6 SURVEY REFERENCE POINTS

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

1.7 SURVEY REQUIREMENTS

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

1.8 SURVEYS FOR MEASUREMENT AND PAYMENT

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01050

**SECTION 01300
SHOP DRAWINGS**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Shop drawing submittal procedures.

1.2 PROCEDURES

- A. Deliver a minimum of six copies of submittals to ENGINEER at address listed on cover sheet of specifications. Distribution is two copies for the ENGINEER, two copies for the OWNER and two copies returned to the CONTRACTOR. If additional copies are required by the CONTRACTOR, they shall submit them.

- B. Transmit each item under ENGINEER-accepted form. Identify Project, CONTRACTOR, Subcontractor, and major supplier. Identify pertinent drawing sheet and specification section number as appropriate. Identify deviations from contract documents. Approve all submittals prior to forwarding to ENGINEER by stamping and signing approval stamp. Provide space for CONTRACTOR and ENGINEER review stamps.

- C. After ENGINEER review of submittal, revise and resubmit as required, identifying changes made since previous submittal.

- D. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

- E. Prior to any submittals, a Schedule of Shop Drawings must be submitted and approved by ENGINEER.

PART 2 PRODUCTS

2.1 SHOP DRAWING SUBMITTAL

- A. _____

- B. _____

- C. _____

- D. _____

PART 3 EXECUTION

Not Used

PART 4 **MEASUREMENT AND PAYMENT**

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

END OF SECTION 01300

**SECTION 01310
PROGRESS SCHEDULES**

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 FORMAT

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

1.3 CONTENT

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

1.4 REVISIONS TO SCHEDULES

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

1.5 SUBMITTALS

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

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

1.6 SUBMITTAL

- A. Submit six copies of schedules to ENGINEER.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01310

**SECTION 01410
TESTING SERVICES
(PROVIDED BY OWNER)**

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 SELECTION AND PAYMENT

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

1.3 SCHEDULING TESTS

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

1.4 QUALITY ASSURANCE

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

1.5 LABORATORY RESPONSIBILITIES

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

1.6 LABORATORY REPORTS

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

1.7 LIMITS ON TESTING LABORATORY AUTHORITY

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

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

1.8 CONTRACTOR RESPONSIBILITIES

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. In accordance with Article 1.02, Selection and Payment, this section.

END OF SECTION 01410

**SECTION 01510
TEMPORARY UTILITIES AND CONTROLS**

PART 1 GENERAL

1.1 REQUIREMENTS

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

1.2 TEMPORARY TRAILER LOCATION

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

1.3 REQUIREMENTS OF REGULATORY AGENCIES

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

PART 2 PRODUCTS

2.1 MATERIALS, GENERAL

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

2.2 TEMPORARY ELECTRICITY AND LIGHTING

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

2.3 TEMPORARY HEAT AND VENTILATION

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

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

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

2.4 TEMPORARY TELEPHONE SERVICE

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

2.5 TEMPORARY WATER

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

2.6 TEMPORARY SANITARY FACILITIES

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

2.7 EROSION AND PROPERTY CONTROL

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

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

2.8 CLEANING DURING CONSTRUCTION

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

2.9 CHEMICALS, HAZARDOUS WASTES, AND PETROLEUM PRODUCTS

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

PART 3 EXECUTION

3.1 REMOVAL

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

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01510

**SECTION 01600
MATERIAL AND EQUIPMENT**

PART 1 GENERAL

1.1 SCOPE OF WORK

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

1.2 SUBSTITUTIONS

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

PART 2 PRODUCTS

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

PART 3 EXECUTION

3.1 TRANSPORTATION AND HANDLING

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

3.2 STORAGE AND PROTECTION

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

3.3 SYSTEMS DEMONSTRATION

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

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01600

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

PART 1 GENERAL

1.1 SECTION INCLUDES

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

1.2 PERMITS AND REGULATIONS

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01650

**SECTION 01700
CONTRACT CLOSE-OUT**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Requirements and procedures for Contract Closeout.

1.2 CLOSE-OUT PROCEDURES

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

1.3 FINAL CLEANING

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

1.4 PROJECT RECORD DOCUMENTS

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

1.5 WARRANTIES AND BONDS

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

1.6 SPARE PARTS AND MAINTENANCE MATERIALS

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

1.7 EVIDENCE OF PAYMENT AND RELEASE OF LIENS

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

1.8 FINAL APPLICATION FOR PAYMENT

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 01700

**SECTION 02101
TRASH REMOVAL**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

- A. Provide all equipment and do all work necessary to remove all foreign non-vegetative material from:
 - 1. Protected Habitat Areas
 - 2. Areas defined by Limits of Clearing lines
 - 3. Areas scheduled for improvements
- B. Remove trash from all other areas of the job site and prepare haul routes to facilitate trash removal and legal off-site disposal, complete, as indicated on the Drawings and specified.

1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:
 - 1. Section 01650 - Wetlands and Native Vegetation Reserve Areas
 - 2. Section 02116 - Removal of Invasive Exotic Plants
 - 3. Section 02122 - Plants and Habitat Protection
 - 4. Section 02480 - Landscape Work
 - 5. Section 02810 - Irrigation System
 - 6. Section 02817 – Clearing and Grubbing
 - 7. Section 02820 - Excavation and Embankment

1.4 SUBMITTALS

- A. The following shall be submitted:
 - 1. Permit for transport and legal disposal of debris.
 - 2. Location plan of staging areas and schedule for moving staging equipment into those areas will be submitted for ENGINEER'S/LANDSCAPE ARCHITECT'S approval prior to mobilization.

1.5 QUALITY ASSURANCE

- A. In the event that the removal of invasive plants would damage any indigenous trees larger than three inches (3") in caliper, the CONTRACTOR will notify the LANDSCAPE ARCHITECT before proceeding further.

- B. Selective clearing methods will conform to the applicable requirements of ANSI Z133.1.
- C. Contractor Qualifications: A firm specializing in the removal of invasive plants with not less than five (5) years of experience in installing irrigation systems similar to those required for this project.
- D. The CONTRACTOR, as part of their bid, shall list not less than six (6) projects completed by their company of similar size and scope to the work specified herein. The six (6) or more projects shall be listed by project, name, location, owner's name and phone number, and the total paid cost of work executed. The listed project shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any bids which either do not respond to this condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- E. Coordination: Coordinate and cooperate with other CONTRACTORS to enable the work to proceed as rapidly and efficiently as possible. CONTRACTOR shall be responsible for coordinating with other trades and in the proper sequencing of work.
- F. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

1.6 HAUL ROUTES

- A. Select haul routes for minimum disruption to existing native vegetation. Do not impact areas defined by Limits of Clearing, if applicable, without authorization from the OWNER, ENGINEER or LANDSCAPE ARCHITECT.
- B. Haul routes will be marked in the field for ENGINEER's/LANDSCAPE ARCHITECTS's approval. Clearly mark haul routes during construction.
- C. Haul routes within Protected Habitat Areas are strictly prohibited.

1.7 PROTECTION

- A. Prevent movement, settlement or collapse of adjacent services, sidewalks, driveways, overhead power lines, and trees. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the OWNER.
- B. Provide, erect, and maintain barricades, lighting, and guardrails to protect general public, workers, and adjoining property.
- C. In the event that the removal of trash would endanger any indigenous trees or palms larger than 3-inch caliper, the CONTRACTOR will notify the ENGINEER/LANDSCAPE ARCHITECT before proceeding further.

1.8 SECURING THE SITE

- A. Until such time as the permanent perimeter fencing is in place, the CONTRACTOR will be responsible for denying vehicular access to the site by unauthorized persons.

1.9 MAINTAINING TRAFFIC

- A. Do not close or obstruct roadways without permits.
- B. Conduct operations with minimum interference to public or private roadways.

1.10 QUALITY ASSURANCE

- A. Trash will be removed to the satisfaction of the OWNER. The ENGINEER/LANDSCAPE ARCHITECT will inspect the site to assure successful performance of this requirement.
- B. Any damage to existing vegetation within "Protected Habitat Areas" shall be corrected by the CONTRACTOR.
- C. Any damage to existing vegetation outside of approved haul routes within "Limits of Clearing," if applicable, shall be corrected by the CONTRACTOR.
- D. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

PART 2 PRODUCTS

Not Applicable.

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

- A. Where haul routes are to be built, trees, shrubs, and other vegetation not indicated on the Drawings or designated in the field by the ENGINEER/LANDSCAPE ARCHITECT to remain will be cleared and grubbed, as required for execution of the Work.
- B. Stumps will be removed to their full depth. Roots 3 inch and larger will be removed to a depth of 2 feet below existing grade. Stumps will be legally disposed of off-site.
- C. Refer to Section 02817 - Clearing and Grubbing, if applicable, for complete requirements and specifications of this sub-paragraph.

3.2 TRASH REMOVAL

- A. Remove trash from within the protected habitat areas by hand or using hand tools and methods which will minimize damage to those areas. The use of mechanical equipment in these areas is strictly forbidden.

- B. Trash removal and collection outside of the protected habitat areas may be done by hand methods and/or mechanical equipment, used so as to minimize damage to the natural vegetation.
- C. The CONTRACTOR shall be responsible for removing all trash and debris from within the limits of construction, whether said trash and debris pre-existed construction activities or was generated by work. Complete removal of trash and debris shall be a condition of Final Acceptance.
- D. The presence of any hazardous materials will be brought to the attention of the ENGINEER/ LANDSCAPE ARCHITECT immediately. Proceed thereafter only at the direction of the ENGINEER/ LANDSCAPE ARCHITECT. Work may proceed, however, in areas not affected by the hazardous materials.

3.3 TOPSOIL

- A. No topsoil will be removed from the site without written permission of the ENGINEER/LANDSCAPE ARCHITECT.

3.4 DISPOSAL OF MATERIALS

- A. Material resulting from trash removal work will become the property of the CONTRACTOR and will be legally disposed of off-site.
- B. Material will be disposed of promptly and will not be left until final cleanup of site.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. CONTRACTOR shall submit a lump sum bid and will receive full compensation for conforming to the provisions of this Section and related drawings. Lump sum shall be paid for the complete execution of the work shown and specified.
- B. No additional compensation will be allowed excluding relative change orders. CONTRACTOR shall submit a per diem rate executable for work in addition to that shown and specified herein. Said per diem rate shall be submitted with the CONTRACTOR's bid. The OWNER reserves the right to reject any bid that does not include the per diem rate.

END OF SECTION 02101

**SECTION 02104
TRANSPLANTING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

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

1.3 RELATED WORK

- A. Section 02817 - Clearing and Grubbing
- B. Section 02480 - Landscape Work
- C. Section 02810 - Irrigation System

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Installer shall be a licensed firm specializing in landscape work with not less than five years of experience installing landscape work on projects similar size and scope to this project.
- B. The CONTRACTOR, as part of their bid, will list not less than six projects completed by their company of similar size and scope to the work specified herein. The six or more projects will be listed by project, name, location, OWNER's name and phone number, and the total paid cost of work executed. The listed projects will be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any CONTRACTOR's bid which either does not respond to this condition or does not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- C. Perform work in accordance with the drawings and specifications.
- D. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

1.5 JOB CONDITIONS

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

1.6 STAKING

- A. It is the intent of this section to have the CONTRACTOR field stake the location of all trees for the LANDSCAPE ARCHITECT's approval prior to planting. The CONTRACTOR should schedule their work and arrange for periodic site meetings with the LANDSCAPE ARCHITECT for the purpose of reviewing the work that has taken place in the prior five days and approval of the staking for the next five days. The CONTRACTOR shall notify the LANDSCAPE ARCHITECT in writing at least five days prior to the desired date for inspection of staking.
- B. The CONTRACTOR shall accurately stake plant material according to the plans. Stakes shall be three feet high above grade and be painted a bright color (one color for each species) to be clearly visible for inspection.
- C. It is understood and agreed that should minor changes and deviations from the plans or staking be required by the LANDSCAPE ARCHITECT, this shall be done by the CONTRACTOR at no additional cost providing such instructions are given to the CONTRACTOR before such affected work other than staking is started.
- D. The LANDSCAPE ARCHITECT shall approve transplanting method.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Slurry of peat moss and bone meal to be applied as specified under transplanting operations.
 - 1. Peat Moss: Shall be granulated raw Canadian peat or baled Canadian peat moss, containing not more than 9 percent mineral on a dry basis.
 - 2. Bone meal: Bone meal shall be delivered to the site in original unopened containers which shall bear the manufacturer's guaranteed statement of analysis. Bone meal shall be stored in weatherproof locations in such a manner that it will be kept dry and its effectiveness not impaired.
- B. Fertilizer: The CONTRACTOR shall provide and apply a non-burning fertilizer with a 5-5-2 analysis at the rate of 1 pound per transplant pit. Fertilizer shall be evenly distributed throughout the pit.

PART 3 EXECUTION

3.1 TRANSPLANTING METHODS

- A. Trees moved with a "Vermeer Spade" (or similar equipment) will be limited to the following sizes:
 - 1. 44" Vermeer - 3" caliper trees maximum
 - 2. 55" Vermeer - 5" caliper trees maximum
 - 3. 60" Big John - 6" caliper trees maximum
 - 4. 80" Big John - 8" caliper trees maximum
 - 5. 84" Big John - 10" caliper trees maximum
 - 6. 90" Big John - 12" caliper trees maximum
- B. Slurry of peat moss and bone meal shall be placed in the hole prior to planting the trees as following:
 - 1. 44" Vermeer - 2 c.f. peat, 1 lb. bone meal, 10 gallon water
 - 2. 55" Vermeer - 3 c.f. peat, 1½ lbs. bone meal, 15 gallon water
 - 3. 60" Big John - 4 c.f. peat, 2 lbs. bone meal, 15 gallon water
 - 4. 80" Big John - 5 c.f. peat, 3 lbs. bone meal, 25 gallon water
 - 5. 84" Big John - 7 c.f. peat, 4 lbs. bone meal, 25 gallon water
 - 6. 90" Big John - 6 c.f. peat, 4½ lbs. bone meal, 30 gallon water
- C. Preparation: The holes for planting transplants moved with tree mover shall be the same diameter as hole of the tree moved. Excess subsoil dug from pits, trenches, and beds shall be disposed on-site by the CONTRACTOR at the direction of the LANDSCAPE ARCHITECT.

- D. The CONTRACTOR has the option to hand dig and plant transplants by conventional balled and burlapped methods. CONTRACTOR shall submit methods in writing to the LANDSCAPE ARCHITECT for approval with their price submission. Backfill mixture and mulch shall be as specified under Materials.
- E. The CONTRACTOR is responsible for planting to correct grades and alignment, and all plants shall be set so that, when settled, they will bear the same relation to finish grade as they did before being transplanted. No filling will be permitted around trunks or stems. All broken or frayed roots shall be cut off. A ring of soil shall be formed around the edge of each plant to hold water.
- F. Mulching and Watering: All trees shall be mulched with a four-inch cover of the specified mulch, shredded bark or peat. All trees shall be thoroughly watered after planting.
- G. Pruning and Repair: Upon completion of planting, all trees shall have been pruned and injuries repaired. The amount of pruning shall be limited to the minimum necessary to remove dead or injured twigs and branches and to compensate for the loss of roots from transplanting. Pruning shall be done in such a manner as not to change the natural habit or shape of the plant. All cuts shall be made flush, leaving no stubs. Paint all cuts over three-fourths inch in diameter with tree paint.

3.2 PROTECTION AND CLEAN-UP

- A. At completion of job, any remaining holes from transplants shall be backfilled with approved materials and seeded as specified under Section 02489 - Grass Hydroseeding.
- B. The CONTRACTOR shall, at all times, protect plants to remain from damage. Anything damaged by the CONTRACTOR shall be replaced or treated by the CONTRACTOR at their own expense to the satisfaction of OWNER.

3.3 MAINTENANCE

- A. The CONTRACTOR shall be responsible for a thorough watering of all transplants three times a week for a period of four weeks after planting.

3.4 COMPLETION AND ACCEPTANCE

- A. At completion of transplanting, a preliminary acceptance will be made by the LANDSCAPE ARCHITECT provided all requirements of the specifications have been fulfilled.
- B. Right to Reject: The LANDSCAPE ARCHITECT will have the right, at any stage of the work, to reject any and all work and materials which, in their opinion, does not meet the requirements of the plans and specifications. Rejected material will be immediately removed from the site and acceptable material substituted in its place.
- C. Completion of the work will mean the full and exact compliance and conformity with the provisions expressed or implied in the drawings and specifications, associated change orders and field orders.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. CONTRACTOR shall submit a lump sum bid and will receive full compensation for conforming to the provisions of this section and related drawings. Lump sum will be paid for the complete execution of the work shown and specified.

- B. No additional compensation will be allowed excluding relative change orders. CONTRACTOR shall submit a per diem rate executable for work in addition to that shown and specified herein. Said per diem rate shall be submitted with the CONTRACTOR's bid. The OWNER reserves the right to reject any bid that does not include the per diem rate.

END OF SECTION 02104

**SECTION 02116
REMOVAL OF INVASIVE EXOTIC PLANTS**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

- A. Conduct all work necessary to remove invasive exotic plants within the limits as indicated on the drawings and as specified herein.
- B. Invasive exotic plants shall include those species, but not limited to, those listed in Sub-paragraph 1.07 -Invasive Plants.

1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this section. Other specification sections that directly relate to work of this section include, but are not limited to:
 - 1. Section 01650 - Wetlands and Native Vegetation Reserve Areas
 - 2. Section 02101 - Trash Removal
 - 3. Section 02122 - Plant and Habitat Protection
 - 4. Section 02480 - Landscape Work
 - 5. Section 02484 - Wetland Mitigation, Restoration, Littoral Zone Planting
 - 6. Section 02817 - Clearing and Grubbing

1.4 REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements will govern.
 - 1. American National Standards Institute (ANSI)
 - 2. Z133.1 Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees, and for Cutting Brush
- B. Where supplementary specifications or standards are referenced, such references shall be latest edition.

1.5 QUALITY ASSURANCE

- A. Contractor Qualifications: A firm specializing in the removal of invasive exotic plants with not less than five years of experience in the removal of invasive exotic plants similar to the scope required for this project.

- B. The CONTRACTOR, as part of their bid, shall list not less than six projects completed by their company of similar size and scope to the work specified herein. The six or more projects shall be listed by project, name, location, OWNER's name and phone number, and the total paid cost of work executed. The listed projects shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any bids which either do not respond to their condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- C. In the event that the removal of invasive exotic plants would damage any indigenous trees larger than three inches in caliper, the CONTRACTOR will notify the LANDSCAPE ARCHITECT before proceeding further.
- D. Selective clearing methods shall conform to the applicable requirements of ANSI Z133.1.
- E. Coordination: Coordinate and cooperate with other CONTRACTORs to enable the work to proceed as rapidly and efficiently as possible. CONTRACTOR shall be responsible for coordinating with other trades and in the proper sequencing of work.
- F. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.
- G. The CONTRACTOR shall be licensed to handle and apply all chemicals protected by applicable federal, state, and local regulations.

1.6 HAUL ROUTES

- A. Select haul routes for minimum disruption to existing native vegetation. Do not impact areas defined by Limits of Clearing, if applicable, without authorization from the OWNER, ENGINEER or LANDSCAPE ARCHITECT.
- B. Haul routes will be marked in the field for ENGINEER's/LANDSCAPE ARCHITECT's approval. Clearly mark haul routes during construction.
- C. Haul routes within protected habitat areas shall be strictly monitored to assure minimal disruption to existing habitat. Access through protected habitat areas shall be conducted only with the OWNER's or LANDSCAPE ARCHITECT's prior approval. No mechanical equipment shall be permitted within protected habitat areas.

1.7 SUBMITTALS

- A. The CONTRACTOR shall submit a detailed description of their plan to protect all gopher tortoises and gopher tortoise burrows. Prior to the approval of this plan, no clearing work will be done on the site.

- B. The CONTRACTOR shall submit to the LANDSCAPE ARCHITECT for review, proposed methods and materials for clearing of invasive exotic plants, including a schedule indicating specific dates for implementing specific work items in each major work area.
- C. The CONTRACTOR shall submit product data and technical data and safety sheet for herbicide, if used.
- D. The CONTRACTOR shall submit an aerial photograph of the site clearing depicting all haul routes to be used for the purpose of invasive exotic plant removal.
- E. The CONTRACTOR shall submit proof of licensure to handle regulated chemicals, if applicable.

1.8 INVASIVE EXOTIC PLANTS

- A. Invasive exotic plants are described as, but not limited to the following:
 - 1. Brazilian Pepper (*Schinus terebinthifolius*)
 - 2. Australian Pine (*Casaurina* spp.)
 - 3. Melaleuca (*Melaleuca quinquenervia*)
 - 4. Carrotwood (*Cupianopsis anacardioides*)
 - 5. Earleaf Acacia (*Acacia auriculiformis*)
 - 6. Downy Rose Myrtle (*Rhodomyrtus tomentosus*)
 - 7. Chinese Tallow (*Sapium sebiferum*)
- B. CONTRACTOR shall be responsible for reviewing all permits pertaining to invasive exotic plant removal relative to the site.

1.9 COMPLETION AND ACCEPTANCE

- A. Completion of the work shall mean the compliance and conformity with the provisions expressed or implied in the drawings and specifications, and associated change orders.
- B. The acceptability of all material, workmanship, labor and compliance with the specifications, grades and standards shall be solely determined by the LANDSCAPE ARCHITECT.
- C. Right to Reject: The LANDSCAPE ARCHITECT shall have the right, at any stage of the work, to reject any and all work and products which, in their opinion, does not meet the requirements of the drawings and specifications. Rejected workmanship shall be immediately corrected and acceptable procedures shall be immediately undertaken.
- D. Substantial Completion: Upon notification by the CONTRACTOR that the removal is complete, the LANDSCAPE ARCHITECT, will perform a substantial completion site observation to determine if the CONTRACTOR has completed the work in accordance with the plans, specifications and permits. If final acceptance is not given, the LANDSCAPE ARCHITECT will prepare a "punch list". The notification by the CONTRACTOR must be made at least three working days before the anticipated substantial completion site observation.

- E. Final Acceptance: Upon notification by the CONTRACTOR that all defects have been corrected, the LANDSCAPE ARCHITECT will perform one final site observation. Any additional final site observations due to the CONTRACTOR's inability to meet the items listed on the initial or subsequent "punch lists", will be at the expense of the CONTRACTOR according to the LANDSCAPE ARCHITECT's standard hourly rate schedule. Final acceptance will be given upon satisfactory completion of all work, including "punch list" items. The notification by CONTRACTOR must be made at least three working days before the anticipated final site observation.

PART 2 PRODUCTS

2.1 HERBICIDE

- A. Herbicide for stump removal will be Garlon-4D Woody Plant Control Herbicide manufactured by Dow Chemical Company, Midland, MI 48874, or approved equal.

PART 3 EXECUTION

3.1 INVASIVE EXOTIC PLANT REMOVAL

- A. Except for the area marked "Trash Removal Only" on the drawings, remove all invasive exotic plants from within the limit of the site unless indicated otherwise on the drawings.
- B. Only handwork and hand tool work will be permitted within the protected habitat areas. No mechanical equipment will be allowed within the protected habitat area. Invasive exotic plants will be cut off at the base and removed from protected habitat areas by hand and stockpiled near haul routes for collection. Existing native flora and fauna will be protected from harm during the process:
 - 1. Treat stumps with herbicide mixture to facilitate removal or grub by hand. Herbicide may be used where necessary to protect plants from damage by mechanical equipment.
 - 2. Herbicide to be applied in strict compliance with manufacturer's published application instructions and manufacturer's published instructions for safe use and safety.
- C. Remove invasive exotic plants from all areas outside of the protected habitat areas using mechanical equipment for clearing and grubbing, except where stump removal might injure native plants. Stockpile plant materials debris near specified haul routes for collection.
- D. Dispose of removed plant material off-site in legally designated landfill sites.
- E. If any resprouting or regrowth of invasive plants occur within the limits of the treated area within 90 days of project final acceptance, the CONTRACTOR will re-execute the herbicide application as herein specified to those areas exhibiting new growth.

3.2 STUMP REMOVAL

- A. All stumps to be removed to their full depth. Roots three inches and larger to be removed to a depth of two feet below grade. Stumps will be legally disposed off-site.
- B. Remove stumps from protected habitat areas without damage to the surrounding under story. If mechanical removal is not possible without damage to native plants, notify LANDSCAPE ARCHITECT and recommend alternate methods for ensuring that there is not vegetative regeneration. Proceed with alternative methods only with the LANDSCAPE ARCHITECT's approval.
- C. Stumps will be removed from all areas outside of the protected habitat areas using mechanical methods which minimize damage to the surrounding native vegetation.

3.3 HAZARDOUS MATERIALS

- A. The presence of any hazardous material to be brought to the attention of the LANDSCAPE ARCHITECT immediately. Proceed thereafter only at the direction of the LANDSCAPE ARCHITECT. Work may proceed, however, in areas not affected by the hazardous materials.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS AND PAYMENT

- A. CONTRACTOR will submit a lump sum bid and shall receive full compensation for conforming to the provisions of this Section and related drawings. Lump sum paid will be for the complete installation as shown and specified, including any addenda or change orders.
- B. No additional compensation will be allowed. A complete unit cost breakdown shall be included as a separate item and submitted with the CONTRACTOR's bid. Said unit cost breakdown shall be on a per acre basis, unless the area is less than one acre, in which case square yards shall be the basis for payments, and may be submitted after award of contract and prior to the execution of work. However, the OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02116

**SECTION 02122
PLANT AND HABITAT PROTECTION**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

- A. Protection of existing trees and plants from damage as a result of the CONTRACTOR's operations including, but not limited to:
 - 1. Protection of existing natural habitat areas, as indicated "Protected Habitat Area" on the drawings. Protective fencing as indicated.
 - 2. Marking of clearing limits with protective fencing, as indicated in the "Limits of Clearing" on the drawings.
 - 3. Habitat protective signage.
 - 4. Habitat protective fencing.
 - 5. Protection of all endangered plant and animal species as identified by the Environmental Impact Assessment, or Protected Species Assessment, whether inside marked Habitat Protection Areas or outside of such areas.
 - 6. Protection of trees, plants, burrows, and nests as identified by the LANDSCAPE ARCHITECT in the construction documents and/or in the field and identified.
 - 7. Boxing of tree trunks as specified.
- B. Plant and Habitat Protection measures shall be executed prior to or in concert with work activities and shall remain in effect through final acceptance.

1.3 RELATED WORK

- A. Examine Contract Documents for requirements that affect work of this section. Other specification sections that directly relate to work of this section include, but are not limited to:
 - 1. Section 02101 - Trash Removal
 - 2. Section 02116 - Removal of Invasive Exotic Plants
 - 3. Section 02480 - Landscape Work
 - 4. Section 02817 - Clearing and Grubbing
 - 5. Section 02820 - Excavation and Embankment

1.4 QUALITY ASSURANCE

- A. Arborist Qualifications: Engage a qualified arborist who has successfully completed tree protection and trimming, to perform the following work:
 - 1. Remove branches from trees that are to remain, if required.
 - 2. Recommend procedures to compensate for loss of roots and perform initial pruning of branches and stimulation of root growth were removed to accommodate new construction. Arborist shall make recommendations for the application of bio-stimulants and/or insecticides where necessary to assure the survival of specific plants.
 - 3. Recommend procedures for excavation and grading work juxtaposed to established plants to be submitted to the LANDSCAPE ARCHITECT for approval prior to the execution of work.
 - 4. Recommend procedures to perform tree repair work for damage incurred by new construction or work activities to be submitted to the LANDSCAPE ARCHITECT for approval prior to the execution of the work.
- B. CONTRACTOR shall employ a qualified Arborist certified by the International Society of Arborists (ISA) to conduct or direct the work specified by this section.
- C. CONTRACTOR shall be held responsible for the damage to any existing plant or habitat unless written and photographic proof that plant material was damaged prior to construction activities must also be provided.
- D. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

1.5 REFERENCED STANDARDS

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements will govern.
 - 1. American National Standards Institute (ANSI):
Z133.1 - Safety Requirements for Pruning, Trimming, Repairing, Maintaining and Removing Trees, and for Cutting Brush.

1.6 SUBMITTALS

- A. Certification: Submit written certification by a qualified arborist that vegetation indicated to remain has been protected during the course of construction in accordance with recognized standards. Written and photographic proof of trees which were damaged during construction must be provided. Indicate which damages trees (if any) are incapable of retaining full growth potential and are recommended to be replaced.

- B. CONTRACTOR shall submit proof of certification (ISA) of the Arborist.

1.7 PROJECT CONDITIONS

- A. Temporary Protections: Provide temporary fencing, barricades, or other suitable guards located outside drip line (outer perimeter of branches) to protect trees and other plants that are to remain from damage. Erect and maintain protective fencing along reserve areas as defined by the "Limits of Clearing" line and Protected Habitat Areas shown on the drawings.
- B. Protect Root Systems: Do not store construction materials, debris, or excavated material within drip line of trees to remain. Do not permit vehicles within drip line. Restrict foot traffic to prevent excessive compaction of soil over root systems within drip line.
- C. Damage to existing vegetation caused by CONTRACTOR's lack of diligence in maintaining the integrity of remaining tree's drip lines, will be replaced at the CONTRACTOR's expense. If plant material damaged by the CONTRACTOR cannot be replaced due to the existing size and/or maturity, the LANDSCAPE ARCHITECT will apply an accepted ISA horticultural formula to determine the damaged specimens monetary value. Said monetary value will be paid by the CONTRACTOR to the OWNER.

1.8 HABITAT PROTECTION

- A. The CONTRACTOR's attention is called to the fact that certain areas on site exist as Protected Habitat Areas and are to remain as such. Therefore, all construction operations must be performed in a manner which will minimize disturbance to these existing environments as natural habitat areas.
- B. Clearly mark the boundary of the Protected Habitat Area in the field and accompany LANDSCAPE ARCHITECT on a joint review before operations have commenced.
- C. Habitat protection to be installed around Protected Habitat Areas after the LANDSCAPE ARCHITECT has approved the layout and marking of those areas.
- D. The CONTRACTOR to protect all endangered plant and animal species as identified by the Environmental Impact Assessment, whether inside marked Habitat Protection Areas or outside of such areas. Protection methods will be as specified in Parts 2 and 3 of this section.

1.9 HABITAT PROTECTIVE SIGNAGE

- A. Two types of signs shall be posted throughout the property with respect to the care of habitat. The signs are as follows:
 - 1. A sign at all access points to the construction areas, informing all personnel that they are entering a "Protected Habitat Area" and that any violations which occur in the protected areas will be fined. Exact sign and language will be approved by the LANDSCAPE ARCHITECT.
 - 2. A sign mounted at the same location as the Protected Habitat Area perimeter protection, at 50'-0' intervals warning construction personnel to keep out of protected zones and informing them that all violators will be fined.

1.10 LIMIT OF CLEARING

- A. A Limit of Clearing line is shown on the drawings. The CONTRACTOR shall consider this line as the "limits of construction" activities to minimize the impact on existing vegetation.
- B. Any damage to or adverse impacts to existing vegetation that is not in response to work as defined or shown on the drawings will be replaced or repaired by the CONTRACTOR at their expense. Replacement material will be in equal size, proportion, or quantity to that which is damaged or destroyed.

1.11 BOXING

- A. Boxing of trees will be limited to an area 15 feet outside the construction limits.

PART 2 PRODUCTS

2.1 MATERIALS

- A. New Topsoil: Topsoil will conform to the requirements of Section 02480 - Landscape Work.

2.2 HABITAT PROTECTION

- A. Protected Habitat Areas will be designated on site with plastic surveyor's flagging tape at least one inch wide, in a highly visible color, or approved equal product and unless otherwise specified.

2.3 LIMITS OF CLEARING

- A. Limits of Clearing shall be defined by a protective barrier as defined in Paragraph 3.05 herein.
- B. Stakes shall be three-inch diameter cedar stakes, eight feet long.

2.4 BOXING

- A. Boxing shall be 4 x 4 inch posts space eight feet o.c., with 2 x 4 inch rails between posts approximately 24 x 24 ft. centered on the tree trunk, to a height of approximately five feet.

PART 3 EXECUTION

3.1 GENERAL

- A. Protect trees root systems from damage due to noxious materials caused by run-off or spillage during mixing, placement, or storage of construction materials. Protect root systems from flooding, eroding, or excessive wetting resulting from dewatering operations.
- B. Do not allow fires under or adjacent to trees or other plants that are to remain.

- C. Restrict all construction traffic from within the limits of a preserved tree/palm's drip line. NO activity shall be allowed within these limits. Any adverse damage or stress to a specimen will be grounds for additional protective measures to be taken at the CONTRACTOR's expense as directed by LANDSCAPE ARCHITECT. Any adverse residual affects will be the responsibility of the CONTRACTOR up to one year from final acceptance.

3.2 EXCAVATION AROUND TREES

- A. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots which may interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.
- B. Prune branches to balance loss to root system caused by damage or cutting of root system.

3.3 GRADING AND FILLING AROUND TREES

- A. Maintain existing grade within drip line of trees.
- B. Raising Grade:
 - 1. Minor Fills: Where existing grade is six inches or less below elevation of finish grade shown, use topsoil fill material specified. Place in single layer and do not compact; hand grade to required finish elevations.
 - 2. Moderate Fills: Where existing grade is more than six inches but less than 12 inches below finish grade elevation, place a layer of drainage fill on existing grade before placing topsoil. Carefully place against trunk of tree approximately two inches above finished grade elevation and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip line perimeter, place drainage fill to an elevation six inches below grade and complete fill with a layer of topsoil to finish grade elevation. Do not compact drainage fill or topsoil layers; hand grade to required elevations.

3.4 REPAIR AND REPLACEMENT OF TREES

- A. Repair trees damaged by construction operations. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged trees.
- B. Remove and replace dead and damaged trees that arborist or LANDSCAPE ARCHITECT determines to be incapable of restoration to normal growth pattern.
- C. All replacement trees/palms/specimens will be with a specimen of equal or greater size composition and quality. If the damage to the existing specimen cannot be adequately replaced, the LANDSCAPE ARCHITECT will determine fair compensation to the OWNER by the CONTRACTOR utilizing accepted ISA aboricultural formulas and historical values for the specimen in question.
- D. Damage or stress to existing plant material to be preserved by the CONTRACTOR will be repaired, replaced, or rectified at the CONTRACTOR's expense.

3.5 INSTALLATION OF HABITAT PROTECTION

- A. Habitat protection to be installed in two continuous bands: one 24 inches above ground and the second 48 inches above the ground. The habitat protection will be looped once around each tree trunk and knotted in a manner not injurious to the plant material. Habitat protection will be maintained in place for the duration of the work.
 - 1. If tree spacing is greater than 10 feet along line of habitat protection, install habitat protection on stakes, drive three feet into existing ground. Install by looping around stake and knotting.
- B. The CONTRACTOR shall maintain the habitat protection during the course of the work through Final Acceptance. Repair or replace habitat protection as necessary to maintain effective protection.

3.6 LIMIT OF CLEARING

- A. Limit of Clearing barrier shall be construction as specified in Subparagraph 3.05(A) above. Where Protected Habitat Areas fall within Limits of Clearing and no other work activities are scheduled within, the Protected Habitat barrier shall be constructed at the Limits of Clearing line.
- B. The CONTRACTOR shall maintain the Limits of Clearing and Protected Habitat barriers through final acceptance. Repair or replace barriers as necessary to maintain effective protection.

3.7 BOXING

- A. Boxing of trees will be done only after construction limits have been staked and approved by the LANDSCAPE ARCHITECT and prior to beginning any construction activities.
- B. Boxing of trees in remote locations of the site may be done concurrently with construction activities under the supervision of the LANDSCAPE ARCHITECT.

3.8 REMOVAL OF PROTECTION

- A. Except as otherwise indicated or requested by LANDSCAPE ARCHITECT, temporary protection devices and facilities installed during course of the work will be removed only after all work which may injure or damage trees and plants is completed.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. CONTRACTOR shall submit a lump sum bid and will receive full compensation for conforming to the provisions of this Section and related drawings. Lump sum shall be paid for the complete execution of the work shown and specified.

- B. No additional compensation will be allowed excluding relative change orders. CONTRACTOR shall submit a per diem rate executable for work in addition to that shown and specified herein. Said per diem rate shall be submitted with the CONTRACTOR's bid. The OWNER reserves the right to reject any bid that does not include the per diem rate.

END OF SECTION 02122

**SECTION 02484
WETLAND MITIGATION, RESTORATION
AND LITTORAL ZONE PLANTING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SCOPE

- A. Work under this specification includes wetland mitigation work; including the restoration of existing wetlands and installation of plant materials in newly created wetlands. It shall be the CONTRACTOR's responsibility to comply with general and specific conditions of wetland and littoral zone planting as indicated herein and shown on the drawings.

1.3 RELATED WORK

- A. Section 02116 - Removal of Invasive Plants
- B. Section 02122 - Plant and Habitat Protection
- C. Section 02480 - Landscape Work

1.4 QUALITY ASSURANCE

- A. The CONTRACTOR shall read and understand all aspects of the environmental permits issued for the project, including requirement of the Special Conditions contained therein. The CONTRACTOR shall be responsible for the compliance with all conditions of the permits which relate to the construction activities or construction impacts.
- B. Contractor Qualifications: A firm specializing in irrigation work with not less than five years of experience in installing irrigation systems similar to those required for this project.
- C. The CONTRACTOR, as part of their bid, shall list not less than six projects completed by their company of similar size and scope to the work specified herein. The six or more projects shall be listed by project, name, location, owner's name and phone number, and the total paid cost of work executed. The listed project shall be considered as representative of the CONTRACTOR's ability to execute the work specified herein. The OWNER, at their sole discretion, reserves the right to reject any bids which either do not respond to this condition or do not represent satisfactory performance of prior work of similar size and scope as that specified herein.
- D. Coordination: Coordinate and cooperate with other CONTRACTORS to enable the work to proceed as rapidly and efficiently as possible.

- E. The OWNER's Landscape Architect or designated individual, herein referred to as the OWNER's Representative or LANDSCAPE ARCHITECT shall have full authority to approve or reject work performed by the CONTRACTOR. The OWNER's Authorized Representative shall also have full authority to make field changes that are deemed necessary.

1.5 SUBMITTALS

- A. The CONTRACTOR shall submit certification on all plants and/or other data substantiating that the plants or materials comply with the specifications.
- B. Planting Schedule: The CONTRACTOR shall coordinate wetland planting with the approved landscape work schedule. The CONTRACTOR may revise dates only as approved in writing, after documentation of reasons for delay.
- C. All plant material shall be those as specified on the drawings or approved by the LANDSCAPE ARCHITECT.

1.6 GUARANTEE

- A. The CONTRACTOR shall ensure that all plantings installed by the CONTRACTOR achieve a survival rate of 90 percent for one year following installation and acceptance of these plants. The CONTRACTOR shall examine all plantings quarterly during this period and replace all dead plant species encountered shortly after each quarterly inspection.
- B. After the one-year warranty period, the CONTRACTOR shall guarantee all replacement plant material for a period of not less than 90 days.

1.7 WATERING

- A. The CONTRACTOR shall be responsible for supplying water to plant material to ensure plant viability. No claim shall be made by the CONTRACTOR for the loss of plant material through the warranty period due to the lack of water or failure of the irrigation system

1.8 CONTROL OF REINFESTATION

- A. After removing invasive exotic vegetation within existing wetlands, as specified on the drawings, the CONTRACTOR shall control reinfestation of invasive exotic vegetation into wetland restorations and mitigation areas for a period of one year following initial extermination of the plants.

1.9 COMPLETION AND ACCEPTANCE

- A. Completion of the work shall mean the full and exact compliance and conformity with the provisions expressed or implied in the drawings and specifications, and associated change orders.
- B. The acceptability of all material, workmanship, labor and compliance with the specifications, grades and standards shall be solely determined by the LANDSCAPE ARCHITECT.

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

PART 2 PRODUCTS

2.1 PLANT MATERIALS

- A. An itemized list of plants is shown on the drawings.
- B. The CONTRACTOR shall be responsible for providing the plant material specified on the drawings or approved by the LANDSCAPE ARCHITECT. No plant substitutions shall be made without the written approval of the LANDSCAPE ARCHITECT.
- C. The CONTRACTOR shall adhere to the requirements for plant material quality as defined in Section 02480 - Landscape Work.

2.2 SUBSOIL

- A. Requirements for subsoil conditions in created and restored wetlands are indicated on the drawings.

PART 3 EXECUTION

3.1 INSTALLATION

- A. CONTRACTOR shall prepare all proposed restoration areas/mitigation areas as per the drawings.
- B. The CONTRACTOR shall be responsible for furnishing and planting selected species of wetland plants in the littoral zones as indicated and shown on the drawings:

1. The littoral zones are those portions of the lake system that shall be no deeper than two feet at normal water level (NWL).
 2. The littoral zones shall be planted with selected species of wetland plants that were on the DEP and SFWMD or SWFWMD preferred lists, such as: Saggitaria, Pickerelweed, Maidencane, Water Lilies, etc. The species shall be planted on three-foot centers or as specifically shown on the drawings. Plantings shall attain a mature growth of not less than 90 percent after one year. CONTRACTOR is responsible for at least 90 percent growth after one year. At the end of this one-year period, the CONTRACTOR shall be required to vegetate the areas of non-growth.
- C. Maintenance and Monitoring Program
1. Guarantee of Survival: Supplemental planting will be required at the end of the first and second years following planting if survival falls below 85 percent. Supplemental planting will be limited to the number of plants needed to equal a cumulative survival of 85 percent (original number of plants plus supplemental plants = 85 percent of the number planted originally).
 2. Proposed Monitoring and Maintenance: The success of wetland plant installation will be assessed at least once every six months for two years. A summary of the results shall be submitted to the OWNER.
 3. Planting Schedule: Littoral zones should be planted during the months of April through September.
 4. Required littoral zone vegetation shall be maintained in perpetuity.

3.2 COMPLETION AND ACCEPTANCE

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

- E. Final Completion: The LANDSCAPE ARCHITECT shall perform at the request of the CONTRACTOR, one final site observation after all defects have been repaired or replaced following the substantial completion site observation. The request by the CONTRACTOR must be made at least three working days before the anticipated final completion site observation. All defects shall be repaired or replaced before final acceptance.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. CONTRACTOR shall submit a lump sum bid and will receive full compensation for conforming to the provisions of this section and related drawings. Lump sum paid for the complete installation as shown and specified will be categorized as follows:
 - 1. Trees
 - 2. Wetland Plant Material

- B. No additional compensation will be allowed excluding relative change orders. A complete unit cost breakdown, based on the included plant lists (pay items), will be included as a separate item and submitted with the CONTRACTOR's bid or submitted prior to executing any work on the project. The OWNER reserves the right to reject any bid that does not include said unit cost breakdown.

END OF SECTION 02484

**SECTION 02514
PORTLAND CEMENT CONCRETE PAVING**

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and provisions of Contract, including Contract Conditions, Division-1 Specification Sections, Section 02814 - Concrete Curbs, Gutters, and Division-3 - Concrete.

1.2 SCOPE

- A. Extent of portland cement concrete paving is shown on drawings, including curbs, gutters, walkways, and pavement.
- B. Prepared subbase is specified in Section 02820 - Excavation and Embankment, and Section 02910 - Limerock Base Course and Stabilized Subgrade.
- C. Concrete and related materials are specified in Division-3.
- D. Joint fillers and sealers are specified in Division-7.

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with local governing regulations if more stringent than herein specified.

1.4 JOB CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities. Utilize flagman, barricades, warning signs and warning lights as required.
- B. Examination of Site: The bidder must acknowledge that they have examined the site, plans and specifications and the submission of a quotation shall be considered evidence that examinations have been made.
- C. Field Conditions: The CONTRACTOR shall verify drawing dimensions with actual field conditions and inspect related work and adjacent surfaces. The CONTRACTOR shall report to the LANDSCAPE ARCHITECT all conditions which prevent proposed execution of this work.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Forms: Steel, wood, or other suitable materials of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
 - 1. Use flexible spring steel forms or laminated boards to form radius bends as required.

- B. Coat forms with a non-staining form release agent that will not discolor or deface surface concrete.
- C. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185.
 - 1. Furnish in flat sheets, not rolls, unless otherwise acceptable to LANDSCAPE ARCHITECT.
- D. Colored Concrete: Colored concrete lithochrome color hardener shall be manufactured by L.M. Scofield Company or approved equal. Color _____ with _____ finish. A 4' x 4' test panel is required for approval by the LANDSCAPE ARCHITECT.
- E. Exposed Aggregate: Where exposed aggregate concrete is called for, the aggregate type shall be added to concrete to achieve the texture and color indicated on the drawings. A 4' x 4' test panel is required for approval by the LANDSCAPE ARCHITECT.
- F. Special Aggregate: Where special aggregate concrete is called for, shell fragments ($\frac{1}{4}$ " - $1\frac{1}{2}$ " in size) shall be incorporated into the surface to achieve a "keystone" effect when surface is exposed. A 4' x 4' test panel is required for approval by the LANDSCAPE ARCHITECT.
- G. Subbase: In situ or borrow soils, stabilized by blending with shell to a minimum LBR of 40, compacted to 98 percent of modified proctor maximum density. (AASHTO T-180) Florida DOT Section S160.
- H. Base: Recycled, crushed concrete base with a minimum LBR of 100, compacted to 98 percent of modified proctor maximum density (AASHTO T-180).

OR

Shell with a minimum LBR of 100 compacted to 98 percent of modified proctor maximum density (AASHTO T-180).

- I. Concrete Materials: Comply with requirements of applicable Division-3 sections for concrete materials, admixtures, bonding materials, curing materials, and others as required.
- J. Expansion Joint Materials: Comply with requirements of applicable Division-7 sections for preformed expansion joint fillers and sealers.
- K. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - 1. "Masterseal", Master Builders
 - 2. "A-H 3 Way Sealer", Anti-Hydro Waterproofing Company
 - 3. "Ecocure", Euclid Chemical Company
 - 4. "Clear Seal", A.C. Horn
 - 5. "J-20 Acrylic Cure", Dayton Superior
 - 6. "Sure Cure", Kaufman Products, Inc.

7. "Spartan-Cote", The Burke Company
 8. "Sealkure", Toch Division - Carboline
 9. "Kure-N-Seal", Sonneborn - Contech
 10. "Polyclear", Upco Chemical/USM Corp.
 11. "L&M Cure", L & M Construction Chemicals
 12. "Klearseal", Setcon Industries
 13. "LR-152", Protex Industries
 14. "Hardtop", Gifford – Hill
- L. Bonding Compound: Polyvinyl acetate or acrylic base, rewettable type.
- M. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
1. "J-40 Bonding Agent", Dayton Superior Corp.
 2. "Weldcrete", Larsen Products
 3. "Everbond", L & M Construction Chemicals
 4. "EucoWeld", Euclid Chemical Company
 5. "Hornweld", A.C. Horn
 6. "Sonocrete", Sonneborn-Contech
 7. "Acrylic Bondcrete", The Burke Company
- N. Epoxy Adhesive: ASTM C 881, two component materials suitable for use on dry or damp surfaces. Provide material's: "Type", "Grade" and "Class", to suit project requirements.
- O. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
1. "Epoxite", A.C. Horn
 2. "Edoco 2118 Epoxy Adhesive", Edoco Technical Products
 3. "Sikadur Hi-Mod", Sika Chemical Corp.
 4. "Euco Epoxy 463 or 615", Euclid Chemical Company
 5. "Patch and Bond Epoxy", The Burke Company
 6. "Sure-Poxy", Kaufman Products, Inc.

2.2 CONCRETE MIX, DESIGN AND TESTING

- A. Comply with requirements of applicable Division-3 sections for concrete mix design, sampling and testing, and quality control, and as herein specified.
- B. Design mix to product normal-weight concrete consisting of Portland cement, aggregate, water-reducing or high-range water-reducing admixture (super-plasticizer), air-entraining admixture and water to produce the following properties:
1. Compressive Strength: 3000 psi, minimum at 28 days, unless otherwise indicated.
 2. Slump Range: Eight inches for concrete containing HRWR admixture (super-plasticizer); three inches for other concrete.
 3. Air Content: 5 to 8 percent.

PART 3 EXECUTION

3.1 COORDINATION OF WORK

- A. The CONTRACTOR shall be responsible for complete coordination of concrete installation with other Contractors on the job.

3.2 SURFACE PREPARATION

- A. Remove loose materials from compacted subbase surface immediately before placing concrete.

3.3 FORM CONSTRUCTION

- A. Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:
 - 1. Top of forms: not more than one-eighth inch in 10 feet.
 - 2. Vertical face on longitudinal axis: not more than one-eighth inch in 10 feet.
- C. Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.
- D. For sidewalk straight lengths exceeding 100 feet; steel forms are required.

3.4 REINFORCEMENT

- A. Locate, place and support reinforcement as specified in Division-3 sections, unless otherwise indicated.

3.5 CONCRETE PLACEMENT

- A. General: Comply with requirements of Division-3 sections for mixing and placing concrete, and as herein specified.
- B. Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- C. Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

- D. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- E. Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than one-half hour, place a construction joint.
- F. When adjacent pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.
- G. Curbs and Gutters: Refer to Section 02814 of these specifications.

3.6 JOINTS

- A. General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construction transverse joints at right angles to the centerline, unless otherwise indicated.
- B. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.
- C. Weakened-Plane (contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construction weakened-plane joints for a depth equal to at least one-fourth concrete thickness, as follows:
 - 1. Joints must be saw-cut one-eighth inch wide to a minimum depth of one-fourth of the slab depth unless otherwise indicated.
 - 2. Saw-cut joints shall follow a straight unwavering line and cut using a straight edge guide.
 - 3. Saw-cut joints must be performed between a minimum of four hours and a maximum of eight hours after concrete placement.
- D. Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated.
 - 1. Locate expansion joints at 20-foot o.c. unless otherwise indicated.
 - 2. Extend joint fillers full-width and depth of joint, and not less than one-half inch or more than one inch below finished surface where joint sealer is indicated. If not joint sealer, place top of joint filler flush with finished concrete surface.
 - 3. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.

4. Protect top edge of joint filler during concrete placement with a metal cap or other temporary materials. Remove protection after concrete has been placed on both sides of joints.
- E. Fillers and Sealants: Comply with requirements of application Division-7 sections for preparation of joints, materials, installation, and performance. Colors to match adjacent surfaces unless indicated otherwise.

3.7 BROOM, EXPOSED AGGREGATE AND SPECIAL AGGREGATE FINISHING

- A. After striking-off and consolidating concrete, smooth surface by screening and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
- B. After floating, test surface for trueness with a 10 foot straight edge. The surface shall not vary more than 0.01 foot from the edge of the straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
- C. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to one-half-inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
- D. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing as follows:
 1. Broom finish, by drawing a fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation, if required, to provide a fine line texture acceptable to LANDSCAPE ARCHITECT.
 2. On incline slab surfaces, provide a course, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic.
 3. Exposed Aggregate Finish and Special Aggregate Finish: CONTRACTOR to use acid wash or baking soda, or other methods to produce a rough "keystone" texture to finished concrete. Surface textures to vary from 0" - ¼" in depth. CONTRACTOR to prepare test panels for LANDSCAPE ARCHITECT's approval.
 4. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects as directed by LANDSCAPE ARCHITECT.

3.8 CURING

- A. Protect and cure finished concrete paving, complying with applicable requirements of Division-3 sections. Use membrane-forming curing and sealing compound or approved moist-curing methods.

3.9 REPAIRS AND PROTECTIONS

- A. Repair or replace broken or defective concrete as directed by LANDSCAPE ARCHITECT.
- B. Drill test cores where directed by LANDSCAPE ARCHITECT, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Sweep concrete pavement and wash free of stains, discolorations, dirt and other foreign materials just prior to final inspection.

3.10 COLORED CONCRETE

- A. Concrete Substrate Design: All fine and coarse aggregates shall be totally non-reactive (free of deleterious particles). The water content shall be the minimum practicable and the slump shall not exceed four inches. A normal-set or retarded-set, water-reducing admixture may be used, but the concrete substrate shall contain no other admixture, such as those containing calcium chloride. Expansion joints shall be designed for installation of Lithochrome colorcalk.
- B. Subgrade Preparation: The subgrade shall be well drained and have adequate and uniform load-bearing characteristics. It shall be grades such that the thickness of the concrete will be uniform.
- C. Concrete Substrate Installation: Concrete mix control shall be such as to provide good batch-to-batch uniformity. After placing, the surface shall be vibrated or tamped (tamping should be minimized) and then wood-floated to an even surface which corresponds to the finished grade within a tolerance of plus or minus one-eighth inch in 10 feet in any direction.
- D. Color Hardener Application: After concrete substrate has reached the point where no excess moisture shows at the surface, but while still plastic throughout, Lithochrome Color Hardener shall be applied evenly to the surface by the dry-shake method. Water shall not be sprinkler or otherwise added to the surface during application or finishing. The first shake shall consume two-thirds of the material, one-third being withheld for the second shake and final touch-up. After the first shake, the surface shall be thoroughly floated, either mechanically or by hand. It shall not be troweled between the first and second shakes. The second shake shall then be applied evenly and the surface floated and troweled. A small quantity of material shall be withheld from the second shake for touching up non-uniform or weak-toned areas as necessary. Long-handled Fresnos shall not be used. When 90 or more pounds per 100 square feet area being applied, a weighted mechanical floating and troweling machine shall be used. Hard troweling shall be minimized and consistent finishing practices used to insure uniformity of color.

- E. Curing: Lithochrome Colorwalk, Water Base, in the matching color, shall be applied unthinned in accordance with Schofield's Application Instructions A-513 as soon as, but not before, the concrete surface has sufficiently set so it can be walked on gently without marring. The concrete shall remain uncovered for at least four days, after which time new and unwrinkled non-staining reinforced waterproof draft curing paper maybe used for additional protection. The concrete shall never be covered with plastic sheeting.
- F. Caulking: The joints shall be formed, prepared, and primed, and the backer rod and Lithochrome Colorcalk shall be installed in accordance with Schofield's Application Instructions A-803 (color to match).
- G. All colored concrete surfaces shall have a light broom finish, unless indicated otherwise.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. Items under this section may be paid as a lump sum, per square yard, or per lineal foot as specified on the bid schedule.
- B. The quantities to be paid for under this section as per square yard or per lineal foot shall be paid as the quantity actually completed and accepted, for the various types required by the approved plans.

4.2 BASIS OF PAYMENT

- A. The Portland cement concrete paving items shall be paid for at the contracted lump sum, square yard or lineal foot price for the various types required by the approved plans as specified in the bid schedule.
- B. The above price and payment shall be full compensation for all the work specified in this section and shall include all materials, equipment, tools, labor, testing, laboratory, and incidentals necessary to complete the work.

END OF SECTION 02514

**SECTION 02703
TRENCHING AND BACKFILLING FOR PIPING**

PART 1 GENERAL

1.1 SCOPE

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

1.2 REFERENCES

- A. Referenced standards or specifications such as ASTM, AASHTO, or AWWA, shall be the latest edition.

- B. AM Engineering, LLC Specifications

 Sections: 02817 CLEARING AND

 GRUBBING
 02820 EXCAVATION AND EMBANKMENT

- C. Attachments

 Figure A (Section 02703)

1.3 SUPPLEMENTAL REQUIREMENTS

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

1.4 SUBSURFACE CONDITIONS

- A. The CONTRACTOR shall be responsible for determining the subsurface conditions in areas where excavation can be anticipated. The type of soil, depth and thickness of rock and unsuitable materials, ground water table, and other factors that affect cost shall be evaluated prior to submitting a bid.

- B. The method used to determine subsurface conditions shall be the responsibility of the CONTRACTOR. Soil borings (if provided) only supply information in the exact location of each boring; therefore, on-site exploration of the subsurface is the CONTRACTOR's responsibility. All on-site exploration shall be scheduled with the OWNER and coordinated with jurisdictional agencies and utility companies.

1.5 PROTECTION

- A. With the exception of sheeted excavations for deep pipe installations, wet wells or other poured in place construction activity, all excavations or trenches shall be backfilled immediately after the work is completed. The CONTRACTOR shall plan the daily construction activity whereby trenches are backfilled and compacted in accordance with the accompanying specifications at the end of each work day. Should it be necessary for reasons other than standard construction procedures to leave an excavation open the

CONTRACTOR shall isolate and protect the workers and the general public from the entire excavation by barricades, fences, signs, lights or other devices required by the contract documents and/or local agency codes.

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

PART 2 PRODUCTS

2.1 BEDDING MATERIALS

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

2.2 BACKFILLING MATERIALS

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

PART 3 EXECUTION

3.1 PREPARATION

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

3.2 CLEARING AND GRUBBING

- A. Prior to trench excavation, the existing surface that will be disturbed by the excavation operation shall be cleared and grubbed in accordance with AM Engineering, LLC Specification Section 02817 CLEARING AND GRUBBING.
- B. The limits of clearing and grubbing for this section shall be as shown on the plans or as otherwise specified in the Contract Documents. Where the clearing limits are not shown or stated, the limits of clearing and grubbing shall be the smallest area that will facilitate the construction of work specified.

3.3 TRENCH WIDTH

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

3.4 EXCAVATION

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

3.5 ROCK EXCAVATION

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

3.6 UNSUITABLE MATERIALS

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

3.7 REPLACEMENT MATERIAL

- A. Where unsuitable material including rock larger than six inches is excavated and hauled off-site, replacement material shall be acquired from on-site excavation as provided by the Contract Documents or as authorized by the OWNER. Where replacement material is not available from the site, the CONTRACTOR shall furnish fill material from an off-site

borrow source. Only materials that conform to Article 2.02 of this section may be used for backfilling operations unless otherwise specified in the Contract Documents or authorized in writing by the OWNER's Representative.

3.8 PREPARATION OF TRENCH BOTTOM

- A. Where rock is encountered at the bottom of the trench, the trench shall be undercut to a depth of at least six inches below the bottom of the pipe to allow for a bedding cushion above the rock.
- B. Where muck, roots or other organic materials are encountered at the bottom of the trench, the trench shall be undercut to remove the unsuitable material to the satisfaction of the OWNER's Representative.
- C. The CONTRACTOR shall dewater the excavation operation as required to provide a dry trench bottom. Prior to beginning work CONTRACTOR shall prepare their dewatering plan and obtain all necessary permits.

3.9 BEDDING

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

3.10 BACKFILLING

- A. Backfilling of pipe trenches shall be done in three stages as follows:
 - 1. First Stage: Material above the bedding and beneath the haunches compacted in six-inch layers.
 - 2. Second Stage: Material along the sides of the pipe up to at least one foot above the top of the pipe compacted in six-inch layers.
 - 3. Third Stage: Material above the second stage up to the bottom of the subgrade or the finished surface as applicable compacted in 12-inch layers.

- B. Backfilling of structures shall be done in 12- inch compacted layers up to the top of the completed or partially completed structure.
- C. Materials used for backfilling shall comply with the requirements of Article 2.02 this section or as otherwise authorized in writing by the OWNER's representative. For backfilling of pipe, "Select Fill" shall be used for the first and second stages. "Common Fill" shall be used for the third stage of pipe backfill and for backfilling structures.

3.11 COMPACTION

- A. The compaction requirements for backfilling pipe trenches and around structures are listed below under the following categories. These requirements are the minimum percentages of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).
 - 1. Under and adjacent (within ten feet) to pavement shall be 95 percent except within three feet of bottom of subbase grade it shall be 98 percent.
 - 2. Not under pavement: Any area outside the 10 feet referred to above shall be 95% for all stages.

These requirements are the minimum percentages of the maximum density determined by the "Modified Proctor Density" (ASTM D-1557).
 - 3. Under and adjacent (within ten feet) to structures shall be 95 percent except within three feet of finished grade it shall be 98 percent.
- B. The CONTRACTOR shall add water or dry out the material used for backfilling until the moisture content is within two percent of the optimum moisture required to achieve the maximum compaction.
- C. A density test shall be taken for each 300 lineal foot section of trench or part thereof for each layer.
- D. A density test shall be taken for every other layer for each structure.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

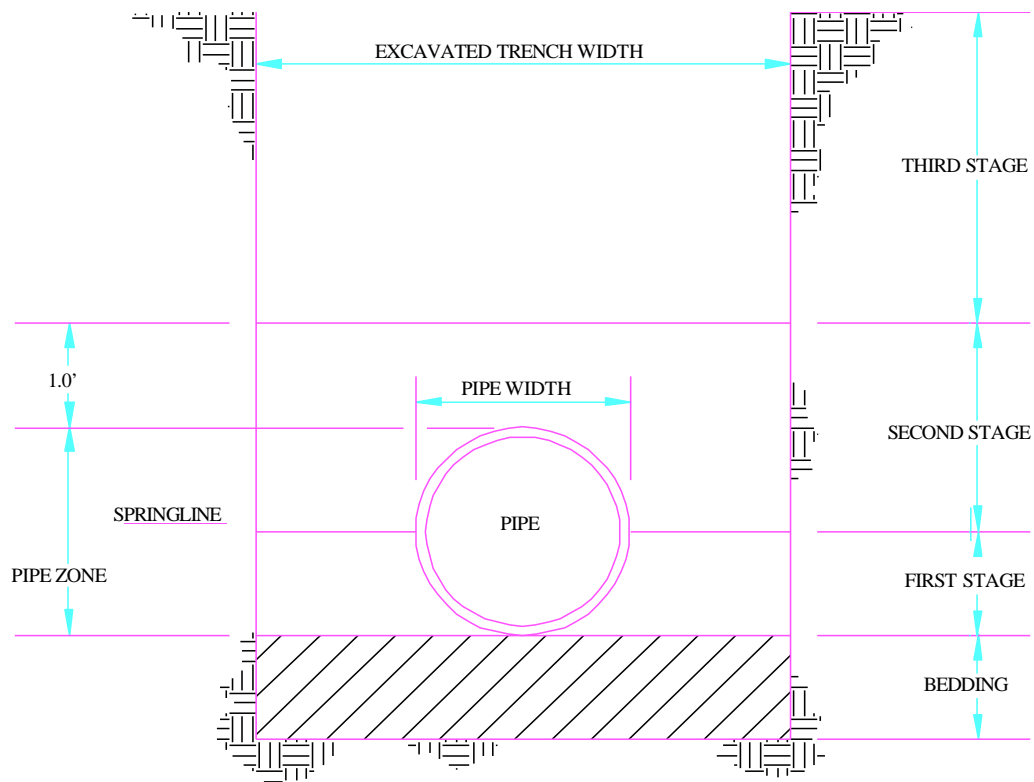


FIGURE A

N.T.S.

END OF SECTION 02703

**SECTION 02704
TEMPORARY TRAFFIC CONTROL**

PART 1 GENERAL

1.1 SCOPE

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

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

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

1.2 SPECIFICATIONS AND STANDARDS

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

PART 2 PRODUCTS

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

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

3.2 SPECIFIC REQUIREMENTS

- A. In addition to the CONTRACTOR providing a worksite traffic supervisor in accordance with FDOTSPEC Section 102-3.2, the Traffic Control Plan (TCP)

shall be installed, maintained and removed under the direct supervision of an individual who is certified by a Florida Department of Transportation (FDOT) approved training agency, which meets the FDOT's maintenance of traffic training requirement for intermediate or advanced training.

- B. The CONTRACTOR will maintain the existing number of lanes of traffic in each direction at all times by using existing or constructing temporary pavement. There shall be no lane closures or road closures without the prior written approval of the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadway.
- C. The CONTRACTOR shall not provide detours to re-route vehicle, bicycle and/or pedestrian traffic around the work zone without prior written approval from the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadways.
- D. If approved by the ENGINEER and the authority having jurisdiction over the operation and maintenance of the roadway, the CONTRACTOR may concurrently construct portions of the work from different phases.
- E. If the CONTRACTOR cannot maintain the existing access to a current residence or business, then the CONTRACTOR shall provide an alternate access, as approved by the ENGINEER.
- F. All surfaces used to maintain traffic through the work zone shall be paved.
- G. Any alterations to the approved traffic patterns must be reviewed and approved by the ENGINEER prior to implementation, unless the alterations are required to avoid eminent danger to the public or the workers present within the approved work zone.
- H. All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 02704

**SECTION 02705
RESTORATION AND GENERAL REQUIREMENTS**

PART 1 GENERAL

1.1 SCOPE

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

1.2 SPECIFICATIONS AND STANDARDS REFERENCE

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

02703 TRENCHING AND BACKFILLING FOR PIPING

PART 2 PRODUCTS

2.1 MATERIALS

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

PART 3 EXECUTION

3.1 GENERAL

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

3.2 UNDERGROUND FACILITIES

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

3.3 TRENCHING AND BACKFILLING

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

3.4 PAVEMENT CUTS

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

3.5 CONCRETE PAVEMENT, CURB AND GUTTER, ETC.

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

3.6 FLEXIBLE PAVEMENT

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

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

3.7 LANDSCAPING AND MISCELLANEOUS

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

3.8 DENSITY TESTS

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

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

3.9 GENERAL REQUIREMENTS

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

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

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 02705

**SECTION 02706
WATER LINES**

PART 1 GENERAL

1.1 SCOPE

- A. The scope of this section covers materials and work necessary for construction, connection, and placing into operation the water distribution system shown on the plans and herein described and specified.

1.2 SPECIFICATION AND STANDARD REFERENCE

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

- B. AM Engineering, LLC Specifications Sections:

 02703 TRENCHING AND BACKFILLING FOR PIPING
 02705 RESTORATION AND GENERAL REQUIREMENTS

PART 2 PRODUCTS

2.1 MATERIALS

- A. All pipe shall be designed for a minimum working pressure of 150 psi unless otherwise specified.

- B. Ductile Iron Pipe - Pipe shall meet the requirements of AWWA C-151. Minimum thickness class shall be Class 51 or as specified. Pipe shall be cement lined and interior seal coated in accordance with AWWA C-104. Pipe exterior shall be coated with bituminous coating.

- C. Polyethylene Encasement - In areas where called for on the plans, ductile iron pipe shall be polyethylene encased. Polyethylene encasement shall meet the requirements of AWWA C-105, and shall be the color blue. CONTRACTOR shall inform the ENGINEER should they encounter muck, peat or similar soils which are generally corrosive in areas without encasement specified to verify if it should be added. In Sarasota County all ductile iron pipe shall be encased,

- D. Polyvinyl Chloride Pipe (PVC) - PVC 4-inch through 12-inch diameter shall meet requirements of AWWA C-900. Minimum thickness class shall be Class 150 (DR 18) unless otherwise shown on the plans or in the specifications. Pipe bell shall be monolithic and integral to pipe barrel.

- E. Polyvinyl Chloride Pipe (PVC) - PVC 14-inch through 36-inch diameter shall meet the requirements of AWWA C905. Minimum thickness class shall be DR25, rated for 150 psi pressure class, unless otherwise shown on the plans or in the specifications. Pipe bell shall be monolithic and integral to pipe barrel.

F. Fittings and Joints

1. Fittings for ductile iron pipe: Pipe fittings for ductile iron pipe shall be ductile iron, mechanical joint with retainer glands. Fittings shall have a minimum rated working pressure of 350 psi, and conform to AWWA C-110 or C-153. Fittings shall be thickness cement lined, interior seal coated, and exterior bituminous coated in accordance with AWWA C-104.
2. Pipe joints: Pipe joints shall be push-on type meeting the requirements of AWWA C-111 except where specifically shown or detailed otherwise.
3. Restrained joints: Restrained joints, where required, shall be American Fastite Joint with Fast Grip Gasket, or approved equal.
4. Flanged pipe: Flanged ductile iron pipe shall meet the requirements of AWWA C-115. Gaskets shall be American Toruseal Full-Face or approved equal.
5. Fittings for polyvinyl chloride (PVC) water mains: Pipe fittings for PVC water pipe shall be ductile iron and shall have a minimum rated working pressure of 350 psi. Fittings shall be mechanical joint and shall meet the requirements of AWWA C-110 or C153. Fittings shall be cement lined, interior seal coated, and exterior bituminous coated in accordance with AWWA C-104. Where C-900 or C-905 PVC fittings are available and acceptable to the utility, they shall be utilized.

G. Gasket Joint Lubrication

1. CONTRACTOR shall only use pipe joint lubricant supplied by or recommended by the pipe manufacturer. Lubricant shall be water-soluble, non-toxic, an inhibitor to bacterial growth, and shall be non-detrimental to the elastomeric seal and pipe. Mineral oil, petroleum jelly, hydrogenated vegetable fat (i.e. Crisco (RR), petroleum products, cooking oil, grease, etc.) shall not be used.

H. Fire Hydrants

1. Fire hydrants, materials, and installation shall conform to specifications of the governing fire department. In general, fire hydrants shall conform to requirements of AWWA Specification C 502, "Dry Barrel Fire Hydrants." They shall have a minimum six-inch connection, two 2½-inch hose nozzles, and one 4½-inch steamer nozzle. All nozzles shall have American National Standard Hose Thread.
2. The hydrant valve shall be 5¼ inches minimum and hydrant lead shall have an auxiliary valve (not bolted to the hydrant) six inches in size or larger, as indicated. Auxiliary valve shall be installed on the lead to all hydrants including those having a breakable feature at the ground line. The pentagonal operating nuts and the cap nuts shall be 1½ inches point to flat. Drain valves for the hydrants shall be omitted. Hydrants shall open counter clockwise and direction of opening shall be cast on the top. Bury length

measured from bottom of connecting pipe to the ground line at the hydrant shall be three feet minimum. For unusual depths of water main, bends or offsets shall be used to bring the hydrant to grade.

Where this procedure is not feasible, bury length may be increased or special extension sections used.

3. Auxiliary valve shall be attached to the main using anchor tee and valve fittings. The distance from center of pumper nozzle to finished grade shall be 18 inches minimum and 24 inches maximum. Painting shall be in accordance with requirements of the agency having jurisdiction. Fire hydrants shall be restrained to the fitting in the main. Hydrants shall have a sealed bonnet oil reservoir which lubricates internal threaded and bearing surfaces. Hydrants shall be traffic type with breakaway flange construction. CONTRACTOR shall submit manufacturers details and certified hydrant flow data to ENGINEER for review and approval prior to ordering of materials.

I. Valves - Buried

1. Gate Valves: Three Inch Through Twelve Inch:

- a. In general gate valves three inches in size and larger shall be cast iron body, cast iron gate, and disc with rubber coating, resilient sealing mechanism, non-rising stem, open left (counter clockwise) with two inch square operating nuts. They shall meet the requirements of AWWA C-509 and C-550, and shall bear name of manufacturer and water rating cast into valve body in raised letters.

2. Gate Valves - Less than Three Inch:

- a. Gate valves under three inches in size shall be as in above or shall be 125 pounds, Bronze Gate Valves conforming to M.S.S. Standard Practice SP-37. They shall be double-disc, non-rising stem, open left (counter clockwise) with operating wheel. Pewter and pot metal operating wheels will not be permitted. Valves shall be of United States manufacture.

3. Butterfly Valves - Greater Than Twelve Inch:

- a. Buried service butterfly valves shall be of the rubber seat type, with enclosed geared operators and integrally cast mechanical joint ends, all in accordance with AWWA C-504, Class 150-B. Valves shall have cast iron body, ductile iron valve disc, Type 304 stainless steel valve shaft, and self-lubricating nylon sleeve type shaft bearings. Valve seats shall be Buna-N, in the body or on disc.
- b. Operators shall be fully gasketed and oil filled to withstand an external water pressure of 10 psi minimum. A valve position indicator shall be furnished for installation in each valve box. Indicator shall be hermetically sealed for installation inside a cast iron valve box and shall show valve disc position, direction of

rotation and number of turns from fully opened to fully closed. Indicator shall be provided by the valve manufacturer, complete. Valves shall be Henry Pratt Company "Groundhog," Crane "Monarch" with ground level position indicator, or approved equal.

4. Valve Boxes

- a. Valve boxes shall be telescoping type, cast iron with 5¼-inch shaft. The word WATER shall be cast into the top of the lid. Extension pieces, if required, shall be manufacturer's standard type for use with valve box.

5. Extension Stems For Valve Operators

- a. Where depth of the operating nut is more than three feet, operating extension shall be provided to bring the operating nut to a point 18 inches below the surface of the ground or pavement. Extension stem shall be constructed of stainless steel.

6. Valve Coating

- a. Valves shall have a factory applied epoxy lining and exterior coating meeting the requirements of AWWA C-550. Valve lining shall be NSF approved for potable water.

J. Air and Vacuum Release Valve Assemblies

1. General - Air valve assembly shall include all work necessary, including tapping main pipeline, installing service saddle, piping, valve, cabinet, slab, and any incidental excavation and backfill as may be required to install the valve, complete as detailed on the plans. Valve shall be epoxy lined and coated at the factory.

K. Continuous Service Connections (Hot Taps)

1. Continuous service connections (Hot Taps) of existing in-service pressure mains shall be made where called for on the plans. Hot taps shall be performed in accordance with requirements of the agency having jurisdiction over the utility system.
2. Valve shall meet all requirements for gate valves. Tapping sleeve shall be stainless steel or ductile iron.
3. Prior to cutting, the installed tapping sleeve and tapping valve shall be pressure tested at 150 psi in accordance with the pressure testing section of these specifications. Following the accepted pressure test, the CONTRACTOR shall obtain the utility agency's approval prior to cutting the in service main.
4. Cutting of existing main shall be made with a tapping machine in excellent operating condition as approved by the utility agency and the ENGINEER.

- L. Metalicized identification tape shall be buried approximately 18 inches above PVC pipe. Non-metalicized tape shall be buried approximately 18 inches above ductile iron pipe. Tape width shall be three-inch minimum. Tape colors and imprints shall be as follows:

<u>Imprint</u>	<u>Color</u>
1) Caution - Potable Water Line Buried	Blue

PART 3 EXECUTION

3.1 MATERIAL HANDLING

- A. Pipe and accessories shall be loaded and unloaded by lifting with hoists or skidding in a manner that will avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. In distributing material at the site of the work, each piece shall be off-loaded near the place where it is to be laid in the trench.
- B. Pipe shall be handled so coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, repair shall be made by CONTRACTOR according to recommendations of the manufacturer and satisfactory to ENGINEER.
- C. PVC Pipe shall remain covered when exposed to the sun for four weeks or more. Faded color and/or warped lengths shall be cause for rejection of the materials.

3.2 TRENCHING AND BACKFILLING

- A. Excavation, bedding, and backfilling of trenches during the construction of water lines shall comply with the requirements of AM Engineering, LLC Specifications Section 02703, TRENCHING AND BACKFILLING FOR PIPING.
- B. Bell Holes - Holes for the bells shall be provided at each joint, but shall be no longer than necessary for joint assembly and assurance the pipe barrel will lie flat on the trench bottom.

3.3 INSTALLATION

- A. General
 - 1. All construction shall be performed in strict accordance with the manufacturer's recommendations. No sand or foreign material shall be allowed to enter the pipe. Ends shall be suitably plugged when pipe laying is not in progress.
 - 2. Only one connection to the existing distribution system will be allowed until after lines have been tested and sterilized in accordance with specifications. This connection shall utilize a metered jumper assembly with backflow preventer sized to provide flushing capabilities. All tie-ins will be accomplished under field inspection of a representative of the OWNER of the utility to which connection is being made.

3. Ductile iron pipe shall be installed in accordance with pipe manufacturer's recommendations, in accordance with AWWA C-600. Unless otherwise specified, ductile iron pipe shall be installed per laying condition Type 2, AWWA C-600.
4. PVC pressure pipe and appurtenances shall be installed in accordance with the special requirements of the pipe manufacturer. In addition, the pipe installation shall follow The Uni-Bell Pipe Association, Handbook of PVC Pipe Design and Construction, AWWA, and the governing utility agency requirements as applicable.
5. PVC pipe spigot ends shall be installed into bell ends so manufacturer's spigot end reference mark is even with the outside edge of the bell. Field cut pipe shall be remarked with a spigot end reference mark in accordance with pipe manufacturer's specifications, or by remarking from a factory marked end of the same pipe diameter.
6. Any service connections, blow-offs, or air relief ports called for on the plans shall be made by means of a double strap tapping saddle or by use of a ductile iron tee and fittings.

B. Pipe Laying

1. Pipe lines shall be laid and maintained to required lines and grades with fittings and valves at required locations, spigots centered in bells, and all valve stems plumb.
2. Pipe and fittings shall be inspected for defects and all lumps, blisters and excess coal-tar coating removed from the bell and spigot ends of each length of pipe. Outside of the spigot and inside of the bell of all pipe shall be wiped clean and dry before pipe is laid.
3. Every precaution shall be taken to prevent foreign material from entering the pipe while being placed. ENGINEER may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size shall be placed over each end and left there until the connection is made to preceding pipe. During laying operations no debris, tools, clothing or other material shall be placed in the pipe.
4. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. Pipe shall be secured in place with approved backfill material tamped under it except at the bells. Pipe and fittings which do not allow a sufficient and uniform space for joints shall be removed and replaced with pipe and fittings of proper dimensions to insure such uniform space. Manufacturer's recommendations as to limits of deflection of joints shall be strictly adhered to.
5. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the ENGINEER. Joints of pipe in the trench which cannot be completed shall be caulked with packing to make them as watertight as possible. This provision shall

apply during the noon hour as well as overnight. If water is in the trench, seal shall remain in place until the trench is pumped completely dry.

6. Cutting of pipe for inserting valves, fittings or closure pieces shall be done without damage to the pipe or lining, and so as to leave a smooth end at right angles to the axis of the pipe. All pipe shall be cut in accordance with the pipe manufacturer's specifications and recommendations.
7. Water mains shall be installed no closer than ten feet (outside to outside) to sanitary sewers, storm sewers, force mains and restricted public access reclaimed water mains.
8. Water mains shall be installed no closer than three feet (outside to outside) from public access reclaimed water mains.
9. Whenever water mains cross any sanitary sewers, storm sewers, force mains, or reclaimed water lines, the water mains cross above such pipelines with a minimum vertical distance of 18 inches between the outside of the water mains and the outside of such pipelines or such crossings shall be arranged so that all pipe joints are equidistant from the point of crossing with no less than ten feet between any two joints (or, alternatively, the sanitary sewers, storm sewers, force mains, and reclaimed water lines at such crossings are placed in sleeves or encased in concrete to obtain the equivalent of the ten foot separation between joints. In all cases, the minimum cover called for on the plans shall be maintained.

C. Jointing

1. Mechanical Joint Pipe - All mechanical joints shall be made up in strict accordance with the manufacturer's specifications using such special tools as stipulated by them. Gaskets shall be evenly seated, the gland placed in position, and bolts hand tightened before final tightening with wrenches.
2. Compression - Pipe utilizing rubber gasket compression type joints shall be coupled in accordance with the printed instructions furnished by the pipe manufacturer.
3. PVC Polyvinyl Chloride Pipe - PVC pipe shall be coupled in strict accordance with the printed instruction of the pipe manufacturer.

D. Cover

1. In general, cover on all pressure pipes shall be 36 inches minimum or as shown on the construction plans. Grade of sanitary sewer service laterals shall be considered in field determination of pipe cover.

E. Anchoring

1. All plugs, caps, tees, valves, and bends deflecting $11\frac{1}{4}^{\circ}$ or more and connecting mains shall be provided with restrained joints, or movement shall be prevented by means of thrust blocking, metal rods or clamps as

shown or specified. System design to be based upon a 150 psi working pressure times a safety factor of 2.0. See restraining joint tables on the plans for lengths required.

F. Transition Details

1. At locations of interconnections, bypasses, manifolds, pipe size changes or other transitions requiring numerous fittings and adapters, ENGINEER may require the CONTRACTOR to submit for approval detailed shop drawings of the respective transition prior to construction. Where detailed drawings at such transitions are included on the plans, CONTRACTOR may submit for approval detailed plans of alternate design. In any case, prior to construction of a transition, CONTRACTOR shall inform ENGINEER of the proposed design, including number of type of fittings, for approval.

G. Valve Installation

1. Before installation, valves shall be thoroughly cleaned of all foreign material, and inspected for proper operation. Valves shall be installed so stems are vertical, unless otherwise directed by the ENGINEER. Jointing shall meet the requirements of AWWA C-600. Joints shall be tested with adjacent pipeline. If joints leak under test, valves shall be disconnected and reconnected, and pipeline retested.
2. Faces of flanges shall be cleaned thoroughly before flanged joint is assembled. After cleaning, the gasket shall be inserted and the nuts tightened uniformly around the flange. If flanges leak under test, the nuts shall be loosened, the gasket reset or replaced, the nuts re-tightened, and the valve and pipeline retested.
3. Provide bronze disks cast in valve pads per details on the plans.

H. Valve Box Installation

1. Center valve boxes and set plumb over the valve. Set valve boxes so they do not transmit shock or stress to the valves. Set valve box covers to finished grade or as shown. Cut extensions to the proper length so valve box does not ride on the extension when set at grade.
2. Backfill shall be the same as specified for the adjacent pipe. Place backfill around the valve boxes and thoroughly compact to a density equal to that specified for the adjacent trench and in such a manner that will not damage or displace the valve box from proper alignment or grade.

3.4 HYDROSTATIC TESTS

- A. After a new water main has been laid and backfilled, it shall be flushed for a sufficient time to replace the water in the main at least twice. All flushing shall be full-bore flush.

- B. Main shall then be pumped to a pressure of 150 psi and all visible leaks stopped by approved methods. A leakage test shall then be conducted at the above pressure. No installation will be accepted by the agency having jurisdiction until the leakage is less than the number of gallons per hour as determined by the formula below

$$L = \frac{S D (P)^5}{133,200}$$

in which L equals the allowable leakage in gallons per hours; S is length of pipe tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. The test shall be maintained for two hours. Water supplied to the main during the test to maintain required pressure shall be measured by a five-eighths inch meter installed on the discharge side of the test pump, or by pumping from a calibrated container, all in accordance with AWWA C-600. All visible leaks shall be repaired regardless of the leakage allowance.

3.5 DISINFECTION

A. General

1. Pipelines shall be disinfected before placing in service. Disinfecting procedures shall meet the requirements of AWWA C 651 and Chapter 62-555, F.A.C. (Florida Administrative Code) as hereinafter modified or expanded and requirements of any governing agency having jurisdiction. On main breaks, cut-ins, etc., a liberal application of calcium hypochlorite shall be made.

B. Flushing

1. Before disinfecting, all foreign matter shall be flushed from the pipeline. Provide hoses, temporary pipes, ditches, etc., as required to dispose of flushing water without damage to adjacent properties. Flushing velocities shall be at least 2.5 fps. For large diameter pipe where it is impractical or impossible to flush the pipe at 2.5 fps velocity, clean the pipeline by means of "pigging" at a lower velocity. CONTRACTOR shall obtain the governing utility's approval prior to flushing and shall report the gallons used in the flushing operation to the utility department and the ENGINEER.

C. Disinfecting Mixture

1. Sterilizing mixture shall be a chlorine-water solution having a free chlorine residual of 50 ppm. The mixture shall be prepared by injecting: (1) a liquid chlorine gas-water mixture; or (2) a calcium or sodium hypochlorite and water mixture into the pipeline at a measured rate while fresh water is allowed to flow through the pipeline at a measured rate so the chlorine-water solution is of the specified strength.

D. Point of Application

1. Inject the chlorine mixture into the pipeline to be treated at the beginning of the line through a corporation stop or suitable tap in the top of the pipeline. Water from the existing system or other approved source shall be controlled so as to flow slowly into the newly laid pipeline during the application of chlorine. The rate of chlorine mixture flow shall be in such proportion to the rate of water entering the pipe that the combined mixture shall contain 50 ppm of free available chlorine. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water. Use check valves if necessary.

E. Retention Period

1. Treated water shall be retained in the pipeline long enough to destroy all non spore-forming bacteria, 24 hours minimum. At the end of the 24-hour period, the sterilizing mixture shall have a strength of at least 10 ppm of chlorine.
2. Operate all valves, hydrants, and other appurtenances during disinfection to assure the mixture is dispersed into all parts of the line, including dead ends, new services, and similar areas that otherwise may not receive the treated water.
3. Do not place concentrated quantities of commercial disinfection agents in the line before it is filled with water.
4. After chlorination, flush the water from the line until the water through the line is equal chemically and bacteriologically to the permanent source of supply.

F. Disposal of Disinfecting Water

1. Dispose of disinfection water in an approved manner. Do not allow disinfecting water to flow into a waterway without adequate dilution or other satisfactory method of reducing chlorine concentrations to a safe level. It shall be the CONTRACTOR's responsibility to obtain necessary permits and approvals for disposal of the disinfecting waters.

3.6 BACTERIOLOGICAL TESTING

- A. After disinfection and final flushing, water main shall be bacteriologically tested in accordance with AWWA C 601, these specifications, requirements of the State of Florida Department of Environmental Protection, and the agency having jurisdiction over the water system.
- B. Bacteriological tests shall be performed by a State of Florida certified laboratory in accordance with "Standard Methods". Tests shall show an absence of coliform organisms. The tests shall be taken on two consecutive days. The number and locations of the tests shall be designated by the ENGINEER, the Health Department, or the Utility. At least one sample point shall be established on each

main and on each branch. On long runs, additional samples along the length of line will be required as well as at its end. The number of required samples shall conform to the requirements of the utility and the Florida Department of Environmental Protection.

- C. CONTRACTOR shall pay for bacteriological testing and shall include the costs in the unit prices.
- D. CONTRACTOR shall submit the bacteriological test results along with the record drawings to the ENGINEER. The bacteriological test results shall be a maximum of one week old at that time.

3.7 ADJUSTING EXISTING STRUCTURES

- A. Existing valve boxes, fire hydrants, or other similar items within the limits of the proposed work, that do not conform to the finished grade of the proposed pavement, or to the finished grade designated on the plans, shall be cut down or extended, and made to conform to the grade of the new pavement, or to the designated grade of the surface if outside of the proposed pavement area. The materials and construction methods for this work shall conform to the requirements specified above.

3.8 RESTORATION

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

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. The quantities of water lines to be paid for under this section shall be the lengths of the various types and sizes of pipe satisfactorily completed according to the Contract Documents. The pay quantity shall be in linear feet measured along the horizontal centerline of the pipe with no deductions for valves or fittings.
- B. Valves to be paid for under this section shall be the number of each size and type of valve, including valve box and extensions, satisfactorily installed accordingly to the Contract Documents.
- C. Fire hydrants to be paid for under this section shall be the number of hydrant assemblies satisfactorily installed according to the Contract Documents. Each hydrant assembly shall include the hydrant, all fittings, extension as required to meet finished grade, pipe lead, auxiliary valve, valve box and cover, and concrete thrust block as required by the Contract Documents.
- D. Hot taps to be paid for under this section shall be the number of hot taps installed complete with tapping sleeve and tapping valve according to the Contract Documents.

- E. PVC Conduits for future water lines shall be paid for as established in the bid form section of the Contract Documents. Payment by the linear foot or for each lateral crossing shall include a locator disk at each end as an incidental cost to the pay item specified.
- F. Other miscellaneous items such as blow-offs and air release assemblies shall be paid for by the number of each pay item satisfactorily installed according to the Contract Documents. Each item shall include all components as shown in the plans or stated in the Contract Documents, such as manholes, castings, valves, fittings and other appurtenances as applicable.

4.2 BASIS OF PAYMENT

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

END OF SECTION 02706

**SECTION 02707
STORM SEWERS, PIPE AND STRUCTURES**

PART 1 GENERAL

1.1 SCOPE

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

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

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

PART 2 PRODUCTS

2.1 CORRUGATED ALUMINUM ALLOY CULVERTS

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

2.2 CORRUGATED STEEL PIPE AND PIPE ARCH

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

2.3 REINFORCED CONCRETE PIPE

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

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

2.4 CORRUGATED POLYETHYLENE PIPE

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

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

2.5 MORTAR, BRICK, AND REINFORCING BARS

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

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

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

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

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

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

2.6 STRUCTURES

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

2.7 IRON CASTINGS

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

2.8 CROSSING BOXES (CONFLICT BOXES)

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

PART 3 EXECUTION

3.1 GENERAL

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

3.2 TRENCHING AND BACKFILLING

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

3.3 MATERIAL HANDLING

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

3.4 PIPE LAYING

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

3.5 SAND CEMENT RIP RAP

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

3.6 PIPE END TREATMENTS

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

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

3.7 JOINING ARCH CONCRETE PIPE

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

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

3.8 INSTALLATION OF CORRUGATED POLYETHYLENE PIPE

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

3.9 PLACING OF CONCRETE FOR STRUCTURES

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

3.10 FINAL INSPECTION OF STORM WATER SYSTEM

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

3.11 ADJUSTING EXISTING STRUCTURES

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

3.12 RESTORATION

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

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

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

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

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

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

4.2 BASIS OF PAYMENT

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

END OF SECTION 02707

**SECTION 02708
SANITARY SEWER SYSTEMS**

PART 1 GENERAL

1.1 SCOPE

- A. The scope of this section is to cover materials and methods of performing work necessary for construction and placing in operation gravity sanitary sewers, lift stations and force mains shown on the plans and herein described and specified. Sanitary sewer systems covered under these specifications comprise lines, laterals, mains, trunk sewers, service wyes, fittings, manholes, pavement, sidewalk, curb repair, supports, sheeting and other work necessary to complete the system in full accordance with the plans and specifications.

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

02703 TRENCHING AND BACKFILLING FOR PIPING
02705 RESTORATION AND GENERAL REQUIREMENTS

PART 2 PRODUCTS

2.1 MANHOLE CONSTRUCTION

- A. Precast Manholes
 - 1. Base and first section of manhole barrel shall be an integral cast. Minimum base reinforcing shall be as detailed on the plans. Base slab shall have four equally spaced lifting lugs.
 - 2. Straight barrel sections shall be reinforced to meet the requirements of ASTM C 478. Minimum wall thickness shall be six inches or as shown on the plans.
 - 3. Joints shall be tongue-and-groove sealed with round or other flexible type natural rubber joint rings or by a flexible bitumastic sealing material equal to Ram-Nek as manufactured by R. K. Snyder and Co. In addition to the rubber ring gaskets, interior and exterior voids in pipe joints shall be sealed with a flexible plastic gasket installed in strict accordance with the manufacturer's printed instructions. Rubber joint rings and flexible plastic gasket shall be provided by the manhole manufacturer. All exterior joints shall be covered with EZ Wrap or approved equal.
 - 4. Cone section shall be precast concrete with all reinforcing steel and joints as specified for straight barrel sections.
 - 5. Concrete shall be Type II in all manholes.

6. Manhole base sections shall be set on a minimum of six inches of uniformly graded shell. Bedding shall extend one foot beyond the periphery of the base.
7. Drop connections shall be constructed as detailed on plans.
8. Prior to construction, if different from the approved plans, shop drawings of typical manhole and manhole connection shall be submitted by the CONTRACTOR to ENGINEER for review.
9. Cone section shall be eccentric type unless otherwise specified by the applicable code, utility standard or the ENGINEER.

B. Sewer Brick

1. Brick used in construction of manholes and manhole inverts shall be clay or shall be brick meeting the requirements of ASTM Specification, Serial Designation C 32, Grade MM.
2. Brick shall be sampled and tested in accordance with ASTM, Specification, Serial Designation C 67 and any subsequent revisions thereof.
3. Sewer brick shall have a nominal size of 2 1/4" x 3 5/8" x 8".

C. Mortar

1. Mortar for use in constructing and plastering manholes shall meet the requirements of ASTM C 270, Type MM. The addition of Masonry Cement - ASTM C 91, will be permitted to improve workability of mortar. Mortar materials shall be proportioned by volume and shall be as follows:

One part Type II Portland Cement - ASTM C 150

Three parts Aggregate (sand) - ASTM C 144

D. Manhole Channel Bottoms

1. Invert channel bottoms shall be smooth and semicircular in shape conforming to inside of adjacent sewer sections. Changes in direction of flow shall be made with a smooth curve of as large a radius as the size of manhole will permit. Changes in size and grade of channels shall be made gradually and evenly. Channel height shall match crown of exit connecting sewer. Floor of manhole outside channels shall be smooth and shall slope towards channels as shown on plans. Drop connections shall be constructed in accordance with details shown on plans. Channels shall be shaped and constructed to permit placement of a television inspection camera into the main.

E. Iron Castings

1. All castings for manhole covers and other purposes shall meet the requirements of ASTM, Designation A 48, Class 30 gray iron. Castings

shall be true to pattern in form and dimensions, free from pouring faults, spongings, cracks, blowholes and other defects.

2. Manhole frames and covers shall be U.S. Foundry and Manufacturing Corporation, or approved equal. The cover shall be solid, indented with words "sanitary sewer" cast thereon. Circular covers must fit the frames in any position. Contact surfaces of both frames and covers shall be machined and any tendency to rattle, as determined by test before or after installation, will be sufficient cause for rejection of the frame and cover.

F. Manhole Tops

1. All manhole tops shall be set flush in paved areas, and 0.2 feet above grade in unpaved areas, unless indicated otherwise on plans.

G. Drop-Pipe to Manholes

1. Drop-pipe to manholes shall be installed by the CONTRACTOR when the difference in invert elevations of intersecting sewers exceeds two feet, or where directed by ENGINEER. The difference in elevation shall be measured from the invert of the incoming pipe to the invert at the center of the manhole.
2. Drop-pipe structure shall be constructed according to plans and specifications.

H. Manhole Connections

1. Manhole connections of pipe shall be watertight. Pipe to manhole flexible connectors shall conform to ASTM C-923 as manufactured by KOR-N-SEAL or approved equal.

I. Concrete Surface Painting

1. Prepare all surfaces after concrete has cured by sandblasting, prime and paint per utility standard. All work shall be in accordance with manufacturers recommendations. CONTRACTOR shall provide written confirmation from the painter that all surface preparation and painting was done in accordance with manufacturer's recommendations.

2.2 GRAVITY SEWER PIPE MATERIALS

A. Polyvinyl Chloride (PVC) Pipe and Fittings

1. Pipe and fittings for PVC gravity sewers shall be Polyvinyl Chloride meeting the requirements of ASTM D-3034, SDR 26 for pipes up to 15 inches in diameter, and ASTM Specification F679 for pipes over 15 inches in diameter. Elastomeric joint gaskets shall conform to ASTM F477. If separations cannot be obtained, use AWWA C-900, DR 14 PVC for the entire run from manhole to manhole.

2.3 FORCE MAIN MATERIALS

- A. All pipe shall be designed for a minimum working pressure of 100 psi unless otherwise specified.
- B. PVC Pipe, 12 inches and smaller, shall meet the requirements of AWWA C-900 Polyvinyl Chloride (PVC) Pressure Pipe 4-inch through 12-inch. C-900 PVC force main shall be Class 100, DR25, or as called for on the plans. PVC pipe larger than 12 inches shall conform to AWWA C-905, with pressure ratings required as above.
- C. Fittings shall be ductile iron, mechanical joint with a minimum rated working pressure of 350 psi and conform to AWWA C-110 or C153. Fittings shall be coated inside with a minimum 60 mils DFT of Polybond Plus or 40 mils DFT of Protecto 401, or approved equal. Where C-900 or C-905 PVC fittings are available and acceptable to the utility, they shall be utilized.
- D. Plug Valves 4-inch through 30-inch, shall be Pratt, Milliken or approved equal. Valves up to four inches shall provide 100 percent of pipe area, round port opening and a minimum of 80 percent for larger valves. Buried valves shall have mechanical joints and exposed valves shall be faced and drilled to ANSI 125 pound standard flange. Valves ten inches and larger shall be supplied with worm gear actuators. All size valves shall be equipped with two inch operating nuts, have an interior coating meeting AWWA C-550 requirements and be suited for services as indicated on the plans.

Buried valves shall be equipped with an extension box stem and tee wrench unless otherwise noted on the plans. Covers shall be marked "SEWER".
- E. Air release valves shall be as detailed on the construction plans.

PART 3 EXECUTION

3.1 GENERAL

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

3.2 MATERIAL HANDLING

- A. Pipe and accessories shall be loaded and unloaded by rolling with hoists or skidding in a manner that will avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. In distributing material at the site of the work, each piece shall be off-loaded near the place where it is to be laid in the trench.
- B. PVC pipe shall remain covered when exposed to the sun for four weeks or greater. Faded color and/or warped lengths shall be cause for rejection of the materials.

3.3 TRENCHING AND BACKFILLING

- A. Excavation, bedding, and backfilling of trenches during the construction of a sanitary sewer system shall comply with the requirements of AM Engineering, LLC Specifications Section 02703 TRENCHING AND BACK-FILLING for piping.

3.4 GRAVITY SEWER LINE INSTALLATION

- A. Polyvinyl Chloride (PVC)

- 1. In general, PVC pipe shall be installed in accordance with ASTM D 2321 and "Chapter VI, Construction", of the Handbook of PVC Pipe, Design and Construction, published by Uni-Bell Plastic Pipe Association, and in accordance with the pipe manufacturer's recommendations and installation guide. The spigot end reference mark shall be aligned with the bell end in accordance with the manufacturer's recommendations.

- B. Gasket Joint Lubrication

- 1. CONTRACTOR shall only use pipe joint lubricants supplied by or recommended by the pipe manufacturer. The lubricant shall be water-soluble, non-toxic, an inhibitor to bacterial growth, and shall be non-detrimental to the elastomeric seal and pipe. Mineral oil, petroleum jelly, hydrogenated vegetable fat (i.e. Crisco(r), cooking oil, grease, etc.) shall not be used.

- C. Laying of Pipe

- 1. Pipe shall be laid in accordance with the specifications and in accordance with manufacturer's recommendations. Proper tools and equipment shall be used for placement of the pipe in the trench. Under no circumstances shall pipe or accessories be dropped.
- 2. Pipe bells shall be laid on the upstream end. Pipe laying shall commence at the lowest elevation and shall proceed up grade. Whenever pipe laying is interrupted, the open ends of the pipe shall be closed to prevent entrance of trench water, mud, and foreign matter.
- 3. Gravity sewers shall be laid to the exact line and grade called for on the plans.
- 4. Minimum three-inch wide metallic warning/location tape shall be laid 18 inches above the pipe in accordance with the utilities requirements.

- D. Branch Fittings

- 1. Fittings for service branches on new construction shall be factory molded with all gasketed "O" ring type connections. Taps or fittings made to existing lines shall be made with a factory fabricated tapping saddle or by use of a factory gasketed fitting in conjunction with a repair sleeve coupling with all stainless steel clamps.

2. Saddles shall be installed in accordance with the manufacturer's specifications. Holes for saddle connections shall be made by a hole cutter or keyhole type saw based on layout by a template. Holes shall be made to the exact manufacturer's dimension and shall be de-burred and beveled.

E. Sewer Services

1. CONTRACTOR shall install type of sewer service shown on the plans.
2. Services shall be six-inch and shall consist of wye, 45° bend(s), cleanouts and sufficient six-inch pipe to reach the property line or as shown on the plans. Laterals, wherever possible, shall be laid on a uniform grade from the street sewer to a point 3 feet below the proposed grade of the property line or to the flow line called for on the plans. Tunneling under curbs, curbs and gutters or sidewalks will not be permitted. Services shall be plugged at the point of termination with a factory plug. In locations where a minimum of 36-inch cover cannot be provided, or separation from potable water mains is not possible, laterals shall be AWWA C-900 DR 14 PVC.

F. Record Data

1. CONTRACTOR shall accurately measure and record the location of all wyes and service connections, recording both the location (or "plus") and distance from the next downstream manhole and the elevation of the invert of the wye or termination of the service connection at the curb line.
2. CONTRACTOR shall accurately measure line lengths, swing ties and manhole rim and invert elevations and present this data to the ENGINEER prior to partial or final payment.
3. Records shall be available for inspection of and verification by the ENGINEER throughout the project and shall be given to the ENGINEER in a neat, organized and legible form at the conclusion of the project for delivery to the OWNER. The cost of this record drawing preparation shall be incidental to construction, and shall be borne by the CONTRACTOR.

G. Gravity Sewer Line Tests - General

1. Unless otherwise specified herein, the expense of all required tests shall be borne by the CONTRACTOR and shall be included in the unit cost bids.
2. All leaks evident shall be traced, uncovered and repaired regardless of the total leakage as indicated by the test, and all pipes and fittings and other materials found defective under the test shall be removed and replaced at the CONTRACTOR's expense. Tests shall be repeated until leakage has been reduced below the allowable amount and approved by the ENGINEER.
3. All tests required by the OWNER or applicable regulatory agency shall be performed in addition to or in accordance with the tests specified herein.

4. All manhole, service and piping construction must be completed prior to commencement of testing. Sewer lines shall be flushed and be free of debris, sand, etc.
5. All testing shall be done under the observation of the Engineer of Record or their duly authorized representative, applicable regulatory agency and the utility.
6. Testing shall be performed in the following sequence: deflection test, air test, television test. If any tests fail, the lines shall be repaired at the CONTRACTOR's expense. Upon the completion of the repairs, the preceding sequence of testing shall be repeated.
7. If any sewer line for any length hold more than one-inch or 12.5 percent of the inside diameter of water in the pipe, the section of pipe shall be corrected at the CONTRACTOR's expense.
8. Deflection Testing - Allowable deflection (reduction in the vertical inside diameter) in PVC gravity sewer pipe shall be five percent. The CONTRACTOR shall test the lines laid for deflection with a suitable gauge, mandrel or meter as approved by the ENGINEER. CONTRACTOR shall deflection test the entire sewer system. All locations with excessive deflection shall be excavated and be repaired by rebedding or replacement of the pipe.
 - a. Ductile iron pipe shall be exempt from deflection tests but shall be visually tested by lamping.
 - b. Deflection tests shall occur a minimum of 30 days after sewer installation, backfill and compaction has been completed.
 - c. The gauge shall be pulled independent of the video camera.
9. Low Pressure Air Testing
 - a. Low pressure air testing shall be required. Testing shall be performed on individual sections of pipe between manholes. Testing shall be performed in accordance with Unibell B-6-85.
 - b. All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to the manufacturer's recommended inflation pressure. The sealed pipe shall be pressurized to 5 psig. The plugs shall hold against this pressure without bracing or movement of the plugs out of the pipe.
 - c. After a manhole to manhole reach of pipe has been cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to manufacturer's recommended inflation pressure. Low-pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any

ground water that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize. After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected.

- d. The portion of line being tested shall be termed "Acceptable" if the allocated line pressure decreased from less than 1 psi (greater than the average back pressure of any ground water that may be over the pipe) in the time shown for the given diameters in the following table:

<u>PIPE DIAMETER IN INCHES</u>	<u>MINUTES PER 100 FEET</u>
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6

- e. In areas where ground water is known to exist, the height in feet shall be divided by 2.35 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11½ feet, then the added pressure will be 5 psig. This increased the 3.5 psig to 8.5 psig, and the 2.5 psig to 7.5 psig. The allowable drop of one pound and the timing remain the same.)
- f. If the installation fails to meet this requirement, the CONTRACTOR shall, at his own expense, determine the source of leakage. The CONTRACTOR shall then repair or replace all defective materials and/or workmanship.

10. Television Inspection

- a. After completing backfill and at a time to be selected by the ENGINEER the sewer lines shall be inspected by video inspection camera.
- b. The CONTRACTOR shall allow the ENGINEER or utility the opportunity to lamp the sewer lines prior to video inspection and shall assist the ENGINEER or utility in the lamping procedure.
- c. Immediately prior to televising of the line, the CONTRACTOR shall add water to the upstream manhole. The amount of water shall be sufficient to be seen in the downstream manhole.
- d. The television camera shall be pulled in an upstream direction only.

- e. A marker one-inch in thickness or diameter shall be attached to the camera cable and shall be visible at all times while pulling the video camera. The video technician during the pipeline video inspection, shall indicate vocally and enter in the log each location when the marker is even with or below the water level in the pipe.
- f. Record tapes, log and report of the final inspection shall be submitted to the ENGINEER. These tapes shall be in VHS format, shall be color tape with continuous voice track and footage counter.
- g. The videotape shall display data including the date, time, footage from manhole and location of main. The log and report shall contain the following information:
 - (1) Date and time of inspection
 - (2) Name of project
 - (3) Location of manhole run, street, right-of-way, etc.
 - (4) Length of line
 - (5) Size and type of pipe
 - (6) Personnel witnessing inspection
 - (7) Cleanliness and general condition of pipe
 - (8) Notes on standing water, dips and sags in pipe
 - (9) Location and position of services
 - (10) Pipe damage and character, type and location of such damage
 - (11) Infiltration points location from manhole, location on periphery of the pipe, estimated amount of infiltration in gallons per minute (GPM) and a description of the infiltration point (i.e. joint, break, hole, etc.)

11. Infiltration/Exfiltration Tests

- a. Tests for gravity line water tightness shall be made by the CONTRACTOR in the presence of the ENGINEER. The sewer and connections shall not leak at a rate in excess of 100 U.S. gallons per inch of pipe diameter per mile per 24 hours, conforming to the UNIBELL Standard Specification B-5.
- b. Under dry soil conditions, measurement by exfiltration shall be made on gravity lines by bulkheading the sewer at the end of the lower grade partially filling the manhole with water at upper end and computing the volume of leakage from the extent of the diminished volume of water in the manhole during the period of test. The sewer and connections shall not leak at a rate in excess of 100 U.S. gallons per inch of pipe diameter per mile per 24 hours, conforming to UNIBELL Standard Specification B-5.
- c. Under wet soil conditions, measurement of the infiltration shall be made on gravity lines before sewage flows are allowed in the sewer and shall be made by measuring the volume direct by means of a calibrated V-notch weir furnished by the CONTRACTOR.

- d. The infiltration or exfiltration shall be done at the option of the ENGINEER, OWNER or utility company. The CONTRACTOR shall provide all equipment necessary to complete these tests.

12. Adjusting Existing Structures

- a. Existing manholes, within the limits of the proposed work, that do not conform to the finished grade of the proposed pavement, or to the finished grade designed on the plans for such structures, shall be cut down or extended, and made to conform to the grade of the new pavement, or to the designated grade of the structure if outside of the proposed pavement area. The materials and construction methods for this work shall conform to the requirements specified above.

Where manholes are to be raised, the adjustment may, at the CONTRACTOR's option, be made by the use of adjustable extension rings of the type which shall provide positive locking action and shall permit adjustment in height, surface bevel to match paved surfaces, as well as diameter. The particular type of device used shall meet the approval of the ENGINEER and utility.

13. Clean Outs

- a. Clean outs shall be constructed according to the details and at locations shown on the plans.

14. Locator Disks

- a. Locator disks shall be the type that is compatible with the Utilities' location equipment and approved by the utilities' representative prior to installation. They shall be placed in locations specified in the plans or as otherwise specified in the Contract Documents.

15. Restoration

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

3.5 FORCE MAIN INSTALLATION

- A. PVC pipe shall be installed in accordance with ASTM D 2321, Unibell Handbook of PVC Pipe, Design and Construction. PVC pipe spigot ends shall be installed into the bell ends so the manufacturer's spigot end reference mark is even with the outside edge of the bell. Field cut pipe shall be remarked with a spigot end reference mark in accordance with the pipe manufacturer's specifications, or by remarking from a factory marked end of the same pipe diameter.

B. Any blow-offs, or air relief ports, called for on the plans shall be made by means of a double strap tapping saddle or by use of a ductile iron tee and fittings.

C. Pipe Laying

1. Pipe lines shall be laid and maintained to required lines and grades with fittings and valves at required locations, spigots centered in bells, and all valve stems plumb.
2. Pipe and fittings shall be inspected for defects and all lumps, blisters and excess coal-tar coating removed from the bell and spigot ends of each length of pipe. Outside of the spigot and inside of the bell of all pipe shall be wiped clean and dry before pipe is laid.
3. Every precaution shall be taken to prevent foreign material from entering the pipe while being placed. ENGINEER may require that before lowering the pipe into the trench, a heavy, tightly woven canvas bag of suitable size be placed over each end and left there until the connection is made to preceding pipe. During laying operations no debris, tools, clothing or other material shall be placed in the pipe.
4. After placing a length of pipe in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. Pipe shall be secured in place with approved backfill material tamped under it except at the bells. Pipe and fittings which do not allow a sufficient and uniform space for joints shall be removed and replaced with pipe and fittings of proper dimensions to insure such uniform space. Manufacturer's recommendations as to limits of deflection of joints shall be strictly adhered to.
5. At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the ENGINEER. Joints of pipe in the trench which cannot be completed shall be caulked with packing to make them as watertight as possible. This provision shall apply during the noon hour as well as overnight. If water is in the trench, seal shall remain in place until the trench is pumped completely dry.
6. Cutting of pipe for inserting valves, fittings or closure pieces shall be done without damage to the pipe or lining, and so as to leave a smooth end at right angles to the axis of the pipe. All pipe shall be cut in accordance with the pipe manufacturer's specifications and recommendations.

D. Jointing

1. Mechanical Joint - All mechanical joints shall be made up in strict accordance with the manufacturer's specifications using such special tools as stipulated by him. Gaskets shall be evenly seated, the gland placed in position, and bolts hand tightened before final tightening with wrenches.
2. Compression - Pipe utilizing rubber gasket compression type joints shall be coupled in strict accordance with the printed instructions furnished by pipe manufacturer.

3. PVC Polyvinyl Chloride Pipe - PVC pipe shall be coupled in strict accordance with the printed instructions of the pipe manufacturer.
- E. Cover
1. In general, cover on all pressure pipes shall be 36 inches minimum.
- F. Anchoring
1. All plugs, caps, tees, valves, and bends deflecting 11-1/4° or more and connecting mains shall be provided with restrained joints, or movements shall be prevented by means of thrust blocking, metal rods or clamps as shown or specified. System design to be based upon a 100 psi working pressure times a safety factor of 2.0. See restrained joint tables on the plans for lengthening required.
- G. Transition Details
1. At locations of interconnections, bypasses, manifolds, pipe size changes or other transitions requiring numerous fittings and adapters, ENGINEER may require the CONTRACTOR to submit for approval, detailed shop drawings of the respective transition prior to construction. Where detailed drawings at such transitions are included on the plans, CONTRACTOR may submit for approval detailed plans of alternate design. In any case, prior to construction of a transition, CONTRACTOR shall inform ENGINEER of the proposed design, including number and type of fittings, for approval.
- H. Valve Installation
1. Before installation, valves shall be thoroughly cleaned of all foreign material, and inspected for proper operation. Valves shall be installed so stems are vertical, unless otherwise directed by the ENGINEER. Jointing shall meet the requirements of AWWA C-600. Joints shall be tested with adjacent pipeline. If joints leak under test, valves shall be disconnected and reconnected, and pipeline retested.
 2. Faces of flanges shall be cleaned thoroughly before flanged joint is assembled. After cleaning, the gasket shall be inserted and the nuts tightened uniformly around the flange. If flanges leak under test, the nuts shall be loosened, the gasket reset or replaced, the nuts re-tightened, and the valve and pipeline retested.
- I. Valve Box Installation
1. Center valve boxes and set plumb over the valve. Set valve boxes so they do not transmit shock or stress to the valves. Set valve box covers to finished grade or as shown. Cut extensions to the proper length so valve box does not ride on the extension when set at grade.

2. Backfill shall be the same as specified for the adjacent pipe. Place backfill around the valve boxes and thoroughly compact to a density equal to that specified for the adjacent trench and in such a manner that will not damage or displace the valve box from proper alignment or grade.

J. Force Main Testing

1. Hydrostatic Tests - CONTRACTOR shall backfill all newly laid pipe, or valved section thereof, between joints before conducting a hydrostatic test. After the force main has been laid and backfilled between joints, it shall be pumped to a pressure of 80 psi or twice the maximum operating pressure (whichever is highest) and all visible leaks stopped by approved methods. A leakage test shall then be conducted at the above pressure. No installation will be acceptable by the agency having jurisdiction until the leakage is less than the number of gallons per hour as determined by the formula below

$$L = \frac{S D (P)^5}{133,200}$$

in which L equals the allowable leakage in gallons per hours; S is length of pipe tested in feet; D is the nominal diameter of the pipe in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. Test shall be applied for two hours. Water supplied to the main during the test to maintain the required pressure shall be measured by a 5/8 inch meter installed on the discharge side of the test pump, or by pumping from a calibrated container, all in accordance with AWWA C-600.

K. Flushing

1. Before final tie-in to the "Live" main the force main shall be flushed to remove all foreign matter. Provide hoses, temporary pipes, valves, and pumps, ditches, etc. as required to provide and dispose of flushing water without damage to adjacent properties. Flushing velocity shall be at least 2.5 fps. For large diameter pipe where it may be impractical or impossible to flush the pipe at 2.5 fps velocity, clean the pipeline by means of "pigging" at a lower velocity.

L. Continuous Service Connections (Hot Taps)

1. Hot taps of existing in-service pressure mains shall be made where called for in the plans. Hot taps shall be constructed in accordance with requirements of the agency having jurisdiction over the utility system.

M. Adjusting Existing Structures

1. Existing valve boxes or other similar items within the limits of the proposed work, that do not conform to the finished grade of the proposed pavement, or to the finished grade designated on the plans, shall be cut down or extended and made to conform to the grade of the new pavement or to the

designated grade of the surface if outside of the proposed pavement area. The materials and construction methods for this work shall conform to the requirements specified above.

N. Restoration

1. Existing surfaces or property improvements damaged during the construction of work specified in this section shall be repaired in accordance with the requirements of AM Engineering, LLC Specifications Section 02705, RESTORATION AND REQUIREMENTS.

PART 4 **MEASUREMENT AND PAYMENT**

4.1 **METHOD OF MEASUREMENT**

- A. The quantities of sanitary sewer to be paid for under this section shall be the lengths of the various types and sizes of pipe satisfactorily completed according to the Contract Documents. The pay quantity shall be in linear feet measured horizontally along the centerline of the pipe with no deductions for manholes or fittings.

Where the pay item description for pipe specifies a depth of cut, the depth shall be determined by measuring the vertical distance from the existing surface to the invert of the pipe as shown on the plans.

- B. The quantities for manholes to be paid for under this section shall be the number of the various types and sizes satisfactorily completed according to the Contract Documents.

Where the pay item description for a manhole specifies a depth, the depth shall be measured from the top of the frame and cover to the lowest invert elevation of the manhole as shown on the plans.

- C. The quantity of sewer services to be paid under this section shall be either by the linear foot or by each service. If by linear foot, the pay quantity shall be the length of pipe satisfactorily completed measured horizontally along its centerline from the hub of the wye to the right-of-way or pipe end as shown on the plans. If by each, the pay quantity shall be the number of sewer services satisfactorily completed according to the Contract Documents.

- D. The quantities of existing structure adjustment to be paid for under this section shall be the number of existing manholes satisfactorily adjusted, unless otherwise specified.

- E. The quantities of locator disks, clean outs and valves shall be the number of disks, clean outs or valves satisfactorily installed according to the Contract Documents unless otherwise specified.

4.2 BASIS OF PAYMENT

- A. The quantities determined by the methods described above, shall be paid for at the contract unit prices established for each pay item. Such payment shall constitute full compensation for all work specified in this section including all labor, materials, equipment, and other incidental costs required to construct the work defined in this section.
- B. Payment for drop manholes shall include the cost for the drop piping in addition to all other costs involved in a regular manhole.
- C. Payment for sewer services by the linear foot shall include the cost of the fitting which connects the service to the sewer main.

Payment for sewer services by each shall include the cost of the connecting fitting, the length of pipe specified, clean out, cap, and any incidental costs required to install the sewer service according to the Contract Documents.
- D. Clean outs shall be paid as a separate pay item when the sewer services are paid by the linear foot. Such payment shall include the cost of all component parts as specified in the plan details.
- E. Pipe fittings shall not be paid for separately but shall be included in the cost of pipe unless otherwise specified in the Contract Documents.
- F. Unless otherwise specified in the Contract Documents, restoration work shall not be paid for separately. The cost of any such restoration work shall be included in the various work items that necessitate the restoration.
- G. The cost of television inspection and other testing as specified in this section shall be included in the contract unit price for sanitary sewer pipe and no additional payment will be allowed unless a separate pay item is established in the Contract Documents.

END OF SECTION 02708

**SECTION 02726
JACKING AND BORING**

PART 1 GENERAL

1.1 SCOPE

- A. This section covers materials and work necessary to jack and bore a utility system under and across the area shown on the plans.

1.2 GENERAL REQUIREMENTS

- A. All materials and methods of installation for crossings by jacking and boring shall be subject to the ENGINEER's approval and in accordance with the plans, specifications, and requirements of the permit issued by the controlling agency of the facility being crossed. The cost of abiding by provisions of the permit shall be considered incidental to the contract.
- B. CONTRACTOR shall give officials of the controlling agency and ENGINEER adequate notice of the anticipated time and duration of the crossing construction.
- C. Jack and bores in general shall conform to the requirements of the Florida Department of Transportation Utility Accommodation Guide.

1.3 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

2.1 STEEL CASING PIPE

- A. Unless otherwise specified by the controlling agency, steel casing pipe shall be ASTM A 129, Grade A pipe, of the sizes and thicknesses shown on the plans. Joints shall be welded.

2.2 CASING WALL THICKNESS

- A. Steel casings shall conform to the following minimum thickness requirements:

Casing Nominal Outside Diameter - Inches	Casing Minimum Wall Thickness - Inches
¾"	0.113"
1"	0.133"
1¼"	0.140"
1½"	0.145"
2"	0.154"

Casing Nominal Outside Diameter - Inches	Casing Minimum Wall Thickness - Inches
4"	0.188"
6"	0.188"
8"	0.188"
10"	0.188"
12"	0.188"
16"	0.250"
18"	0.250"
20"	0.250"
24"	0.250"
30"	0.312"
36"	0.375"
42" & greater	0.500"

- B. Minimum thickness for pipe diameters not shown shall be the same as required for the next larger size listed above.

PART 3 EXECUTION

3.1 CASING INSTALLATION

- A. Bored installations shall have a hole diameter which shall not exceed the OD of the casing pipe. Where unstable soil conditions are found to exist, boring operations shall be conducted in such a manner as not to be detrimental to the facility being crossed. If excessive voids or too large a bored hole results, or if it is necessary to abandon a bored hole, prompt remedial measures shall be taken by the CONTRACTOR, subject to approval by ENGINEER and controlling agency of the facility being crossed.
- B. Once boring and jacking operations are started, the work shall be continuous until completed in order to guard against the "grazing" of the casing due to settlement and compaction of surrounding soil.

3.2 CARRIER PIPE INSTALLATION

- A. The entire length of casing shall be complete before any carrier pipe is placed. Carrier pipe materials and installation shall conform to requirements specified elsewhere, except as hereafter indicated or as required by the controlling agency permit.
- B. The carrier shall be pushed or pulled (depending upon piping material, joint type, and method of pipe support) into the casing as pipe lengths are assembled. Carrier shall be adequately blocked all around to prevent any movement and to attain specified grade for gravity lines. The proposed carrier pipe installation shall be approved by the ENGINEER prior to starting the crossing. Carrier pipe support shall be provided along the entire length of the carrier. Support shall consist of filling the void space between the carrier, and casing with granular fill (sand or pea gravel).

- C. After successful testing has been performed, as specified elsewhere, recheck alignment and grade.

3.3 SEALS AND VENTS

- A. At each end of casings, provide seals for the annular space between the casing and carrier pipes. Seals and vents, if any, shall be as shown on the plans and required by the permit.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. Payment for crossings will be based upon the lump sum price stated in the proposal for each crossing. Payment on the lump sum basis shall constitute full compensation for all labor, materials, permits, and equipment required to complete the installation, within the limits shown. No additional payment for trench excavation and backfill, for furnishing and placing pipe, or for any other items will be made within the limits as shown on the plans. Carrier pipe will be paid for separately. Where multiple jack and bores are to be completed, a separate lump sum will be established for each.

END OF SECTION 02726

**SECTION 02731
DIRECTIONAL DRILLING**

PART 1 GENERAL

1.1 SCOPE

- A. The work covered by this section involves the furnishing and installation of a high-density polyethylene (HDPE) pipe by means of directional drilling.

1.2 EXPERIENCE

- A. The CONTRACTOR must demonstrate expertise in trenchless methods by providing a list of 10 utility references for whom similar work has been performed in the last five years. The references should include a name and telephone number where contact can be reached to verify the CONTRACTOR's capability. The CONTRACTOR must provide documentation showing successful completion of the projects used for reference. Conventional trenching experience will not be considered applicable.

- B. The CONTRACTOR's supervisor assigned to this project must be experienced in work of this nature and must have successfully completed similar projects using Horizontal Directional Drilling, Midi-Directional Drilling, or Guided Horizontal Drilling in the last three years. As part of the bid submission, the CONTRACTOR shall submit a description of such project(s) which shall include, at a minimum, a listing of the location(s), date of project(s), owner, pipe type and size, length of installation, type and manufacturer of equipment used and other information relevant to the successful completion of the project.

- C. The CONTRACTOR shall provide on-site supervisory personnel which shall be experienced and competent, thoroughly familiar with the equipment and type of work being performed, and shall be in direct charge and control of the operation at all times.

1.3 SUBMITTALS

- A. Submit manufacturer's data for the pipeline and/or sleeve materials proposed for use. Submit the directional boring equipment and locating equipment proposed for use, the method of locating to be used, and the proposed sequence and method of construction for approval by the ENGINEER in accordance with the plans and specifications. Include information on how the bore is to be steered, the information recorded, and the pipe location verified for record drawing. Include proposed tunnel size, proposed drilling fluid composition and Material Safety Data Sheets (MSDS), proposed viscosities, and proposed preream procedures. Give an estimate of time proposed to complete the project. Submit proposed Temporary Traffic Control (MOT) plan for right-of-way work.

- B. Prior to approval for directional boring, the CONTRACTOR must submit the names of supervisory field personnel and historical information of directional boring experience.

- C. The CONTRACTOR is required to bring to the attention of the ENGINEER any known design discrepancies with actual tunneling methods that the CONTRACTOR will be performing. This shall be stated in writing to the ENGINEER no later than the preconstruction meeting.

1.4 SAFETY

- A. Utmost attention must be paid to all permit conditions and safety considerations, to protect lives and property. At a minimum, these things must be done:
 - 1. Provide crew with accurate cable avoidance equipment and training to detect and avoid damage to all existing utilities.
 - 2. Provide crew with safety equipment which will detect electrical current and voltage, with both visual and audible alarms, in the event of contact/close proximity with electrical and/or telecommunications lines. Provide and use properly grounded matting around the boring equipment. Provide insulated work boots and gloves. Provide OSHA safety equipment and signage for work in public rights-of-way.
 - 3. Provide an OSHA certified Health and Safety Officer to maintain all areas of the job site. The job site superintendent may be the OSHA Certified Health and Safety Officer. At the end of each workday, pits shall be barricaded using a safety fence.

1.5 UTILITY PROTECTION

- A. Utility lines and structures indicated on the drawings which are to remain in service shall be protected by the CONTRACTOR from any damage as a result of their operations. Where utility lines or structures not shown on the drawings are encountered, the CONTRACTOR shall report them to the OWNER before proceeding with the work. The CONTRACTOR shall bear the cost of repair or replacement of any utility lines or structures which are broken or damaged by their operations.
- B. All utilities in close proximity to the drill pilot bore, back ream or product pipe installation must be exposed through a "pot-hole" or other opening, in accordance with state utility locate laws and regulations, to ensure, through visual inspection, that the drill, reamer or product pipe has caused no damage to the utility and maintains adequate clearance.

1.6 APPLICABLE REGULATIONS AND CODES

- A. All work covered by this section shall be performed in accordance with the applicable federal and state codes and laws which pertain to such work and supplemental regulations which are contained in these specifications. In case of conflict between these specifications and any federal or state codes or laws, the most stringent shall govern.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Pipe shall be HDPE, PE3408, SDR and working pressure as shown on the plans, meeting the requirements of ASTM F-714 and AWWA C906. Driscopipe 1000 Series or approved equal. Pipe shall be permanently color-coded; blue for potable water, green for sewer, and purple for reuse.
- B. Fitting shall be thermal butt-fusion HDPE, PE3408, SDR and working pressure the same as the pipe, meeting the requirements of ASTM D3261 and AWWA C906.
- C. Transition fittings between HDPE and PVC or DIP shall be specifically manufactured for that purpose. Adapters, fittings, sleeves, or devices are to have a ductile iron body which is fusion bonded epoxy coated. Bolts shall be corten steel. See construction plans for details.
- D. The CONTRACTOR must use a high quality bentonite drilling fluid or equivalent to ensure hole stabilization, cuttings transport, bit and electronics cooling and hole lubrication to reduce drag on the drill pipe and the product pipe. Oil based drilling fluids or fluids containing additives that can contaminate the soil or groundwater will not be considered acceptable substitutes. Composition of the fluid must comply with all federal and local environmental regulations.

Drilling fluids must be mixed with potable water to ensure no contamination is introduced into the soil during the drilling, reaming or the pipe installation process. Recycled gray water, if approved for use by State Department of Natural Resources or other controlling agency, is an acceptable alternative to potable water.

Disposal of drilling fluids shall be the responsibility of the CONTRACTOR and shall be conducted in compliance with all relative environmental regulations, right-of-way and workspace agreements and permit requirements.

Drilling fluid returns can be collected in the entrance pit, exit pit or spoils recovery pit. The CONTRACTOR shall immediately clean up any drilling fluid spills or overflows from these pits.

- E. Pits and "pot hole" backfill material must comply with specifications in Section 02703.
- F. Where accessible, magnetic location tape shall be installed in the utility line trench, 18 inches directly above and parallel with the pipe line, continuous and printed side up at HDPE-to-PVC connections or any location where directionally bored pipe is exposed.

The tape shall be three inches wide and conform to the following appropriate caution message:

<u>Conduit</u>	<u>Tape Color</u>	<u>Printing</u>
Force main	Green	"Force Main"
Reclaimed Water Main	Purple	"Reclaimed Water Main"
Water main	Blue	"Water Main"

Note: All printing shall be repeated for the entire length of the tape.

In addition, a single insulated #12 copper location wire shall be fastened to the full length of the pipe for future pipe location assistance.

The location wire shall not be spliced unless a waterproof connector is utilized and the wires shall be brought to the surface in each valve box along the route, and at hydrants for water lines.

PART 3 **EXECUTION**

3.1 The directional drilling process shall be generally described as follows:

- A. First a pilot hole is drilled such that the required vertical clearances from ditch, river or wetland bottoms and utilities and horizontal clearances from jurisdictional or buffer lines and utilities are maintained. The CONTRACTOR shall monitor and record boring hole location and depth at 10' intervals or any changes in grade. If the pilot hole exits in jurisdictional or buffer areas they shall be responsible to grout hole to the satisfaction of the environmental regulators and the ENGINEER.
- B. The boring hole shall then be reamed to be 120% to 150% oversized than the HDPE. Drilling mud, usually fluidized bentonite clay, shall be used to stabilize the hole and remove soil cuttings. The CONTRACTOR shall monitor and record the reamed hole location and depth at the same intervals as the bore hole.
- C. The pullback operation shall then pull the entire pipeline in one segment back through the reamed hole and drilling mud. Proper pipe handling, cradling, bending minimization, surface inspection, and fusion welding procedures shall be followed. Axial tension force readings, constant insertion velocity, mud flow circulation exit rates, and footage length installed shall be recorded. Pullback speed is typically 1 to 2 feet per minute.
- D. Record drawings shall be submitted to the ENGINEER for each crossing, plan and profile.

3.2 The CONTRACTOR shall provide detailed submittals for each crossing showing the expected pipeline profile, connection to DIP or PVC detail, specific work staging area details and a listing of materials/equipment necessary.

3.3 Any soil borings required for the CONTRACTOR's detailed designs shall be included in the bid. The CONTRACTOR is fully responsible to obtain this information.

- 3.4 CONTRACTOR will be responsible for design and construction of the drill entrance and exit pits. Supports will be required to maintain safe working conditions, ensure stability of the pit, minimize loosening, and minimize soil deterioration and disturbance of the surrounding ground.
- 3.5 CONTRACTOR will be required to locate all utilities prior to start of excavation or drilling. All utilities crossed or approached within 48 inches in a lateral direction must be exposed to verify location. In addition, visual verification will be required that the drill, reamer or product pipe has missed the utility as it passes.

Damage to utilities will be the responsibility of the CONTRACTOR.

- 3.6 The CONTRACTOR will be responsible for maintaining drilling logs that provide drill bit location at least every rod length along the drill path. In addition, logs will be kept that record the following on an hourly basis throughout each drill pass, backream pass, or pipe installation pass:
1. Drilling fluid pressure
 2. Drilling fluid flow rate
 3. Drill thrust pressure
 4. Drill pullback pressure
 5. Drill head torque

The CONTRACTOR will be required to provide a "record" drawing in the form of a plot of the pipe installation with reference to locations shown on the plans.

- 3.7 Immediately upon completion of work in this section, all rubbish and debris shall be removed from the job site. All construction equipment and implements of service shall be removed and the entire area involved shall be left in a neat, clean and acceptable condition.

"Blow holes" or "breakouts" of drilling fluid to the surface must be cleaned up immediately and the surface area washed and returned to original condition. All drilling fluids, spoils and separated material will be disposed of in compliance with federal and local environmental regulations.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. The directional bore pay item shall be the unit price per lineal foot, measured horizontally above the pipe, as shown on the plans. If the HDPE pipe is installed outside the directional bore limits it shall be paid for at the PVC pipe unit price. The unit price shall include all necessary excavation, dewatering, testing, backfilling, restoration, blow-offs, cleanup, and appurtenances.

END OF SECTION 02731

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

PART 1 GENERAL

1.1 DESCRIPTION

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

PART 2 PRODUCTS

2.1 SODDING

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

2.2 GRASSING AND MULCHING

A. Seed

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

B. Mulch

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

C. Fertilizer

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

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

D. Dolomitic Limestone

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

E. Water

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

F. Fertilizer Spreader

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

G. Seed Spreader

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

H. Equipment for Cutting Mulch into Soil

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

I. Rollers

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

2.3 HYDRO-SEEDING/MULCHING

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

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

B. Mulch

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

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

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

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

C. Fertilizer

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

D. Water

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

E. Equipment

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

PART 3 EXECUTION

3.1 SODDING

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

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

3.2 GRASSING AND MULCHING

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

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

3.3 HYDRO-SEEDING/MULCHING

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

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

3.4 MAINTENANCE

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

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

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

4.2 BASIS OF PAYMENT

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

END OF SECTION 02813

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

PART 1 GENERAL

1.1 SCOPE

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

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

2.1 CONCRETE CONSTRUCTION

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

D. Reinforcement Steel

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

E. Transit Or Ready-Mixed Concrete

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

PART 3 **EXECUTION**

3.1 CONSTRUCTION METHODS

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

3.2 PLACING OF CONCRETE

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

3.3 MACHINE-LAYING

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

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

3.4 CURING

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

3.5 JOINTS

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

3.6 CONTRACTORS RESPONSIBILITIES

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

3.7 EXCAVATION AND BACKFILL

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

3.8 STORM WATER INLETS

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

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

3.9 MANHOLE FRAMES AND COVERS

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

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

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

END OF SECTION 02814

**SECTION 02817
CLEARING AND GRUBBING**

PART 1 GENERAL

1.1 SCOPE

- A. Work specified in this section consists of clearing and grubbing within areas specified in the Contract Documents or as directed by the OWNER's representative. Work under this section includes removal and disposal of all trees, brush, stumps, grass, roots, and other such protruding objects. Also included is the removal and disposal of buildings, structures, existing pavement, other existing facilities, and debris not required to remain or to be salvaged that is necessary to prepare the area for the proposed construction. CONTRACTOR shall notify all utility companies or utility owners (both public or private) of their intent to perform such work and shall coordinate field location of utility lines prior to commencement of construction.

- B. Other miscellaneous work considered necessary for the complete preparation of the overall project site is also included under this section. Work includes, but is not limited to, the following:
 - 1. Plugging of wells encountered within the project limits which are to be abandoned.
 - 2. Leveling and restoration of terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations.
 - 3. Trimming of certain trees and shrubs within project limits for utilization in subsequent landscaping of the project.
 - 4. Plugging or sealing of culvert pipes or other structures to prevent erosion or collapse of adjacent soils.

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CLEARING AND GRUBBING

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

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

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

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

C. Depths of Removal

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

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

3.2 SELECTIVE CLEARING AND GRUBBING

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

3.3 SPECIAL CLEARING AND GRUBBING

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

3.4 ERADICATION OF EXOTIC VEGETATION

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

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

3.5 REMOVAL OF EXISTING PAVEMENT

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

3.6 REMOVAL OF EXISTING STRUCTURES

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

3.7 BURNING ON-SITE

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

3.8 DISPOSAL OF MATERIALS

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

3.9 OWNERSHIP OF MATERIALS

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

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

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

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

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

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

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

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

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

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

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

4.2 BASIS FOR PAYMENT

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

END OF SECTION 02817

**SECTION 02820
EXCAVATION AND EMBANKMENT**

PART 1 GENERAL

1.1 SCOPE

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

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CLASSIFICATION OF EXCAVATION

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

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

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

For any of the above classifications not specifically listed as a separate pay item in the proposal or included as part of another pay item, all excavation of such type

shall be included under the item of Regular Excavation. If the item of Regular Excavation is not listed in the proposal, all costs included in the excavation of roadway, swales, subsoil, rock, lakes, structures (including utilization or disposal of materials) shall be incidental to the general cost of the project and no additional compensation will be allowed.

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

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

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

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

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

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

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

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

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

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

3.2 UTILIZATION OF EXCAVATION MATERIALS

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

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

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

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

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

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

- C. Rock and Boulders: Rock and boulders shall be utilized on site as embankment unless otherwise specified. In all cases, the alteration or replacement of excavated material shall be at the CONTRACTOR's expense unless otherwise provided in the plans or Contract Documents.
- D. Muck: Although muck or other material high in organic content will not generally be permitted in embankment areas, certain conditions may require or permit its utilization. Muck will not be permitted in embankment unless specifically stated on the plans or specified herein. When so specified the placement of muck or other similar material will only be permitted outside of an imaginary downward 2:1 slope starting from the outward edge of roadway structure or other permanent structure.
- E. Top Soil: Where top of the existing surface is high in organic content, it may be necessary to strip the topsoil and reuse it or dispose of it. Topsoil shall be stripped and stockpiled on-site for later use as a layer under sod, grassing, or in landscaped areas. When an item of topsoil is not listed as a separate pay item in the Contract Documents, the placement of the stockpiled topsoil shall be included in the item of Clearing and Grubbing or Excavation. When topsoil is listed as a pay item, it shall be placed in locations shown in the plans to a specified thickness and to a finished elevation that will allow for the placement of sod, ground cover or other landscape related surface.

The material utilized as topsoil shall be suitable for plant growth and free from appreciable quantities of hard clods, stiff clay, hardpan, gravel, brush, large roots, refuse, or other deleterious materials. The organic content shall be at least 1.5 percent. The characteristics of the material shall be such that it can be adjusted to have a pH value between 5.0 and 8.0, or as approved by the ENGINEER.

3.3 DISPOSAL OF EXCAVATED MATERIALS

- A. Disposal of Surplus Materials: Ownership of all suitable excavated materials shall be retained by the OWNER unless otherwise stated in the plans or Contract Documents to be surplus material. When so specified the surplus material shall become the property of the CONTRACTOR to be disposed of outside the project limits. The cost of the disposal and furnishing the disposal area shall be included in the item requiring excavation and no additional compensation will be given.
- B. Disposal of Unsuitable Materials: Unsuitable excavated material as defined in Sub-article 3.02.B. shall become the property of the CONTRACTOR to be disposed of outside the project limits. The cost of the disposal and furnishing the disposal area shall be included in the item requiring excavation and no additional compensation will be given.

3.4 EMBANKMENT

- A. General: Embankments shall be constructed true to lines and grades shown in the plans or ordered by the ENGINEER. Material used in embankments shall be obtained from on-site excavation and/or from off-site borrow sources secured by the CONTRACTOR.
- B. Site Preparation: Subsequent to clearing and prior to placement of embankment material, the existing earth surface shall be compacted six feet beyond the building and pavement structure limits and in other areas shown in the plans or stated in the Supplementary Conditions. The existing surface shall be compacted at a moisture content such that the specific density requirement can be attained. Soil one foot below the compacted surface shall attain a density of 95 percent of the maximum theoretical density as determined by the Modified Proctor Density (ASTM-D-1557). Field density tests shall be conducted in accordance with ASTM D-1556, D-2167, D-2922, or D-2937 (latest revisions) by a certified laboratory or soils engineer approved by the OWNER. The location and number of the tests shall be verified by the ENGINEER.
- C. Requirements for Embankment Materials: Embankments shall be constructed of material containing no muck, stumps, roots, brush, vegetable matter, rubbish, or other material that will not compact into a suitable and enduring roadbed or similar foundation. Material designated as unsuitable in the soil borings or as classified as unsuitable by the ENGINEER shall be removed from the embankment and disposed of off-site. Utilization of material in embankment construction shall be in accordance with plan details or as directed by the ENGINEER.

The maximum size of rock which will be permitted in the completed embankment are as follows:

In top 12 inches ----- 3 1/2 inches
12 inches to 2 feet ----- 6 inches
In the 2 feet depth below --- Not to exceed the
compactd thickness of the layer being placed

When and where approved by the ENGINEER, the CONTRACTOR may place larger rocks outside the 2-to-1 slope of any structure embankment. Where such rock is utilized in any embankment, enough fine material shall be deposited and compacted between individual rocks so as to completely fill any voids that may occur during the placement of such material. No rock shall be utilized in any building pad embankment areas.

- D. Borrow Material: The use of borrow material shall be resorted to only when sufficient quantities of suitable material are not available from the various types of excavation required on the drawings. When borrow is required the material shall conform to the requirements of article 3.04.C. and shall be approved by the ENGINEER prior to placement. Borrow material shall be obtained from areas furnished by the CONTRACTOR at his expense. Borrow sources shall comply with all local requirements applicable for the excavation and sale of fill material.

- E. Construction Requirements: Embankment material shall be placed in horizontal layers not to exceed 12 inches thickness measured loose. Each layer shall be leveled and compacted in accordance with Sub-article 3.04.F. No fill material shall be placed where area is wet. Dewatering may be required prior to filling operation, either by pumping or well pointing. Water shall not be allowed to stand on or adjacent to fill areas that could saturate the material.

When embankments are constructed on a hill or slope, slope shall be "stepped" so as to permit the embankment to be placed in horizontal layers and compacted as stated above. Upon completion of the embankment steps on a slope, steps shall be dressed to conform to the specified slope.

For any embankments not covered above, construction methods shall be approved by the ENGINEER prior to placement.

- F. Compaction Requirements: Materials shall be compacted at a moisture content such that the specific density can be attained. If necessary, water shall be added to the material, or the moisture content shall be lowered by manipulating the material or allowing it to dry, as is appropriate. Each layer of material shall be compacted by the use of a smooth drum vibratory roller or other method approved by the engineer. The top 12" of natural ground shall be compacted in accordance with be requirements listed below.

Field density tests shall be conducted in accordance with ASTM D-1556, D-2167, D-2922, or D-2937 (latest revisions) by a certified laboratory or soils engineer approved by the OWNER according to the Compaction Requirements stated below:

Embankment Area	Density ¹ Below 3'	Density ¹ 0' to 3'	Testing Frequency/Lift
Building Pads ²	95%	98%	1 Ea/2000 SF, Minimum 2 Ea/Structure
Pavement Areas ³	95%	98%	1 Ea/500 SY
Retention Areas ⁴	95%	95%	1 Ea/500 SY
Other Areas	N/A	N/A	N/A

- ¹ The percentage listed shall be the minimum acceptable amount of the maximum theoretical density as determined by the Modified Proctor Density (ASTM-D-1557).
- ² Includes future building pads and lots.
- ³ Includes any permanent pavement structure such as curb and gutter, sidewalk, roadway, shoulder, driveway, or any other similar surface.
- ⁴ Includes earth berms, water retention slopes, dikes, and other similar areas.

CONTRACTOR shall be responsible for scheduling of all soil testing. These soil testing costs shall be borne by the CONTRACTOR unless stated otherwise in the plans or specifications. Where the testing costs are borne by the OWNER, in the event of a test failure all subsequent tests required to pass density shall be at the expense of the CONTRACTOR. The OWNER may deduct this expense from the CONTRACTOR's payment or request payment directly from CONTRACTOR.

3.5 FINISH GRADING

- A. General: As a final grading operation the surface of the earthwork shall be shaped to conform to the lines, grades, and contours shown on the plans. Hand dressing will be required in confined areas where equipment operation is restricted or where the equipment finished surface is unsatisfactory in the judgment of the ENGINEER.

CONTRACTOR shall take necessary precautions to prevent erosion of slopes before and after finish grading. Any erosion of whatever consequence shall be repaired at the expense of the CONTRACTOR until final acceptance of the project.

- B. Tolerances: In final shaping of the surface of earthwork a tolerance of 0.1 foot above or below the plan elevations and contours will be allowed with the following exceptions:
1. In areas where sod, ground cover or other finish landscape surface will be used, an allowance shall be made for the thickness of sod, etc. that will result in the finish landscape elevation to be within the above tolerance.
 2. Earthwork shall be shaped to match adjacent pavement, curb, sidewalk, structures, etc. with applicable allowance for sod, etc.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. General:
1. VOLUMETRIC – When payment is made on a volumetric basis, calculations shall be based on the method of average end areas or the grid cell method, unless the ENGINEER determines that another method will provide a more accurate result. The existing elevations shown on the plans or field survey taken by the ENGINEER shall be incorporated into the volume calculations. Should any of these existing elevations appear to be in error, the CONTRACTOR shall notify the ENGINEER in writing and resolve the dispute prior to disturbing the existing surface in question. Once the existing surface is

disturbed by clearing, excavating, or any other construction, the CONTRACTOR's right to dispute the existing elevations shown by the ENGINEER will be nullified. After the excavation or embankment is completed, the finished surface shall be measured in place by field survey paid for by the CONTRACTOR and these cross-sections shall be incorporated into the volume calculations.

2. LOOSE VOLUME – In special cases as shown in the Contract Documents, payment shall be made on a loose volume basis as measured in trucks or other hauling equipment. The volume capacity of each truck shall be measured and recorded by the OWNER's representative. Before unloading onsite, the OWNER's representative shall compare the loaded truck to its recorded capacity and record the actual volume on the load ticket. Only load tickets that have been so recorded and collected by OWNER's representative at the point of dumping shall be included in the quantity for payment.
 3. LUMP SUM – The proposal may contain items of work that are to be paid for on a lump sum basis. Additionally, the Contract Documents may provide for a lump sum payment for the entire project. The lump sum payment for individual items or for the entire project shall constitute full compensation for the completion of all work specified in the plans and specifications.
 4. PLAN QUANTITY – When cross-sectioning finished surfaces is not feasible, the ENGINEER may specify the final pay quantity of any item to be the original plan quantity. When so specified in the Contract Documents, such quantity will be revised only in the event that it is determined to differ by more than 10 percent of the original plan quantity. Such revisions will be determined by calculations of quantities from the plan sheets as applicable. Field measurement will not be considered except to verify that the work was accomplished in substantial compliance with the plan dimensions.
- B. Regular Excavation: Measurement of regular excavation shall include only the net volume of material excavated between the original ground surface and the surface of the completed earthwork. The pay quantity shall be the plan quantity in accordance with Article 4.01.A., unless otherwise stated in the Contract Documents.
- C. Swale Excavation: Measurement of swale excavation shall include only materials excavated within the line and grades indicated in the plans or as directed by the ENGINEER. Measurement may be by volume or lineal feet as called for in the Contract Documents.
- D. Subsoil Excavation: Measurement of subsoil excavation shall include only material excavated within the lines and grades indicated on the plans or as directed by the ENGINEER. Where the limits of subsoil excavation are not shown or vary from the limits shown on the plans, the pay quantity shall be determined by cross-sectioning measurements in accordance with the volumetric method described in Article 4.01.A. When the final pay quantity is more or less than the original plan quantity an appropriate adjustment shall be made to the applicable pay quantity for imported fill so that the loss or increase is compensated provided that the unsuitable material is to be disposed of off-site. A lower than plan volume will require less fill replacement and a

higher than plan volume will require more fill replacement than originally calculated. However, if the subsoil excavation is displaced by onsite excavation, a quantity adjustment will not be made. Where no separate pay item is included in the contract, all such work involving the excavation and disposal of unsuitable material shall be considered incidental to the cost of the applicable excavation item.

- E. Rock Excavation: When rock excavation is listed as a separate pay item in the Contract Documents, measurement of rock excavation shall be by cross-sectioning method prior to and after the rock layer is excavated. CONTRACTOR shall allow enough time between operations to facilitate this field survey work.

If Rock Excavation is not listed as a separate pay item in the Contract Documents, the cost of all such work shall be included in the unit price for Regular Excavation, Swale Excavation, Subsoil Excavation, Lake Excavation (Unclassified), or other items which may require the excavation of rock or boulders.

- F. Lake Excavation (Unclassified): Measurement of Lake Excavation (Unclassified) shall include only the net volume of material excavated between the ground surface and bottom of the lake using the VOLUMETRIC method as described in the first paragraph of Article 4.01.A. Any unauthorized overdigging or excavation below the plan bottom elevation will not be included in the measurement for payment.

If the sections indicate that the depths or bank slopes do not conform to the permitted design slopes or indicate that they are steeper, the CONTRACTOR shall correct the deficiency. Further, the CONTRACTOR shall pay for the expense of re-sectioning the lakes to document that said correction has been accomplished.

OWNER shall have the option of deducting the re-sectioning costs from the CONTRACTOR's payment, or the OWNER may request separate payment directly from the CONTRACTOR.

- G. Structure Excavation: Unless otherwise specified, there shall be no measurement for structure excavation. The cost of structure excavation shall be incidental to the cost of the applicable structure and no separate pay item will be established.

- H. Pavement removal: Measurement for pavement removal shall be by the square yard as measured in place prior to removal unless otherwise specified in the Contract Documents. When no separate pay item is included, the cost of such work shall be incidental to the item of clearing and grubbing or excavation as applicable.

- I. Topsoil: Measurement for topsoil shall be by the square yard as measured in place in locations shown in the plans or as directed by the ENGINEER. Placement of topsoil shall be to the thickness specified in the plans or Contract Documents, and it shall include the cost of furnishing the material as specified in Article 3.02.E. If enough excavated material is not available to satisfy the topsoil requirements, suitable topsoil shall be imported and the cost of furnishing and hauling this imported material shall be included in the unit price of the topsoil item.

- J. Embankment: When there is not enough suitable excavated material to satisfy the requirements of embankment, a separate item called Embankment or Borrow may be

established in the Contract Documents to facilitate completion. Payment will be made only for material required to complete the embankment to the plan dimensions and elevations. Material placed beyond the limits shown on the plans will not be measured for payment.

For Embankment, the pay quantity shall be the plan quantity unless otherwise stated in the plans or Contract Documents. The measurement for embankment shall be the in place volume of material placed above the original surface elevation within the dimensions and elevations indicated on the plans less the neat volume of excavation. No allowance will be made for subsidence or shrinkage.

For Borrow, the pay quantity shall be made on a loose volume basis unless otherwise specified in the plans or contract Documents. The method of measurement shall be in accordance with the second paragraph of Article 4.01.A., LOOSE VOLUME.

- K. Berm Construction: Measurement for Berm Construction shall include only materials excavated within the lines and grades indicated in the plans or as directed by the ENGINEER. Measurement may be by volume or lineal feet as defined in the Contract Documents.
- L. Finish Grading: Measurement for Finish Grading shall only include areas that require a change in elevation to meet the new design grade. Placement of sod to an existing elevation would require finish grading to facilitate placement of sod. If there is no pay item for finish grading, the cost of all such work shall be incidental to the applicable item of excavation or embankment.

4.2 BASIS OF PAYMENT

- A. General: Prices and payments for the various work items included in this section shall constitute full compensation for all work described herein and shall include excavation, hauling, placing, compacting, and dressing of the finish surface. Said payments shall also include the following items when no separate pay item is included in the contract:
 - 1. Removal and disposal of existing pavement
 - 2. Clearing and grubbing
 - 3. Providing disposal areas
 - 4. Furnishing of borrow areas
 - 5. Permits and waiver costs
- B. Excavation and Embankment: Cost of utilizing suitable excavated materials and disposing of unsuitable excavated materials shall be included in the cost of the applicable excavation item, unless otherwise stated in the plans or Contract Documents.

When separate classifications of Excavation and/or Embankment are listed as pay items in the contract, the quantities determined as provided above shall be paid at the

contract unit price per cubic yard, square yard, lineal foot or lump sum as applicable. Such payment shall constitute full compensation for all items as described in this section or as stated in the plans or Contract Documents.

- C. PAY ITEMS: For all work specified in this section, payment shall be made in accordance with the list of pay items established or as otherwise defined in the Contract Documents. The description of a pay item in the proposal section may vary from the descriptions stated in this section.

END OF SECTION 02820

**SECTION 02822
RIPRAP**

PART 1 GENERAL

1.1 SCOPE

- A. The work specified in this section consists of the construction or riprap, composed of sand and cement or rubble as specified in the Contract Documents. The riprap shall be placed against the embankment or other work to be protected, in accordance with these specifications and in conformity with the lines, grades, dimensions and notes shown in the plans.

1.2 SPECIFICATIONS AND STANDARDS REFERENCE

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

PART 2 MATERIALS

2.1 SAND-CEMENT

- A. Portland Cement used shall be Type I from an approved domestic manufacturer.
- B. Fine Aggregate shall meet the requirements of FDOTSPEC Subsection 902-3.3.
- C. Sacks shall be made of burlap unless otherwise approved by the ENGINEER and shall hold the sand-cement mixture without significant leakage when handled. The sack material shall be permeable and absorptive enough to permit passage of sufficient water to provide for hydration of the cement.

The sacks shall be uniform in size and strong enough to stand handling without ripping and splitting. Only one type and size of sack shall be used at any one location.

- D. Grout used shall be mixed from portland cement and fine aggregate as specified above in this section.

2.2 RUBBLE

- A. Rubble shall consist of broken rock or stone locally available. The material shall of sufficient hardness so as not to break or crumble while loading or placing, similar to the cap rock stratum found in southwest Florida.
- B. The pieces shall be roughly angular and shall be reasonably free from thin, flat, or elongated pieces. The rubble shall be a graded mixture of individual pieces ranging

in size from three inches to 12 inches with at least 50 percent composed of pieces that measure six inches across the shortest dimension, unless otherwise specified.

- C. Bedding material shall be a crushed stone in accordance with ASTM C-33, gradation 67.

PART 3 CONSTRUCTION METHODS

3.1 SAND-CEMENT RIPRAP

- A. **Mixing Materials:** The sand and cement shall be proportioned in the ratio of five cubic feet of sand (loose volume) to 94 pounds (one bag) of cement. If the materials are proportioned by weight, sand shall be assumed to have a unit weight of 85 pounds per cubic foot (loose volume). Sand may be batched at the moisture content occurring in the stockpile.

The sand and cement shall be mixed until the mixture is of uniform color.

- B. **Filling Sacks:** The mixed material shall be accurately measured into each sack, with care being taken to place the same amount of material in each sack, and at least the top six inches of the sacks shall remain unfilled to allow for proper tying for folding and to insure against breaking of the sack during placing.
- C. **Placing:** The filled sacks shall be placed with their tied or folded ends all in the same direction unless otherwise shown in the plans. The sacks shall be laid with broken joints, in a regular pattern. The sacks shall be rammed or packed against each other so as to form a close and molded contact after the sand and cement mixture has set up. Sacks ripped or torn in placing shall be removed and replaced with sound, unbroken sacks. All sacks shall then be thoroughly saturated with water.
- D. **Grouting:** Immediately after watering, all openings between sacks shall be filled with dry grout composed of one part portland cement and five parts sand.
- E. **Toe Walls:** Toe walls of riprap for fill slopes may be constructed of poured-in-place concrete in lieu of sand-cement in sacks. If sand-cement in sacks is used for the toe walls, the entire trench excavated for the toe walls shall be filled with sand-cement in sacks.

3.2 RUBBLE RIPRAP (Rock RipRap)

- A. Rubble shall be dumped in place and arranged to form a compact layer conforming to the neat lines called for and to the specified thickness, plus or minus three inches. It shall be placed in such manner that the small pieces are not segregated but are evenly distributed and placed so that they fill the voids between the larger pieces.
- B. Bedding material will only be required if shown on the plan detail.

- C. Filter fabric shall be placed on the prepared surface prior to placement of rubble. The fabric shall be Mirafi 700X or as approved by the OWNER's representative and it shall be overlapped three feet at any seam or break in the fabric.

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. The quantities of Sand-Cement Riprap to be paid for under this section shall be the volume in cubic yards of sand-cement bags satisfactorily placed according to the details in the plans, unless otherwise specified.
- B. Rubble Riprap shall be measured in square yards and satisfactorily placed according to the details in the plans.

When payment is by the ton, a certificate of scale weight shall be provided by a facility approved by the OWNER's representative. Only the rubble actually used shall be included in the quantity to be paid.

When payment is by the square yard, the area to be included for payment shall be the actual area satisfactorily completed according to the details in the plans or as otherwise authorized by the OWNER's representative. The dimensions used for payment purposes shall be measured parallel to the completed surface of riprap.

4.2 BASIS OF PAYMENT

- A. The quantities as determined according to the above shall be paid for at the contract unit price as established in the Contract Documents for RIPRAP (SAND-CEMENT) or RIPRAP (RUBBLE). This price and payment shall be full compensation for all the work specified in this section and shall include all materials, equipment, labor, and other incidental costs required to satisfactorily complete the work according to the details in the plans. The cost of excavation for the placement of riprap and backfilling and finish grading after placement shall also be included in the contract unit price for riprap.

END OF SECTION 02822

**SECTION 02910
LIMEROCK BASE COURSE AND STABILIZED SUBGRADE**

PART 1 GENERAL

1.1 SCOPE

- A. The scope of this Section consists of furnishing materials and methods for construction of a crushed limerock base course and stabilized subgrade in accordance with the Plans and Specifications.

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

2.1 LIMEROCK BASE

- A. Material for limerock base shall meet the requirements of Section 911 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, hereinafter referenced as FDOTSPEC.
- B. CONTRACTOR shall pay for and furnish samples of materials to the approved testing laboratory for physical and chemical analysis, together with optimum moisture and density relationships of the base material. Test reports and samples shall be required of every limerock supplier furnishing material for the work. The source or sources of materials proposed for use shall be designated and shall not change without written consent of the ENGINEER. During the course of construction, ENGINEER may require additional tests if any visible variation occurs.
- C. Limerock shall be obtained from pits from which all overburden has been removed, prior to blasting. It shall show no tendency to air slake or undergo chemical change under exposure to weather, Limerock-Miami (or Ocala) formations shall be tested to meet the following requirements:

	LIMEROCK BASE GRADE #1	LIMEROCK BASE GRADE #2
Minimum Limerock Bearing Ratio (LBR)	100	100
Maximum Liquid Limit	35	35
Maximum Plasticity Index	Non-plastic	10/less
Maximum Percent Clay	3/less	3/less

- D. Grade #1 Limerock as placed shall be well graded, crushed material from either Miami or Ocala formations with at least 97 percent (by weight) of the material passing a 3-½ inch sieve and shall be graded uniformly down to dust with the fines consisting entirely of dust of fracture. Grade #2 Limerock will conform to the above except that 97 percent shall pass a 1-½ inch sieve.

2.2 SUBGRADE STABILIZATION

- A. General: Materials to be used for stabilizing shall be commercial limerock, limerock overburden, crushed or local shell meeting the requirements of Section 914 of FDOTSPEC.
- B. Limerock and Limerock Overburden: For limerock and limerock overburden, the percentage of carbonates of calcium and magnesium shall be at least 70 percent and the plasticity index shall not exceed 10 percent. The gradation of both commercial limerock and limerock overburden shall be such that at least 95 percent (by weight) of the material will pass a 3 ½ inch sieve and not less than 10 percent (by weight) of the material will pass a No. 200 sieve and the material shall be graded uniformly down to dust.
- C. Crushed Shell: Crushed shell shall be mollusk shell (i.e., oysters, mussels, clams, cemented coquina, etc.). Steamed shell will not be permitted. Shell shall meet the following requirements:
 - 1. At least 95 percent (by weight) of the material shall pass a 3-½ inch sieve and at least 50 percent (by weight) of the total material shall be retained on the No. 4 sieve.
 - 2. Not more than 15 percent (by weight) of the total material shall pass the No. 200 sieve. The determination of the percentage passing the No. 200 sieve shall be made by washing the material over the sieve.
 - 3. In the event shell meets the above requirements without crushing, crushing will not be required.
- D. Local Shell: Local shell shall consist of a naturally occurring deposit which is essentially broken mollusk shell. The gradation of the shell shall be such that at least 95 percent (by weight) of the material will pass a 3-½ inch sieve and not more than 20 percent (by weight) of the material will pass a No. 200 sieve by washing. The portion of material passing the No. 40 sieve shall have a liquid limit not greater than 30 percent and a plasticity index not greater than 10 percent.

2.3 PRIME COAT MATERIALS

- A. Material used for prime coat shall meet the requirements of FDOTSPEC 300. CONTRACTOR may select any of the specified bituminous materials for use, unless the Plans or Specifications indicate use of a specific material. Types and grades of bituminous material other than those specified above may be allowed if it can be shown the alternate material will properly perform the function of prime coat material.

2.4 COVER MATERIAL FOR PRIME COAT

- A. If an emulsified asphalt is used for prime coats, the cover material shall consist of a sand-bituminous hot mix or screenings. Sand-bituminous hot mix shall contain from 2 to 4 percent Asphalt-Cement, viscosity Grade AC-20, and fine aggregate consisting of a clean sand or screenings. Sand shall contain no more than 10 percent (by weight) of material passing the No. 200 sieve. The gradation of screenings used along shall be such that 100 percent will pass the 3/8 inch sieve and not more than 10 percent will pass the No. 200 sieve.
- B. If material other than emulsified asphalt is used for the prime coat, cover material shall be either sand (bare or hot-asphalt coated) or screenings, at the CONTRACTOR's option. Sand shall be non-plastic and free from any appreciable amount of silt, clay balls and root particles, and from any noticeable sticks, trash, vegetation or other organic matter. Screenings shall be Miami Oolitic rock screenings.

2.5 TACK COAT

- A. Unless a specific type or grade of material is called for on the Plans or Specifications, material used for tack coat shall meet the requirements of FDOTSPEC 300.

PART 3 EXECUTION

3.1 CONSTRUCTION OF STABILIZED SUBGRADE

- A. Stabilized subgrade shall be constructed of roadbed soil and subgrade stabilization materials in conformance with the lines, grades, and cross-section shown on the Plans. Prior to beginning of stabilizing operations, the area to be stabilized shall have been completed to the lines shown on the Plans and to a grade parallel to finished elevation of the stabilized subgrade. Before stabilizing material is added, the elevation of the roadbed shall be such that subgrade shall conform to requirements of the typical cross-section when the work is completed.
- B. Stabilized Subgrade Minimum Bearing Value - Completed stabilized subgrade shall have minimum limerock bearing ratio value of 40 (LBR40) unless otherwise stated on the Plans or amended in the Specifications.
- C. Incorporation of Stabilizing Material and Mix-in
 - 1. Spreading and Mixing: Stabilizing material shall be placed on areas to be stabilized, and spread uniformly. Stabilizing material shall be thoroughly mixed with the soil with rotary tillers or other approved equipment which is capable of achieving a satisfactory blend. Mixing shall be done as soon as practical, but not later than one week after stabilizing material is placed on the road. The area to be stabilized shall be thoroughly mixed throughout the entire depth and width of the stabilized subgrade.

2. Maximum Particle Size of Mixed Materials: At the completion of mixing, all particles of materials within the limits of the stabilized sub-base shall pass a 3-½ inch ring. Any particles not meeting this requirement shall be removed or shall be broken down as to meet this requirement.
3. Planting Mixing: Mixing of the soil may be accomplished by the central plant-mix method in lieu of mixing in place, provided that a uniform mixture containing the proper amount of water is achieved.
4. Depth of Mixing Stabilizing Materials: Stabilizing material shall be mixed to the nominal depth of Stabilized Subgrade shown on the Plans. The following tolerances over or under the specified depth will be allowed:

<u>Plan Depth</u>	<u>Tolerance</u>
8" or less	1"
Over 8"	2"

In the event the measured depth of mixing is less than the minimum specified above, CONTRACTOR shall remix the stabilized subgrade until stabilizing material is distributed throughout the subgrade course to the required depth. ENGINEER may waive the above requirements for remixing or addition of stabilizing material and remixing for Stabilized Subgrade which serves solely as a working platform for concrete paving equipment, if the subgrade as originally mixed is firm and substantially unyielding.

5. Compacting
 - a. After mixing operations have been completed and requirements for uniformity, mixing depth and maximum particle size have been satisfied, sub-base shall be shaped and compacted. Minimum density acceptable at any location within the entire limits of width and depth of the sub-base will be 98 percent of the maximum density as determined by AASHTO T-180.
 - b. In the event CONTRACTOR elects to shape and compact the subgrade that will be underlying curb and gutter separate from the rest of the subgrade, additional density testing along those curb and gutter lines will be required at a minimum frequency of 1 test per 500 lineal feet.
 - c. ENGINEER may waive the above density requirement for Stabilized Subgrade which serves solely as a working platform for concrete paving equipment, if the subgrade as compacted is firm, substantially unyielding, and no areas of excessive moisture are evident.

6. Finish Grading: Completed stabilized subgrade shall be shaped to conform with finished lines, grades and cross-sections indicated on the Plans. Sub-base shall be checked by the use of elevation stakes, or other means approved by the ENGINEER.
7. Requirements for Condition of Stabilized Subgrade: After stabilizing and compacting operations have been completed, subgrade shall be firm and substantially unyielding to the extent it will support construction equipment. All soft and yielding material, and any other portions of the subgrade which will not compact readily, shall be removed and replaced with suitable material and the whole subgrade brought to line and grade, with proper allowance for subsequent compaction.
8. Maintenance of completed Stabilized Subgrade: After stabilized subgrade has been completed as specified, CONTRACTOR shall maintain it free from ruts, depressions and any damage resulting from the hauling or handling of materials, equipment, tools, etc.
9. Preparation of Subgrade
 - a. Embankment Subgrade Soil: If the subgrade consists of embankment soil, CONTRACTOR before undertaking this work, shall shape and compact the subgrade to conform with the grade lines and cross-sections required for the completed work. Unless otherwise shown on the Plans, subgrade limits shall extend through the pavement area to one foot beyond the curb line or 6 feet beyond pavement edge where curbs are not employed. Unless otherwise shown on the plans, subgrade thickness shall be 12 inches.
 - b. Undisturbed Subgrade Soil: In-place soil under Group Classification A-4 through A-7, according to AASHTO's Soil Classification System, shall be removed and replaced unless ENGINEER directs it remain in place. Any replacement soil must be acceptable to the ENGINEER.

3.2 CONSTRUCTION OF LIMEROCK BASE

- A. Limerock (also referred to as "rock") base shall be constructed on the prepared subgrade in accordance with the Specifications and with lines, grades, and cross-sections shown on the Plans. Construction shall meet requirements of FDOTSPEC Section 200, Limerock Base.
- B. Transporting Limerock: Limerock shall be transported to the point where it is to be used, over rock previously placed if practical, and dumped on the end of the preceding spread. Hauling over the subgrade and dumping on the subgrade will be permitted when, in the ENGINEER's opinion, these operations will not be detrimental to the base.

C. Spreading Limerock

1. Method of Spreading: Limerock shall be spread uniformly. All segregated areas of fine or coarse rock shall be removed and replaced with properly graded rock.
2. Number of Courses: When the specified compacted thickness of the base is greater than 6 inches, base shall be constructed in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subgrade.

D. Compacting and Finishing Base

1. Single-Course Base: For single-course base, after the spreading is completed, the entire surface shall be scarified, then shaped so as to produce the required grade and cross-section after compaction.
2. Double-Course Base: For double-course base, the first course shall be cleaned of foreign material, bladed and brought to a surface cross-section approximately parallel to that of the finished base. Prior to the spreading of any material for the upper course, density tests for the lower course shall be made and ENGINEER will determine that required compaction has been obtained. After spreading of the material for the second course is completed, its surface shall be finished and shaped so as to produce the required grade and cross-section after compaction, free of scabs and laminations.
3. Moisture Content: When material does not have proper moisture content to insure the required density, wetting or drying will be required. When water is added, it shall be uniformly mixed by disking to the full depth of the course which is being compacted. Wetting or drying operations shall involve manipulation, as a unit, of the entire width and depth of the course which is being compacted.
4. Density Requirements: As soon as proper conditions of moisture are attained, material shall be compacted to a density of not less than 98 percent of maximum density as determined by AASHTO T 180. Minimum density which will be acceptable at any location outside the traveled roadway (such as crossovers) shall be 95 percent of such maximum.

- E. Testing Frequency: At least three density determinations shall be made on each day's final compaction operation on each course, and a frequency of one test per 1000 square yards or fraction thereof of surface roadway with a minimum of three tests on each course or roadway section requiring a break in the rolling pattern. Additional tests or greater frequency may be deemed necessary by the ENGINEER.

- F. Checking: Prior to application of any bituminous materials, base shall be checked for grade, cross-section and thickness. Where excessive deviations occur, base shall be reworked by scarifying, adding additional materials, blading, rolling and re-bonding until such unsatisfactory condition is corrected. In general, deficiency in thickness shall be interpreted as anything in excess of 1/4 inch for the entire work or of 1/2 inch in isolated or limited areas. Deviations from straight edge laid parallel with the centerline, or from cross-section template, shall not be more than 1/16 inch per foot from point to point of contact. Deviations from grade shall not exceed .05 (five one hundredths) foot and in no case shall such deviation vary from one extreme to the other within less than 100 feet from low to high.

3.3 PRIMING

- A. Prime coat shall be applied only when the base meets specified density requirements and the moisture content in the top half of the base does not exceed 90 percent of the optimum moisture of the base material. At time of priming, base shall be firm, unyielding and in such condition that no undue distortion will occur.

3.4 MAINTAINING

- A. CONTRACTOR shall assure the true crown and template are maintained, with no rutting or other distortion, and the base meets all requirements at the time the surface course is applied.

3.5 CLEANING BASE AND PROTECTION OF ADJACENT WORK

- A. Before any bituminous material is applied, all loose material, dust, dirt, cakes clay and other foreign material which might prevent proper bonding with the existing surface, shall be removed for the full width of the application. Particular care shall be taken in cleaning the outer edges of the strip to be treated to insure the prime or tack coat will adhere.
- B. When the prime or tack coat is applied adjacent to curb and gutter, valley gutter or any other concrete surfaces, such concrete surfaces (except where they are to be covered with a bituminous wearing course) shall be covered with heavy paper or otherwise protected as approved by ENGINEER. Any bituminous material deposited on such concrete surfaces shall be removed.

3.6 WEATHER LIMITATION

- A. Prime and tack coats shall be applied when the air temperature, in the shade, is above 40EF, and when all other weather conditions and the condition of the surface are suitable.

3.7 APPLICATION OF PRIME COAT

- A. Rate of Application for Limerock, Limerock Stabilized, and Local Rock Bases: For these bases, rate of application shall be not less than 0.10 gallon per square yard, unless a lower rate is directed by ENGINEER.

- B. Sprinkling: If so required by ENGINEER, base shall be lightly sprinkled with water and rolled with a traffic roller in advance of the application of the prime.
- C. Partial Width of Application: If warranted by traffic conditions, ENGINEER may request that the application be made on only one-half the width of the base at one time, in which case positive means shall be used to secure the correct amount of bituminous material at the joint.

3.8 APPLICATION OF TACK COAT

- A. General: Where a bituminous surface is to be laid and a tack coat is required, tack coat shall be applied as specified herein below.
- B. Where Required: In general, a tack coat will not be required on primed bases except in areas that have become excessively dirty and cannot be cleaned, or in areas where the prime has cured to the extent that it has lost all bonding effect. Generally, a tack coat will be required on hot bituminous base courses before placing the surface course.
- C. Method of Application: Tack coat shall be applied with a pressure distributor except that, on small jobs, if approved by ENGINEER, application may be by other mechanical devices or by hand methods. The bituminous material shall be heated to a suitable temperature as designated by the ENGINEER and shall be applied in a thin, uniform layer.
- D. Rate of Application: Rate of application shall be between 0.02 and 0.08 gallon per square yard. For tack coat applied on concrete pavement which is to be surfaced, the rate of application may exceed the upper limit, if directed by ENGINEER.
- E. Curing and time of Application: Tack coat shall be applied sufficiently in advance of the laying of the bituminous mix to permit drying, but shall not be applied so far in advance that it might lose its adhesiveness as a result of being covered with dust or other foreign material.
- F. Protection: Tack coat surface shall be kept free from traffic until the subsequent layer of bituminous hot mix has been laid.

3.9 QUALITY CONTROL

- A. OWNER shall select and pay the Engineering Testing Laboratory for required testing in work performed under this Section. Should retesting be required because of failure to pass, CONTRACTOR shall pay for additional testing required until specification requirements are attained. CONTRACTOR shall either promptly reimburse the OWNER for said costs or shall have the amount deducted from the next month's pay request and all subsequent pay requests. In such case the OWNER shall promptly pay the Engineering Laboratory for all testing costs. CONTRACTOR is herein required to schedule and make test arrangements with the Test Laboratory for making the required tests. Test patterns and frequency will be at the direction of the ENGINEER. Frequency of tests shown below shall be considered a minimum.

1. Subgrade - Bearing: One Limerock Bearing Value (LBR) test for each 0-5000 square yards of subgrade plus one test for each additional 5000 square yards or fraction thereof, plus one LBR for each change of material. One subgrade in place density for each 0-1000 square yards of base and one test for each additional 1000 square yards or fraction thereof.
2. Base Course: One Limerock Base Course in place density for each 0-1000 square yards of base plus one test for each additional 1000 square yards or fraction thereof (AASHTO T 180).

PART 4 MEASUREMENT AND PAYMENT

4.1 METHOD OF MEASUREMENT

- A. Quantities to be paid for under this Section shall be the area, in square yards, of stabilized subgrade and crushed limerock base completed and accepted.
- B. In determining the area of base to be paid for, length to be used in the calculation shall be the actual length measured along the surface of the completed base. Width shall be the actual width of base constructed within lines shown on the Plans, not to exceed the width called for on the Plans.
- C. In determining the area of stabilized subgrade to be paid for, length to be used in the calculation shall be the actual length measured along the surface of the completed base. Width shall be actual width of stabilized subgrade that does not exceed the width called for on the Plans.

4.2 BASIS OF PAYMENT

- A. Payment shall be made on a unit price basis in accordance with the accepted Proposal. OWNER reserves the right to add or deduct from the Work. Such additions or deductions will be made at the unit prices established in the Proposal. Said additions or deductions shall not exceed twenty-five percent (25%) of the base bid of the successful BIDDER or BIDDERS without consideration of an adjustment in the unit price.
 1. Compacted Base: The quantity of base, determined as provided in Section 4.01 (B), shall be paid for at the contract unit price per square yard for this item. Such price and payment shall be full compensation for furnishing, hauling, spreading, compacting, and surface finishing the limerock material; furnishing and placing asphaltic prime coat materials on the road, removing same, if necessary, and incidental items shown on the Plans, all performed in a workmanlike manner in accordance with the Plans and Specifications. No separate payment shall be made for bituminous material, sand or earth applied as a curing agent.

2. Stabilized Subgrade: The quantity of stabilized subgrade determined as provided in Section 4.01 (C), shall be paid for at the contract unit price per square yard for this item. Such price and payment shall be full compensation for furnishing, hauling, spreading, mixing, compacting, and finishing the subgrade material, and incidental items shown on the Plans, all performed in a workmanlike manner in accordance with the Plans and Specifications.

END OF SECTION 02910

**SECTION 02911
ASPHALTIC CONCRETE**

PART 1 GENERAL

1.1 SCOPE

- A. The work consists of the application of hot bituminous mixtures of the type and thickness specified on the construction plans which shall be composed of a mixture of:
 - 1. Aggregate.
 - 2. Mineral filler, if necessary to produce the desired stability hereinafter described; and
 - 3. Asphalt cement.

- B. The application of hot bituminous mixtures shall be properly placed upon a prepared base of the type called for on the construction plans in accordance with lines, grades, thickness, and typical section(s) shown including the conditioning of existing surface or base.

PART 2 PRODUCTS

2.1 ASPHALT MIXES

- A. Except for friction courses and base courses, the hot bituminous mixture shall be of the type called for on the construction plans and shall conform to hot mix design criteria as outlined in the latest edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

2.2 FRICTION COURSE

- A. The asphaltic concrete friction course shall be in accordance with Section 337, Florida Department of Transportation, Standard Specifications for Road and Bridge Construction, latest edition.

PART 3 EXECUTION

3.1 APPLICATION OF ASPHALT MIXES

- A. Limitation of Operations
 - 1. The mixture shall be spread only when the air temperature (in the shade) is above 40° Fahrenheit and rising.

 - 2. The temperature of the mixture at the time of spreading shall be within 25° Fahrenheit of the temperature set by the ENGINEER for this stage of the operation. The temperatures thus set by the ENGINEER shall be between 250° Fahrenheit and 340° Fahrenheit.

3. Any mixture caught in transit by a sudden rain may be laid only at the CONTRACTOR's risk. Should such mixture prove unsatisfactory, it shall be removed and replaced with satisfactory mixture at the CONTRACTOR's expense. In no case shall the mixture be laid while rain is falling or when there is water on the surface to be covered.

B. Joints

1. Transverse joints: Placing of the mixture shall be as continuous as possible and the roller shall not pass over the unprotected end of the freshly laid mixture except when the laying operation is to be discontinued long enough to permit the mixture to become chilled. When the laying operation is thus interrupted, or laying operation is to commence from a cold joint, a transverse joint shall be construction by cutting back on the previous run to expose the full depth of the mat.
2. Longitudinal joints: Where only a portion of the width of pavements is to be laid, the exposed edge shall be vertical. If traffic has rolled over the edge the ENGINEER may require the rolled edge trimmed back to a vertical face prior to construction the adjacent strip.
3. General: When the fresh mixture is laid against the exposed edges of joints (trimmed or formed) it shall be placed on close contact with the exposed edge so that an even, well compacted joint will be produced after rolling without having an open joint or unlevel surface condition.
4. Layered placement of hot bituminous mixture shall be accomplished to cause longitudinal joints to be offset 6 to 12 inches laterally between successive layers.

C. Finished Surface Requirements

1. For the purpose of testing the finished surface, the CONTRACTOR shall provide a 15-foot straight edge and a standard template cut to the true cross-section of the road. These shall be available at all times during construction so that the ENGINEER may check the finished surface. The CONTRACTOR shall provide and designate some employee whose duty it is to use the straight edge and template in checking all rolled surface under the direction of the ENGINEER. Vertical measurements from a string line between curbs to determine crown may be accepted as an alternate. The finished surface shall be such that it will not vary more than one-fourth inch from the 15-foot straight edge. Any irregularity of the surface exceeding the above limits shall be corrected.
2. The CONTRACTOR shall be responsible for obtaining a smooth surface on all pavement courses placed. The finished surface shall be of uniform thickness texture and compaction. The surface shall have no pulled, torn, loosened portions and shall be free of segregation, sand streaks, sand spots, ripples or roller marks, depressions that show up after initial rolling, and roller depressions. Any area of the surface which does not meet the foregoing requirements shall be corrected at the CONTRACTOR's expense.

3. Correction of unacceptable pavement or portion thereof shall be determined in one of the following methods, only if approved by the ENGINEER:
 - a. Remove and replace - if correction is made by removing and replacing the pavement, the removal must be for the full depth of the course and extend at least 50 feet on either side of the defective area, for the full width of the paving lane.
 - b. Overlaying - if correction is made by overlaying, the overlay shall cover the length of the defective area and taper uniformly to a feather edge thickness at a minimum distance of 50 feet on either side of the defective area and for the entire width of roadway.

D. Compaction

1. The complete pavement will be accepted with respect to in-place density when the following criteria has been met:
 - a. Ninety-five percent of laboratory density (FM 1-T166) has been achieved.
 - b. Laboratory density (FM-T166) will be determined from a sample of the hot mix obtained in the field.
 - c. In-place density will be determined from field cores obtained during thickness evaluation.

E. Tests (Allowable Deficiencies - Thickness)

1. The average thickness of the compaction in-place mixture shall be determined as shown on the construction plans typical cross-section(s) for that particular roadway(s) to be constructed. The pavement shall not be approved or accepted unless the following criteria has been met:
 - a. The compacted in-place pavement has not exceeded a deficiency of $\frac{1}{4}$ inch in thickness as determined by the measured depths of two-inch diameter cores taken at random at a rate of one every 500 SY.
 - b. Not more than 20 percent of the total cores taken for than roadway (thickness and type) shall be deficient with no individual core exceeding the $\frac{1}{4}$ -inch tolerance. Roadway pavement indicating an average thickness of $1\text{-}\frac{1}{4}$ inch shall not have an individual core of less than one-inch in-place thickness.
 - c. Core lengths shall not exceed the average pavement thickness by more than three-eighths inch and shall be calculated as the next lower thickness.
 - d. All testing required such as mixture, density, cores, etc. shall be the responsibility of the CONTRACTOR with the testing performed by an

independent testing laboratory, testing results submitted to and approved by the ENGINEER.

F. Care to be Exercised

1. The CONTRACTOR shall use extreme care when applying prime coats, tack coats or laying the asphaltic concrete to insure the materials being applied do not come in contact with surface of adjacent structures such as but not limited to curb, inlets, etc., other than those surfaces designed for contact. Any material allowed to come in contact with surfaces other than those scheduled shall be cleaned by any method acceptable to the ENGINEER that does not destroy the function or aesthetic value of the structure. Any surface after cleaning that remains objectionable to the ENGINEER may result in removing and replacing the objectionable section. All removal, replacement or attempts to clean surfaces shall be at the CONTRACTOR's expense.
2. The CONTRACTOR shall use extreme care in using equipment adjacent to structures such as, but not limited to curbs, inlets, etc. to prevent damage to those structures such as roller scars, grader scars, etc. The ENGINEER may direct removal and replacement of those objectionable surfaces that have in his opinion destroyed the functional or aesthetic value of the structure. Cost of removal and replacement shall be at the CONTRACTOR's expense.

PART 4 **MEASUREMENT AND PAYMENT**

4.1 **METHOD OF MEASUREMENT**

- A. The quantity to be paid for under this section shall be the number of square yards of asphaltic surface and/or friction course actually completed and accepted, for the various types required by the approved plans.
- B. In determining the quantity of asphaltic concrete surface and/or friction course, the length to be used in the calculation shall be the actual length measured along the surface of the pavement and the width as specified by the approved plans.

4.2 **BASIS OF PAYMENT**

- A. The quantity of asphaltic concrete surface and/or friction course shall be paid for at the contract unit price per square yard for the various types required by the approved plans.
- B. The above price and payment shall be full compensation for all the work specified in this section and shall include all materials, equipment, tools, labor, testing laboratory, and incidentals necessary to complete the work.

END OF SECTION 02911

SECTION 02912
BASE COURSE, PRIME AND TACK COAT, AND STABILIZED SUBGRADE

PART 1 GENERAL

1.1 SCOPE

- A. The soil-cement base course work specified in this section consists of construction of a base course composed of soil and Portland cement uniformly mixed, moistened, compacted, finished and cured in accordance with these specifications, and shall conform to the lines, grades, thicknesses and typical cross-sections shown on the plans. The base shall be designed to have a seven-day in-situ compressive strength of 250 psi minimum. Seven-day laboratory design compressive strength shall be a minimum of 300 psi.
- B. The shell base course work specified in this section consists of construction of a base course composed of shell. It shall be constructed on the prepared subbase in accordance with these specifications and in conformity with the lines, grades, notes and typical cross-sections shown on the plans. Where so shown on the plans, the base shall be constructed in two courses. Where the plans do not specify double-course base, the base may be constructed in either one or two courses.
- C. The prime and tack coat work consists of applying bituminous materials on a previously prepared base in accordance with these specifications and in conformity with the lines, grades, dimensions and notes shown on the plans.
- D. The stabilized subgrade work shall consist of bringing the bottom of excavations and top of embankments of the roadway between the outer limits of the paving or base course to a surface conforming to the grades, lines and cross-sections shown on the plans, and to a uniform density.
- E. The base material must meet the requirements of the local transportation entity or it will not be considered.
- F. The base material specified on the drawings shall be the basis for the bid.

PART 2 PRODUCTS

2.1 SOIL CEMENT BASE

- G. Portland cement shall comply with the latest specifications for Portland cement, AASHTO M-85, AASHTO M-134 or ASTM C-150 for the type specified. A one-cubic-foot sack of Portland cement shall be considered to weight 94 pounds. The amount of cement used shall be sufficient to obtain the required compressive strength, however, under no circumstances shall the amount be more than 9 percent by weight. No minimum cement content is required.
- H. Water for use with cement shall be clean and free of substances deleterious to the hardening of the soil-cement.

I. The soil to be used for the base course shall consist of bank-run shell, limerock, crushed portland cement concrete, approved borrow material or a combination of these materials proportioned as approved by the laboratory. The soil shall be free of organic debris, trash, roots or any other substance considered deleterious to the hardening of the soil-cement. Proposed recycled materials will be considered on a case-by-case basis.

1. Specific requirements for soil

Limerock Bearing Ratio.....Minimum 100 (per FM S-515)

Plastic Index.....Maximum 10 percent (per FM 1-T090)

Liquid Index.....Maximum 25 percent (per FM 1-T089)

Gradation:	Sieve Size	Minimum % Passing
	2 - inch	100 percent
	#4	55 percent
	10	37 percent

J. Soil cement for base construction shall have a LBR value of not less than 100. One LBR test shall be required from the source of the soil cement base material.

K. The CONTRACTOR shall submit for approval a design mix for the soil proposed for use in soil-cement construction prepared by an independent testing laboratory approved by the ENGINEER. The design mix submittal shall include the results of tests run to verify that the soil meets the material requirements. Results of test used to establish the cement content, and a final design laboratory sample shall also be submitted. Laboratory testing for design mix evaluation shall be accomplished using water from the source proposed for use during construction. The design mix shall be submitted to the Engineer for approval a minimum of 15 calendar days prior to beginning of soil-cement construction. The minimum cement content shall be determined by Florida Test Method FM 5-520-Laboratory Design of Soil-Cement Mixtures. The soil material, used in producing a soil-cement mixture, shall be obtained from a commercial source where soil properties are consistently uniform, and the mixture shall be processed in a central mix plant that automatically weighs components and automatically records the weight of each component on a printed ticket or tape. Mixed in place soil cement will not be authorized.

2.2 SHELL BASE

The materials shall not contain excessive amounts of sand and fine particles to prevent proper bonding.

At least 97 percent of the material shall pass a 3½-inch sieve. Not less than ten percent nor more than 20 percent of the material shall pass the Number 200 sieve by washing.

The portion of the material passing the Number 40 sieve shall be non-plastic.

Shell for base construction shall have an LBR value of not less than 100. One LBR test shall be taken per each 1,500 SY area. Each source of shell base materials must be specifically approved for usage.

Each deposit proposed for use shall be inspected by the ENGINEER prior to use. Acceptance or rejection will be made on production of a uniform material consistently meeting this specification. The ENGINEER may require a certified copy of current Florida Department of Transportation (FDOT) quality assurance for each source.

2.3 CRUSHED CONCRETE BASE

Crushed concrete conforming to the gradation and other requirements of Section 204-2 of the most recent FDOT Standard Specifications for Road and Bridge Construction.

2.4 PRIME AND TACK COAT

For the prime and tack coat, any one of the following types or grades of prime and tack materials may be used at the option of the CONTRACTOR unless a particular type and grade are called for on the plans.

1. Prime Coat
 - a. Cutback Asphalt, Grade RC-70 or RC-250.
 - b. Emulsified Asphalt, Grade RS-2, SS-1, SS-1H or Special MS.
2. Tack Coat
 - a. Emulsified Asphalt, Grade S, RS-2, AE-90, SS-1, SS-1H or Special MS.

PART 3 EXECUTION

3.1 CONSTRUCTION OF SOIL CEMENT BASE

A. Equipment

3. For performing the work specified in this section, the CONTRACTOR may use any machine, combination of machines or equipment that will produce the completed soil-cement base course meeting the requirements for soil pulverization, cement application, mixing, water application, incorporation of materials, compaction, finishing and curing as controlled by these specifications. Special attention is directed to the necessity for utilizing compaction equipment which will produce the required density in a particular soil-cement blend.

B. Preparation

1. Before other construction operations are begun, the areas to be paved shall be graded and shaped as required to construct the soil-cement base in conformance with the grades, lines, thicknesses and typical cross-sections shown on the plans. Any additional soil needed shall be placed as directed by the ENGINEER. The subgrade shall be firm and able to support without displacement the construction equipment and compaction hereinafter specified. Any unsuitable soil or materials, including material retained on a three-inch sieve, shall be removed and replaced with acceptable material. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

2. The subgrade in both cuts and fills shall be compacted to density of 98 percent of the maximum density as determined by AASHTO T-180 (modified). The subgrade shall be shaped prior to making the density tests. Subgrade LBR shall be as shown on the construction plans. Test results of subgrade density and LBR shall be provided to the ENGINEER for review prior to the construction of the base material.

C. Plant Mix

1. A plant mixture of soil-cement material shall be utilized. The plant should demonstrate the ability to properly proportion the cement to obtain a uniform mix, meeting all specifications.

D. Compaction

1. Prior to the beginning of compaction the mixture shall be in a loose condition for its full depth and shall be within approximately two percent of the optimum moisture. The loose mixture shall be uniformly compacted to the specified density within three hours. During compaction operations, shaping may be required to obtain uniform compaction and required grade and cross-section. No soil cement shall be applied when the soil or subgrade is frozen. The air temperature shall be at least 40° Fahrenheit in the shade and rising, or over 50° Fahrenheit.

E. Finishing

1. After the mixture has been compacted, the surface of the soil-cement shall be shaped, if necessary, to the required lines, grades and cross-section. During shaping operations, the surface shall be lightly scarified to loosen any imprints left by the compacting or shaping equipment. The resulting surface shall then be compacted to the specified density with steel-wheel or pneumatic tire rollers, or both. Rolling shall be supplemented by broom-dragging as required. Surface compaction and finishing shall be done in such a manner as to produce, in not longer than three hours, a smooth, dense surface, free of surface compaction planes, cracks, ridges or loose materials.

F. Uniformity

1. Any portion of the soil-cement that has a density less than 95 percent of the maximum density, determined as specified, shall be corrected by additional rolling. If the time limits set forth herein have been exceeded, the base shall be left undisturbed and shall be tested (after seven days of curing) to determine its suitability. If it is found unsuitable, it shall be removed and replaced by the CONTRACTOR without additional compensation. The CONTRACTOR may, at his option, remove and replace the deficient base rather than wait for the results of the seven-day test.

G. Construction Joints

1. At the end of each day's construction, a straight transverse construction joint shall be formed by cutting back into the completed work to form a true vertical face. The construction joint thus formed shall be located so as to exclude all of that part of the base at the end of the run from being considered a part of the finished base if it

does not have full depth, is not thoroughly compacted, is not properly proportioned, or is not properly mixed.

H. Curing

1. After the soil-cement base has been finished as specified herein, it shall be protected against drying for seven days, as specified herein. The finished soil-cement base shall be maintained in a moist condition by application of water until the curing material is applied. The curing material shall not be applied until the finished soil-cement base has been inspected by the ENGINEER and such inspection has determined that the base material is hardening in a uniform and satisfactory manner. The bituminous material and construction shall be in accordance with the specifications for Prime and Tack Coat for base courses. The actual rate of application shall be sufficient to provide complete coverage without excessive runoff. At the time the bituminous material is applied, the soil-cement surface shall be dense, free of all loose and extraneous material and shall contain sufficient moisture to permit penetration of the bituminous material. Water shall be applied in sufficient quantity to fill the surface voids of the soil-cement immediately before the bituminous curing material is applied.

I. Opening to Traffic

1. After the seven-day curing period, the completed portion may be open to all traffic, provided the soil-cement is either protected or has hardened sufficiently to prevent marring or distorting of the surface by the equipment or traffic, and provided the curing as specified is not impaired.
 - a. The curing material shall be adequately maintained during the seven-day protection period so that all of the soil-cement will be covered effectively during this period.
 - b. Finished portions of soil-cement that are used by equipment during the construction of an adjoining section shall be protected in such a manner as to prevent the equipment from marring or damaging the completed work.
 - c. When the air temperature may be expected to reach the freezing point, sufficient protection from freezing shall be given the soil-cement for seven days after its construction and until it has hardened. Other curing materials such as moist earth, straw or hay may be used upon approval.

J. Maintenance

1. The CONTRACTOR shall maintain the base to a true and satisfactory surface until the wearing surface is constructed. Should any repairs or patching be necessary, they shall extend to the full depth of the base and shall be made in a manner that will assure restoration of a uniform base course conforming to the requirements of these specifications. In no case shall repairs be made by adding a thin layer of soil-cement to the completed work. The CONTRACTOR may, at his option, make full-depth repairs with concrete to small or minor areas such as manholes, inlets or the like.

K. Testing

1. Tests are a necessary part of soil-cement base construction. The following tests will be made by the laboratory:
 - a. Determinations of Cement Applied
 - b. Field Density - Tests shall be taken per each 500 SY maximum area or per each 500 feet per lane, whichever is less.
 - c. Moisture-Density Test
 - d. Bag Samples - Bag samples shall be taken at least once daily at intervals not to exceed 5,000 SY and molded in the laboratory at field moisture content based on standard proctor density test (AASHTO T-99). Each specimen shall be four inches in diameter and six inches in height. The specimens shall be cured for seven days and tested for compressive strength. The bag samples shall have a minimum strength of 250 psi.
 - e. Six-Inch Diameter Cores - For each day's placement of base material, field cores of six inch diameter shall be taken after seven days curing time at intervals of one every 500 SY or at intervals closer if necessary to isolate areas showing below minimum requirements. The cores shall be used to determine thickness of base and compression tested to determine strength of base material. The cores shall have an average compressive strength of 250 psi. The minimum compressive strength core break shall be 200 psi. Cores with less than 200 psi shall require the CONTRACTOR to isolate the area of base with additional cores and compressive tests for determining limits of the unacceptable base. That portion determined unacceptable shall be removed and replaced with new material, retested after seven days as outlined above. Where the base is more than one-half inch deficient in thickness, the area covered by this deficient base shall be replaced. The one-half inch deficiency may be accepted only if found in minor isolated areas. Additional cores will be required to determine size of deficient area.
 - f. Test Results - After receipt of the test reports from the laboratory stating that there is a satisfactory soil-cement base, the ENGINEER may allow the wearing surface to be placed.
 - g. All tests shall be performed by a testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience. All tests shall be performed at the CONTRACTOR's expense.

L. Grade Stakes

1. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.2 CONSTRUCTION OF SHELL BASE

A. Equipment

1. This work may be performed with any machine, combination of machine or equipment that will produce the specified results.

B. Transporting Shell

1. The shell shall be transported (over material previously spread) to the point where it is to be used. It shall then be dumped on the end of the preceding spread. In no case shall material be dumped directly on the subbase.

C. Spreading Shell

1. The shell shall be spread uniformly. All segregated areas of fine or coarse material shall be removed and replaced with well graded shell. For double-course base, the material shall be spread in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subbase.

D. Compacting and Finishing Base

1. For double-course base, the first course shall be bladed if necessary to secure a uniform surface and shall be compacted to the density specified below immediately prior to spreading the second course. No other finishing of this course is required.
 - a. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross-section after compaction. For double-course bases, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.
 - b. As soon as proper conditions of moisture are attained, the material shall be compacted to a density of 98 percent of the maximum density obtainable under AASHTO Method T-180 (modified). Where the base is being constructed in one course and the specified thickness is more than six inches, the density specified above shall be obtained in both the bottom half and the top half of the base. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross-section, the compacting operations for such areas shall be completed prior to making the density determinations on the finished base.
 - c. The surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the tin-glazed or cemented surface, leaving a granular or porous condition that will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.

- d. If, at any time, the subbase material should become mixed with the base course material, the CONTRACTOR shall excavate and remove the mixture. He shall reshape and compact the subgrade, and replace the materials removed with clean base material. The clean base material shall then be shaped and compacted as specified above.

E. Testing Surface

1. The finished surface of the base course shall be checked with a templet cut to the required cross-section and with a 15 foot straight edge laid parallel to the centerline of the road or other approved testing devices. All irregularities greater than $\pm 1/4$ inch shall be corrected by scarifying and removing or adding rock, as may be required, after which the entire areas shall be recompacted as specified herein. On every project at least one of each of the following density tests shall be made by the laboratory at intervals not exceeding 500 SY unless otherwise specified.
 - a. Modified Proctor Maximum Density Determination Tests. Tests shall be taken per each 500 SY maximum area.
 - b. Field In-Place Density Tests.

F. Thickness

1. After the base is completed, test holes shall be dug or cores taken at intervals of not more than 500 SY, or at closer intervals if necessary. Where the base is deficient in thickness, the area covered by this deficient base shall be reworked by scarifying to a depth of at least three inches and adding more base material, so that after proper compacting the thickness will conform to the plans.

All tests shall be performed by an independent testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience.

G. Grade Stakes

4. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.3 CONSTRUCTION OF CRUSHED CONCRETE BASE

A. Equipment

1. This work may be performed with any machine, combination of machine or equipment that will produce the specified results.

B. Transporting Crushed Concrete

1. The crushed concrete shall be transported (over material previously spread) to the point where it is to be used. It shall then be dumped on the end of the preceding spread. In no case shall material be dumped directly on the subbase.

C. Spreading Crushed Concrete

1. The crushed concrete shall be spread uniformly. All segregated areas of fine or coarse material shall be removed and replaced with well graded material. For double-course base, the material shall be spread in two courses. The thickness of the first course shall be approximately one-half the total thickness of the finished base, or enough additional to bear the weight of the construction equipment without disturbing the subbase.

D. Compacting and Finishing Base

1. For double-course base, the first course shall be bladed if necessary to secure a uniform surface and shall be compacted to the density specified below immediately prior to spreading the second course. No other finishing of this course is required.
 - a. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross-section after compaction. For double-course bases, this scarifying shall extend to a depth sufficient to penetrate slightly the surface of the first course.
 - b. As soon as proper conditions of moisture are attained, the material shall be compacted to a density of 98 percent of the maximum density obtainable under AASHTO Method T-180 (modified). Where the base is being constructed in one course and the specified thickness is more than six inches, the density specified above shall be obtained in both the bottom half and the top half of the base. During final compacting operations, if blading of any areas is necessary to obtain the true grade and cross-section, the compacting operations for such areas shall be completed prior to making the density determinations on the finished base.
 - c. The surface shall be "hard-planed" with a blade grader immediately prior to the application of the prime coat to remove the tin-glazed or cemented surface, leaving a granular or porous condition that will allow free penetration of the prime material. The materials planed from the base shall be removed from the base area.
 - d. If, at any time, the subbase material should become mixed with the base course material, the CONTRACTOR shall excavate and remove the mixture. He shall reshape and compact the subgrade, and replace the materials removed with clean base material. The clean base material shall then be shaped and compacted as specified above.

E. Testing Surface

1. The finished surface of the base course shall be checked with a templet cut to the required cross-section and with a 15 foot straight edge laid parallel to the centerline of the road or other approved testing devices. All irregularities greater than $\pm 1/4$ inch shall be corrected by scarifying and removing or adding rock, as may be required, after which the entire areas shall be recompacted as specified herein. On every project at least one of each of the following density tests shall be made by the laboratory at intervals not exceeding 500 SY unless otherwise specified.

- a. Modified Proctor Maximum Density Determination Tests. Tests shall be taken per each 500 SY maximum area.
- b. Field In-Place Density Tests.

F. Thickness

- 1. After the base is completed, test holes shall be dug or cores taken at intervals of not more than 500 SY, or at closer intervals if necessary. Where the base is deficient in thickness, the area covered by this deficient base shall be reworked by scarifying to a depth of at least three inches and adding more base material, so that after proper compacting the thickness will conform to the plans.

All tests shall be performed by an independent testing laboratory, approved by the ENGINEER. The testing laboratory shall be under the direction of a Professional Engineer with at least five years of materials testing experience.

G. Grade Stakes

- 1. The CONTRACTOR shall make every effort to preserve the grade stakes until the job is completed. Destroyed or moved stakes shall be replaced at the CONTRACTOR's expense.

3.4 APPLICATION OF PRIME AND TACK COAT

A. Equipment

- 1. This work may be performed with any machines, combination of machines, or equipment that will produce the specified results.

B. Cleaning the Base

- 1. Before any bituminous material is applied, all loose material, dust, caked clay and foreign materials which might prevent proper bond with existing surface shall be moved to the shoulders. Particular care shall be taken to clean the outer edges of the strip to be treated in order to insure that the tack coat will adhere. Where the prime or tack coat is applied adjacent to the curb and gutter or valley gutter, such concrete surfaces are to be protected and kept free of bituminous material.

C. Weather Limitations

- 1. No bituminous material shall be applied when the temperature of the air is less than 40° Fahrenheit in the shade, or when the weather conditions or the condition of the existing surface is unsuitable.

D. Application of Prime Coat

- 1. The surface to be primed shall be clean and contain optimum moisture. The temperature of the prime material shall be between 100° and 150° Fahrenheit. The exact temperature shall be such as will insure uniform distribution. The material shall be applied by means of a pressure distributor.

The amount of bituminous material applied shall be at the rate of approximately 0.10 to 0.25 gallons per square yard, dependent upon the type of base materials. The rate of application shall be sufficient so as to coat the surface thoroughly and uniformly without having any excess to form pools or to flow off the base. A light, uniform application of clean sand shall be applied prior to opening the primed base to traffic. To cure the prime coat in such cases, the sand shall be rolled with a traffic roller in conjunction with traffic. If warranted by traffic conditions, the application shall be made only on one-half of the width of the base at one time, care being taken to secure the correct amount of bituminous material at the joint. The base shall be sufficiently moist in order to obtain maximum penetration of the asphalt.

E. Application of Tack Coat

1. Where a bituminous surface is to be laid and a tack coat is required, both shall be applied as herein specified. On newly constructed base courses, the application of the tack coat (when one is required) shall follow the application of the prime coat, immediately before the wearing surface is applied. In general, a tack coat will not be required on primed bases, except in areas which have become excessively dirty and cannot be cleaned, or in areas where the prime has cured and lost bonding effect. The tack coat shall be applied with a pressure distributor. The bituminous material shall be heated to a suitable consistency as designated. The bituminous material shall be applied only in the amount necessary to bond the wearing surface to the base. The rate of application shall be between 0.02 and 0.08 gallons per square yard. The exact rate shall be designated by the ENGINEER. The tack coat shall be applied sufficiently in advance of the wearing surface to permit drying. However, it shall not be applied so far in advance or over such an area as to lose its adhesiveness as a result of being covered with dust or other foreign material. The tack coat shall be kept free from traffic until the wearing surface is laid.

3.5 PREPARATION OF STABILIZED SUBGRADE

A. Subbase

1. The work shall consist of bringing the bottom of excavations and the top of embankments of the roadway to a surface conforming to the grades, lines and cross sections shown on the plans.

All soft and yielding material and other portions of the subgrade which will not compact readily shall be removed and replaced with suitable material and the whole subbase brought to line and grade, allowing for subsequent compaction.

- a. All submerged stumps, roots or other organic matter encountered in the preparation of the subbase shall be removed.
- b. The subbase shall be stabilized to the minimum Bearing Ratio and depth shown on the plans. LBR tests shall be taken per each 1,500 SY area or per each 1,500 feet of roadway, whichever is less. If the natural in-place soils do not meet the required stability, sufficient borrow material for stabilization shall be uniformly mixed with in-place soils to produce the load Bearing Ratio. Material used for stabilization must be specifically approved for usage. Borrow material shall be included in the cost of subbase bid item.

- c. The stabilized subbase in both cuts and fills shall be compacted to a density as determined by AASHTO T-180 (modified). The subbase shall be shaped prior to making the density tests.
- d. The subbase shall be firm and able to support the construction equipment without displacement. The minimum density acceptable at any location will be 98 percent of the maximum density as determined by AASHTO T-180 (modified). Load Bearing Ratio determinations shall be made by the Limerock Bearing Ratio Method, Test Method D of AASHTO T-180 as modified by the Florida Department of Transportation's Research Bulletin 22-B, revised April, 1972. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.
- e. Density tests shall be made before work proceeds.
- f. The required density shall be maintained until the base of pavement has been laid or until the aggregate materials for the base of pavement course have been spread in place.
- g. After the subbase has been prepared, and immediately before any base material is placed, the subbase shall be tested for substantial compliance as to crown and elevation. Material shall be removed or added, as the condition necessitates, and again stabilized and compacted to bring all portions of the subbase to the specified elevation, stability and density.

PART 4 **MEASUREMENT AND PAYMENT**

4.1 **SOIL-CEMENT BASE**

A. **Method of Measurement**

- 1. The quantity to be paid for under this section shall be the number of square yards of soil-cement base course actually completed and accepted. In determining the quantity of soil-cement base course, the length to be used in the calculations shall be the actual length measures along the surface of the base and the width shall be the width of the base actually constructed, both within the neat lines shown on the plans.

B. **Basis of Payment**

- 1. This work shall be paid for at the contract unit price per square yard of completed and accepted soil-cement base course. The contract unit price shall be full payment for furnishing all materials, equipment tools, labor, testing and incidentals necessary to complete the work and for carrying out the maintenance provisions in this specification.
- 2. Any additional earth required for the base course in accordance with Paragraph 3.01,B.1 herein, will be paid for at the contract unit price per cubic yard for excavation.
- 3. No allowance shall be made for any materials used or work done outside the lines established by the ENGINEER.

4.2 SHELL BASE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of base acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed base, and the width of the base actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for base, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

4.3 CRUSHED CONCRETE BASE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of base acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed base, and the width of the base actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for base, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

4.4 PRIME AND TACK COAT

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of prime or tack coat actually completed and accepted.
2. In determining the quantity of prime or tack coat, the length to be used in the calculation shall be the actual length measured along the surface of the pavement and the width shall be the width of pavement actually constructed, both within the neat lines shown on the plans.

B. Basis for Payment

1. The quantity of prime or tack coat determined, as provided in Paragraph A above, shall be paid for at the contract unit price per square yard for this item.

2. When no separate bid item for prime is provided in the proposal, the prime coat shall not be paid for directly, and the cost shall be included in the contract unit price for the base course on which it is applied.
3. When no separate bid item for tack coat is provided in the proposal, the tack coat shall not be paid for directly, and the cost shall be included in the contract unit price for the pavement to be laid over the tack coat.
4. The prices and payments provided for herein shall be full compensation for all materials (including sand covering where required) for heating, hauling and applying, and for all equipment, tools, labor and incidentals necessary to complete the work covered by this section.

4.5 STABILIZED SUBGRADE

A. Method of Measurement

1. The quantity to be paid for under this section shall be the number of square yards of subgrade acceptably completed. The length to be used in the calculation shall be the actual length measured along the surface of the completed subgrade, and the width of the subgrade actually constructed, both within the neat lines shown on the plans.

B. Basis of Payment

1. The quantity determined as provided above shall be paid for at the contract unit price per square yard for subgrade, complete, in place and accepted. Such price and payment shall be full compensation for performing and completing all the work described in this section and shall include furnishing all materials, equipment, tools, labor, testing and incidentals necessary to complete the work.

END OF SECTION 02912

**SECTION 02924
PAVEMENT MARKING, STRIPING, AND SIGNS**

PART 1 GENERAL

1.1 SCOPE

- A. This section specifies pavement traffic painting, marking, striping, and signing shown on the plans or called for in the specifications. In general, all pavement traffic painting, marking, striping, and signing shall comply with the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, hereafter referenced "FDOTSPEC" and the Manual on Uniform Traffic Control Devices, U.S. Department of Transportation, Federal Highway Administration, hereafter referenced as "MUTCD" and the Florida Department of Transportation Roadway and Traffic Design Standards, hereafter referenced by index number.

1.2 SPECIFICATION AND STANDARDS REFERENCE

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

PART 2 PRODUCTS

2.1 SIGN PANELS AND POSTS

- A. Sign panels shall be aluminum. All signposts shall be steel flanged channel installed in accordance with FDOT index number 11865.

2.2 SIGN BLANKS AND FACES

- A. Regulatory and Warning signs as defined in the MUTCD shall be "High Intensity" reflectorized grade.
- B. Street name and guide signs as defined in the MUTCD shall be "Standard reflectorized grade."
- C. CONTRACTOR shall submit documentation from the sign suppliers which identifies the reflector grade of each sign. All materials shall meet the requirements of FDOTSPEC.

2.3 SIGN HARDWARE

- A. Signs shall be attached to posts in accordance with FDOT index number 11865.

2.4 PAVEMENT STRIPING AND PAINTING

- A. Thermoplastic Striping and Marking - Thermoplastic pavement striping shall be reflective and meet the requirements of FDOTSPEC, Section 711.

- B. Painted Striping and Marking - Painted striping shall be reflectorized and meet the requirements of FDOTSPEC, Section 710.

2.5 REFLECTIVE PAVEMENT MARKERS

- A. Reflective pavement markers and their installation shall meet the requirements of FDOTSPEC, Section 706.

PART 3 EXECUTION

Not Used

PART 4 MEASUREMENT AND PAYMENT

4.1 BASIS OF PAYMENT

- A. Payment for pavement marking, striping, and signing shall be on a lump sum basis in accordance with the accepted proposal. Such payment shall constitute full compensation for furnishing all labor, materials, and equipment necessary to complete the construction on accordance with the plans and specifications.

END OF SECTION 02924

LAKES OF SARASOTA

COMMUNITY DEVELOPMENT DISTRICT

UNAUDITED FINANCIAL STATEMENTS

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
FINANCIAL STATEMENTS
UNAUDITED
AUGUST 31, 2022**

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
BALANCE SHEET
GOVERNMENTAL FUNDS
AUGUST 31, 2022**

	Major Funds					Total Governmental Funds
	General	Debt Service Series 2021 A-1 & A-2	Debt Service Series 2021 B-1 & B-2	Capital Projects Series 2021 A-1 & A-2	Capital Projects Series 2021 B-1 & B-2	
ASSETS						
Cash - Valley checking	\$ 11,059	\$ -	\$ -	\$ -	\$ -	\$ 11,059
Investments						
Revenue	-	98,338	11	-	-	98,349
Reserve A-1	-	130,250	-	-	-	130,250
Reserve A-2	-	105,497	-	-	-	105,497
Reserve B-1	-	-	262,398	-	-	262,398
Reserve B-2	-	-	270,806	-	-	270,806
Prepayment A-2	-	212,689	-	-	-	212,689
Construction	-	-	-	13	-	13
Construction-utility improvement	-	-	-	-	2,619,308	2,619,308
Due from Developer	11,494	-	-	390,273	-	401,767
Deposits	500	-	-	-	-	500
Due from other funds						
General	-	1,071	-	-	-	1,071
Undeposited funds	19,561	-	-	-	-	19,561
Total assets	<u>\$ 42,614</u>	<u>\$ 547,845</u>	<u>\$ 533,215</u>	<u>\$ 390,286</u>	<u>\$2,619,308</u>	<u>\$ 4,133,268</u>
LIABILITIES						
Liabilities:						
Accounts payable	35,043	-	-	390,273	-	425,316
Retainage payable	-	-	-	269,205	256,050	525,255
Due to other funds						
Debt service	1,071	-	-	-	-	1,071
Developer advance	6,000	-	-	-	-	6,000
Total liabilities	<u>42,114</u>	<u>-</u>	<u>-</u>	<u>659,478</u>	<u>256,050</u>	<u>957,642</u>
DEFERRED INFLOWS OF RESOURCES						
Deferred receipts	11,494	-	-	390,273	-	401,767
Total deferred inflows of resources	<u>11,494</u>	<u>-</u>	<u>-</u>	<u>390,273</u>	<u>-</u>	<u>401,767</u>
FUND BALANCES						
Restricted						
Debt service	-	547,845	533,215	-	-	1,081,060
Capital projects	-	-	-	(659,465)	2,363,258	1,703,793
Unassigned	(10,994)	-	-	-	-	(10,994)
Total fund balances	<u>(10,994)</u>	<u>547,845</u>	<u>533,215</u>	<u>(659,465)</u>	<u>2,363,258</u>	<u>2,773,859</u>
Total liabilities, deferred inflows of resources and fund balances	<u>\$ 42,614</u>	<u>\$ 547,845</u>	<u>\$ 533,215</u>	<u>\$ 390,286</u>	<u>\$2,619,308</u>	<u>\$ 4,133,268</u>

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
GENERAL FUND
FOR THE PERIOD ENDED AUGUST 31, 2022**

	Current Month	Year to Date	Budget	% of Budget
REVENUES				
Assessment levy: on-roll	\$ -	\$ -	\$ 237,175	0%
Assessment levy: off-roll	418	232,050	-	N/A
Developer contribution	12,072	12,084	-	N/A
Lot closing	-	4,921	-	N/A
Total revenues	<u>12,490</u>	<u>249,055</u>	<u>237,175</u>	105%
EXPENDITURES				
Professional & administrative				
Supervisors	1,000	10,400	12,000	87%
Management	2,500	27,500	30,000	92%
Legal	-	23,353	20,000	117%
Engineering	-	3,570	15,000	24%
Audit	-	5,900	6,000	98%
Assessment roll preparation	-	7,500	7,500	100%
Dissemination agent	83	2,750	5,000	55%
Trustee	8,062	8,062	6,000	134%
Telephone	16	50	-	N/A
Printing and binding	42	125	-	N/A
Postage	68	148	300	49%
Legal advertising	183	2,687	5,000	54%
Annual district filing fee	-	175	175	100%
Insurance	-	5,175	5,525	94%
Office supplies	-	538	250	215%
Miscellaneous/bank charges	-	-	475	0%
Remortization schedules	-	-	250	0%
Website: hosting and maintenance	-	3,310	2,700	123%
Total professional & administrative	<u>11,954</u>	<u>101,243</u>	<u>116,175</u>	87%
Filed operations				
Electric	1,150	14,212	1,000	1421%
Reclaimed water	7,635	40,901	-	N/A
Well pump maintenance	-	6,210	4,500	138%
Wetland maintenance	-	22,725	25,000	91%
Wetland contract	-	17,675	32,000	55%
Pond contract	3,000	47,400	22,000	215%
Pond maintenance	-	-	20,000	0%
Irrigation contract	1,375	9,653	3,500	276%
Irrigation pump maintenance	1,514	5,530	5,000	111%
Drainage maintenance	-	-	6,000	0%
Curb replacement	-	-	2,000	0%
Total field operations	<u>14,674</u>	<u>164,306</u>	<u>121,000</u>	136%
Total expenditures	<u>26,628</u>	<u>265,549</u>	<u>237,175</u>	112%
Excess/(deficiency) of revenues over/(under) expenditures	(14,138)	(16,494)	-	
Fund balances - beginning	3,144	5,500	-	
Fund balances - ending	<u>\$ (10,994)</u>	<u>\$ (10,994)</u>	<u>\$ -</u>	

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
DEBT SERVICE FUND - SERIES 2021 A-1 & A-2
FOR THE PERIOD ENDED AUGUST 31, 2022**

	Current Month	Year to Date	Budget	% of Budget
REVENUES				
Assessment levy: off-roll	\$ 1,071	\$ 247,105	\$ 723,320	34%
Assessment prepayments	95,457	1,317,375	-	N/A
Interest	3	32	-	N/A
Lot closing	1,264	16,724	-	N/A
Total revenues	<u>97,795</u>	<u>1,581,236</u>	<u>723,320</u>	219%
EXPENDITURES				
Debt service				
Principal - 2021A-1	-	85,000	86,599	98%
Principal prepayments A-2	365,000	1,155,000	-	N/A
Interest - 2021A-1	-	180,414	178,815	101%
Interest - 2021A-2	3,536	249,542	251,673	99%
Total debt service	<u>368,536</u>	<u>1,669,956</u>	<u>517,087</u>	323%
Excess/(deficiency) of revenues over/(under) expenditures	(270,741)	(88,720)	206,233	
OTHER FINANCING SOURCES/(USES)				
Transfers in	-	7,776	-	N/A
Total other financing sources	<u>-</u>	<u>7,776</u>	<u>-</u>	N/A
Net change in fund balances	(270,741)	(80,944)	206,233	
Fund balances - beginning	818,586	628,789	-	
Fund balances - ending	<u>\$ 547,845</u>	<u>\$ 547,845</u>	<u>\$ 206,233</u>	

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
DEBT SERVICE FUND - SERIES 2021 B-1 & B-2
FOR THE PERIOD ENDED AUGUST 31, 2022**

	<u>Current Month</u>	<u>Year to Date</u>	<u>Budget</u>	<u>% of Budget</u>
REVENUES				
Assessment levy: off-roll	\$ -	\$ 297,271	\$ 773,298	38%
Interest	2	24	-	N/A
Total revenues	<u>2</u>	<u>297,295</u>	<u>773,298</u>	38%
EXPENDITURES				
Debt service				
Principal - 2021B-1	-	80,000	80,000	100%
Interest - 2021B-1	-	187,165	187,165	100%
Interest - 2021B-2	-	282,090	282,090	100%
Total debt service	<u>-</u>	<u>549,255</u>	<u>549,255</u>	100%
Excess/(deficiency) of revenues over/(under) expenditures	2	(251,960)	224,043	
OTHER FINANCING SOURCES/(USES)				
Transfers in	-	7,941	-	N/A
Total other financing sources	<u>-</u>	<u>7,941</u>	<u>-</u>	N/A
Net change in fund balances	2	(244,019)	224,043	
Fund balances - beginning	533,213	777,234	-	
Fund balances - ending	<u>\$ 533,215</u>	<u>\$ 533,215</u>	<u>\$ 224,043</u>	

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
CAPITAL PROJECTS FUND - SERIES 2021 A-1 & A-2
FOR THE PERIOD ENDED AUGUST 31, 2022**

	Current Month	Year to Date
REVENUES		
Developer contributions	758,233	5,421,351
Total revenues	758,233	5,421,351
 EXPENDITURES		
Capital outlay	381,026	5,994,535
Total expenditures	381,026	5,994,535
Excess/(deficiency) of revenues over/(under) expenditures	377,207	(573,184)
 OTHER FINANCING SOURCES/(USES)		
Transfers (out)	-	(7,776)
Total other financing sources	-	(7,776)
Net change in fund balances	377,207	(580,960)
Fund balances - beginning	(1,036,672)	(78,505)
Fund balances - ending	\$ (659,465)	\$ (659,465)

**LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT
STATEMENT OF REVENUES, EXPENDITURES,
AND CHANGES IN FUND BALANCES
CAPITAL PROJECTS FUND - SERIES 2021 B-1 & B-2
FOR THE PERIOD ENDED AUGUST 31, 2022**

	Current Month	Year to Date
REVENUES		
Interest	\$ 15	\$ 225
Total revenues	15	225
 EXPENDITURES		
Capital outlay	854,911	5,208,704
Total expenditures	854,911	5,208,704
Excess/(deficiency) of revenues over/(under) expenditures	(854,896)	(5,208,479)
 OTHER FINANCING SOURCES/(USES)		
Transfers (out)	-	(7,941)
Total other financing sources	-	(7,941)
Net change in fund balances	(854,896)	(5,216,420)
Fund balances - beginning	3,218,154	7,579,678
Fund balances - ending	\$2,363,258	\$2,363,258

LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT

MINUTES

DRAFT

**MINUTES OF MEETING
LAKES OF SARASOTA
COMMUNITY DEVELOPMENT DISTRICT**

The Board of Supervisors of the Lakes of Sarasota Community Development District held multiple Public Hearings and a Regular Meeting on August 17, 2022, at 12:00 P.M., at 5800 Lakewood Ranch Blvd, Sarasota, FL 34240.

Present were:

Pete Williams	Chair
John Leinaweaver	Vice Chair
Sandy Foster	Assistant Secretary
Dale Weidemiller (via telephone)	Assistant Secretary
John Blakley	Assistant Secretary

Also present, were:

Chuck Adams	District Manager
Ed Vogler (via telephone)	District Counsel
Bobbi Claybrooke (via telephone)	District Engineer

FIRST ORDER OF BUSINESS

Call to Order/Roll Call

Mr. Adams called the meeting to order at 12:44 p.m. All Supervisors were present.

SECOND ORDER OF BUSINESS

Public Comments: Agenda Items (*limited to 3 minutes per individual*)

There were no public comments.

THIRD ORDER OF BUSINESS

Consideration of Resolution 2022-13, Ratifying the Action of the District Manager in Re-Setting the Date of the Public Hearing on the Proposed Budget for Fiscal Year 2022/2023; Amending Resolution 2022-04 to Reset the Hearing

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Thereon; Providing a Severability Clause;
and Providing an Effective Date

Mr. Adams presented Resolution 2022-13.

On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, Resolution 2022-13, Ratifying the Action of the District Manager in Re-Setting the Date of the Public Hearing on the Proposed Budget for Fiscal Year 2022/2023; Amending Resolution 2022-04 to Reset the Hearing Thereon; Providing a Severability Clause; and Providing an Effective Date, was adopted.

FOURTH ORDER OF BUSINESS

**Public Hearing on Adoption of Fiscal year
2022/2023 Budget**

A. Proof/Affidavit of Publication

The affidavit of publication was included for informational purposes.

B. Consideration of Resolution 2022-14, Relating to the Annual Appropriations and Adopting the Budget(s) for the Fiscal Year Beginning October 1, 2022, and Ending September 30, 2023; Authorizing Budget Amendments; and Providing an Effective Date

On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the Public Hearing was opened.

No members of the public spoke.

On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the Public Hearing was closed.

Mr. Adams presented Resolution 2022-14.

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On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, Resolution 2022-14, Relating to the Annual Appropriations and Adopting the Budget(s) for the Fiscal Year Beginning October 1, 2022, and Ending September 30, 2023; Authorizing Budget Amendments; and Providing an Effective Date, was adopted.

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FIFTH ORDER OF BUSINESS

Public Hearing to Hear Comments and Objections on the Imposition of Maintenance and Operation Assessments to Fund the Budget for Fiscal Year 2022/2023, Pursuant to Florida Law

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A. Proof/Affidavit of Publication

B. Mailed Notice(s) to Property Owners

These items were included for informational purposes.

C. Consideration of Resolution 2022-15, Making a Determination of Benefit and Imposing Special Assessments for Fiscal Year 2022/2023; Providing for the Collection and Enforcement of Special Assessments, Including but Not Limited to Penalties and Interest Thereon; Certifying an Assessment Roll; Providing for Amendments to the Assessment Roll; Providing a Severability Clause; and Providing an Effective Date

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On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the Public Hearing was opened.

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No members of the public spoke.

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On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the Public Hearing was closed.

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Mr. Adams presented Resolution 2022-15.

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On MOTION by Mr. Williams and seconded by Mr. Blakley, with all in favor, Resolution 2022-15, Making a Determination of Benefit and Imposing Special Assessments for Fiscal Year 2022/2023; Providing for the Collection and Enforcement of Special Assessments, Including but Not Limited to Penalties and Interest Thereon; Certifying an Assessment Roll; Providing for Amendments to the Assessment Roll; Providing a Severability Clause; and Providing an Effective Date, was adopted.

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SIXTH ORDER OF BUSINESS

Ratification Items

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Mr. Adams presented the following:

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A. H&J Contracting, Inc., Termination Notice [Grand Park Phase 2]

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On MOTION by Mr. Williams and seconded by Mr. Blakley, with all in favor, the Termination Notice to H&J Contracting, Inc., terminating work on Grand Park Phase 2, was ratified.

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B. Deme Construction, LLC Bid Number B21-03 [Grand Park Phase 2]

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On MOTION by Mr. Williams and seconded by Mr. Leinaweaver, with all in favor, Deme Construction, LLC Bid Number B21-03 for Grand Park Phase 2, was ratified.

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C. Firethorn GP2 Completion Proposal [Grand Park Phase 2 for Testing]

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On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the Firethorn Proposal for Completion of Grand Park Phase 2 for Testing, was ratified.

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SEVENTH ORDER OF BUSINESS

Consideration of First Amendment to the Interlocal Agreement Between Sarasota County, Florida and the Lakes of Sarasota Community Development District for the Design, Engineering, and Construction of

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**the Ibis Street and Hawkins Road
Intersection**

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148 Mr. Adams presented the First Amendment to the Interlocal Agreement Between
149 Sarasota County, Florida and the Lakes of Sarasota Community Development District for the
150 Design, Engineering, and Construction of the Ibis Street and Hawkins Road Intersection.

151 Mr. Vogler reported the following:

152 ➤ A few years ago, Sarasota County asked the CDD to complete improvements to the Ibis
153 Street and Hawkins intersection and to build a multi-use recreational trail along Ibis Street.

154 ➤ As the project has developed, the County became interested in making improvements
155 to the Twin Lakes Park and connecting it with a pedestrian connection to the Multi-Use
156 Recreational Trail (MURT).

157 ➤ The County is requesting an amendment that provides for the County to make a cash
158 reimbursement to the CDD for some of the costs associated with the park improvements and a
159 small increase in the MURT and intersection improvements that would be reimbursed to the
160 CDD in the form of a Mobility Fee credit.

161 ➤ In the Developer Funding Agreement, the Developer is obligated to fund these items
162 but, when the CDD receives the reimbursement from the County, in the form of cash or credits,
163 the CDD will reimburse the Developer.

164 ➤ The CDD is basically operating as a conduit to enter into the Agreement with the County
165 but the financial elements of this do not affect the CDD.

166 Mr. Vogler stated he prepared an Amendment to the Developer Funding Agreement
167 and, if the Board wishes to proceed, approval should be subject to the Developer entering into
168 the Amended Developer Funding Agreement approved by District Counsel.

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On MOTION by Mr. Williams and seconded by Ms. Foster, with all in favor, the First Amendment to the Interlocal Agreement Between Sarasota County, Florida and the Lakes of Sarasota Community Development District for the Design, Engineering, and Construction of the Ibis Street and Hawkins Road Intersection, subject to the Developer entering into the Amended Developer Funding Agreement approved by District Counsel, was approved.

176 **EIGHTH ORDER OF BUSINESS** **Acceptance of Unaudited Financial**
177 **Statements as of June 30, 2022**

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179 Mr. Adams presented the Unaudited Financial Statements as of June 30, 2022.

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181 **On MOTION by Mr. Williams and seconded by Mr. Blakley, with all in favor, the**
182 **Unaudited Financial Statements as of June 30, 2022, were accepted.**

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185 **NINTH ORDER OF BUSINESS** **Approval of July 13, 2022 Regular Meeting**
186 **Minutes**

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188 Mr. Adams presented the July 13, 2022 Regular Meeting Minutes.

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190 **On MOTION by Mr. Williams and seconded by Mr. Leinaweaver, with all in**
191 **favor, the July 13, 2022 Regular Meeting Minutes, as presented, were**
192 **approved.**

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195 **TENTH ORDER OF BUSINESS** **Staff Reports**

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197 **A. District Counsel: *Vogler Ashton, PLLC***

198 There was no report.

199 **B. District Engineer: *AM Engineering, Inc.***

200 **• Presentation of Phases 3 and 4 Bids**

201 Ms. Claybrooke stated bids were received for Phases 3 and 4 and Ibis Street but since
202 receipt, the bids were modified to include just Phase 3 and Ibis Street, which reduces the total
203 units to 212, basically just the townhomes. The contract amount was \$5,893,779. Since then, a
204 direct purchase order was received to “change order out” some of the materials, in the amount
205 of 1,257.778, which does not include some of the storm drain structures but that should lower
206 the costs even more. For now, it is a 20% savings that should be “change ordered out” of the
207 contract. The calendar dates were changed from 400 days to 365 days, so the work completion
208 date will be August 23, 2023, dependent on a work start date of August 22, 2022. Applications
209 for the tree and utility permits were submitted and the warranty bond is pending.

210 Ms. Claybrooke recommended approval subject to receipt of the pending items so that
211 work can commence as soon as possible.

212 Mr. Vogler stated he will provide the standard addendum for all CDD construction
213 contracts to Ms. Claybrooke for inclusion in the contract package. He noted that, normally, a
214 contract would only be approved if it has the addendum prepared by District Counsel. Ms.
215 Claybrooke stated the addendum is probably included as this is similar to the other Phases.

216

217 **On MOTION by Mr. Williams and seconded by Mr. Blakley, with all in favor, the**
218 **Firethorn, Inc., bid and entering into a contract with Firethorn, Inc., subject to**
219 **receipt and review of all final bid, bonding and other necessary documents and**
220 **review and approval by District Counsel, and authorizing the Chair to execute,**
221 **was approved.**

222

223

224 **C. District Manager: *Wrathell, Hunt and Associates, LLC***

225 • **NEXT MEETING DATE: September 14, 2022 at 12:00 P.M.**

226 ○ **QUORUM CHECK**

227 The next meeting will be held on September 14, 2022.

228

229 **ELEVENTH ORDER OF BUSINESS**

Board Members' Comments/Requests

230

231 There were no Board Members' comments or requests.

232

233 **TWELFTH ORDER OF BUSINESS**

Public Comments: Non-Agenda Items
(limited to 3 minutes per individual)

234

235

236 No members of the public spoke.

237

238 **THIRTEENTH ORDER OF BUSINESS**

Adjournment

239

240

241 **On MOTION by Mr. Williams and seconded by Mr. Leinaweaver, with all in**
242 **favor, the meeting adjourned at 12:55 p.m.**

243

244

245

246

247 _____
Secretary/Assistant Secretary

_____ Chair/Vice Chair

LAKES OF SARASOTA

COMMUNITY DEVELOPMENT DISTRICT

STAFF REPORTS

LAKES OF SARASOTA COMMUNITY DEVELOPMENT DISTRICT

BOARD OF SUPERVISORS FISCAL YEAR 2022/2023 MEETING SCHEDULE

LOCATION

5800 Lakewood Ranch Boulevard, Sarasota, Florida 34240

DATE	POTENTIAL DISCUSSION/FOCUS	TIME
October 12, 2022	Regular Meeting	12:00 PM
November 8, 2022	Landowners' Meeting	12:00 PM
November 9, 2022	Regular Meeting	12:00 PM
December 14, 2022	Regular Meeting	12:00 PM
January 11, 2023	Regular Meeting	12:00 PM
February 8, 2023	Regular Meeting	12:00 PM
March 8, 2023	Regular Meeting	12:00 PM
April 12, 2023	Regular Meeting	12:00 PM
May 10, 2023	Regular Meeting	12:00 PM
June 14, 2023	Regular Meeting	12:00 PM
July 12, 2023	Regular Meeting	12:00 PM
August 9, 2023	Regular Meeting	12:00 PM
September 13, 2023	Regular Meeting	12:00 PM