CITY OF RIVIERA BEACH

CONTRACT SPECIFICATIONS

For

CDBG FY18-19 PROJECT: 26TH COURT FROM AVENUE M TO 27TH STREET

RIVIERA BEACH PROJECT #: 986-20-1

December 2019

TABLE OF CONTENTS

CITY OF RIVIERA BEACH, FLORIDA

CBDG 19-20 W 26TH COURT FROM AVE M TO W 27TH ST

RIVIERA BEACH BID #986-20-1
PART 1 – GENERAL REQUIREMENTS

CONTRACT REQUIREMENTS

TABLE OF CONTENTS
ADVERTISEMENT FOR BIDS .....AB-1 – AB-2
INVITATION TO BID ……ITB-1 – ITB-36
BID BOND…… CB-1
CONTRACT PERFORMANCE BOND ……CB-2 – CB-3
CONTRACT PAYMENT BOND ……CB-4 – CB-5
EXAMPLE CONTRACT FOR CONSTRUCTION ……..CC-1 – CC-21
FINAL RELEASE OF LIEN……FRL-1
GEOTECHNICAL REPORT..... (EXHIBIT A)
BID SCHEDULE .....(EXHIBIT B)
ENVIROMENTAL REVIEW ..... (EXHIBIT C)
PBC AGREEMENT WITH REQUIREMENTS..... (EXHIBIT D)
PERMITS, Health Dept., FDEP, SFWMD

ADDITIONAL DOCUMENTS (Separate package)

PROJECT PLANS

PART 2 – TECHNICAL SPECIFICATIONS

DIVISION ONE - GENERAL REQUIREMENTS

01000 Special Provisions
01010 Summary of Work
01015 General Requirements
01025 Measurement and Payment
01039 Coordination and Meetings
01045 Cutting and Patching
01050 Field Engineering
01090 References
01152 Applications for Payment
01310 Construction Schedules
01340 Submittals and Substitutions
01370 Schedule of Values
01410 Testing and Testing Laboratory Services
01505 Control of Work
01510 Temporary Utilities
01520 Construction Aids
01540 Security
01550 Maintenance of Traffic

01560 Temporary Controls
01580 Project Identification and Signs
01600 Materials and Equipment
01640 Product Handling
01700 Project Closeout
01710 Cleaning
01720 Project Record Documents
01740 Warranties and Bonds

DIVISION 2 – SITE CONSTRUCTION

02010 Subsurface Investigation
02050 Demolition
02100 Site Preparation
02151 Shoring and Bracing of Excavations
02211 Rock and Boulder Excavation
02220 Structural Excavation, Backfill and Compaction
02221 Trenching, Bedding and Backfill for Pipe
02223 Excavation Below Normal Grade and Gravel Refill
02240 Dewatering
02260 Finish Grading
02481 Tree Relocation and Protection
02510 Concrete Sidewalk
02513 Asphaltic Concrete Paving
02520 Concrete Curbs and Headers
02525 Surface Restoration
02580 Pavement Marking & Signing
02720 Storm Drainage Systems
02722 Sanitary Sewers
02750 Wastewater Flow Control
02751 Preparatory Cleaning and Root Removal
02752 Television Survey
02759 Replacement of Sanitary Service Lateral and Cleanout
02760 Service Lateral Television Survey
02765 Cured-In-Place Lining
02931 Sodding

DIVISION 3 – CONCRETE

03200 Concrete Reinforcements
03251 Joints
03300 Cast-in-Place Concrete
03350 Concrete Finishing
03480 Precast Concrete Specialties
03610 Flowable Fill

DIVISION 4 – MASONRY – Not Used

DIVISION 5 - METALS

05500 Metal Fabrications

DIVISION 6 – 14 - Not Used

DIVISION 15 – MECHANICAL

15050 Reinforced Concrete Pipe
15062 Ductile Iron Pipe and Fittings
15065 Polyvinyl Chloride (PVC) Water Main Pipe
15110 Valves and Appurtences

DIVISION 16– ELECTRICAL – Not Used

PART 1 – GENERAL REQUIREMENTS

ADVERTISEMENT FOR BIDS
CDBG 19-20 W 26TH CT FROM AVE M TO W 27TH ST
BID # 986-20-1

Sealed proposals for furnishing all labor, materials and equipment for the roadway construction on West 26th Ct from Ave M to West 27th St located in the City of Riviera Beach, Palm Beach County, Florida will be received until **11:00 a.m**. **Thursday, January 16, 2020** at the office of the City Clerk, 600 West Blue Heron Boulevard, Riviera Beach, Florida. Bids will be opened and publicly read aloud in the Council Chambers on the specified date and time. No bids will be received after the time and date specified.

The project involves all labor, supervisors, equipment, machinery, tools, materials, transportation, and other services necessary for partial demolition, construction, associated with the Roadway construction in the City of Riviera Beach. The work includes, but is not limited demolition of existing sidewalks, installation of utilities, drainage, milling and resurfacing the roadway. The Contractor prior, during and at the completion of the demolition and rebuilding part of this work shall follow all the required notifications, protection, regulatory requirements and execution procedures described in throughout Project Technical Specifications.

Copies of Plans and Specifications and Contract Documents in electronic format (USB) may be obtained from the City Procurement Department, 2051 Dr. Martin Luther King Blvd Ste. 310 upon receipt of a non-refundable deposit in the amount of twenty dollars ($20.00) payable to the City of Riviera Beach. Payment shall be made at the Billing and Collections Department located at 600 West Blue Heron Boulevard, Riviera Beach. The work shall be constructed in accordance with the plans and specifications, included in the Contract Documents.

The Owner reserves the right to reject any or all bids, and the award, if award is made, will be made to the lowest responsible, responsive bidder.

Bids shall be:

1. Submitted on standard forms, which will be furnished with the Project Manual. Bids must be submitted on all bid items;

2. Accompanied by a certified check (drawn in favor of the City) or by a Bid Bond in the amount of 5% of the total bid. No bid bond is required if the total bid price is less than $100,000.00;

3. Irrevocable after the time and date set for the opening of bids and for a period of 6 months thereafter and submitted in sealed envelopes marked "**West 26th Ct from Ave M to West 27th St."** In addition, the bidder's name and address shall be shown on the outside of the sealed envelope. If submitted by mail, the sealed envelope shall be enclosed in a separate mailing envelope.

4. Please be aware that this is Federal funded project and the federal requirements in Exhibit D as this project in its entirety is governed by Davis Bacon, Wage Decisions, MBE/WBE and Sections 3 clauses.

The City of Riviera Beach reserves the right to waive informalities and to reject any or all bids.

CITY OF RIVIERA BEACH
PALM BEACH COUNTY, FLORIDA
GLENDORA WILLIAMS, INTERIM SENIOR PROCUREMENT SPECIALIST

CITY OF RIVIERA BEACH
BID #986-20-1

CDBG FY19-20 PROJECT 26TH COURT FROM AVENUE M TO 27TH STREET

Event	Date
Date ITB Issued	December 8, 2019
Due date for bidder questions	December 23, 2019
Due date for bidder responses	December 30, 2019
ITB Due Date	January 16, 2020
Proposed CRB Award Date	February 19, 2020

BID CONTACT: **GLENDORA WILLIAMS, INTERIM SENIOR PROCUREMENT SPECIALIST**

GVWILLIAMS@RIVIERABEACH.ORG

NO PHONE INQUIRIES WILL BE ACCEPTED. ALL CORRESPONDENCE SHALL BE DIRECTED TO THE CITY CONTACT INDICATED ABOVE VIA EMAIL OR FAX.

SUBMIT BID TO:
City of Riviera Beach Office of the City Clerk
600 West Blue Heron
Riviera Beach, FL 33404
(561) 845-4090

CITY OF RIVIERA BEACH
PALM BEACH, FLORIDA

INVITATION FOR BID

Bidder Acknowledgment

- GENERAL CONDITIONS –

THESE INSTRUCTIONS ARE STANDARD FOR ALL CONTRACTS FOR COMMODITIES/SERVICES ISSUED BY THE CITY OF RIVIERA BEACH. THE CITY OF RIVIERA BEACH MAY DELETE, SUPERSEDE OR MODIFY ANY OF THESE STANDARD INSTRUCTIONS FOR A PARTICULAR CONTRACT BY INDICATING SUCH CHANGE IN THE SPECIAL INSTRUCTIONS TO BIDDERS OR IN THE BID SHEETS. BY ACCEPTANCE OF A PURCHASE ORDER ISSUED BY THE CITY, BIDDER AGREES THAT THE PROVISIONS INCLUDED WITHIN THIS INVITATION FOR BID SHALL PREVAIL
OVER ANY CONFLICTING PROVISION WITHIN ANY STANDARD FORM CONTRACT OF THE BIDDER REGARDLESS OF ANY LANGUAGE IN BIDDER'S CONTRACT TO THE CONTRARY.

BIDDER ACKNOWLEDGEMENT MUST BE SIGNED AND RETURNED WITH YOUR BID

SEALED BIDS: This form must be executed and submitted with all bid sheets in a sealed envelope. (DO NOT INCLUDE MORE THAN ONE BID PER ENVELOPE). The face of the envelope shall contain the above address, the date and the time of bid opening, and bid number. Bids not submitted on attached bid form may be rejected. All bids are subjected to the conditions specified herein. Those that do not comply with these conditions are subject to rejection.

1. EXECUTION OF BID: Bid must contain an original signature of an individual authorized to bind the bidder. Bid must be typed or printed in ink. All corrections made by bidder to his bid must also be initialed. The bidder's name should also appear on each page of the bid sheet if required. Bids will not be accepted from firms in arrears to the City of Riviera Beach upon debt or contract nor from a defaulter upon obligations to the City of Riviera Beach. Bidder certifies by signing the bid that no principals or corporate officers of the firm were principals or corporate officers in any other firm, which may have been suspended or debarred from doing business with the City within the last three years, unless so noted in the bid documents.

2. TIE BIDS: In case of tie bids, the award will be made in the following preference:

BIDDER WITHIN CITY LIMITS OF RIVIERA BEACH.
BIDDER WITHIN PALM BEACH COUNTY.
BIDDER WITHIN THE STATE OF FLORIDA.

3. NO BID: If not submitting a bid, respond by returning this Bidder Acknowledgement form, marking it "NO BID", no later than the stated bid opening date and hour, and explain the reason in the space provided. Failure to respond without justification may be cause for removal of the bidder's name from the bid mailing list.

4. BID WITHDRAWAL: No bidder may withdraw his or her bid before the expiration of ninety (90) calendar days from the date of bid opening.

5. BID OPENING: Shall be public, on date, location and time specified on the bid form. The official time is the time clock located in the City Clerk's Office and will be accepted by all parties without reservation. It is the bidder's responsibility to assure that the bid is delivered on date, location and time specified on the bid form. Bids, which for any reason are not so delivered, will not be considered. Bid files and any bids after they are opened are exempt from public examination until an intended decision is announced or until 30 days from the opening, whichever is earlier (Florida Statutes Section 119.071) may be examined during normal working hours by appointment. Bid tabulations are available for inspection upon request. NOTE: Except as required by Florida statues, bids are exempt from release for certain periods of time after bid opening.

BID WILL BE DUE and may not be withdrawn within 90 calendar days after such date and time. **1/16/2020 11:00 A.M. (EST)**

BID TITLE: **CDBG FY19/20 26TH CT FROM AVE M TO W 27TH ST**

BID NO. **986-20-1**

BUYER: **Glendora Williams (561) 845-4180**

DELIVERY DATE: **1/16/2020**

SEE SPECIAL INSTRUCTION

CASH DISCOUNT TERMS

IF BID EXCEEDS $100,000, BIDDER MUST PROVIDE BID BOND OR CASHIERS CHECK IN THE AMOUNT OF 5% OF BID OR BID WILL BE REJECTED $_____

TOTAL BID AMOUNT: $_____

FEDERAL EMPLOYER I.D. or SOCIAL SECURITY NUMBER

DUN & BRADSTREET NUMBER

BIDDER NAME

BIDDER MAILING ADDRESS/CITY/STATE/ZIP

AREA CODE TELEPHONE NO.	CONTACT PERSON
FAX NO.	INTERNET ADDRESS

_____
AUTHORIZED SIGNATURE (original in ink)

_____
TYPED NAME OF SIGNER TITLE

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm or person submitting a bid for the same items/services, and is in all respects fair and without collusion or fraud, I agree to abide by all conditions of this bid and certify that I am authorized to sign this bid for the bidder. Further by signature of this form, pages 1 through 4 are acknowledged and accepted as well as any special instruction sheet(s) if applicable.

6. **ADDENDA TO BID:** The City reserves the right to amend this Bid prior to the Bid opening date indicated. Only written addenda will be binding. If, upon review, material errors in specifications are found, contact the Procurement Department immediately, prior to Bid opening date, to allow for review and subsequent clarification on the part of the City.

7. **ACCEPTANCE / REJECTION OF BIDS** The City of Riviera Beach reserves the right to accept or to reject any or all bids and to make the award to that bidder, who in the opinion of the City will be in the best interest of and/or the most advantageous to the City. The City of Riviera Beach also reserves the right to reject the bid of any vendor who has previously failed in the proper performance of an award to delivery on time contracts of a similar nature or who is not in the position to perform properly under this award.

The Contract will be awarded to the lowest, responsible and responsive bidder. The Procurement Director reserves the right to reject any and all bids and to waive any informality in bids received whenever such rejection or waiver is in the best interest of the City.

In determining responsibility, the following qualifications, in addition to price, will be considered in the evaluation of the bid:

(a) The ability, capacity, and skill of the bidder to perform the service required.

(b) Whether the bidder can perform the contract or provide the service promptly, or within the time specified, without delay or interference.

(c) The character, integrity, reputation, judgment, experience and efficiency of the bidder.

(d) The quality of performance of previous contracts or services.

(e) The previous and existing compliance by the bidder with the laws and ordinances relating to the contract or service.

(f) The sufficiency of the financial resources and ability of the bidder to perform the contract or provide the service.

(g) The quality, availability, and adaptability of the supplies or services to the particular use required.

(h) The ability of the bidder to provide future maintenance and service for the use of the subject of the contract.

(i) Whether the bidder is in arrears to the City on a debt or contract or is a defaulter on surety to the City, or whether the bidder's taxes or assessments are delinquent.

(j) Such other information as may be required or obtained.

8. **LEGAL REQUIREMENTS:** Federal, State, County and local laws, ordinances, rules and regulations that in any manner affect the items covered herein apply. Lack of knowledge by the bidder shall in no way be a cause for relief from responsibility.

The City of Riviera Beach is committed to assuring equal opportunity in the award of contracts and, therefore, complies with all laws prohibiting discrimination on the basis of race, color, religion, national origin, age, sex, sexual orientation, disability and marital status.

Minority Business Enterprise (MBE) indicates a business entity, which is owned and operated by a minority. In this instance, minority group members are citizens of the United States or lawfully admitted permanent residents who are Blacks, Hispanics, Women, Native Americans, Asian-Pacific, Asian-Indian, and eligible others as outlined in Procurement Ordinance Sec. 10-301. Minority owned businesses wishing to participate in the City procurement process may contact the Procurement Department for information and assistance.

In compliance with Florida Public Entity Crime Statute (Section 287.132, 133), the attached Public Entity Crime Form should be fully executed, notarized and submitted with bid response once per calendar year. No award will be executed with any person or affiliate identified on the State of Florida Department of General Services "convicted vendor" list. This list is defined as consisting of persons and affiliates who are disqualified from public contracting and procurement process because they have been found guilty of a public entity crime. No public entity shall award any contract to, or transact any business in excess of the threshold amount provided in Section 287.017 without receipt of the statement.

In compliance with Florida Statute (Section 287.087) attached form "Drug Free Workplace Certification" should be fully executed and submitted with bid response in order to be considered for a preference whenever two (2) or more bids/proposals which are equal with respect to price, quality and service are received by the City.

The obligations of the City under this award are subject to the availability of funds lawfully appropriated for its purpose.

9. **PRICES, TERMS & PAYMENTS:** Firm prices shall be bid and include all handling, set up, shipping and inside delivery charges to the destination shown herein unless otherwise indicated.

(a) **The Bidder:** in submitting this bid certifies that the prices quoted herein are not higher than the prices at which the same commodity(s) or service(s) is sold in approximately similar quantities under similar terms and conditions to any purchaser whomsoever.

(b) **F.O.B.** - as specified in Special Instructions to bidder.

(c) **TIE BIDS:** The award on tie bids will be in accordance with the provisions of the Procurement Code.

(d) **TAXES:** City of Riviera Beach is exempt from Federal Excise and Florida Sales taxes on direct purchase of tangible property. Exemption numbers appear on purchase order. The Contractor shall pay all applicable sales, consumer, land use, or other similar taxed required by law. The Contractor is responsible for reviewing the pertinent State Statutes involving the sales tax and complying with all requirements.

(e) **DISCOUNTS:** Bidders may offer a cash discount for prompt payment. However, such discounts will not be considered in determining the lowest bid cost for bid evaluation purposes. Bidders should reflect any discounts to be considered in the bid evaluation in the unit prices bid.

(f) **MISTAKES:** Bidders are cautioned to examine all specifications, drawings, delivery instructions, unit prices, extensions and all other special conditions pertaining to the bid. Failure of the bidder to examine all pertinent documents shall not entitle the bidder to any relief from the conditions imposed in the contract. In case of mistakes in extension, the unit price shall govern. Multiplication or addition errors are deemed clerical errors and shall be corrected by the City.

(g) **ORDERING:** The City of Riviera Beach reserves the right to purchase commodities/services specified herein through contracts established by other governmental agencies or through separate procurement actions due to unique or special needs. If an urgent delivery is required, within a shorter period than the delivery time specified in the contract and if the seller is unable to comply therewith, the City of Riviera Beach reserves the right to obtain such delivery from others without penalty or prejudice to the City or to the seller.

10. **TERMINATION:**

(a) **FUND-OUT:** The City of Riviera Beach City Council shall be the final authority as to availability of funds and how such available funds are to be allotted and expended. In the event funds for this project/purchase are not made available or otherwise allocated the City may terminate in accordance with the contract.

11. **CONDITIONS AND PACKAGING:** Unless otherwise stated in the special instructions to bidders or the bid sheets, or specifically ordered from an accepted price list, deliveries must consist only of new and unused goods and shall be the current standards production model available at the time of the bid. The goods must be suitably packaged

for shipment by common carrier. Each container or multiple units or items otherwise packaged shall bear a label, imprint, stencil or other legible markings stating name of manufacturer or supplier, purchase order number and any other markings required by specifications, or other acceptable means of identifying vendor and purchase order number.

12. **SAFETY STANDARDS:** Unless otherwise stipulated in the bid, all manufacturing items and fabricated assemblies shall comply with applicable requirements of Occupational Safety and Health Act and any standards there under. In compliance with Chapter 442, Florida Statutes, any toxic substance listed in Section 38F-41.03 of the Florida Administrative Code delivered from a contract resulting from this bid must be accompanied by a Material Safety Data Sheet (MSDS). A Material Safety Data Sheet (MSDS) should also be submitted to the City of Riviera Beach Risk Management Division, 600 W. Blue Heron Blvd., Riviera Beach, FL 33404. The MSDS must include the following information.

(a) The chemical name and the common name of the toxic substance.

(b) The hazards or other risks in the use of the toxic substance, including:

1. The potential for fire, explosion, corrosively, and reactivity;
2. The known acute and chronic Health effects of risks from exposure, including the medical conditions which are generally recognized as being aggravated by exposure to the toxic substance; and
3. The primary routes of entry and symptoms of over-exposure.

(c) The proper precautions, handling practices, necessary personal protective equipment, and other safety precautions in the use of or exposure to the toxic substances, including appropriate emergency treatment in case of overexposure.

(b) The emergency procedure for spills, fire, disposal, and first aid.

(c) A description in lay terms of the known specific potential health risks posed by the toxic substance intended to alert any person reading this information.

(d) The year and month, if available, that the information was compiled and the name, address, and emergency telephone number of the manufacturer responsible for preparing the information.

13. **ALTERNATIVES / APPROVED EQUAL / DEVIATIONS:**
Unless otherwise specified, the mention of a particular manufacturer's brand name or number in the specifications does not imply that this particular product is the only one that will be considered for purchase. This reference is intended solely to designate the type or quality of merchandise that will be acceptable. Alternate offers will be considered and must include descriptive literature and/or specifications. Please be aware that this is a Federally funded project and the federal requirements in Exhibit D as this project in its entirety is governed by Davis Bacon, Wage Decisions, MBE/WBE and Sections 3 clauses.

The determination as to whether any alternate product or service is or is not equal shall be made by the City of Riviera Beach and such determination shall be final and binding upon all bidders.

Although the City of Riviera Beach provides for the consideration of alternate bids, the bid is to be awarded to the lowest responsible and responsive bidder.

Contractor and Subcontractors are aware that monitoring and evaluation activities will be performed to determine payment, reimbursement. HES or HUD, shall be allowed to monitor on site activities and visits may be scheduled or unscheduled as determined by HES and HUD. Contractors and Subcontractors are to allow DHES staff to conduct interviews and request information when on site.

The bidder shall be responsible for reading very carefully, and understanding completely, the requirements and the specifications of the items bid upon. Any deviation from specifications listed herein must be clearly indicated, otherwise it will be considered that items offered are in strict compliance with these specifications, and the successful bidder will be held responsible therefore, deviations must be explained in detail on an attached sheet(s) and itemized by number.

14. SUBCONTRACTING: If the vendor, subcontracts any portion of a contract for any reason, must include, in writing, the name and address of the subcontractor, name of the person to be contacted including telephone number and extent of work to be performed. This information shall be submitted with bid response. The City of Riviera Beach reserves the right to reject a bid of any bidder if the bid names a subcontractor who has previously failed in the proper performance of an award or failed to deliver on time contracts of a similar nature, or who is not in a position to perform properly under this award.

15. **INTERPRETATIONS:** Any questions concerning conditions and specifications of this bid shall be directed in writing to the Procurement Department before or by the final day and time for questions as indicated. No interpretation(s) shall be considered binding unless provided to all Bidders in writing by the Procurement Department.

16. **EEO STATEMENT:** The City of Riviera Beach is committed to assuring equal opportunity in the award of contracts and, therefore, complies with all laws prohibiting discrimination on the basis of race, color, religion, national origin, age and sex.

17. **BID TABULATION:** Bidders desiring a copy may request same by enclosing a self-addressed, stamped envelope with their bid.

18. **BID FORMS:** All bid proposals must be submitted on our standard Invitation to Bid form. Bid proposals on vendor quotation forms will not be accepted.

19. **POSTING OF BID TABULATIONS:** Bid tabulations will be posted within a period of 72 hours for review by interested parties, at the Procurement website @ www.rivierabch.com and at the Procurement Department at 2051 Dr. Martin Luther King Blvd., Riviera Beach, Florida. Failure to file a protest to the Procurement Director within the time prescribed in Section 16.5-241 of the City's Riviera Beach Code of Ordinances shall constitute a waiver of proceedings under the referenced City ordinance.

20. **SMALL BUSINESS ENTERPRISE PARTICIPATION GOAL – CITY OF RIVIERA BEACH ORDINANCE #4010:** It is the policy of the City of Riviera Beach that Small Business Enterprises (SBE) shall have the maximum opportunity to participate in the projects financed with City funds. Bidders are hereby informed that the City has established a requirement of a minimum of 15% participation of Small Business Enterprises in all City contracts. An effort should be made to hire SBE subcontractors, laborers, material men. (See Schedules1&2).

21. **SELECTION PROCESS:** Notwithstanding any other provisions, preference shall be given in the selection process as follows:

(a) If there is a tie in bid amounts between a Riviera Beach company and one from another city, the Riviera Beach Company will be awarded the bid.

(b) If no Riviera Beach Company bids on a contract, preference will be given to Palm Beach County companies, the State of Florida and then out of state.

22. **BIDDERS RESPONSIBILITY:** Each bidder must before submitting their bid, carefully examine and become familiar with this Invitation to Bid and all of its contents. Ignorance of the bid content and resulting contract will in no way relieve the Contractor of any of the obligations and responsibilities.

23. **BID PROTEST PROCEDURES:** *Right to protest.*
Any actual or prospective bidder, offer, or contractor who is aggrieved in connection with the solicitation or award of a contract may protest to the city council. Protestors shall seek resolution of their complaints initially with the Director of Procurement, and secondly with the City Manager prior to protesting to the City Council. A protest with respect to an invitation for bids or request for proposals shall be submitted in writing prior to the opening of bids or the closing date of proposals, unless the aggrieved person did not know and could not have been reasonably expected to know of the facts giving rise to such protest prior to bid opening or the closing date for proposals. The protest shall be submitted within five calendar days after such aggrieved person knows or could have reasonably been expected to know of the facts giving rise thereto.

In the event of a timely protest under subsection (a) of this section, the Director of Procurement shall not proceed further with the solicitation or award of the contract until all administrative remedies have been exhausted or until the City Manager makes a written determination that the award of a contract without delay is necessary to protect substantial interests of the city.

1. Written Protest. The written protest submitted to the Procurement Director must be accompanied by a filing fee in the form of a money order or cashier's check in the amount equal to $500.00 or 2% of the value of the Bid/Proposal, whichever is greater up to a maximum of $2,500.

2. Appeal to the City Manager. The written appeal to the City Manager must be accompanied by a filing fee in the form of a money order or cashier's check in the amount equal to $500.00 or 2%, whichever is greater, up to a maximum of $2,500.

3. Appeal to the City Council. The written request for an appeal to the City Council must be accompanied by a filing fee in the form of a money order or cashier's check in the amount equal to $500.00, or 2% whichever is greater, up to a maximum of $2,500.

4. Refund of Filing Fees. All costs resulting from a protest shall be borne by the Protestor. If a protest is upheld by either the Procurement Director or City Manager, as applicable, the filing fee shall be refunded to the Protestor less costs incurred by the City. If the protest is denied the filing fee shall be forfeited to the City in lieu of payment of costs incurred by the City.

24. **AWARDS: If a specific basis of award is not established in the instructions to bidders, specifications or special conditions of the Bid, the award shall be to the responsible bidder with the lowest responsive bid meeting the written specifications.** As the best interest of the City of Riviera Beach may require, the right is reserved to make award(s) by individual commodities/services, group of commodities/services, all or none or any combination thereof. When a group is specified, all items within the group must be bid. A bidder desiring to bid "No Charge" on an item in a group must so indicate; otherwise the bid for the group will be construed as incomplete and may be rejected. However, if bidders do not bid all items within a group, the City reserves the right to award on an item by item basis. When a group bid is indicated or variable quantities and the bid for the group shows evidence of unbalanced bid prices, such bid may be rejected.

25. **GOVERNMENTAL RESTRICTIONS:** In the event any governmental restrictions may be imposed which would necessitate alteration of the material quality, workmanship or performance of items offered on this bid prior to their delivery, it shall be the responsibility of the successful bidder to notify the City at once, indicating in letter the specific regulation which required an alternation. The City of Riviera Beach reserves the right to accept any such alteration, including any price adjustments occasioned thereby, or to cancel the contract at no further expense to the City.

26. **CONFLICT OF INTEREST:** The award hereunder is subject to provisions of State Statutes and City Ordinances. All bidders must disclose with their bid the name of any officer, director or agent who is also an employee of the City of Riviera Beach. Further, all bidders must disclose the name of any City employee who owns, directly or indirectly, interest of ten percent (10%) or more in the bidder's business.

27. **LEGAL REQUIREMENTS:** Applicable provisions of all Federal, State, County and local laws, and of all ordinance, rules and regulations including the Procurement Code of the City of Riviera Beach shall govern development, submittal and evaluation of bids received in response hereto and shall govern any and all claims and disputes which may arise between person(s) submitting a bid in response hereto and City of Riviera Beach by and through its officers, employees and authorized representative, or any other person natural or otherwise. Lack of knowledge by any bidder shall not constitute a recognizable defense against the legal effect thereof.

28. **NOTICE TO SELLER TO DELIVER:** No delivery shall become due or be acceptable without a written order or shipping instruction by the City, unless otherwise provided in the Contract. Such order will contain the quantity, time of delivery and other pertinent data. However, on items urgently required, the Seller may be given telephone notice, to be confirmed by an order in writing.

29. **PURCHASE BY OTHER GOVERNMENTAL AGENCIES:** Each Governmental unit which avails itself of this contract will establish its own contract, place its own orders, issue its own purchase orders, be invoiced there from and make its own payments and issue its own exemption certificates as required by the bidder.

It is understood and agreed that the City of Riviera Beach is not a legally binding party to any contractual agreement made between any governmental unit and the bidder as a result of this bid.

30. **BID SECURITY AND PERFORMANCE BONDS**
Bid security shall be required for all competitive sealed bidding for construction contracts when the price is estimated by the Procurement Director to exceed $100,000. Bid security shall be a bond provided by a surety company authorized to do business in the State, or the equivalent in case, or otherwise supplied in a form satisfactory to the City. Nothing herein shall prevent the requirement of such bonds on construction contracts under $100,000 when then circumstances warrant in the opinion of the City Manager.

1. Performance bond satisfactory to the city, executed by a surety insurer authorized to do business in the State as a surety, in an amount equal to 100% of the price specified in the contract, conditioned that the contractor perform the contract in the time and manner prescribed in the contract; and

2. A payment bond satisfactory to the city, executed by a surety insurer authorized to do business in the state as a surety, in an amount equal to 100 percent of the price specified in the contract, conditioned that the contractor promptly make payments to all persons supplying labor, materials of supplies used directly or indirectly in the performance of the work provided for in the contract, and who are claimants as defined in F.S. § 255.05(1).

31. **AMOUNT OF BID SECURITY**
Bid security shall be required for all competitive sealed bidding for construction contracts when the price is estimated to exceed $100,000.00. Bid security shall be a bond provided by a surety company authorized to do business in the State, or the equivalent in case, or otherwise supplied in a form satisfactory to the city. Nothing herein shall prevent the requirement of such bonds on construction contracts under $100,000.00 when the circumstances warrant in the opinion of the City Manager.

Bid security shall be in an amount equal to at least five percent of the amount of the bid.

When the invitation for bids requires bid security, a bid shall be rejected in the event of non-compliance unless it is determined that the bid fails to comply only in a non-substantial manner with the security requirement.

32. **REJECTION OF BIDS FOR NONCOMPLIANCE WITH BID SECURITY REQUIREMENTS**
When the invitation for bid requires bid security, a bid shall be rejected in the event of non-compliance unless it is determined that the bid fails to comply only in a non-substantial manner with the security requirement.

33. **WARRANTY:** The successful bidder shall furnish factory warranty on all equipment furnished hereunder against defect in materials and /or warranty shall become effective on the date of delivery and acceptance by the City. Should any defects in materials or workmanship, except ordinary wear and tear appear during the above stated warranty period, the successful bidder shall repair or replace same at no cost to the City. **Warranties shall be indicated on the bid sheet or enclosed herewith.**

34. **TERMS AND CONDITIONS OF AGREEMENT:** An example of the agreement to be entered into with the successful bidder is available for review on the Procurement Department web page at www.rivierabch.com

35. **EXECUTION OF AGREEMENT:** The successful bidder shall, within ten (10) working days after notification of award by the City, enter into a contract with the City on forms as included within the Invitation to Bid documents for the performance of work awarded and shall simultaneously provide any required bonds, indemnities and insurance certificates. Failure to comply within the established deadline for submittal of required documents may be grounds for cancellation of the award and City keeping bid security.

36. **SPECIAL CONDITIONS:** Any and all special conditions that may vary from these standard conditions shall have precedence.

37. **ADDITIONAL INFORMATION:** The entire chapter of the City of Riviera Beach Procurement Code describing the aforementioned subject matter can be obtained from the Procurement Department. You may also view and/or download the Request for Proposals. Requests for Quotation; Request for Letters of Interest; structure of the Procurement Department; telephone directory; and How to do Business with the City of Riviera Beach on the internet at www.rivierabch.com

38. **Florida's Public Records Act, Chapter 119 Florida Statutes**
The Contractor shall comply with Florida's Public Records Act, Chapter 119, Florida Statutes, and if determined to be acting on behalf of the City as provided under section 119.011(2), Florida Statutes, specifically agrees to:

(a) Keep and maintain public records required by the City to perform the service.
(b) Upon Request from the City's custodian of public records or designee, provide the City with a copy of the requested records or allow the records to be inspected or copied within a reasonable time at a cost that does not exceed the cost provided in Chapter 119, Florida Statutes, or as otherwise provided by law.
(c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of this Contract and following completion of this Contract if the Contractor does not transfer the records to the City.
(d) Upon completion of this Contract, transfer, at no cost, to the City all public records in possession of the Contractor or keep and maintain public records required by the City to perform the service. If the Contractor transfers all public records to the City upon completion of the Contract, the Contractor shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the Contractor keeps and maintains public records upon completion of the Contract, the Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City, upon request from the City's custodian of public records or designee, in a format that is compatible with the information technology systems of the City
(e) Please be aware that this is Federal funded project and the federal requirements in Exhibit D as this project in its entirety is governed by Davis Bacon, Wage Decisions, MBE/WBE and Sections 3 clauses.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACTR, CONTACT THE CUSTODIAN OF PUBLIC RECORDS CITY CLERK OR DESIGNEE AT 600 West Blue Heron Blvd., Riviera Beach, FL 33404. (561) 845-4090 cityclerk@rivierabeach.org)

GENERAL INFORMATION TO BIDDERS
BID NO. 986-20-1

GENERAL CONDITIONS:

A. All contracted services are to be performed in a professional manner, at a 100% level by qualified personnel.

B. Prices submitted in regards to this bid shall include, but not be limited to all necessary manpower and equipment.

SPECIAL REQUIREMENTS:

A. The contractor must be licensed to work in the State of Florida and Palm Beach County. Submit documentation of this with bid.

B. Insurance is required as listed in this bid package. Provide copy of insurance with bid.

C. The contractor shall direct its personnel in the execution of the work.

AWARD CRITERIA

The award shall be to the responsive and responsible lowest bidder meeting the written specifications and the minimum qualifications of experience, competency, and price**.**

FURTHER INFORMATION

Bidders requiring additional information as to the technical provisions or desiring to view the site shall contact the Procurement Department.

No change(s) and no interpretation(s) shall be considered binding unless provided to all bidders in writing by the Director of the Procurement.

CONDUCT OF EMPLOYEES

All employees of the contractor shall conduct themselves in a courteous and professional manner at all times. Abusive language or gestures shall not be tolerated and could be cause for removal from contract. Caution shall be exercised to assure that their operations do not cause any safety hazards to the general public. Whenever questions, complaints, etc., are directed to an employee of the contractor by the public, they are to acknowledge, record, and pass on to the City's Contact Person if unable to reply.

SUPERVISION AND INSPECTIONS

The Contractor shall have a competent and designated person in charge and outside for each crew at all times. The City shall inspect work at its discretion. If work is not performed to specifications outlined in this contract, the Contractor will have 72 hours to correct the deficiency, weather permitting. If deficiency is not corrected, liquidated damages will be accessed.

PERSONNEL

Personnel employed directly, or indirectly, by the Contractor who is incompetent, inept or unfit to perform the work shall be promptly removed from work covered under the contract. Failure of the Contractor to remove personnel who are incompetent, inept or unfit may result in the termination of the contract.

PROTECTION OF PROPERTY

The Contractor shall at all times guard against damage or loss to the property of the City or other owners and shall be held responsible for replacing or repairing any such loss or damage. The City may withhold payment or make such deductions as deemed necessary to insure reimbursement or replacement for loss or damage to property through negligence of the Contractor or agents.

The responsibility for all harm or damage to person or property arising out of, or on account of, work done under this Contract shall rest upon the Contractor and the Contractor shall save the City harmless from all claims made on account of such damage.

PAYMENT/PERFORMANCE BOND:
The successful bidder will be required to secure a payment and performance bond in the amount equal to 100% of the contract amount for any bid in excess of $100,000.00.

The CONTRACTOR shall furnish bonds and maintain said bonds throughout the duration of the project as provided for in Florida Statutes Section 255.05, covering the faithful performance of the Contract and payment in strength as rated by Best's Key Rating Guide published by Alfred M. Best Company, Oldwick, New Jersey 08858. The bonds must be recorded in the official records of Palm Beach County prior to any work commencing.

INDEMNIFICATION
CONTRACTOR shall indemnify and save harmless and defend the CITY, its agents, servants, officers and employees from and against any and all claims, liabilities, losses, damages, and costs, including but not limited to reasonable attorney's fees, to the extent caused by the negligence, recklessness, omission or intentional wrongful misconduct of CONTRACTOR and persons employed or utilized by CONTRACTOR in the performance of this Agreement.

The CONTRACTOR further agrees to indemnify, save harmless and defend the City, its agents, servants, officers and employees from and against any claim, demand or cause of action of whatsoever kind or nature arising out of any conduct or misconduct of the CONTRACTOR not included in the paragraph above and for which the City, its agents, servants, officers, or employees are alleged to be liable. Nothing contained in this provision shall be construed or interpreted as consent by the City to be sued, nor as a waiver of sovereign immunity beyond the waiver provided in Section 768.28, Florida Statutes.

The indemnification provided above shall obligate the CONTRACTOR to defend at its own expense to and through appellate, supplemental or bankruptcy proceeding, or to provide for such defense, at CITY'S option, any and all claims of liability and all suits and actions which may be brought against the CITY whether performed by CONTRACTOR, or persons employed or utilized by CONTRACTOR.

PERMITS AND FEES
The Contractor shall procure and pay for all permits and licenses, charges and fees and give all notices necessary and incidental to the lawful prosecution of the work. The Contractor shall include the cost for all permits in the contractor's base bid.

Contractor shall possess and keep in force all licenses, business permits and other permits required to perform the services of this Agreement.

CONTRACT:
The Procurement Department shall issue a purchase order incorporating this Invitation to Bid and the Bid documents submitted by the bidder awarded the contract. Such purchase order together with the City standard contract for services shall constitute the contract.

The Contractor shall not assign, transfer or subcontract this contract in either whole, or in part, without prior written approval of the City.

The contract will be subject to immediate cancellation if services do not comply with the specifications or the terms and conditions as stated herein.

CONTRACT AMOUNT:
Prices quoted in the bid will be considered firm for each type work to be performed.

PAYMENT
Payment will be made by the City after services have been received, accepted and properly invoiced as indicated in the contract and/or purchase order. Invoices must state the purchase order number.

Payment for services shall be made only for work performed and requested of the Contractor and accepted by the City.

The City reserves the right to withhold payments for any work, which is not considered to be within the scope of the specifications of the contract. Continued failure to meet terms of the contract will result in the termination of contract.

INVOICING
Invoice shall be completely itemized and include the City Purchase Order Number and the CONTRACTOR Invoice Number.

CONE OF SILENCE
No entity filing a BID shall through their principal, attorneys, or agents, contact the City Council for the purposes of discussing any aspect of this ITB for any possible decision on the ITB; neither shall any such party approach third parties for the purposes of having those third parties have those types of discussions with the City Council. **Any action in violation of this provision shall be cause for disqualification from participation in this ITB.**

NON-COLLUSION STATEMENT
By signing its Bid, the bidder certifies that its Bid is made independently and free from collusion. Bidder shall disclose below, to their best knowledge, any Riviera Beach officer or employee, or any relative of any such officer or employee as defined in Section 112.3135(1) (c), Florida Statutes, who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement. Any Riviera Beach officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement. For purposes hereof, a person has a material interest if he/she directly or indirectly owns more than five percent (5%) of the total assets or capital stock of any business entity; or if they otherwise stand to personally gain if the contract is awarded to this proposer.

Failure of a bidder to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

Proposer, if doing business under an assumed name, i.e., an Individual, Association, Partnership, Corporation, or otherwise, shall be registered with the Florida Department of State, Division of Corporations.

SMALL BUSINESS ENTERPRISE (SBE)
The City has a goal for Small Business Enterprises (SBE) participation of fifteen percent (15%) for City procurement of construction, professional services and other commodities

The City defines Small Business Enterprises as such, a business which has been certified by the State of Florida, The Palm Beach County Office of Small Business Assistance, or other County or State governmental agencies and is an independently owned and operated for profit business concern organized to engage in commercial transactions.

RIGHTS TO INVESTIGATE AND AUDIT: OFFICE OF THE INSPECTOR GENERAL
The Inspector General of Palm Beach County has the authority to investigate and audit matters relating to the negotiation and performance of any awarded contract and in furtherance thereof may demand and obtain records and testimony from the contractor and its subcontractors and lower tier subcontractors. The bidder understands and agrees that in addition to all other remedies and consequences provided by law, the failure of the bidder or its subcontractors or lower tier subcontractors to fully cooperate with the Inspector General when requested may be deemed by the municipality to be a material breach of any contract entered into with the bidder as justification for termination.

SCOPE OF WORK

The City of Riviera Beach, Florida (City) is seeking sealed proposals from qualified proposers for the milling and resurfacing of W. 26th Court along with utilities and drainage upgrades.

The following services are required for the successful bidder:

1. The City of Riviera Beach Purchasing Department is accepting sealed bid proposals for CDBG FY 19-20 W 26th Court from Ave M to W. 27th St. Improvements in the City of Riviera Beach, Florida. The work includes, but is not limited to, the reconstruction of deteriorated public streets, installation of limerock base, asphaltic pavement, concrete sidewalks, concrete curb and gutter, reinforced concrete drainage pipe and inlet structures, exfiltration trench, replacement of existing water main and services, installation of fire hydrants and appurtenances, replacement of existing sanitary sewer lateral services and cleanouts, sewer lining, traffic calming devices, striping and signage, and grouting, adjustment, proper disposal or abandonment of existing utilities.

2. The contractor shall be responsible to ensure frequent pick-up of all refuse, rubbish, scrap materials, and debris that result from their operations so that work site presents a neat and orderly appearance at all times. All rubbish, scrap, etc., shall be transported from the premises. NO rubbish shall be deposited as fill on the work site. At completion of work, the contractor shall remove all work materials, tools, construction equipment, machinery, and surplus materials from the work site and shall leave project in ready to use condition.

3. The contractor shall provide a schedule for the required work and coordinate all required work with other occupancy and/or construction occurring on or in this area by others.

4. Safeguard of all equipment, tools, materials, etc., at the work site shall be the contractor's responsibility.

5. The contractor shall be responsible for the protection of all personnel against hazards and/or injuries due to their construction operations at the work site.

6. Contractor shall correct any and all damage caused by their operations to the City's satisfaction at no additional cost to the City.

7. The contractor shall have an English-speaking supervisor/representative on the work site at all times, who shall be thoroughly knowledgeable of all plans, specifications, and other contract documents and has the authority to act in the contractor's behalf.

8. The contractor shall be responsible for the appearance of all working personnel assigned to the projects (clean and appropriately dressed) at all times, and their compliance with City Policies and Rules prohibiting smoking and consumption of alcohol and illegal drugs while on City projects.

9. The contract time for this solicitation shall be for 150 calendar days from issuance of Purchase Order / Notice to Proceed to Project Substantial Completion. The contractor work shall Finally

Complete with an additional 30 calendar days from Substantial Completion. Total Calendar Days shall be **180 calendar** days unless specifically indicated in the origination of the requisition.

10. The Public Works Department has taken the liberty to utilize the standard bid documents and latest contract to initiate a draft of the necessary bid document and technical specifications. Please find enclosed the draft bid package.

BID OPENING DATE:

Bids will be received until **1/16/2020 11:00 A.M. (EST)** at the office of the City Clerk, **600 West Blue Heron, Riviera Beach, Florida.** Bids will be opened and publicly read aloud in the Council Chambers on the specified date and time. No bids will be accepted after the time and date specified. The bidder is required to examine carefully the Scope of Work and be thoroughly informed regarding any conditions and requirements that may in any manner affect the work to be performed under this bid, or affect the equipment, materials and labor required. Failure to do so will not be a basis for subsequent change orders.

INQUIRIES/QUESTIONS DEADLINE:

All inquiries shall be in written format and addressed to Glendora Williams:

Procurement Department
2051 MLK Blvd., Suite 310
Riviera Beach, FL 33404
Fax: (561) 842-5105
Email: gvwilliams@rivierabeach.org

The last day to submit questions concerning this ITB shall be **12/23/2019.** Questions received after this time will not be answered.

INSURANCE REQUIREMENTS

The successful firm or individual entering a resulting contract with the City shall provide, pay for and maintain in full force and affect at all times during the services to be performed insurance as set forth below:

Type of Coverage	Amount of Coverage
Commercial and General	$1,000,000 per occurrence
Contractual, insurance broad form property,	$1,000,000 per occurrence
Independent contractor, personal injury)	$3,000,000 annual aggregate
Automobile (owned, non-owned, & hired)	$1,000,000 single limits
Worker's Compensation, as applicable	$1,000,000 per accident
	$1,000,000 disease each employee
	$1,000,000 disease policy limit
Including employer's liability insurance	$1,000,000 per occurrence

The successful bidder must maintain in full force and effect, during the life of this engagement. Certificates of liability insurance, satisfactory to the City, shall be furnished to the City immediately upon commencement of any services, with complete copies of policies to be furnished upon the City's request. Such certificates of insurance will provide the City with thirty (30) days prior written notice of any cancellation or non-renewal.

The policies shall name the City as an additional insured, and proof of such coverage shall be furnished to the City by way of an endorsement to same or a certificate of insurance no later than ten days prior to the provision of services under the awarded contract and upon renewal of each policy each year the awarded contract remains in effect and for a period of one (1) year after the termination of the contract. All such insurance must be with an insurance carrier approved and authorized to do business in the State of Florida, and who must have a rating of no less than "excellent" by A.M. BEST, or as mutually agreed upon by the City and the successful Respondent. All such insurance policies may not be modified or terminated without the express written authorization of the City. The insurance requirements set forth herein may be modified by the City in its sole discretion in competitive negotiations.

Misrepresentation of any material fact, whether intentional or not, regarding the Bidders insurance coverage, policies or capabilities may be grounds for rejection of the proposal and rescission of any resulting. **Evidence of ability to obtain appropriate insurance coverage shall be provided in each bid.**

All policies shall be endorsed to provide sixty (60) days prior written notice of cancellation, non-renewal or reduction in coverage or limits to:

City of Riviera Beach
Attn: Marie Sullin, Risk Manager
2051 MLK Blvd.
Riviera Beach, FL 33404
Email: msullin@rivierabeach.org

BID CHECKLIST

Bidders are expected to examine this bid form, attached drawings, specifications, if any, and all instructions. Failure to do so will be at the Bidder's risk.

All prices and notations must be in ink or typewritten. No erasure permitted. Mistakes may be crossed out and corrections typed adjacent and must be initialed and dated in ink by the person signing the bid. All bids must be signed with the firm name and by a responsible officer or employee. Obligations assumed by such signature must be fulfilled.

Each bidder shall furnish the information required on the bid form and each accompanying sheet thereof on which he or she makes an entry.

Unit price for each unit bid shall be shown. A total shall be entered in the amount column for each bid. In case of discrepancy between a unit price and extended price, the unit prices represented will presume to be correct.

Although the City generally awards based on a "lump sum" basis to the bidder submitting the lowest, most responsive and responsible total bid as shown on the Invitation to Bid cover page, the City may choose to award on a "per group" or "per item" basis. Therefore, bidders must submit with their bids, all pricing pages on the forms provided clearly indicating which items are bid and which are not. Failure to submit these pages will render such bid non-responsive.

Bid Check List:

Bidders are cautioned to please check their bid very carefully, using the following checklist:

_____ Bidder's Certification Page Signed and Notarized

_____ Invitation to Bid Cost Proposal, including Unit Price and Total price completed. Total Amount of Bid Entered on Invitation to Bid Cover Sheet.

_____ Similar Project Form

_____ All required forms

_____ Bid Envelope prepared as specified

_____ It is the bidder's responsibility to contact the Procurement Department prior to submitting a bid to ascertain if any addenda have been issued, to obtain such addenda and return executed addenda with the bid.

CITY OF RIVIERA BEACH
PROCUREMENT DEPARTMENT

2051 MLK JR. BLVD., SUITE #310
Riviera Beach, Florida 33404
Phone (561) 845-4180

PLAN HOLDER INFORMATION SHEET

PLEASE COMPLETE AND EMAIL THIS DOCUMENT TO GVWILLIAMS@RIVIERABEACH.ORG IN THE PROCUREMENT DEPARTMENT. YOUR INFORMATION WILL BE ADDED TO THE CURRENT PLAN HOLDER LIST AND HELP TO INSURE RECEIPT OF CHANGES OR ADDITIONAL INFORMATION.

BID #986-20-1

Contact Person _____

Business Name _____

Business Address _____

Business City, State, Zip _____

Email Address: _____

Business Phone #_____Business Fax # _____

REQUEST FOR INFORMATION FORM

ALL QUESTIONS PERTAINING TO THIS SOLICITATION **MUST** BE SUBMITTED IN WRITING.

(PLEASE EMAIL TO GLENDORA WILLIAMS @ gvwilliams@rivierabeach.org. WE WILL RESPOND AS SOON AS POSSIBLE.)

BID # 986-20-1

Date:_____

Contact Person _____

Business Name _____

Business Address _____

Business City, State, Zip _____

Fax No.:_____ Office No: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

ATTACHMENT "A"

REQUIRED FORMS

IN ADDITION TO THE INVITATION TO BID COVER PAGE, THE FORMS LISTED BELOW ARE TO BE COMPLETED AND SUBMITTED WITH YOUR BID.

1) ***BIDDER'S CERTIFICATION***

2) ***BID COST PROPOSAL SHEET***

3) ***SIMILAR PROJECT FORM***

4) ***BID BOND***

5) ***STATEMENT FROM SURETY***

6) ***ADDENDUM PAGE***

7) ***REFERENCES***

8) ***DRUG FREE WORKPLACE***

9) ***PUBLIC ENTITY CRIMES STATEMENT***

10) ***SCHEDULE 1 – PARTICIPATION FOR SMALL BUSINESS ENTERPRISES***

11) ***SCHEDULE 2 – LETTER OF INTENT TO PERFORM AS A SMALL BUSINESS SUB-CONTRACTORS***

12) ***SCHEDULE 3- LOCAL BUSINESS PARTICIPATION***

13) ***SCHEDULE 4- LETTER OF INTENT TO PERFORM AS A LOCAL BUSINESS***

14) ***STATEMENT OF NO BID***

NOTE: **PLEASE ENSURE THAT ALL OF THESE DOCUMENTS ARE COMPLETED AND SUBMITTED WITH YOUR BID IN ACCORDANCE WITH THE INSTRUCTION SHEET ON THE PRECEDING PAGE. FAILURE TO DO SO MAY RESULT IN YOUR BID NOT BEING CONSIDERED FOR AWARD.**

IT IS THE BIDDER'S RESPONSIBILITY TO CONTACT THE PROCUREMENT DEPARTMENT PRIOR TO SUBMITTING A BID TO ASCERTAIN IF ANY ADDENDA HAVE BEEN ISSUED, TO OBTAIN ANY AND ALL SUCH ADDENDA AND RETURN EXECUTED ADDENDA WITH THIS BID.

BIDDER'S CERTIFICATION

I have carefully examined the Invitation to Bid, Instructions to Bidders, General and/or Special Conditions, Specifications, Bid Proposal and any other documents accompanying or made a part of this invitation.

I hereby propose to furnish the goods or services specified in the Invitation to Bid at the prices or rates quoted in my bid. I agree that my bid will remain firm for a period of up to ninety (90) days in order to allow the City adequate time to evaluate the bids. Furthermore, I agree to abide by all conditions of the bid.

I certify that all information contained in this bid is truthful to the best of my knowledge and belief. I further certify that I am duly authorized to submit this bid on behalf of the vendor / contractor as its act and deed and that the vendor / contractor is ready, willing and able to perform if awarded the bid.

I further certify that this bid is made without prior understanding, agreement, connection, discussion, or collusion with any person, firm or corporation submitting a bid for the same product or service; no officer, employee or agent of the CITY OF RIVIERA BEACH or of any other bidder interested in said bid; and that the undersigned executed this Bidder's Certification with full knowledge and understanding of the matters therein contained and was duly authorized to do so.

_____
NAME OF BUSINESS

_____
E-MAIL ADDRESS

BY:

_____
SIGNATURE OF AUTHORIZED OFFICER

Sworn to and subscribed before me this _____ day of_____, 20__.

_____
PRINTED NAME AND TITLE

_____
SIGNATURE OF NOTARY

_____
MAILING ADDRESS

MY COMMISSION EXPIRES: _____

_____
CITY, STATE, ZIP CODE

PERSONALLY KNOWN _____

_____
TELEPHONE NUMBER

OR PRODUCED IDENTIFICATION

_____

_____
FAX NUMBER

TYPE: _____

BID COST PROPOSAL SHEET #1
(To Be Completed by the Bidder)
(Exhibit B)

INVITATION FOR BID # 986-20-1

CDBG FY19/20 PROJECT
26TH COURT FROM
AVENUE M TO 27TH COURT

ALL BIDS SHALL REMAIN VALID FOR NINETY (90) DAYS AFTER BID OPENING

Company: _____

Address: _____

Contact: _____

Signature of Authorized Officers: _____

Please enter the price of services as indicated in the Bid tab provided in Exhibit B:

_____ _____
SIGNATURE DATE

SIMILAR PROJECT FORM

Location: CDBG FY 19/20	**SAMPLE XXX MY STREET, SOMEWHERE, FL 99999**
Owner Contact Information:----------	
Owner Name:	**Someone Brown**
Phone Number:	**555-555-5555**
Email Address:	**someonebrown@email.com**

Sign Location:
Owner Contact Information:----------
Owner Name:
Phone Number:
Email Address:

…

Picture of CDBG Project

STATEMENT FROM SURETY

Attach a letter of intent from a surety company indicating the applicant's ability to be bonded for projects up to $1,000,000. The surety company must be licensed to do business in the State of Florida, must have an A.M. best rating of "A", and a required financial size of "VII". Firms selected shall maintain, during the life of the contract, workman's compensation, architect's commercial liability coverage, and automobile liability for company vehicles.

Note: The City reserves the right to use all information provided in determining responsibility of vendor, as well as any other information the City may obtain through any means that bears on the issue of responsibility.

ADDENDUM PAGE

The undersigned acknowledges receipt of the following addenda to the Invitation to Bid (indicate number and date of each):

Addendum No._____ Dated _____

Addendum No._____ Dated _____

Addendum No._____ Dated _____

Addendum No._____ Dated _____

FAILURE TO SUBMIT ACKNOWLEDGEMENT OF ANY ADDENDUM THAT AFFECTS THE BID PRICES IS CONSIDERED A MAJOR IRREGULARITY AND WILL BE CAUSE FOR REJECTION OF THE BID.

_____
COMPANY

_____
SIGNATURE

_____
TITLE

REFERENCES

Bidder shall submit as a part of the proposal package four (4) business references with the name of the business, address, contact person, and telephone number. **(At least two (2) references must be a local, county, state, or federal entity.)**

Additionally, contractors should submit a copy of their professional license as required by paragraph 37 of the General Terms and Conditions of the ITB.

Name:_____ Name: _____

Address:_____ Address: _____

Tel. No.:_____ Tel. No.: _____

Fax No.:_____ Fax No.: _____

Email:_____ Email: _____

Contact:_____ Contact: _____

Name:_____ Name: _____

Address:_____ Address: _____

Tel. No.:_____ Tel. No.: _____

Fax No_____ Fax No.: _____

Email:_____ Email: _____

Contact:_____ Contact: _____

FAILURE TO SUBMIT WITH BID PACKAGE WIIL MAKE BIDDER NON RESPONSIVE

DRUG FREE WORKPLACE

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids, which are equal with respect to price, quality, and service, are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie bids will be followed if none of the tied vendors has a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

1. Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.

2. Inform employees about the dangers of drug abuse in the workplace, the business's policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.

3. Give each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in subsection (1).

4. In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or gratuity services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contender to, any violation of chapter 893 or of any controlled substance law of the United States or any state for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

6. Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this form complies fully with the above requirements.

THIS CERTIFICATION is submitted by _____ the
(INDIVIDUAL'S NAME)

_____ Of _____
(TITLE/POSITION WITH COMPANY/VENDOR) (NAME OF COMPANY/VENDOR)

who does hereby certify that said Company/Vendor has implemented a drug free workplace program which meets the requirements of Section 287.087, Florida Statutes, which are identified in numbers (1) through (6) above.

_____ _____
SIGNATURE DATE

CITY OF RIVIERA BEACH

NOTIFICATION OF PUBLIC ENTITY CRIMES LAW

Pursuant to Section 287.133, Florida Statutes (1995), you are hereby notified that a person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases or real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 [F.S.] for CATEGORY TWO [$35,000.00] for a period of 36 months from the date of being placed on the convicted vendor list.

Acknowledged by:

_____

Firm Name

_____

Signature

_____

Name & Title (Print or Type)

SCHEDULE 1

PARTICIPATION FOR SBE CONTRACTORS/PROPOSERS

BID/RFP TITLE: _____ **BID NUMBER:** _____

NAME OF PRIME BIDDER: _____ **BID OPENING DATE:** _____

CONTACT PERSON: _____ **TELEPHONE NO.** _____ **DEPARTMENT:** _____

CONTRACT AMOUNT – SBE

	NAME, ADDRESS & TELEPHONE NUMBER OF SBE CONTRACTOR	TYPE & DESCRIPTION OF WORK TO BE PERFORMED	CERTIFICATION
1.			PALM BEACH COUNTY____ STATE____ OTHER____
2.			PALM BEACH COUNTY____ STATE____ OTHER____
3.			PALM BEACH COUNTY____ STATE____ OTHER____
4.			PALM BEACH COUNTY____ STATE____ OTHER____
5.			PALM BEACH COUNTY____ STATE____ OTHER____

TO BE COMPLETED BY PRIME BIDDER:

BID/RFP PRICE: $_____ **TOTAL % PARTICIPATION:** _____

SCHEDULE 2

BID NUMBER:_____ **LIAISON:**_____

LETTER OF INTENT TO PERFORM AS A SMALL BUSINESS ENTERPRISE

TO:_____
(NAME OF PRIME BIDDER)

The undersigned intends to perform work in connection with the above BID as (Check one):

_____**an individual**_____**a corporation** _____**a partnership** _____**a joint venture**

_____The undersigned is certified as a SBE.

The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

as the following price: $_____.
(Amount must match subcontractor's quote)

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items	**Projected Commencement Date**	**Projected Completion Date**

_____% of the dollar value of the subcontract will be sublet and/or awarded to non-minority contractors and/or non-minority suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

_____
(NAME OF SMALL BUSINESS ENTERPRISE CONTRACTOR)

DATE:_____ BY:_____
(SIGNATURE OF SMALL BUSINESS ENTERPRISE CONTRACTOR)

SCHEDULE 3

PARTICIPATION FOR LOCAL BUSINESSES AS SUB-CONTRACTOR AT LEAST 25%

BID TITLE: _____ **BID NUMBER:** _____

NAME OF PRIME BIDDER: _____ **BID OPENING DATE:** _____

CONTACT PERSON: _____ **TELEPHONE NO.** _____ **DEPARTMENT:** _____

CONTRACT AMOUNT – LOCAL BUSINESSES

	NAME, ADDRESS & TELEPHONE NUMBER OF LOCAL CONTRACTOR	TYPE & DESCRIPTION OF WORK TO BE PERFORMED	% TO BE PERFORMED BY LOCAL BUSINESS	ESTIMATED DOLLAR VALUE
1.			%	$
2.			%	$
3.			%	$
4.			%	$
5.			%	$
		TOTAL:	%	$

TO BE COMPLETED BY PRIME BIDDER:

BID PRICE: $ _____ **TOTAL % PARTICIPATION:** _____

SCHEDULE 4

BID NUMBER:_____ **LIAISON:**_____

LETTER OF INTENT TO PERFORM AS A LOCAL BUSINESS

TO:_____
(NAME OF PRIME BIDDER)

The undersigned intends to perform work in connection with the above BID as (Check one):

_____an individual_____a corporation _____a partnership _____a joint venture

_____The undersigned is a qualified Local Business.

The undersigned is prepared to perform the following described work in connection with the above project (specify in detail particular work items or parts thereof to be performed):

as the following price: $_____.
(Amount must match subcontractor's quote)

You have projected the following commencement date of such work, and the undersigned is projecting completion of such work as follows:

Items	**Projected Commencement Date**	**Projected Completion Date**

_____% of the dollar value of the subcontract will be sublet and/or awarded to local contractors and/or local suppliers. The undersigned will enter into a formal agreement for the work with you, conditioned upon your execution of a contract with the City of Riviera Beach.

_____
(NAME OF LOCAL CONTRACTOR)

DATE:_____ BY:_____
(SIGNATURE OF LOCAL CONTRACTOR)

STATEMENT OF NO BID

BID NO. #986-20-1

If you are not bidding on this service/commodity, please complete this form and return to City of Riviera Beach Procurement Department, 2051 Dr. Martin Luther King Blvd. Suite #310 Riviera Beach, Florida 33404.

Failure to respond may result in deletion of vendor's name from the qualified bidder's list for the City of Riviera Beach.

COMPANY NAME:_____

ADDRESS:_____

TELEPHONE:_____

MINORITY OWNED BUSINESSES

( ) BLACK
( ) HISPANIC
( ) WOMEN

SIGNATURE: _____

DATE: _____

We the undersigned have declined to bid on your Bid No. _____ for _____because of the following reasons:
(Service/Commodity)

_____SPECIFICATIONS TOO "TIGHT", i.e., GEARED TOWARD BRAND OR MANUFACTURER ONLY (EXPLAIN BELOW)

_____INSUFFICIENT TIME TO RESPOND TO THE INVITATION TO BID

_____WE DO NOT OFFER THIS PRODUCT OR AN EQUIVALENT

_____OUR PRODUCT SCHEDULE WOULD NOT PERMIT US TO PERFORM

_____UNABLE TO MEET SPECIFICATIONS

_____SPECIFICATIONS UNCLEAR (EXPLAIN BELOW)

_____OTHER (SPECIFY BELOW)

REMARKS:

_____

_____

_____

_____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____

As Principal, hereinafter called the Principal, and _____

A corporation duly organized under the laws of the State of Florida as Surety, hereinafter called the Surety, are held and firmly bound unto City of Riviera Beach, 600 W. Blue Heron Blvd, Riviera Beach, FL 33404

As Obligee, hereinafter called the Obligee, in the sum of _____

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has submitted a bid for

_____(Project)

NOW, THEREFORE, if the Obligee shall accept the bid of the principal and the Principal shall enter into a Contract with Obligee in accordance with the terms of such bid, and give such insurance and bond or bonds as may be specified in the IFB or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the Obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this_____day of_____, 20___.

_____

Witnesses: Principal (seal)

By:_____

_____ (Title)

For:_____

(Surety) (Seal)

_____ By:_____

CONTRACT PERFORMANCE BOND

BY THIS BOND, we,_____, as Principal and _____, a Corporation, as Surety, whose address is _____, are bound to The City of Riviera Beach, a political Subdivision of the State of Florida, by and through its CITY COUNCIL, hereinafter called the CITY, for the sum of $_____, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the Contract dated_____, 2020 between Principal and the CITY, Contract No._____, the Contract being made a part of this bond by reference, in the time and in the manner prescribed in the Contract and;

2. Pays the CITY all loss, damages, expenses, costs, and attorney's fees, including appellate proceedings, the CITY sustains because of a default by Principal under the Contract and;

3. Performs the guarantee of all-work and materials furnished under the Contract for the time specified in the Contract;

then this bond is void; otherwise it remains in full force. Whenever Principal shall be, and declared by the CITY to be in default under the Contract, the CITY having performed CITY'S obligations thereunder, the Surety may promptly remedy the default or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions; or
(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or, if the CITY elects, upon determination by the CITY and the Surety jointly of the lowest responsible bidder, arrange for a contract between such bidder and the CITY, and make available as the work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this Paragraph) sufficient funds to pay the costs of completion, less the balance of the Contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract price" as used in this paragraph, shall mean the total amount payable by the CITY to Principal under the Contract and any amendments thereto, less the amount properly paid by the CITY to Principal.

Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes does not affect Surety's obligation under this bond. Any increase in the total contract amount as authorized by the CITY shall accordingly increase the Surety’s obligation by the same dollar amount of said increase. The Principal shall be responsible for notification to Surety of all such changes.

Surety expressly acknowledges its obligations and liabilities for liquidated damages suffered by the CITY under the provisions of the Contract Documents.

See subsection (2) of Section 255.05, Florida Statutes as amended for the notice and time limitations for claimants.

Dated on_____, 2020

PRINCIPAL:

By:_____
Signature

_____
Attest as to the signature of Principal

_____
Title

_____
Title

(SEAL)

Address:_____

_____

SURETY:

By:_____
Signature

_____
Attest as the signature of Surety

_____
Title

_____
Title

(SEAL)

Address:_____

_____

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners must execute bond.

IMPORTANT: Surety companies executing bonds **must** appear and remain on the U.S. Treasury Department's most current list (Federal Register), during construction, guarantee and warranty periods, and be authorized to transact business in the State of Florida.

CONTRACT PAYMENT BOND

BY THIS BOND, WE,_____, as Principal and_____, a Corporation, as Surety, whose address is_____, are bound to the City of Riviera Beach, a political Subdivision of the State of Florida, by and through its CITY COUNCIL, hereinafter called The CITY, in the sum of $_____, for payment 'of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Promptly makes payment to all claimants and lienors supplying Principal with labor, materials and suppliers, used directly or indirectly by Principal in the prosecution of the work provided for in the Contract dated_____, 2020, between Principal and the CITY for construction of W. 26TH CT FROM AVE M TO W 27TH ST Contract No._____986-28-1, the Contract being made a part of this bond by reference, in the time and in the manner prescribed in the Contract, and;

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

then this bond is void; otherwise it remains in full force.

Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes, does not affect Surety's obligation under this bond. Any increase in the total contract amount as authorized by the CITY shall accordingly increase the Surety's obligation by the same dollar amount of said increase. The Principal shall be responsible for notification to Surety of all such changes.

See Section 713.23, Florida Statutes as amended for the notice and time limitations for claimants.

Dated on_____, 2020

PRINCIPAL:

By:_____
Signature

_____
Attest as to the signature of Principal

_____
Title

_____
Title

(SEAL)

Address:_____

_____

SURETY:

By:_____
Signature

_____ _____
Attest as the signature of Surety Title

_____
Title

(SEAL)

Address:_____

_____

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners must execute bond.

IMPORTANT: Surety companies executing bonds **must** appear and remain on the U.S. Treasury Department's most current list (Federal Register), during construction, guarantee and warranty periods, and be authorized to transact business in the State of Florida.

EXAMPLE CITY OF RIVIERA BEACH STANDARD CONSTRUCTION CONTRACT

CITY OF RIVIERA BEACH
CONTRACT FOR CONSTRUCTION

This Contract is made as of this_____day of_____, 2019 by and between the CITY OF RIVIERA BEACH, a municipal corporation existing under the laws of the State of Florida, hereinafter referred to as the CITY, and **XXXX CONSTRUCTION**, a corporation authorized to do business in the State of Florida, hereinafter referred to as the CONTRACTOR, whose Federal I.D. number is **XX-XXXXXX**.

In consideration of the mutual promises contained herein, the CITY and the CONTRACTOR agree as follows:

ARTICLE 1 - SERVICES

The CONTRACTOR's responsibility under this Contract is to provide construction services for **W 26th Court east of Ave M towards W 27th St.**, as more specifically set forth in the Scope of Work detailed in Exhibit "A", attached hereto and made a part hereof.

The CITY's representative/liaison during the performance of this Contract shall be **Terrence N. Bailey, P. E.**, telephone no. 561-845-4080, email address tbailey@rivierabeach.org.

ARTICLE 2 - SCHEDULE

A. Time of Completion - Construction work must begin within ten (10) calendar days from the date of receipt of official notice to proceed; provided the CITY has received proof of insurance as set forth in Article 11 and a Performance and Payment Bond as set forth in Article 31 in a form satisfactory to the CITY. Construction work shall be carried on at a rate to ensure its full completion within **one hundred fifty (150)** calendar days from the date of official notice to proceed, the rate of progress and time of completion being essential conditions of this Contract.

B. Deduction for not completing on time - If the contract work is not fully complete according to the terms of this Contract within the limits herein stipulated, the CONTRACTOR shall pay the CITY, not as a penalty, but as liquidated damages, a sum equal to **five hundred dollars ($500.00)** for each day elapsing between the expiration of such time limit and the date of full completion, providing, however, that the time limits herein stated are subject to extension without payment of damages, as provided in Article 17, herein. It is agreed that these liquidated damages are a good faith and reasonable pre-estimate of CITY's actual damages due to delay by CONTRACTOR because it is difficult, if not impossible, to accurately estimate the actual damages suffered by CITY due to any such delay.

C. Reports - Reports and other items shall be delivered or completed in accordance with the detailed schedule set forth in Exhibit "A."

ARTICLE 3 - PAYMENTS TO CONTRACTOR

A. Generally - The CITY agrees to compensate the CONTRACTOR in accordance with the fee proposal set forth in Exhibit "B". The total and cumulative amount of this Contract shall not exceed **XXX Hundred XXX Thousand Dollars ($XX,000.00**). The CITY shall not reimburse the CONTRACTOR for any travel costs incurred as a direct result of the CONTRACTOR providing deliverables to the CITY in pursuance of the scope of work contained in Exhibit A, without specific, prior written approval of the CITY.

B. Progress Invoices - No later than the 20th day of every month, the CONTRACTOR shall prepare and submit, on a form approved by the CITY's representative, a detailed estimate and invoice of work which has been completed from the start of the job up to and including the last day of the preceding month, together with such supporting evidence of the expenditures as required by this Contract. The CONTRACTOR shall also submit with each invoice an updated revised work schedule. The CONTRACTOR shall include in the Progress Invoice a Warranty of Title indicating that as of the date of Progress Invoice that all work, materials, and equipment covered by the Progress Invoice passes to the City at the time of payment of the Progress Invoice and that all laborers, materialmen, and subcontractors have been paid in full for all work, materials, and equipment covered by the Progress Invoice and also provide Partial Releases of Lien and/or Partial Releases of Payment Bond from all laborers, materialmen, and subcontractors as to such work, materials, and equipment covered by the Progress Invoice. CITY has no obligation to pay any Progress Invoice until both a Warranty of Title and Partial Releases of Lien and/or Partial Releases of Payment Bond are provided to CITY.

C. Progress Payments – Progress Invoices received from the CONTRACTOR pursuant to this Contract will be reviewed and approved by the CITY representative within ten days of receipt of the invoice, indicating that services have been rendered in conformity with the Contract unless the CITY requires clarification or a correction of the invoice. The invoices will be sent to the Finance Department for payment. The CITY will pay to the CONTRACTOR ninety percent (90%) of the value based on the CONTRACTOR's estimate and invoice, as approved by the CITY representative. Invoices will normally be paid within thirty (30) days following the CITY representative's approval.

D. Payment of Expenses - All requests for payment of expenses eligible for reimbursement under the terms of this Contract, if any, shall include copies of said receipts, invoices, or other documentation acceptable to the Finance Department. Such documentation shall be sufficient to establish that the expense was actually incurred and necessary in the performance of the scope of work described in this Contract. Long distance telephone calls shall identify the person(s) called, purpose of call, time and costs. Mileage charges shall identify the destination, number of miles, rate, and purpose of travel. Duplication charges shall describe the documents, purpose of duplicating, and rate charged. Any travel, per diem, mileage, meals, or lodging expenses which may be reimbursable under the terms of this Contract, if any, will be paid in accordance with the rates and conditions set forth in Section 112.061, Florida Statutes.

E. Final Invoice - In order for both parties herein to close their books and records, the CONTRACTOR will clearly state "Final Invoice" on the CONTRACTOR's final/last billing to the CITY. This certifies that all services have been properly performed and all charges and costs have been invoiced to the CITY. Since this account will thereupon be closed, any and other further charges if not properly included on this Final Invoice are waived by the CONTRACTOR and the CITY shall have no obligations for any other costs or expenses thereafter. Further, the CONTRACTOR shall include in the Final Invoice a Warranty of Title indicating that that all work, materials, and equipment covered by this Contract passes to the City at the time of payment of the Final Invoice and that all laborers, materialmen, and subcontractors have been paid in full for all work, materials, and equipment covered by this Contract and also provide Final Releases of Lien and/or Final Releases of Payment Bond from all laborers, materialmen, and subcontractors as to such work, materials, and equipment covered by the Contract. CITY has no obligation to pay the Final Invoice until both a Warranty of Title and Final Releases of Lien and/or Final Release of Payment Bond are provided to CITY.

ARTICLE 4 - TRUTH-IN-NEGOTIATION CERTIFICATE

Signature of this Contract by the CONTRACTOR shall also act as the execution of a truth-in-negotiation certificate certifying that the wage rates, over-head charges, and other costs used to determine the compensation provided for in this Contract are accurate, complete and current as of the date of the Contract and no higher than those charged to the CONTRACTOR'S most favored customer for the same or substantially similar service.

The said rates and costs shall be adjusted to exclude any significant sums should the CITY determine that the rates and costs were increased due to inaccurate, incomplete or non-current wage rates or due to inaccurate representations of fees paid to outside contractors. The CITY shall exercise its rights under this Article 4 within three (3) years following final payment.

ARTICLE 5 - TERMINATION

This Contract may be canceled by the CONTRACTOR upon thirty (30) days prior written notice to the CITY'S representative in the event of substantial failure by the CITY to perform in accordance with the terms of this Contract through no fault of the CONTRACTOR; provided the CITY fails to cure same within that thirty (30) day period. This Contract may also be terminated, in whole or in part, by the CITY, with or without cause, immediately upon written notice to the CONTRACTOR. Unless the CONTRACTOR is in breach of this Contract, the CONTRACTOR shall be paid for services rendered to the CITY'S satisfaction through the date of termination. After receipt of a Termination Notice and except as otherwise directed by the CITY, the CONTRACTOR shall:

A. Stop work on the date and to the extent specified.

B. Terminate and settle all orders and subcontracts relating to the performance of the terminated work.

C. Transfer all work in process, completed work, and other materials related to the terminated work to the CITY.

D. Continue and complete all parts of the work that have not been terminated.

ARTICLE 6 - PERSONNEL

The CONTRACTOR represents that it has, or will secure at its own expense, all necessary personnel required to perform the services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the CITY.

All of the services required hereunder shall be performed by the CONTRACTOR or under its supervision, and all personnel engaged in performing the services shall be fully qualified and licensed and, if required, authorized or permitted under state and local law to perform such services.

Any changes or substitutions in the CONTRACTOR's key personnel, as may be listed in Exhibit "A", must be made known to the CITY's representative and written approval, at CITY's sole discretion, must be granted by the CITY's representative before said change or substitution can become effective.

The CONTRACTOR warrants that all services shall be performed by skilled, properly licensed, and competent personnel to the highest professional standards in their respective field(s).

The CONTRACTOR agrees that it is fully responsible to the CITY for the acts and omissions of subcontractors and of persons either directly or indirectly employed by the CONTRACTOR. Nothing contained herein shall create any contractual relationship between any subcontractor and the CITY.

All of the CONTRACTOR's personnel (and all Subcontractors) while on CITY premises will comply with all CITY requirements governing conduct, safety and security.

ARTICLE 7 - SUBCONTRACTING

The CITY reserves, at its sole discretion and for any reason, the right to accept the use of a subcontractor or to reject the selection of a particular subcontractor by CONTRACTOR and to inspect all facilities and approve all qualifications of any subcontractor in order to make a determination as to the capability of the subcontractor to perform properly under this Contract. However, in any event the CONTRACTOR shall be responsible for performing 50% of the work, at a minimum, by its own forces and equipment. Any changes or substitutions in the CONTRACTOR's subcontractors must be made known to the CITY's representative and written approval must be granted by the CITY's representative before said change or substitution can become effective. The CONTRACTOR is encouraged to seek minority and women business enterprises for participation in subcontracting opportunities. Further,

If a subcontractor fails to perform or make progress, as required by this Contract, and it is necessary to replace the subcontractor to complete the work in a timely fashion, the CONTRACTOR shall promptly do so, subject to acceptance, in writing and at the CITY's sole discretion, of the new subcontractor by the CITY. The CITY shall not unreasonably deny the request. However, the CONTRACTOR must demonstrate that the subcontractor being replaced is unable to perform the work, is performing the work poorly or untimely, or is unable to meet the requirements of the contract with the CITY. The CITY will not address issues related to the CONTRACTOR's

specific agreement with the subcontractor including issues of pricing.

If subcontractor(s) are used, the CONTRACTOR shall use only licensed and insured subcontractor(s), and shall require any subcontractor, as may be applicable, to provide a payment and performance bond. All subcontractors shall be required to promptly make payments to any person who, directly or indirectly, provides services or supplies under this Contract.

The CONTRACTOR shall be responsible for the performance of all subcontractors.

ARTICLE 8 – SBE PARTICIPATION

Consistent with the City's procurement code, Small Business Enterprises (SBE) shall have the opportunity to participate in this project. CONTRACTOR is hereby informed that the CITY has established a goal of 15% participation of SBE. Contractor is obligated to demonstrate and document a good faith effort toward the attainment of the 15% SBE participation as a condition of this contract. The CONTRACTOR agrees to maintain all relevant records and information necessary to document compliance with the Ordinance, and agrees to allow the CITY to inspect such records and provide such records to the CITY upon request.

ARTICLE 9 - FEDERAL AND STATE TAX

The CITY is exempt from payment of Florida State Sales and Use Taxes. The CITY will sign an exemption certificate submitted by the CONTRACTOR. The CONTRACTOR shall not be exempted from paying sales tax to its suppliers for materials used to fulfill contractual obligations with the CITY, nor is the CONTRACTOR authorized to use the CITY'S Tax Exemption Number in securing such materials.

The CONTRACTOR shall be responsible for payment of its own and its share of its employees' payroll, payroll taxes, and benefits with respect to this Contract.

ARTICLE 10 - AVAILABILITY OF FUNDS

The CITY's performance and obligation to pay under this Contract is contingent upon an annual appropriation for its purpose by the CITY OF RIVIERA BEACH CITY COUNCIL.

ARTICLE 11 - INSURANCE

A. Prior to execution of this Contract by the CITY, the CONTRACTOR shall provide certificates evidencing insurance coverages as required hereunder. All insurance policies shall be issued by companies authorized to do business under the laws of the State of Florida. The Certificates shall clearly indicate that the CONTRACTOR has obtained insurance of the type, amount, and classification as required for strict compliance with this ARTICLE and that no material change or cancellation of the insurance shall be effective without thirty (30) days prior written notice to the CITY's representative.

Compliance with the foregoing requirements shall not relieve the CONTRACTOR of its liability and obligations under this Contract.

B. The CONTRACTOR shall maintain during the term of this Contract, standard Professional Liability Insurance in the minimum amount of $1,000,000.00 per occurrence (if applicable).

C. The CONTRACTOR shall maintain, during the life of this Contract, commercial general liability, including contractual liability, insurance in the amount of $1,000,000.00 per occurrence to protect the CONTRACTOR from claims for damages for bodily and personal injury, including wrongful death, as well as from claims of property damages which may arise from any operations under this Contract, whether such operations be by the CONTRACTOR or by anyone, directly or indirectly, employed by or contracting with the CONTRACTOR.

D. The CONTRACTOR shall maintain, during the life of this Contract, comprehensive automobile liability insurance in the minimum amount of $500,000.00 combined single limit for bodily injury and property damages liability to protect the CONTRACTOR from claims for damages for bodily and personal injury, including death, as well as from claims for property damage, which may arise from the ownership, use, or maintenance of owned and non-owned automobiles including, but not limited to, leased and rented automobiles, whether such operations be by the CONTRACTOR or by anyone, directly or indirectly, employed by the CONTRACTOR.

E. The parties to this Contract shall carry Workers' Compensation Insurance and Employer's Liability Insurance for all employees as required by Florida Statutes. In the event that a party does not carry Workers' Compensation Insurance and chooses not to obtain same, then such party shall, in accordance with Section 440.05, Florida Statutes, apply for and obtain an exemption authorized by the Department of Insurance and shall provide a copy of such exemption to the CITY.

F. All insurance, other than Professional Liability and Workers' Compensation, to be maintained by the CONTRACTOR shall specifically include the CITY as an "Additional Insured." Further, if CITY is being reimbursed in whole or in part for the cost of the work contemplated by the Contract by any third party, including but not limited to, any County, State, or Federal agency, CONTRACTOR, at CITY's request, will also list any such third party as an "Additional Insured" on all insurance.

ARTICLE 12 - INDEMNIFICATION

To the extent allowed by law, including section 725.06(2), Florida Statutes, the CONTRACTOR shall indemnify and hold harmless the CITY, its agents, officers, and employees from and against any and all claims, liability, losses, and/or causes of action which may arise from any negligent act, recklessness, or intentional wrongful conduct or omission of the CONTRACTOR, its agents, officers, or employees in the performance of services under this Contract, including, but not limited to, to all attorneys' fees and costs incurred by CITY.

The CONTRACTOR further agrees to indemnify and hold harmless the CITY, its agents, officers and employees from and against any claim, demand or cause of action of whatsoever kind or nature arising out of any conduct or misconduct of the CONTRACTOR not included in the paragraph above and for which the CITY, its agents,

officers, or employees are alleged to be liable, including, but not limited to, to all attorneys' fees and costs incurred by CITY.

CONTRACTOR shall pay all claims, losses, liens, fines, settlements or judgments of any nature whatsoever in connection with the foregoing indemnifications including, but not limited to, all costs, expert witness fees, reasonable attorney's fees, and court and/or arbitration costs. These indemnifications shall survive the term of this Contract or any renewal thereof.

Nothing contained in this Article shall be construed or interpreted as consent by the CITY to be sued, nor as a waiver of sovereign immunity beyond the waiver provided in Section 768.28, Florida Statutes.

ARTICLE l3 - SUCCESSORS AND ASSIGNS

The CITY and the CONTRACTOR each binds itself and its partners, successors, executors, administrators and assigns to the other party of this Contract and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Contract. Neither the CITY nor the CONTRACTOR shall assign, sublet, convey or transfer its interest in this Contract without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of the CITY which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than the CITY and the CONTRACTOR.

ARTICLE 14 – DISPUTE RESOLUTION, VENUE, AND REMEDIES

All claims arising out of this Contract or its breach shall be submitted first to mediation in accordance with the local rules for mediation in Palm Beach County, Florida. The parties shall share the mediator's fee equally. The mediation shall be held in Palm Beach County, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

This Contract shall be governed by the laws of the State of Florida. Any and all legal action necessary to enforce the Contract will be held in Palm Beach County, Florida. No remedy herein conferred upon any party is intended to be exclusive of any other remedy, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute or otherwise. No single or partial exercise by any party of any right, power, or remedy hereunder shall preclude any other or further exercise thereof.

ARTICLE 15-REMEDIES

No remedy herein conferred upon any party is intended to be exclusive of any other remedy, and each and every such remedy shall be cumulative and shall be in addition to every other remedy given hereunder or now or hereafter existing at law or in equity or by statute or otherwise. No single or partial exercise by any party of any right, power, or remedy hereunder shall preclude any other or further exercise thereof.

ARTICLE l6 - CONFLICT OF INTEREST

The CONTRACTOR represents that it presently has no interest and shall acquire no interest, either direct or indirect, which would conflict in any manner with the performance or services required hereunder, as provided for in Florida Statutes, Section 112.311. The CONTRACTOR further represents that no person having any such conflicting interest shall be employed for said performance.

The CONTRACTOR shall promptly notify the CITY's representative, in writing, by certified mail, of all potential conflicts of interest for any prospective business association, interest or other circumstance which may influence or appear to influence the CONTRACTOR's judgment or quality of services being provided hereunder. Such written notification shall identify the prospective business association, interest or circumstance, the nature of work that the CONTRACTOR may undertake and request an opinion of the CITY as to whether the association, interest or circumstance would, in the opinion of the CITY, constitute a conflict of interest if entered into by the CONTRACTOR. The CITY agrees to notify the CONTRACTOR of its opinion by certified mail within thirty (30) days of receipt of notification by the CONTRACTOR. If, in the opinion of the CITY, the prospective business association, interest or circumstance would not constitute a conflict of interest by the CONTRACTOR, the CITY shall so state in the notification and the CONTRACTOR shall, at its option, enter into said association, interest or circumstance and it shall be deemed not in conflict of interest with respect to services provided to the CITY by the CONTRACTOR under the terms of this Contract.

ARTICLE 17 – DELAYS AND EXTENSION OF TIME

The CONTRACTOR shall not be considered in default by reason of a delay in timely performance if such delay and failure arises out of causes reasonably beyond the control of the CONTRACTOR or its subcontractors and without their fault or negligence. Such causes include, but are not limited to: acts of God; natural or public health emergencies; labor disputes; freight embargoes; and abnormally severe and unusual weather conditions. Upon the CONTRACTOR's request, the CITY shall consider the facts and extent of any such delay and failure to timely perform the work for reason beyond the control of the CONTRACTOR and, if the CONTRACTOR's delay and failure to timely perform was without it or its subcontractors' fault or negligence, as determined by the CITY in its sole discretion, the time of completion shall be extended for any reasonable time that the CITY, in its sole discretion, may decide; subject to the CITY's rights to change, terminate, or stop any or all of the work at any time.

If the CONTRACTOR is delayed at any time in the progress of the work by any act or neglect of the CITY or its employees, or by any other contractor employed by the CITY, or by changes ordered by the CITY or in an unusual delay in transportation, unavoidable casualties, or any causes beyond the CONTRACTOR'S control, or by delay authorized by the CITY pending negotiation or by any cause which the CITY, in its sole discretion, shall decide justifies the delay, then the time of completion shall be extended for any reasonable time the CITY, in its sole discretion, may decide.

No extension of time shall be made for any delay occurring more than seven (7) days before a claim therefore is made in writing to the CITY. In the case of continuing cause of delay, only one (1) claim is necessary.

If no schedule or other agreement sets forth the dates by which drawing(s) shall be furnished, then no claims for

delay shall be allowed because of failure to furnish such drawing(s), until two (2) weeks after demand for the drawings and not then unless said claim is reasonable.

The CONTRACTOR's sole remedy for a delay in completion of the work for any reason will be an extension of time to complete the work and CONTRACTOR specifically waives any right to seek any monetary damages or losses for a delay in completion of the work, including, but not limited to, waiving any right to seek monetary amounts for lost profits, additional overhead, salaries, lost productivity, efficiency losses, or any other alleged monetary losses which may be allegedly suffered by CONTRACTOR due to a delay in completion of the work.

ARTICLE 18 - INDEBTEDNESS

The CONTRACTOR shall not pledge the CITY's credit or make it a guarantor of payment or surety for any contract, debt, obligation, judgment, lien, or any form of indebtedness. The CONTRACTOR further warrants and represents that it has no obligation or indebtedness that would impair its ability to fulfill the terms of this Contract.

ARTICLE 19 - DISCLOSURE AND OWNERSHIP OF DOCUMENTS

The CONTRACTOR shall deliver to the CITY's representative for approval and acceptance, and before being eligible for final payment of any amounts due, all documents and materials prepared by and for the CITY under this Contract.

All written and oral information not in the public domain or not previously known, and all information and data obtained, developed, or supplied by the CITY or at its expense will be kept confidential by the CONTRACTOR and will not be disclosed to any other party, directly or indirectly, without the CITY's prior written consent unless required by a lawful order. All drawings, maps, sketches, programs, data base, reports and other data developed, or purchased, under this Contract for or at the CITY's expense shall be and remain the CITY's property and may be reproduced and reused at the discretion of the CITY.

The CONTRACTOR shall comply with Florida's Public Records Act, Chapter 119, Florida Statutes, and, if determined to be acting on behalf of the CITY as provided under section 119.011(2), Florida Statutes, specifically agrees to:

(a) Keep and maintain public records required by the CITY to perform the service.

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

(c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law for the duration of this Contract and following completion of this Contract if the CONTRACTOR does not transfer the records to the CITY.

(d) Upon completion of this Contract, transfer, at no cost, to the CITY all public records in possession of the CONTRACTOR or keep and maintain public records required by the CITY to perform the service. If the CONTRACTOR transfers all public records to the CITY upon completion of the Contract, the CONTRACTOR shall destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. If the CONTRACTOR keeps and maintains public records upon completion of the Contract, the CONTRACTOR shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the CITY, upon request from the CITY's custodian of public records or designee, in a format that is compatible with the information technology systems of the CITY.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS OR DESIGNEE AT: 600 WEST BLUE HERON BLVD., RIVIERA BEACH, FL, 33404, Tel. (561)845-4090, crobinson@rivierabch.com.

ARTICLE 20 - INDEPENDENT CONTRACTOR RELATIONSHIP

The CONTRACTOR is, and shall be, in the performance of all work, services and activities under this Contract, an Independent Contractor, and not an employee, agent, or servant of the CITY. All persons engaged in any of the work or services performed pursuant to this Contract shall at all times, and in all places, be subject to the CONTRACTOR's sole direction, supervision, and control. The CONTRACTOR shall exercise control over the means and manner in which it and its employees perform the work, and in all respects the CONTRACTOR's relationship and the relationship of its employees to the CITY shall be that of an Independent Contractor and not as employees or agents of the CITY.

The CONTRACTOR does not have the power or authority to bind the CITY in any promise, agreement or representation other than as specifically provided for in this Contract.

ARTICLE 21 - CONTINGENT FEES

The CONTRACTOR warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the CONTRACTOR to solicit or secure this Contract and that it has not paid or agreed to pay any person, company, corporation, individual, or firm, other than a bona fide employee working solely for the CONTRACTOR, any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the award or making of this Contract.

ARTICLE 22 - ACCESS AND AUDITS

The CONTRACTOR shall maintain adequate records to justify all charges, expenses, and costs incurred in estimating and performing the work for at least three (3) years after completion of this Contract. The CITY shall have access to such books, records, and documents as required in this Article for the purpose of inspection or audit during normal business hours, at the CONTRACTOR's place of business.

ARTICLE 23 - NONDISCRIMINATION

The CONTRACTOR warrants and represents that all of its employees are treated equally during employment without regard to race, color, religion, disability, sex, age, national origin, ancestry, political affiliation, marital status, handicap, or sexual orientation. Further, CONTRACTOR shall not discriminate or permit discrimination against any employee or an applicant for employment on the basis of race, color, sex, religion, political affiliation, natural origin, ancestry, marital status, sexual orientation or handicap.

ARTICLE 24 - ENFORCEMENT COSTS

All parties shall be responsible for their own attorney's fees, court costs and expenses if any legal action or other proceeding is brought for any dispute, disagreement, or issue of construction or interpretation arising hereunder whether relating to the Contract's execution, validity, the obligations provided therein, or performance of this Contract, or because of an alleged breach, default or misrepresentation in connection with any provisions of this Contract.

ARTICLE 25 – LICENSES, APPROVALS AND PERMITS

The CONTRACTOR hereby represents and warrants that it has and will continue to maintain all licenses and approvals required to conduct its business, and that it will at all times conduct its business activities in a reputable manner. This includes, but is not limited to, maintaining all licenses and performing all the duties required under Section 489.128, Florida Statutes. Proof of such licenses and approvals shall be submitted to the CITY's representative upon request.

The CONTRACTOR shall be solely responsible for obtaining, paying for, and complying with all necessary permits, licenses, approvals and authorizations required for any work done pursuant to this Contract from any federal, state, regional, county or city agency.

ARTICLE 26 - SEVERABILITY

If any term or provision of this Contract, or the application thereof to any person or circumstances shall, to any extent, be held invalid or unenforceable, the remainder of this Contract, or the application of such terms or provisions, to persons or circumstances other than those as to which it is held invalid or unenforceable, shall not be affected, and every other term and provision of this Contract shall be deemed valid and enforceable to the extent permitted by law.

ARTICLE 27 - PUBLIC ENTITY CRIMES

As provided in Sections 287.132-133, Florida Statutes, by entering into this Contract or performing any work in furtherance hereof, the CONTRACTOR certifies that it, its affiliates, suppliers, subcontractors and contractors who will perform hereunder, have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287.133(3)(a).

ARTICLE 28 - MODIFICATIONS OF WORK

The CITY reserves the right to make changes in the Scope of Work, including alterations, reductions therein or additions thereto. Upon receipt bythe CONTRACTOR of the CITY's notification of a contemplated change, the CONTRACTOR shall, in writing: (1) provide a detailed estimate for the increase or decrease in cost due to the contemplated change; (2) notify the CITY of any estimated change in the completion date; and, (3) advise the CITY if the contemplated change shall affect the CONTRACTOR's ability to meet the completion dates or schedules of this Contract.

If the CITY so instructs in writing, the CONTRACTOR shall suspend work on that portion of the Scope of Work affected by a contemplated change, pending the CITY's decision to proceed with the change.

If the CITY elects to make the change, the CITY shall initiate a Contract Amendment and the CONTRACTOR shall not commence work on any such change until such written amendment is signed by the CONTRACTOR and approved and executed by the CITY's designated representative and approved by the CITY COUNCIL FOR THE CITY OF RIVIERA BEACH should said change require COUNCIL approval.

ARTICLE 29 - NOTICE

All notices required in this Contract shall be sent by certified mail, return receipt requested, and if sent to the CITY shall be mailed to:

TERRENCE N. BAILEY, INTERIM DIRECTOR OF PUBLIC WORKS
1481 15TH STREET
RIVIERA BEACH, FL 33404

and if sent to the CONTRACTOR shall be mailed to:

XXXXXXXXX CONSTRUCTION
XXXXXXXXX, PRESIDENT
XXX XXXX PARKWAY, UNIT XX
WEST PALM BEACH, FL 33411

ARTICLE 30 - ENTIRETY OF CONTRACTUAL AGREEMENT

The CITY and the CONTRACTOR agree that this Contract and any attachments hereto or other documents as referenced in the Contract sets forth the entire agreement between the parties, that there are no promises or understandings other than those stated herein, and this Contract supersedes all prior oral and written agreements between the parties hereto with respect to the subject matter hereof. None of the provisions, terms and conditions contained in this Contract may be added to, modified, superseded or otherwise altered, except by written instrument executed by the parties hereto in accordance with Article 28 - Modifications of Work.

ARTICLE 31 - SPECIAL CONDITIONS

All materials and supplies provided by CONTRACTOR shall be in strict accordance with the plans and specifications approved by the CITY.

The CONTRACTOR shall furnish bonds and maintain said bonds throughout the duration of the project as provided for in Florida Statutes section 255.01 Et. Seq., covering the faithful performance of the Contract and payment of all obligations arising thereunder. The bonds shall be secured by the CONTRACTOR from a surety company licensed in the State of Florida with an "A" rating or better in management and a "10" rating or better in strength as rated by Best's Key Rating Guide published by Alfred M. Best Company, Oldwick, New Jersey 08858.

The CONTRACTOR shall be required to provide Surety Bonds in the amount of one hundred percent (100%) of the Contract amount. The required premiums shall be paid for by the CONTRACTOR.

In addition to the above-minimum qualifications, the surety company must meet at least one of the following additional qualifications:

A. The surety company shall hold a current certificate or authority as an acceptable surety of federal bonds in accordance with the United States Department of Treasury Circular 570, Current Revision. The surety company shall provide the CITY with satisfactory evidence that such excess risk has been protected in an acceptable manner.

B. The surety company shall have at least the following minimum ratings in the latest revision of Best's Key Rating Guide: Best's Policy Holders Ratings –A- (minimum); Best Financial Category – Class 1.

C. For projects that do not exceed $500,000, the CITY will accept bonds in accordance with section 287.0935, Florida Statutes.

D. If the surety is declared bankrupt, becomes insolvent, its right to do business in the State of Florida is terminated or it ceases to meet the requirements set forth above, the CONTRACTOR shall within ten (10) working days after notification by the CITY substitute another bond and surety company, at no cost to the CITY, meeting the above requirements.

ARTICLE 32 – INSPECTION OF WORK

The CITY's representative and the CITY's Engineer shall at all times have access to work wherever it is, in preparation or progress, and the CONTRACTOR shall provide proper facilities for such access and for inspection.

If the specifications, the CITY, the Engineer's instructions, laws, ordinances or any public authority requires any work to be specially tested or approved, the CONTRACTOR shall give the CITY Representative and CITY Engineer timely notice of its readiness for inspection. If any such work should be covered up by CONTRACTOR and CITY Representative or CITY Engineer desires to inspect or re-inspect such work for any reason, at the sole discretion of CITY Representative or CITY Engineer, such work must be uncovered for examination, at the CONTRACTOR's expense.

ARTICLE 33– WARRANTY/GUARANTY

All materials and equipment to be furnished and/or installed by the CONTRACTOR under this Contract as it relates to the **Project XXXXXX** shall be guaranteed by the Manufacturer, if any, for a period of years as specified by the manufacturer under normal manufacturer warranties from the date of final acceptance thereof against defective materials, design and workmanship. The CONTRACTOR shall guarantee all of its work, including but not limited to all work related to construction of the **Project XXXXXX** and all related amenities for a period of 1 year. Upon receipt of notice from the CITY of failure of any part covered under such warranty/guaranty period, the affected part, parts, or materials shall be replaced promptly with new parts or materials by the CONTRACTOR or Manufacturer at no expense to the CITY. In the event the CONTRACTOR fails to make the necessary repairs or replacements within thirty (30) days after notification by the CITY, the CITY may accomplish the work at the expense of the CONTRACTOR.

The CONTRACTOR shall provide the CITY with a written warranty of its work and with a copy of the manufacturer's warranty as it relates to the materials and parts used to **Project XXXXXX**.

ARTICLE 34 – PROTECTION OF WORK AND PROPERTY

The CONTRACTOR shall continuously maintain adequate protection of all work from damage, and shall protect such work and the CITY's property from injury or loss arising during the term of the Contract. Except for any such damage, injury, or loss which may be directly due to errors caused by the CITY or employees of the CITY, the CONTRACTOR shall adequately protect adjacent property, as provided by the law, and shall provide guard fences, lights, and any other necessary materials to carry out such protection.

Until acceptance of the work by the CITY, the CITY's property shall be under the charge and care of the CONTRACTOR and the CONTRACTOR shall take every necessary precaution against injury or damage to the work by the action of the elements or from any other cause whatsoever, and the CONTRACTOR shall repair, restore and make good, without additional charge any work occasioned by any of the above causes before its completion and acceptance by the CITY.

ARTICLE 35 – TIME

The parties agree that time is of the essence in all respects under this Contract and failure by a party to complete performance within the time specified, or within a reasonable time if no time is specified herein or in the exhibits, shall, at the option of the other party without liability, in addition to any other rights or remedies, relieve the other party of any obligation to accept such performance.

ARTICLE 36 - TERMINOLOGY AND CAPTIONS

All pronouns, singular, plural, masculine, feminine or neuter, shall mean and include the person, entity, firm or corporation to which they relate as the context may require. Wherever the context may require, the singular shall mean and include the plural and the plural shall mean and include the singular. The term "Contract" as used herein, as well as the terms "herein", "hereof", "hereunder", "hereinafter" and the like mean this Contract in its entirety and all exhibits, amendments and addenda attached hereto and made a part hereof. The captions and paragraph headings are for reference and convenience only and do not enter into or become a part of the context of this Contract, nor shall such headings affect the meaning or interpretation of this Contract.

ARTICLE 37 - WAIVER

Failure of the CITY to enforce or exercise any right(s) under this Contract shall not be deemed a waiver of the CITY's right to enforce or exercise said right(s) at any time thereafter.

ARTICLE 38 - PREPARATION

CITY and CONTRACTOR acknowledge that each has had the benefit of counsel or the ability to retain counsel and full and free access to counsel in connection with the negotiation and execution of Contract, that each has consulted or could have consulted with counsel in connection with this Contract, and that each has had the opportunity, prior to execution, to read this Contract and fully understand all of its provisions. Should any provision in this Contract require judicial or quasi-judicial interpretation it is agreed that a Court or other dispute resolution forum interpreting or enforcing the same shall not apply a presumption that the terms hereof shall be more strictly construed against any party by reason of the rule construction that a document is to be construed more strictly against the party who itself or through its agent has prepared the same. CITY and CONTRACTOR agree that this Contract is the product and result of a joint effort.

ARTICLE 39 - MATERIALITY

All provisions of the Contract shall be deemed material. In the event CONTRACTOR fails to comply with any of the provisions contained in this Contract or exhibits, amendments and addenda attached hereto, said failure shall be deemed a material breach of this Contract and CITY may at its option and without notice terminate this Contract.

ARTICLE 40 - REPRESENTATIONS/BINDING AUTHORITY

CONTRACTOR has full power, authority and legal right to execute and deliver this Contract and perform all of its obligations under this Contract. By signing this Contract, XXXXXXXX**, PRESIDENT** hereby represents to the CITY that he/she has the authority and full legal power to execute this Contract and any and all documents necessary to effectuate and implement the terms of this Contract on behalf of the party for whom he or she is signing and to bind and obligate such party with respect to all provisions contained in this Contract.

ARTICLE 41 - EXHIBITS

Each exhibit referred to in this Contract forms an essential part of this Contract. The exhibits, if not physically attached, should be treated as part of this Contract and are incorporated herein by reference.

ARTICLE 42 - CONTRACT DOCUMENTS AND CONTROLLING PROVISIONS

This Contract consists of this contract, bid documents and construction design plans. The CONTRACTOR agrees to be bound by all the terms and conditions set forth in this Contract and design plans. To the extent that there exists a conflict between this Contract and design plans, the terms, conditions, covenants, and/or provisions of this Contract shall prevail. Wherever possible, the provisions of such documents shall be construed in such a manner as to avoid conflicts between provisions of the various documents.

ARTICLE 43 - LEGAL EFFECT

This Contract shall not become binding and effective until approved, in writing, by both CITY's designated representative and the CITY COUNCIL OF THE CITY OF RIVIERA BEACH.

ARTICLE 44 - NOTICE OF COMPLAINTS OR SUITS

Each party will promptly notify the other of any complaint, claim, suit or cause of action threatened or commenced against it which arises out of or relates, in any manner, to the performance of this Contract. Each party agrees to cooperate with the other in any investigation either may conduct, the defense of any claim or suit in which either party is named, and shall do nothing to impair or invalidate any applicable insurance coverage.

ARTICLE 45 – SURVIVABILITY

Any provision of this Contract which is of a continuing nature or imposes an obligation which extends beyond the term of this Contract shall survive its expiration or earlier termination.

ARTICLE 46 - DEFAULT

Notwithstanding anything contained in this Contract to the contrary, the parties agree that, by way of inclusion and not limitation, the occurrence of any of the following shall be deemed a material event of default and shall be grounds for termination:

A. The filing of a lien or claim of any kind by any subcontractor or third tier subcontractor including, but not limited to materialmen, suppliers, or laborers, upon any property, right of way, easement, other interest in land or right to use such land within the territorial boundaries of the CITY which lien is not satisfied, discharged or contested in a court of law within thirty (30) days from the date of notice to the CONTRACTOR;

B. The filing of any claim, including, but not limited to, a claim against any Payment Bond by any

subcontractor or third tier subcontractor including, but not limited to materialmen, suppliers, or laborers, concerning the failure of the CONTRACTOR to pay any such subcontractor or third tier subcontractor including, but not limited to materialmen, suppliers, or laborers, for any work performed or materials supplied pursuant to this Contract;

C. The filing of any judgment lien against the assets of CONTRACTOR related to the performance of this Contract which is not satisfied, discharged or contested in a court of law within thirty (30) days from the date of notice to the CONTRACTOR; or

D. The filing of a petition by or against the CONTRACTOR for relief under the Bankruptcy Code, or for its reorganization or for the appointment of a receiver or trustee of the CONTRACTOR or the CONTRACTOR's property; or an assignment by CONTRACTOR for the benefit of creditors; or the taking possession of the property of the CONTRACTOR by any governmental officer or agency pursuant to statutory authority for the dissolution or liquidation of the CONTRACTOR; or if a temporary or permanent receiver or trustee shall be appointed for the CONTRACTOR or for the CONTRACTOR's property and such temporary or permanent receiver or Trustee shall not be discharged within thirty (30) days from the date of appointment.

The CONTRACTOR shall provide written notice to the CITY of the occurrence of any event of default within ten (10) days of CONTRACTOR's notice of any such default.

ARTICLE 47 - WAIVER OF SUBROGATION

CONTRACTOR hereby waives any and all rights to Subrogation against the CITY, its officers, employees and agents for each required policy. When required by the insurer, or should a policy condition not permit an insured to enter into a pre-loss agreement to waive subrogation without an endorsement, then the CONTRACTOR shall agree to notify the insurer and request the policy be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or its equivalent. This Waiver of Subrogation requirement shall not apply to any policy, which a condition to the policy specifically prohibits such an endorsement, or voids coverage should the CONTRACTOR enter into such an agreement on a pre-loss basis.

ARTICLE 48 - RIGHT TO REVIEW

The CITY, by and through its Risk Management Department, in cooperation with the contracting/monitoring department, reserves the right to review, reject or accept any required policies of insurance, including limits, coverages, or endorsements, therein from time to time throughout the term of this Contract. The CITY reserves the right, but not the obligation, to review and reject any insurer providing coverage because of poor financial condition or failure to operate legally.

ARTICLE 49 – SUBRECIPENT REQUIREMENTS

CONTRACTOR agrees and recognizes that CITY may be seeking reimbursement in whole or in part for the cost of the work contemplated by this Contract from a third party, including but not limited to, various County, State, and Federal agencies or subdivisions. The reimbursement sought by CITY may be dependent upon, among other items, CONTRACTOR's compliance with the terms and conditions of this Contract and the furnishing of Sub-Recipient Requirement information by CONTRACTOR to CITY. CONTRACTOR agrees to fully cooperate with CITY in any requests of CITY to fulfill CITY's Sub-Recipient Requirements and to otherwise obtain the sought after reimbursement. CONTRACTOR agrees and recognizes that the failure to comply with all the terms and conditions of this Contract and the furnishing of Sub-Recipient Requirement information to CITY by CONTRACTOR may result in the CITY failing to obtain the sought after reimbursement in whole or in part for the cost of the work contemplated by this Contract and that such failure by the CONTRACTOR shall constitute a material default under this Contract.

ARTICLE 50 – WAIVER OF TRIAL BY JURY

IN THE EVENT OF LITIGATION ARISING FROM THIS CONTRACT, CITY AND CONTRACTOR KNOWINGLY, VOLUNTARILY AND INTENTIONALLY WAIVE ANY RIGHT TO A TRIAL BY JURY. CITY AND CONTRACTOR HEREBY ACKNOWLEDGE THAT THIS WAIVER PROVISION IS A MATERIAL INDUCEMENT FOR EACH PARTY AGREEING TO ENTER INTO THIS CONTRACT.

IN WITNESS WHEREOF, the parties unto this Contract have set their hand and seal on the day and year above written.

CITY OF RIVIERA BEACH

BY:_____
RONNIE L. FELDER,
MAYOR

ATTEST:

BY: _____
CLAUDENE L. ANTHONY
CERTIFIED MUNICIPAL CLERK
CITY CLERK

APPROVED AS TO TERMS AND CONDITIONS

BY: _____
TERRENCE N. BAILEY, PE
DEPARTMENT DIRECTOR

APPROVED AS TO FORM AND LEGAL SUFFICIENCY

BY: _____
DAWN S. WYNN
CITY ATTORNEY

Date: _____

XXXX DEMOLITION

BY: _____
XXXXXXXXXX,
PRESIDENT

EXHIBIT "A"

SCOPE OF WORK

The project involves the full mill, overlay, and reconstruction of W 26th Court in the City of Riviera Beach, Florida. The work includes, but is not limited to the reconstruction of deteriorated public streets, installation of lime rock base, asphaltic pavement, concrete sidewalks, concrete curb and gutter, reinforced concrete drainage pipe, inlet structures, and ex-filtration trench where applicable, replacement of portions of the existing water main and services, installation of fire hydrants and appurtenances, replacement of existing sanitary sewer manholes and lines including lateral services and cleanouts, traffic calming devices, striping and signage, and grouting, adjustment, proper disposal or abandonment of existing utilities as shown on the approved construction plans. The Contractor prior, during and at completion of the demolition and construction phase of this work shall follow all the required notifications, protection, regulatory, federal requirements and execution procedures described in Section 02050 of the Project Manual. The Federal requirements in Project Manual as this project in its entirety is governed by Davis Bacon, Wage Decisions, MBE/WBE and Section 3 clauses. Please see Exhibit D for Federal Requirements.

D. DAVIS-BACON AND RELATED ACTS (DBRA) (Reference Agreement with County)

1. The copy of the Wage Decision included in the bid documents is Not Valid for this project. An updated copy of the current Wage Decision 'HEAVY' construction is available online at https://www.wdol.gov/dba.aspx A copy of current Wage decision for 'HEAVY' type construction with effective date of 12/21/18 has been attached for your use. Also, current Wage decision for 'HIGHWAY' construction has publication date of 01/05/18 and to be used for this project.

2. Payrolls from contractor and subcontractors shall be current and reviewed for DBRA compliance.

3. Per Agreement with County, PG 13/Davis-Bacon and Related Acts (DBRA)

The County may establish a Labor Compliance Reporting System (LCRS) for this project. Upon implementation, the contractors and subcontractors will no longer be required to submit paper copies of fringe benefit statements, weekly certified payroll reports and or work performed reports, and shall use LCRS for all Davis-Bacon reporting and tracking. The LCRS is an online system and shall be available for use 24 hours a day, 7 days a week, to report weekly certified payrolls and labor compliance related documents.

The Work Schedule is integral part of Exhibit A, in accordance with Article 2 (C).

Reports and other required documentation shall be delivered timely and completed in accordance with Sections 1015, 1310, 1720, 1740 and other, and such submittal requirements are integral part of Exhibit A.

EXHIBIT “B”

SCHEDULE OF PAYMENTS

The Scope of Work to be completed by CONTRACTOR as defined in Exhibit “A” is based on 90% completion and compensation for the work tasks stated herein and shall be paid in accordance with Article 3 and the following Schedule of Values, which is attached herein and which forms a part of Exhibit B.

FINAL RELEASE OF LIEN

State of _____

County of_____, being first duly sworn deposes and says as follows:

1. That he is_____of the_____,
(Name of Corporation)
a_____Corporation which is named in the Performance and Payment Bonds dated the_____day of_____2019, between said corporation as the CONTRACTOR and the City of Riviera Beach, Florida; as the OWNER , for the construction of Fire Station 88 Apparatus Cover for Riviera Beach.

Said Affiant is duly authorized to make this Affidavit as, or on behalf of said Contractor as hereinabove indicated and does hereby give statement under oath in compliance with and pursuant to Section 713-01 Florida Statutes/latest amendment.

2. That the work called for the above and foregoing Contract has been completed and that all creditors contracting directly with or directly employed contractors, materialmen and suppliers, and all other creditors performing or furnishing any work, labor or materials upon said Contract work, and that there are no unpaid creditors in connection therewith.

_____
Affiant

STATE OF _____

COUNTY OF _____

Sworn to and subscribed before me this _____ day of _____2019, by _____, who is personally know to me or who produced the following identification_____.

_____
Notary Public
Printed Name:_____

My Commission Expires:

Exhibit A

Geotechnical Report

CITY OF RIVIERA BEACH, FLORIDA

CDBG FY 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

ATTACHMENT 1

Pavement Core Report from Geotechnical Investigation

TABLE OF CONTENTS

GEOTECHNICAL ENGINEERING EVALUATION CDBG 18-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS AVENUE 'M' & WEST 26TH COURT RIVIERA BEACH, PALM BEACH COUNTY, FLORIDA

AACE FILE NO. 18-235

PAGE #

1.0 INTRODUCTION 1

2.0 EXECUTIVE SUMMARY 1

3.0 SITE INFORMATION AND PROJECT UNDERSTANDING 2
- **3.1** ***Site Location and Description*** 2
- **3.2** ***Review of USDA Soil Survey*** 2
- **3.3** ***Project Understanding*** 2

4.0 FIELD EXPLORATION PROGRAM 3

5.0 OBSERVED SUBSURFACE SOIL AND GROUNDWATER CONDITIONS 4

6.0 LIMITED LABORATORY TESTING PROGRAM 4

7.0 GEOTECHNICAL ENGINEERING EVALUATION 4
- **7.1** ***Open-Cut Trenches*** 4
- **7.2** ***Roadway Restorations and Sidewalk Construction*** 5

8.0 CLOSURE 6

- Figure No. 1 Site Vicinity Maps
- Figure No. 2 Field Work Location Plan

- Sheet No. 1 Soil Boring and Pavement Core Profiles

- Appendix I USDA Soil Survey Information
- Appendix II General Notes (Soil Borings, Sampling and Testing Methods)
- Appendix III Site and Pavement Core Photographs
- Appendix IV AACE Project Limitations and Conditions

ANDERSEN ANDRE CONSULTING ENGINEERS, INC.
Geotechnical Engineering
Construction Materials Testing
Environmental Consulting

AACE File No. 18-235
November 12, 2018

Chen Moore & Associates, Inc.
500 Australian Avenue, Suite 850
West Palm Beach, FL 33401

Attn: Mr. Mike Albert, P.E.

GEOTECHNICAL ENGINEERING EVALUATION
CDBG 18-19 PUBLIC INFRASTRUCTURE IMPROVEMENTS
AVENUE 'M' & WEST 26TH COURT
RIVIERA BEACH, PALM BEACH COUNTY, FLORIDA

1.0 INTRODUCTION

In accordance with your authorization, Andersen Andre Consulting Engineers, Inc. (AACE) has completed a subsurface soil exploration and geotechnical engineering evaluation for the above referenced project. The purpose of performing this exploration was to explore shallow soil types and groundwater levels as they relate to the proposed infrastructure improvement project, and restrictions which these soil and groundwater conditions may place on the project. Our work included pavement coring, auger borings, limited laboratory testing, and engineering analysis. This report documents our explorations and tests, presents our findings, and summarizes our conclusions and recommendations.

2.0 EXECUTIVE SUMMARY

The following summary is intended to provide a brief overview of our findings and recommendations; however, the report should be read in its entirety by the project design team members.

- The encountered, shallow soil conditions are suitable for supporting the proposed piped utilities, with the excavated fill materials similarly suitable for reuse as pipe trench backfill with the exceptions and considerations presented herein.
- Similarly, the encountered soil conditions are considered suitable for the support of new sidewalks, curb/gutter sections as well as flexible pavements.
- The groundwater table was not encountered within the 5-ft and 10-ft deep boreholes.
- The completed pavement cores encountered 1-3/4 to 3 inches of asphalt underlain by 6-1/4 to 14-1/4 inches of limerock base course.

3.0 SITE INFORMATION AND PROJECT UNDERSTANDING

3.1 Site Location and Description

The subject roadway segments are located within a residential area situated on the northwest corner of Blue Heron Boulevard and Old Dixie Highway in Riviera Beach, Palm Beach County, Florida (within Section 29, Township 42 South, Range 43 East). The location of the roadway segments (i.e. the site or study area) is graphically depicted on the Site Vicinity Map (2018 aerial photograph) as well as on a reproduction of the 1983 USGS Quadrangle Map of "Riviera Beach, Florida", both presented on Figure No. 1. The USGS Quadrangle Map depicts the site as being somewhat undulating with surface elevations of 20 to 25 feet relative to the National Geodetic Vertical Datum of 1929.

3.2 Review of USDA Soil Survey

According to the USDA NRCS Web Soil Survey, the predominant surficial soil types within (or in the immediate vicinity of) the study area are as follows:

C St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes (USDA Map Unit 41)
[present throughout the study area]
Sandy marine deposits found within knolls and ridges on historic marine terraces, with sands present to depths in excess of 80 inches and a groundwater table deeper than 80 inches.

C Quartzipsamments, shaped, 0 to 5 percent slopes (USDA Map Unit 35)
[present south/southeast of the study area]
Sandy marine deposits found within rises on historic marine terraces, with fine sands present to depths in excess of 80 inches and a groundwater table deeper than 80 inches.

C Basinger-Urban land complex (USDA Map Unit 7)
[present southwest of the study area]
Sandy marine deposits found within drainage ways on historic marine terraces, with fine sands present to depths in excess of 72 inches and a groundwater table ranging from 0 to 12 inches.

The approximate location of the site is shown superimposed on an aerial photograph obtained from the USDA Web Soil Survey on Figure No. 2. Further, excerpts from the USDA Web Soil Survey summary report is included in Appendix I.

3.3 Project Understanding

Based on our review of the forwarded project-related information, we understand that this project includes the installation of a new water main, the construction of new sidewalks, curb and gutters, and roadway restoration/resurfacing within the two subject roadway segments. Based on our observations during our site visits, similar improvements are on-going throughout portions of the residential neighborhood.

4.0 FIELD EXPLORATION PROGRAM

As requested, to explore subsurface soil and pavement conditions within the site, the exploration program summarized in Table 1 below was completed:

Table 1 - Field Exploration Program

Field Work Type	Standard	# of Borings/Tests	Depth Below Grade [feet]	Location
Auger Boring	ASTM D1452	2	10	Refer to Figure No. 2
Pavement Cores (with hand auger borings)	NA	4	5	Refer to Figure No. 2-3E

We note that our original scope of work included two 10-ft Standard Penetration Test (SPT) borings (ASTM D1586). However, due to general site constraints and the potential presence of deeper and unmarked drainage pipes, it was deemed safer to complete 10-ft auger borings with incremental penetrometer probing, similar to the completed asphalt pavement cores. As such, following coring of the asphalt wearing surface and the underlying base course, the auger borings were advanced to depths of 5 to 10 feet below grade, with the auger boreholes being incrementally probed (approximately every 6 inches) using a manually advanced 0.5-inch diameter, pointed steel probe so as to explore the relative density of the soils. While the manually advanced probe does not provide a direct measure of soil density, it is a frequently-used tool used for gauging the relative density of soils. The relative density of the soils is noted by the Engineering Technician as follows:

< Loose/Soft: Soils offer little to no resistance to the vertical advancement of the probe.
< Medium: The probe can be advanced with some difficulty through the soils.
< Firm: Soils offer significant resistance to the vertical advancement of the probe.
< Unyielding: The probe cannot be advanced through the soils.

Our field work layout, coordination of utility locates, and field exploration program were completed in the period November 1-8, 2018. The field work locations shown on Figure No. 2 were determined in the field using the provided set of site plans and obtained aerial photographs/existing site features as references. The locations should be considered accurate only to the degree implied by the method of measurement used. We preliminarily anticipate that the actual locations are within 10 feet of those shown on Figure No. 2.

Maintenance of Traffic during our field work was completed through a combination of an off-duty City of Riviera Beach Police Officer/patrol car in addition to signs, cones and a flagman as needed.

Summaries of AACE's field procedures are included in Appendix II and the individual soil boring and pavement core profiles are presented on the attached Sheet No. 1. Samples obtained during performance of the borings were visually classified in the field, and representative portions of the samples were transported to our laboratory in sealed sample jars for further classification. The soil samples recovered from our explorations will be kept in our laboratory for 60 days, then discarded unless you specifically request otherwise.

5.0 OBSERVED SUBSURFACE SOIL AND GROUNDWATER CONDITIONS

Detailed subsurface conditions are illustrated on the soil boring profiles presented on the attached Sheet No. 1. The stratification of the boring profiles represents our interpretation of the field boring logs and the results of laboratory examinations of the recovered samples. The stratification lines represent the approximate boundary between soil types. The actual transitions may be more gradual than implied.

In general, at the locations and depths explored, our pavement cores encountered between 1-3/4 to 3 inches of asphalt atop 6-1/4 to 14-1/4 inches of limerock base course. Below this pavement section, unyielding fine sands (A-3) were encountered reaching the termination depths of our borings.

The groundwater table was not encountered within the 5-ft and 10-ft deep boreholes.

The above soil profile is outlined in general terms only. Please refer to the attached Sheet No. 1 for individual soil profile details. Further, site and pavement core photographs are included in Appendix III.

6.0 LIMITED LABORATORY TESTING PROGRAM

Our drillers observed the soil recovered from the augers, placed the recovered soil samples in moisture proof containers, and maintained a log for each boring. The recovered soil samples, along with the field boring logs, were transported to our Port St. Lucie soils laboratory where they were visually examined by AACE's project engineer to determine their engineering classification. The visual classification of the samples was performed in general accordance with the AASHTO soil classification system, and the results of our classifications are presented on the soil boring profiles on Sheet No. 1.

7.0 GEOTECHNICAL ENGINEERING EVALUATION

7.1 Open-Cut Trenches

Based on the findings of our site exploration, our evaluation of subsurface conditions, and judgment based on our experience with similar projects, the encountered fine sands (A-3) are suitable for relatively unrestricted use as pipe trench backfill following their excavation and, with proper moisture control, should densify using conventional compaction equipment.

Placement of pipes and structures, and compaction of the pipe/structure backfill should be performed in accordance with any local City of Riviera Beach and/or Palm Beach County standards, This should include compaction of the bottom of the pipe trenches, and placing backfill in level lifts of 12 inches, with the trench bottom and each lift compacted to a dry density of 98 percent of the Modified Proctor (ASTM D1557/AASHTO T-180) maximum dry density. The pipe backfill should be tested at a minimum frequency of one in-place density test for each 12-inch lift of pipe trench backfill for each 200 lineal feet of pipe.

The groundwater was not encountered within the explored depths. Hence, it does not appear that dewatering measures will be required for the proposed water main installation.

Should deeper trench excavations be needed, we note that sandy soil trench excavations 5 feet or deeper require a protective system, per the Occupational Safety & Health Administration (OSHA) Regulations (OSHA 29 CFR 1926.650-652) and the Florida Trench Safety Act (Florida Statutes, Chapter 553, Part III). The Contractor is responsible for adherence to all relevant trench safety requirements, including any updated regulations not addressed herein.

7.2 Roadway Restorations and Sidewalk Construction

The proposed utility installation will require subsequent roadway restorations. Given the encountered somewhat variable pavement section, below we have included recommendations for a typical urban pavement section that can be utilized for the roadway restoration efforts.

- After completing the pipe installation and trench backfilling/compaction, the trench backfill soils should be suitable to support the pavement section.

- The subbase material to a depth of 12 inches should have a minimum Limerock Bearing Ratio (LBR) value (FDOT FM 5-515) of 40 and it should be compacted to at least 98 percent of its modified Proctor (ASTM D-1557 or AASHTO T-180) maximum dry density. The surficial fine sand (SP) on this site may not have the required LBR value and may require mixing/stabilization.

- The base course may consist of crushed limerock or coquina and should have a minimum Limerock Bearing Ratio (LBR) value (FDOT FM 5-515) of 100. We recommend a base course at least 8 inches thick (i.e. FDOT Optional Base Group 6) which may be placed and compacted in a single layer. All base course material should be compacted to at least 98 percent of its modified Proctor maximum dry density.

  We note that the subgrade above can be substituted with an equivalent thickness of additional base course (i.e. 5.3 inches).

- We recommend a combination of FDOT Type SP-9.5 and SP-12.5 asphaltic wearing surface with a combined thickness of 2 inches. Care must be exercised to place the asphalt over dry, well primed base material.

The above recommendations should provide high quality flexible pavement. We remain available for additional consultations relative to the pavement design.

New sidewalk construction areas should be cleared, grubbed and stripped of all surface vegetation, trash, debris and topsoil (if any). Following clearing of the sidewalk alignment, the natural soils should be compacted (effective to a depth of 12 inches) with a light vibratory roller or a vibratory, walk-behind plate compactor to a dry density not less than 95 percent of its modified Proctor (ASTM D1557) maximum value. Any fill material needed to raise portions of the site should be placed in uniform layers not exceeding 6 inches in loose thickness, with each such layer being compacted similarly.

8.0 CLOSURE

The geotechnical evaluation submitted herein is based on the data obtained from the soil boring and pavement core profiles presented on Sheet No. 1 our understanding of the infrastructure improvement project as previously described. Limitations and conditions to this report are presented in Appendix IV.

This report has been prepared in accordance with generally accepted soil and foundation engineering practices for the exclusive use of Chen Moore & Associates. No other warranty, expressed or implied, is made.

We are pleased to be of assistance to you on this phase of your project. When we may be of further service to you or should you have any questions, please contact us.

Sincerely,
ANDERSEN ANDRE CONSULTING ENGINEERS, INC.
Certificate of Authorization No. 26794

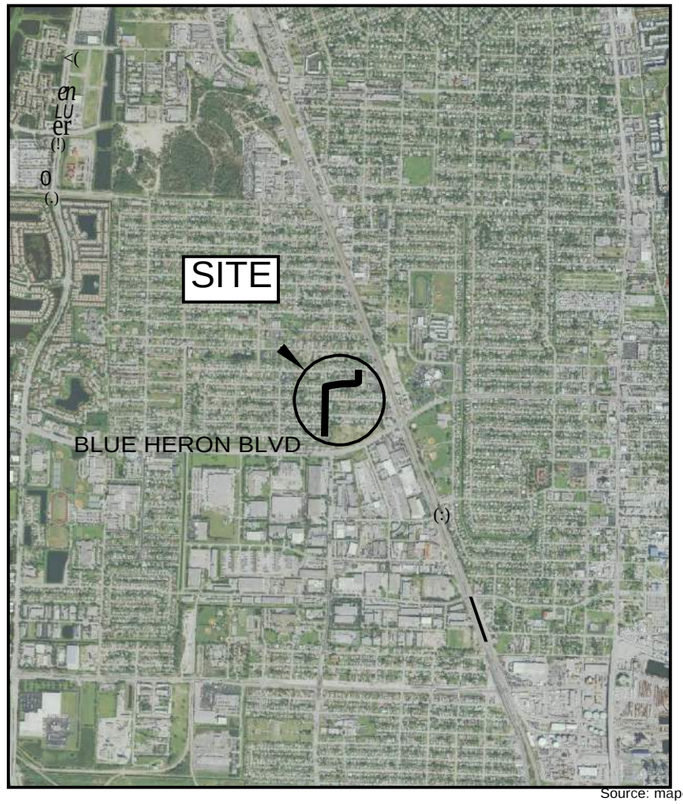
PETER GREGERS ANDERSEN * LICENSE No. 57956 * STATE OF FLORIDA * PROFESSIONAL ENGINEER *

Peter G. Andersen, P.E.
Principal Engineer
Fla. Reg. No. 57956

David P. Andre, P.E.
Principal Engineer
Fla. Reg. No. 53969
11/9/18

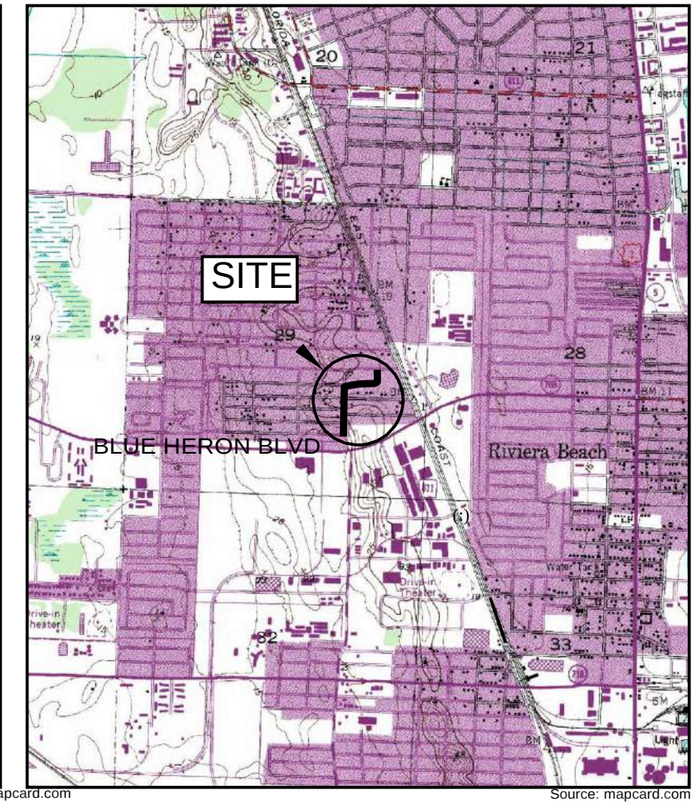
PGA/DPA:pa

2018 AERIAL PHOTOGRAPH



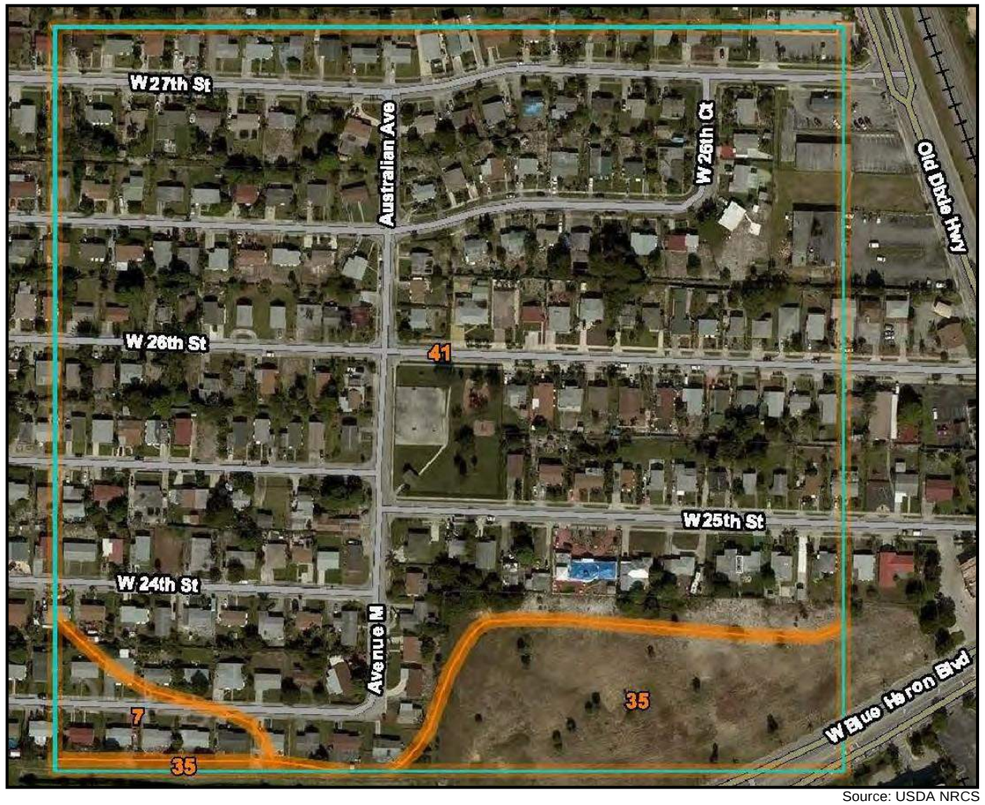
Source: mapcard.com

USGS TOPOGRAPHIC MAP
(1983 USGS Quadrangle Map of "Riviera Beach, Florida")



Source: mapcard.com

USDA SOIL SURVEY MAP



Source: USDA NRCS

Section 29
Township 42 South
Range 43 East

NORTH

NOT TO SCALE

USDA NRCS SOIL TYPES WITHIN
AND IN IMMEDIATE PROXIMITY
OF SITE BOUNDARY

41) St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

35) Quartzipsamments, shaped, 0 to 5 percent slopes

7) Basinger-Urban land complex

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SITE **VICINITY MAPS**

GEOTECHNICAL ENGINEERING EVALUATION
CDBG 18-19 PUBLIC INFRASTRUCTURE IMPROVEMENTS
AVENUE 'M' & WEST 26TH COURT
RIVIERA BEACH , PALM BEACH COUNTY, FLORIDA

Drawn by: PGA	Date: November 2018
Checked by: DPA	Date: November 2018
AACE File No: 18-235	Figure No. 1_)

LEGEND

IAB-#I
Auger Boring

I PC-# I
Pavement Core

NOTE

Shown and noted field work locations are approximate. All field work locations were located using the provided site plan, and obtained aerial photographs/existing site features as references.

Source: Google Earth

NORTH

NOT TO SCALE

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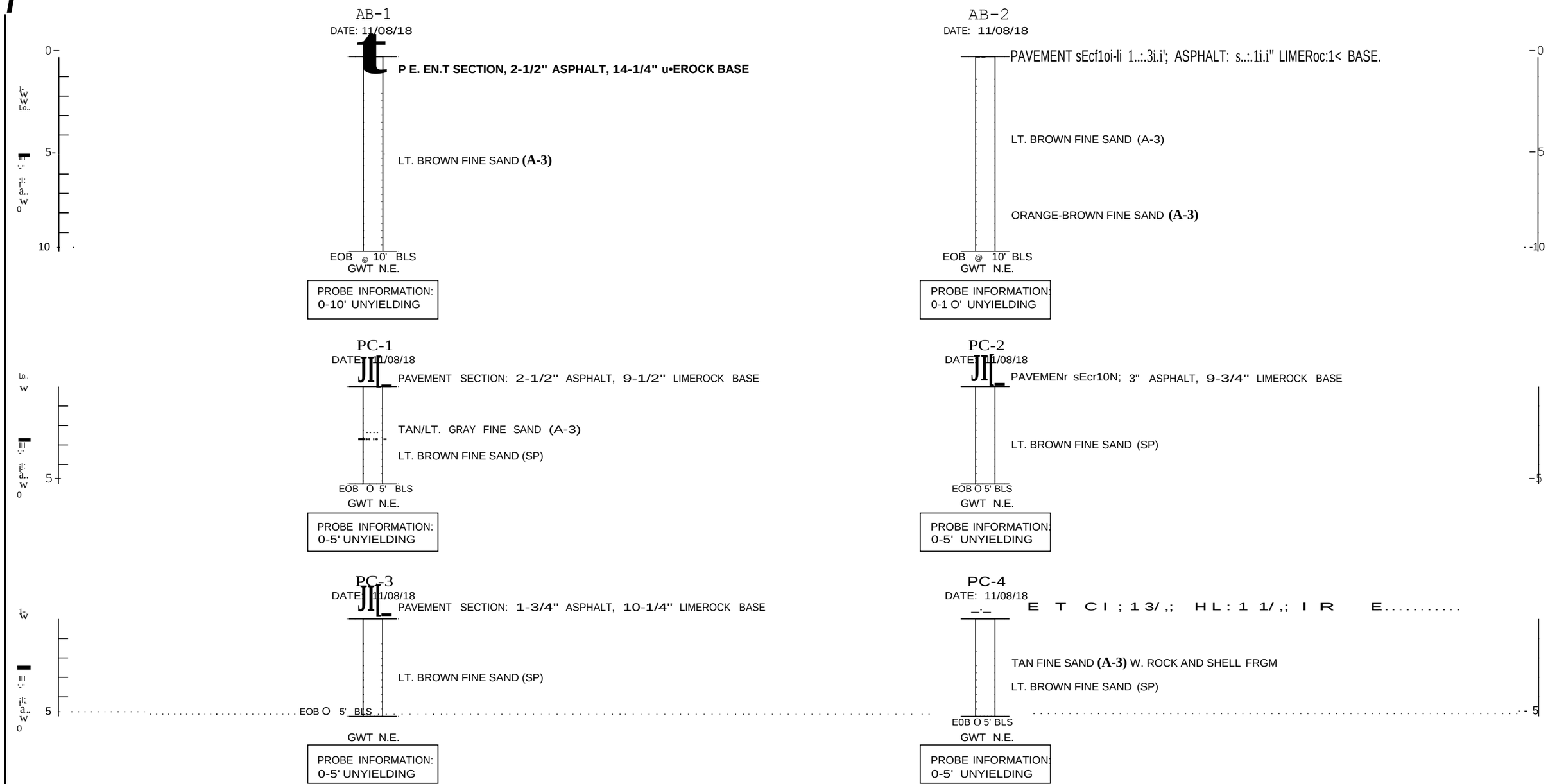
FIELD WORK LOCATION PLAN

GEOTECHNICAL ENGINEERING EVALUATION
CDBG 18-19 PUBLIC INFRASTRUCTURE IMPROVEMENTS
AVENUE 'M' & WEST 26TH COURT
RIVIERA BEACH , PALM BEACH COUNTY, FLORIDA

Drawn by: PGA	Date: November 2018
Checked by: DPA	Date : November 2018
AACE File No: 18-235	**Figure No. 2**



SOIL GRAPHICAL LEGEND:

PAVEMENT SECTION (AS NOTED)

LJ FINE SAND (SP)

FIELD WORK NOTES:

AB-#	HAND AUGER BORING (ASTM D1452)
PC-#	PAVEMENT CORE WITH HAND AUGER BORING (ASTM D1452)
GWT N.E.	GROUNDWATER TABLE NOT ENCOUNTERED
EOB	END OF BORING
BLS	BELOW LAND SURFACE
A-3	AASHTO SOIL CLASSIFICATION SYSTEM (USCS)
	AASHTO GROUPS DETERMINED BY VISUAL CLASSIFICATION

The auger boring boreholes were incrementally probed (approximately every 6 inches) using a manually advanced 0.5-inch diameter, pointed steel probe so as to explore the relative density of the soils. The relative density of the soils is noted by the Engineering Technician as follows:

Loose/Soft: Soils offer little to no resistance to the vertical advancement of the pro be.
Medium: The probe can be advanced with some difficulty through the soils.
Firm: Soils offer significant resistance to the vertical advancement of the probe.
Unyielding: The probe cannot be advanced through the soils.

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SOIL BORING AND PAVEMENT CORE PROFILES

GEOTECHNICAL ENGINEERING EVALUATION
CDBG 18-19 PUBLIC INFRASTRUCTURE IMPROVEMENTS
AVENUE 'M' & WEST 26TH COURT
RIVIERA BEACH , PALM BEACH COUNTY, FLORIDA

Drawn by: PGA	Date: November 2018
Checked by: DPA	Date: November 2018
AACE File No: 18-235	Sheet No. 1

APPENDIX I

USDA Soil Survey Information

United States Department of Agriculture

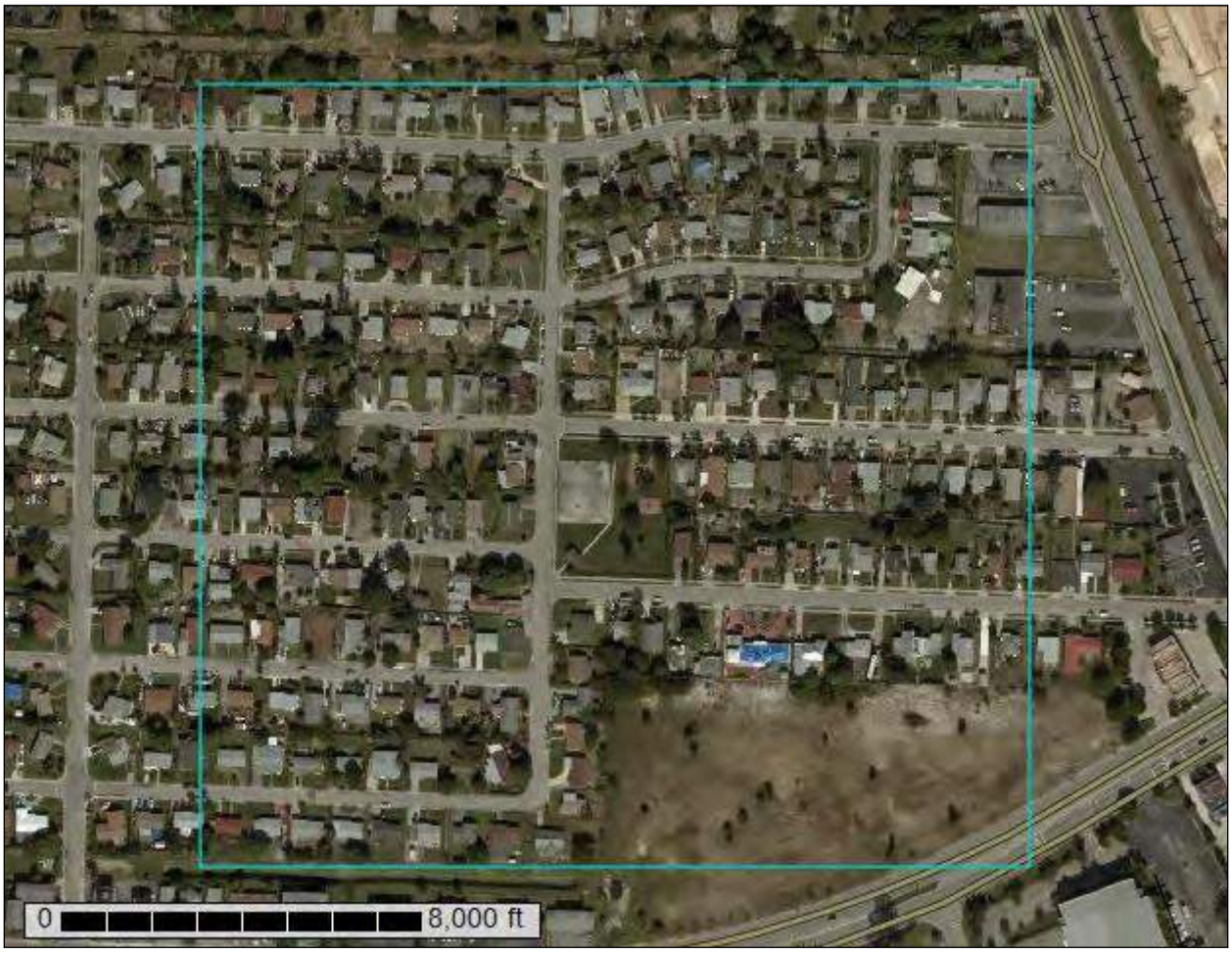
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

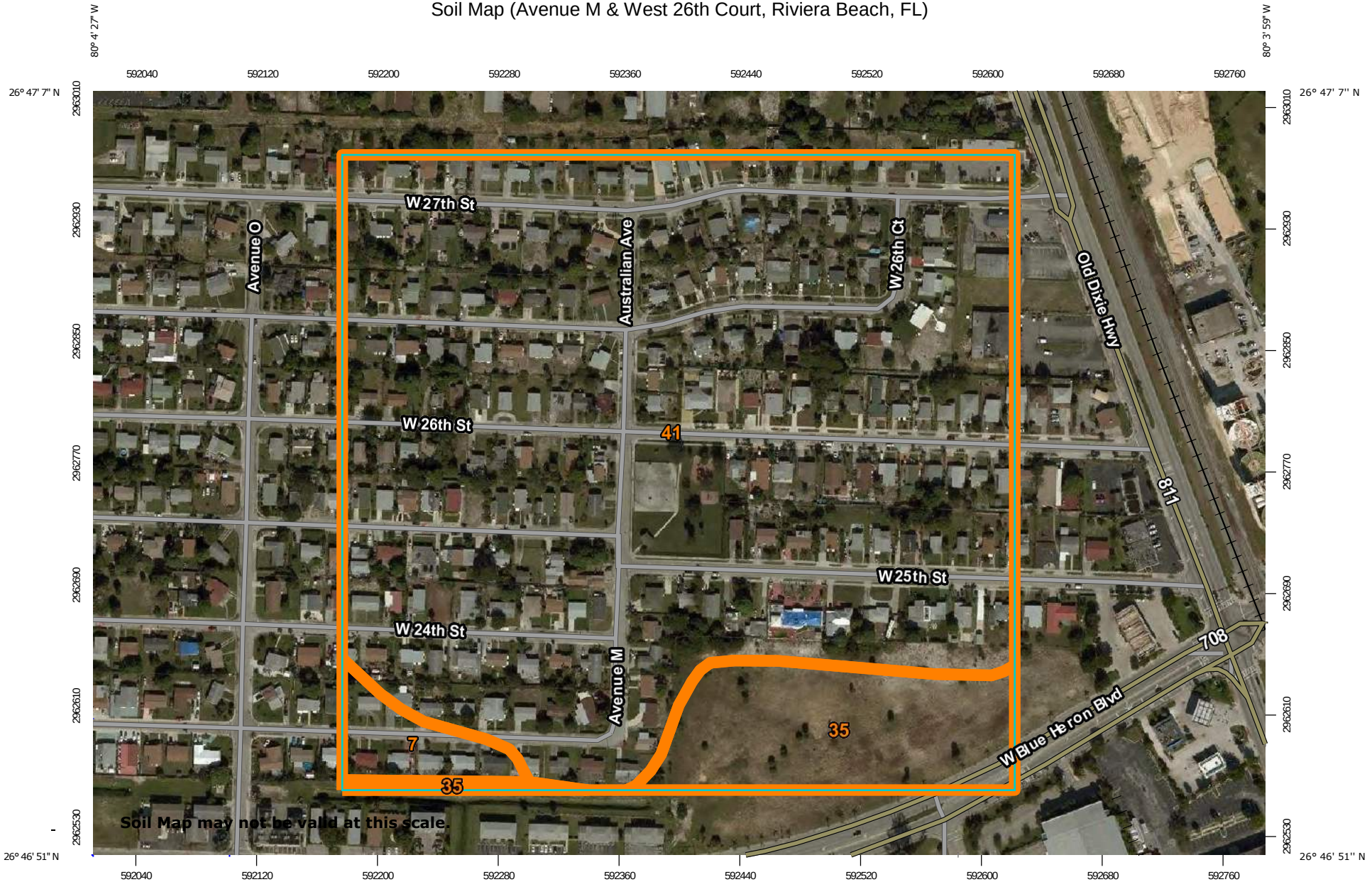
Custom Soil Resource Report for Palm Beach County Area, Florida

Avenue M & West 26th Court, Riviera Beach, FL



October 31, 2018

Custom Soil Resource Report
Soil Map (Avenue M & West 26th Court, Riviera Beach, FL)



Map Scale: 1:3,550 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Palm Beach County Area, Florida
Survey Area Data: Version 14, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 13, 2014—Dec 11, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Avenue M & West 26th Court, Riviera Beach, FL)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7	Basinger-Urban land complex	1.2	2.7%
35	Quartzipsamments, shaped, 0 to 5 percent slopes	4.8	10.3%
41	St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes	40.2	87.0%
Totals for Area of Interest		**46.2**	**100.0%**

Map Unit Descriptions (Avenue M & West 26th Court, Riviera Beach, FL)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Palm Beach County Area, Florida

7—Basinger-Urban land complex

Map Unit Setting

National map unit symbol: 1j7cs
Elevation: 10 to 100 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Basinger and similar soils: 55 percent
Urban land: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Basinger

Setting

Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Sandy marine deposits

Typical profile

A - 0 to 4 inches: fine sand
Eg - 4 to 29 inches: fine sand
Bh/Eg - 29 to 36 inches: fine sand
Cg - 36 to 72 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: Yes

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Immokalee

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Myakka

Percent of map unit: 2 percent
Landform: Flatwoods on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pompano

Percent of map unit: 1 percent
Landform: Drainageways on marine terraces
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

35—Quartzipsamments, shaped, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1j7dm
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

Quartzipsamments and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quartzipsamments

Setting

Landform: Rises on marine terraces
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 6 inches: fine sand
C - 6 to 80 inches: fine sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

41—St. Lucie-Paola-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 1j7ds
Elevation: 10 to 20 feet
Mean annual precipitation: 48 to 56 inches
Mean annual air temperature: 70 to 77 degrees F
Frost-free period: 358 to 365 days
Farmland classification: Not prime farmland

Map Unit Composition

St. lucie and similar soils: 35 percent
Paola and similar soils: 33 percent
Urban land: 30 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of St. Lucie

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Side slope, interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Eolian or sandy marine deposits

Typical profile

A - 0 to 5 inches: sand
C - 5 to 80 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Description of Paola

Setting

Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits

Typical profile

A - 0 to 3 inches: sand
E - 3 to 20 inches: sand
C - 20 to 80 inches: sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (19.98 to 39.96 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Very low (about 1.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Forage suitability group: Forage suitability group not assigned (G156AC999FL)
Hydric soil rating: No

Description of Urban Land

Setting

Landform: Marine terraces
Landform position (three-dimensional): Interfluve, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: No parent material

Minor Components

Palm beach

Percent of map unit: 1 percent
Landform: Dunes on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Pomello

Percent of map unit: 1 percent
Landform: Knolls on marine terraces, ridges on marine terraces
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

APPENDIX II

General Notes
(Soil Borings, Sampling and Testing Methods)

ANDERSEN ANDRE CONSULTING ENGINEERS, INC.

SOIL BORING, SAMPLING AND TESTING METHODS

GENERAL

Andersen Andre Consulting Engineers, Inc. (AACE) borings describe subsurface conditions only at the locations drilled and at the time drilled. They provide no information about subsurface conditions below the bottom of the boreholes. At locations not explored, surface conditions that differ from those observed in the borings may exist and should be anticipated.

The information reported on our boring logs is based on our drillers' logs and on visual examination in our laboratory of disturbed soil samples recovered from the borings. The distinction shown on the logs between soil types is approximate only. The actual transition from one soil to another may be gradual and indistinct.

The groundwater depth shown on our boring logs is the water level the driller observed in the borehole when it was drilled. These water levels may have been influenced by the drilling procedures, especially in borings made by rotary drilling with bentonitic drilling mud. An accurate determination of groundwater level requires long-term observation of suitable monitoring wells. Fluctuations in groundwater levels throughout the year should be anticipated.

The absence of a groundwater level on certain logs indicates that no groundwater data is available. It does not mean that groundwater will not be encountered at that boring location at some other point in time.

STANDARD PENETRATION TEST

The Standard Penetration Test (SPT) is a widely accepted method of in situ testing of foundation soils (ASTM D-1586). A 2-foot (0.6m) long, 2-inch (50mm) O.D. split-barrell sampler attached to the end of a string of drilling rods is driven 24 inches (0.60m) into the ground by successive blows of a 140-pound (63.5 Kg) hammer freely dropping 30 inches (0.76m). The number of blows needed for each 6 inches (0.15m) increments penetration is recorded. The sum of the blows required for penetration of the middle two 6-inch (0.15m) increments of penetration constitutes the test result of N-value. After the test, the sampler is extracted from the ground and opened to allow visual description of the retained soil sample. The N-value has been empirically correlated with various soil properties allowing a conservative estimate of the behavior of soils under load. The following tables relate N-values to a qualitative description of soil density and, for cohesive soils, an approximate unconfined compressive strength (Qu):

Cohesionless Soils:	**N-Value**	**Description**
	0 to 4	Very loose
	4 to 10	Loose
	10 to 30	Medium dense
	30 to 50	Dense
	Above 50	Very dense

Cohesive Soils:	N-Value	Description	Qu
	0 to 2	Very soft	Below 0.25 tsf (25 kPa)
	2 to 4	Soft	0.25 to 0.50 tsf (25 to 50 kPa)
	4 to 8	Medium stiff	0.50 to 1.0 tsf (50 to 100 kPa)
	8 to 15	Stiff	1.0 to 2.0 tsf (100 to 200 kPa)
	15 to 30	Very stiff	2.0 to 4.0 tsf (200 to 400 kPa)
	Above 30	Hard	Above 4.0 tsf (400 kPa)

The tests are usually performed at 5 foot (1.5m) intervals. However, more frequent or continuous testing is done by AACE through depths where a more accurate definition of the soils is required. The test holes are advanced to the test elevations by rotary drilling with a cutting bit, using circulating fluid to remove the cuttings and hold the fine grains in suspension. The circulating fluid, which is bentonitic drilling mud, is also used to keep the hole open below the water table by maintaining an excess hydrostatic pressure inside the hole. In some soil deposits, particularly highly pervious ones, flush-coupled casing must be driven to just above the testing depth to keep the hole open and/or prevent the loss of circulating fluid. After completion of a test borings, the hole is kept open until a steady state groundwater level is recorded. The hole is then sealed by backfilling, either with accumulated cuttings or lean cement.

Representative split-spoon samples from each sampling interval and from different strata are brought to our laboratory in air-tight jars for classification and testing, if necessary. Afterwards, the samples are discarded unless prior arrangement have been made.

POWER AUGER BORINGS

Auger borings (ASTM D-1452) are used when a relatively large, continuous sampling of soil strata close to the ground surface is desired. A 4-inch (100 mm) diameter, continuous flight, helical auger with a cutting head at its end is screwed into the ground in 5-foot (1.5m) sections. It is powered by the rotary drill rig. The sample is recovered by withdrawing the auger our of the ground without rotating it. The soil sample so obtained, is classified in the field and representative samples placed in bags or jars and returned to the AACE soils laboratory for classification and testing, if necessary.

HAND AUGER BORINGS

Hand auger borings are used, if soil conditions are favorable, when the soil strata are to be determined within a shallow (approximately 5-foot [1.5m]) depth or when access is not available to power drilling equipment. A 3-inch (75mm) diameter hand bucket auger with a cutting head is simultaneously turned and pressed into the ground. The bucket auger is retrieved at approximately 6-inch (0.15m) interval and its contents emptied for inspection. On occasion post-hole diggers are used, especially in the upper 3 feet (1m) or so. Penetrometer probings can be used in the upper 5 feet (1.5m) to determine the relative density of the soils. The soil sample obtained is described and representative samples put in bags or jars and transported to the AACE soils laboratory for classification and testing, if necessary.

UNDISTURBED SAMPLING

Undisturbed sampling (ASTM D-1587) implies the recovery of soil samples in a state as close to their natural condition as possible. Complete preservation of in situ conditions cannot be realized; however, with careful handling and proper sampling techniques, disturbance during sampling can be minimized for most geotechnical engineering purposes. Testing of undisturbed samples gives a more accurate estimate of in situ behavior than is possible with disturbed samples.

Normally, we obtain undisturbed samples by pushing a 2.875-inch (73 mm) I.D., thin wall seamless steel tube 24 inches (0.6 m) into the soil with a single stoke of a hydraulic ram. The sampler, which is a Shelby tube, is 30 (0.8 m) inches long. After the sampler is retrieved, the ends are sealed in the field and it is transported to our laboratory for visual description and testing, as needed.

ROCK CORING

In case rock strata is encountered and rock strength/continuity/composition information is needed for foundation or mining purposes, the rock can be cored (ASTM D-2113) and 2-inch to 4-inch diameter rock core samples be obtained for further laboratory analyses. The rock coring is performed through flush-joint steel casing temporarily installed through the overburden soils above the rock formation and also installed into the rock. The double- or triple-tube core barrels are advanced into the rock typically in 5-foot intervals and then retrieved to the surface. The barrel is then opened so that the core sample can be extruded. Preliminary field measurements of the recovered rock cores include percent recovery and Rock Quality Designation (RQD) values. The rock cores are placed in secure core boxes and then transported to our laboratory for further inspection and testing, as needed.

SFWMD EXFILTRATION TESTS

In order to estimate the hydraulic conductivity of the upper soils, constant head or falling head exfiltration tests can be performed. These tests are performed in accordance with methods described in the South Florida Water Management District (SFWMD) Permit Information Manual, Volume IV. In brief, a 6 to 9 inch diameter hole is augered to depths of about 5 to 7 feet; the bottom one foot is filled with 57-stone; and a 6-foot long slotted PVC pipe is lowered into the hole. The distance from the groundwater table and to the ground surface is recordedand the hole is then saturated for 10 minutes with the water level maintained at the ground surface.

If a constant head test is performed, the rate of pumping will be recorded at fixed intervals of 1 minute for a total of 10 minutes, following the saturation period.

LABORATORY TEST METHODS

Soil samples returned to the AACE soils laboratory are visually observed by a geotechnical engineer or a trained technician to obtain more accurate description of the soil strata. Laboratory testing is performed on selected samples as deemed necessary to aid in soil classification and to help define engineering properties of the soils. The test results are presented on the soil boring logs at the depths at which the respective sample was recovered, except that grain size distributions or selected other test results may be presented on separate tables, figures or plates as discussed in this report.

THE PROJECT SOIL DESCRIPTION PROCEDURE FOR SOUTHEAST FLORIDA

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

The soil descriptions shown on the logs are based upon visual-manual procedures in accordance with local practice. Soil classification is performed in general accordance with the United Soil Classification System and is also based on visual-manual procedures.

BOULDERS (>12" [300 MM]) and COBBLES (3" [75 MM] TO 12" [300 MM]):

GRAVEL: Coarse Gravel: 3/4" (19 mm) to 3" (75 mm)
Fine Gravel: No. 4 (4.75 mm) Sieve to 3/4" (19 mm)

Descriptive adjectives:

0 - 5%	– no mention of gravel in description
5 - 15%	– trace
15 - 29%	– some
30 - 49%	– gravelly (shell, limerock, cemented sands)

SANDS:

COARSE SAND: No. 10 (2 mm) Sieve to No. 4 (4.75 mm) Sieve
MEDIUM SAND: No. 40 (425 µm) Sieve to No. 10 (2 mm) Sieve
FINE SAND: No. 200 (75 µm) Sieve to No. 40 (425 µm) Sieve

Descriptive adjectives:

0 - 5%	– no mention of sand in description
5 - 15%	– trace
15 - 29%	– some
30 - 49%	– sandy

SILT/CLAY: < #200 (75µM) Sieve

SILTY OR SILT: PI < 4
SILTY CLAYEY OR SILTY CLAY: 4 # PI # 7
CLAYEY OR CLAY: PI > 7

Descriptive adjectives:

< - 5%	– clean (no mention of silt or clay in description)
5 - 15%	– slightly
16 - 35%	– clayey, silty, or silty clayey
36 - 49%	– very

ORGANIC SOILS:

Organic Content	**Descriptive Adjectives**	**Classification**
0 - 2.5%	Usually no mention of organics in description	See Above
2.6 - 5%	slightly organic	add “with organic fines” to group name
5 - 30%	organic	SM with organic fines Organic Silt (OL) Organic Clay (OL) Organic Silt (OH)

THE PROJECT SOIL DESCRIPTION PROCEDURE FOR SOUTHEAST FLORIDA

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

Organic Clay (OH)

HIGHLY ORGANIC SOILS AND MATTER:

Organic Content	**Descriptive Adjectives**	**Classification**
30 - 75%	sandy peat	Peat (PT)
	silty peat	Peat (PT)
	> 75%	
		amorph
	ous peat	Peat (PT)
	fibrous peat	Peat (PT)

STRATIFICATION AND STRUCTURE:

Descriptive Term		**Thickness**
with interbedded		
seam	--	less than ½ inch (13 mm) thick
layer	--	½ to 12-inches (300 mm) thick
stratum	--	more than 12-inches (300 mm) thick
pocket	--	small, erratic deposit, usually less than 1-foot
lens	--	lenticular deposits
occasional	--	one or less per foot of thickness
frequent	--	more than one per foot of thickness
calcareous	--	containing calcium carbonate (reaction to diluted HCL)
hardpan	--	spodic horizon usually medium dense
marl	--	mixture of carbonate clays, silts, shells and sands

ROCK CLASSIFICATION (FLORIDA) CHART:

Symbol	Typical Description
LS	Hard Bedded Limestone or Caprock
WLS	Fractured or Weathered Limestone
LR	Limerock (gravel, sand, silt and clay mixture)
SLS	Stratified Limestone and Soils

THE PROJECT SOIL DESCRIPTION PROCEDURE FOR SOUTHEAST FLORIDA

CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES

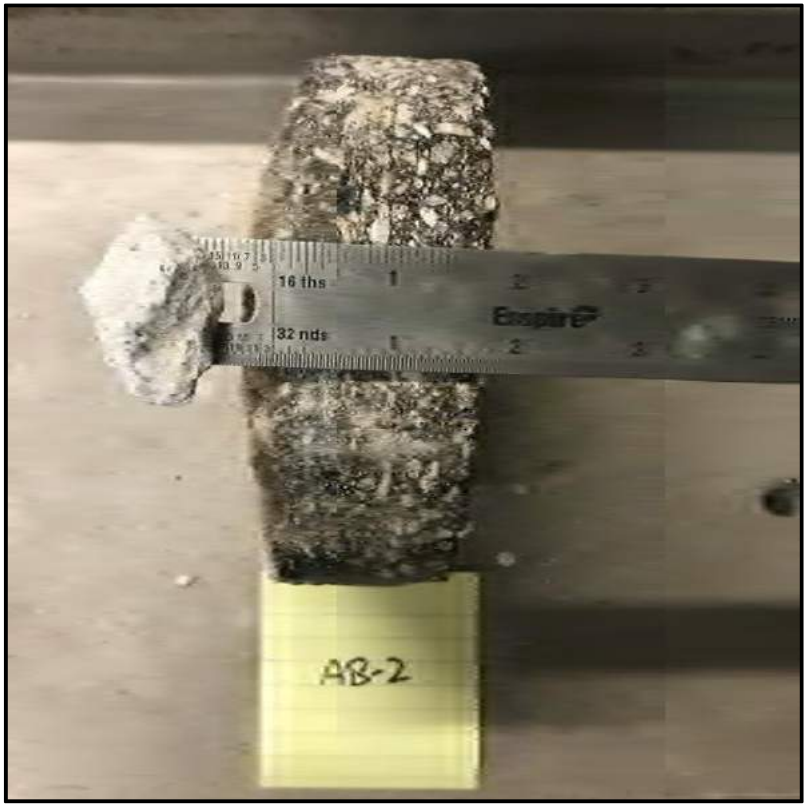
LEGEND FOR BORING LOGS

N:	Number of blows to drive a 2-inch OD split spoon sampler 12 inches using a 140-pound hammer dropped 30 inches
R:	Refusal (less than six inches advance of the split spoon after 50 hammer blows)
MC:	Moisture content (percent of dry weight)
OC:	Organic content (percent of dry weight)
PL:	Moisture content at the plastic limit
LL:	Moisture content at the liquid limit
PI:	Plasticity index (LL-PL)
qu:	Unconfined compressive strength (tons per square foot, unless otherwise noted)
-200:	Percent passing a No. 200 sieve (200 wash)
+40:	Percent retained above a No. 40 sieve
US:	Undisturbed sample obtained with a thin-wall Shelby tube
k:	Permeability (feet per minute, unless otherwise noted)
DD:	Dry density (pounds per cubic foot)
TW:	Total unit weight (pounds per cubic foot)

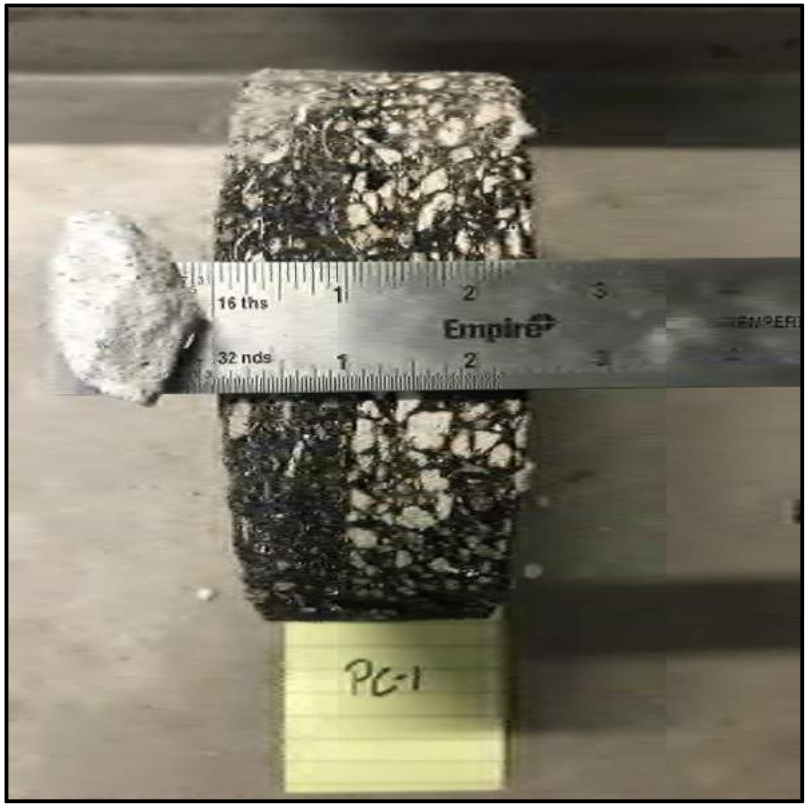
APPENDIX III

Site and Pavement Core Photographs

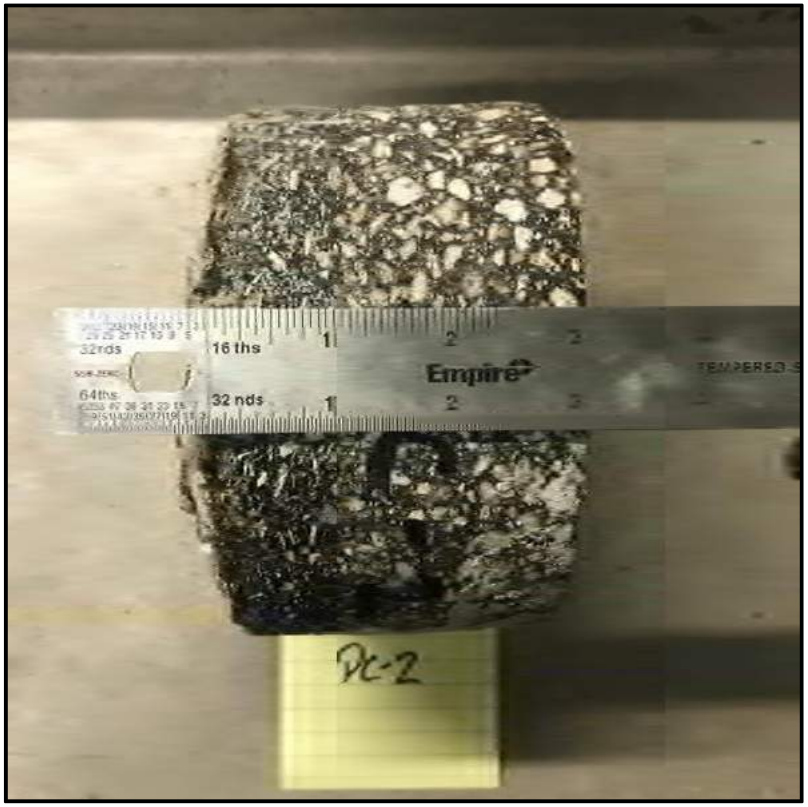
Pavement Core from AB-1
Field Condition (left) and Recovered Core (right)



Pavement Core from AB-2
Field Condition (left) and Recovered Core (right)

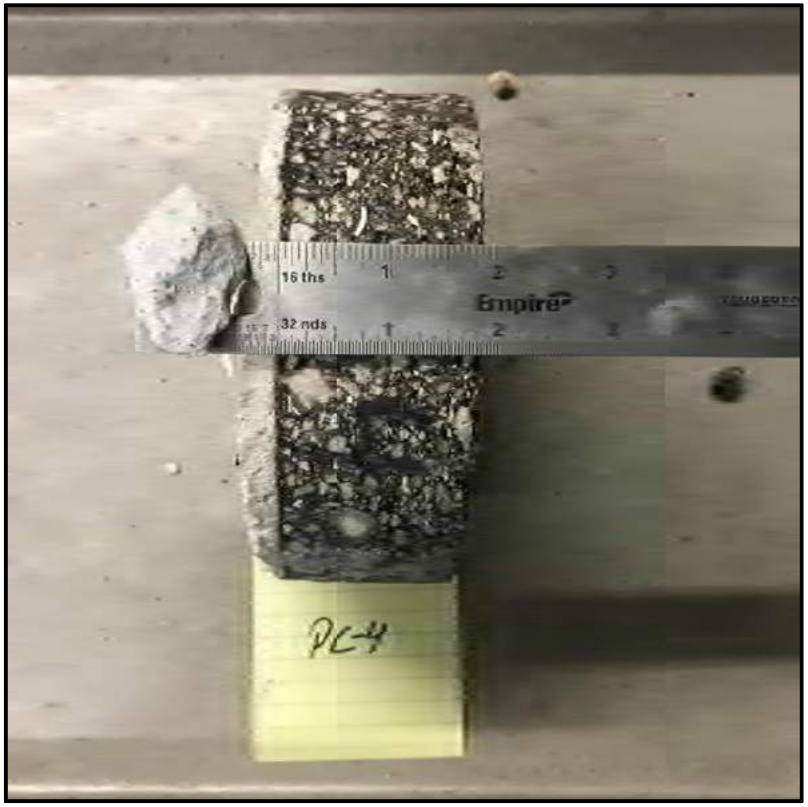


Pavement Core PC-1
Field Condition (left) and Recovered Core (right)



Pavement Core PC-2
Field Condition (left) and Recovered Core (right)

Pavement Core PC-3
Field Condition (left) and Recovered Core (right)



Pavement Core PC-4
Field Condition (left) and Recovered Core (right)

EXHIBIT B

BID TAB

City of Riveria Beach

CDBG FY 19-20 PROJECT 26TH COURT FROM AVENUE M TO 27TH STREET

BID No. 986-20-1

EXHIBIT B

Item No.	Description	Quantity		Unit Price	Total
		Total	Unit	$	$
Overhead Items					
1	Bonds and Insurance	1	LS		
2	Mobilization	1	LS		
3	Maintenance of Traffic	1	LS		
4	Permit Fees	1	AL	**$15,000.00**	**$15,000.00**
5	Professional Audio/Visual of Construction Site	1	LS		
6	Project Identification Sign	2	EA		
7	Survey and Record Drawings (Layout/As Builts)	1	LS		
	SUBTOTAL OVERHEAD ITEMS:			**$**	
Proposed Roadway and Sidewalk					
8	Remove Existing Sidewalk (4-inch)	511	SY		
9	Remove Existing Driveway Apron and Sidewalk (6-inch)	77	SY		
10	Remove Existing Driveway Apron (Asphalt)	283	SY		
11	Remove Existing Driveway - Private Property Contingency	300	SY		
12	Construct Concrete ADA Curb Ramp (Various Configurations)	2	EA		
13	Construct Concrete Sidewalk (4-inch)	711	SY		
14	Construct Concrete Driveway Apron (6-inch)	405	SY		
15	Construct Concrete Driveway - Private Property Contingency (6-inch)	30	SY		
16	Construct F Curb and Gutter	1324	LF		
17	Mill and Resurface Existing Asphalt (1-inch)	689	SY		
18	Furnish and Install St. Augustine Sod	970	SY		
19	Furnish and Install Traffic Sign and Posts	8	EA		
20	Construct Stamped Concrete Speed Hump	1	EA		
	SUBTOTAL PROPOSED ROADWAY AND SIDEWALK ITEMS:			**$**	
Proposed Pavement Marking					
21	Furnish and Install 24" White Stop Bar	12	LF		
22	Furnish and Install 12" White Exterior Crosswalk Stripes	122	LF		
23	Furnish and Install 6" Solid Double Yellow Stripes w/RPM	380	LF		
24	Furnish and Install 6" Solid Yellow 10-30 Skip w/RPM	90	LF		
25	Furnish and Install 6" Solid White Edge Lines	114	LF		
26	Furnish and Install Solid White Striping for Speed Hump	2	EA		
	SUBTOTAL PROPOSED PAVEMENT MARKING ITEMS:			**$**	
Proposed Drainage					
27	Furnish and Install Type C Curb Inlet and Grate	1	EA		
28	Furnish and Install 48" Diameter Curb Inlet	2	EA		
29	Furnish and Install Inlet Pollution Retardant Baffles/Weir	2	EA		
30	Furnish and Install 18" RCP Storm Drain	50	LF		
31	Furnish and Install 18" RCP Storm Drain w/ Exfiltration Trench	20	LF		
	SUBTOTAL PROPOSED DRAINAGE ITEMS:			**$**	
Proposed Water Main and Sanitary Sewer Line					
32	Grout and Abandon Existing 4-inch ACP WM	828	LF		
33	Furnish and Install Water Main (6-inch, PVC)	785	LF		
34	Pavement Restoration	1430	SY		
35	Furnish and Install 8" CIP Sewer Lining	1032	LF		
36	Contingency/Allowance for 8" VCP Sewer Repairs	50	LF		
37	Gravity Sanitary Sewer Manhole Rehabilitation	4	EA		
38	Install sewer lateral and clean out - single, long side	3	EA		
39	Install sewer lateral and clean out - single, short side	3	EA		
40	Install sewer later and clean-outs - double, long side	4	EA		
41	Install sewer lateral and clean out - double, short side	3	EA		
42	Furnish and Install 1" PE Single Water Service	2	EA		
43	Furnish and Install 1" PE Single Water Service	3	EA		
44	Furnish and Install 2" Double Water Service	3	EA		
45	Furnish and Install 2" Double Water Service	4	EA		
46	Furnish and Install DIP Pressure Main Fittings (6-inch)	0.30	TN		
47	Furnish and Install Gate Valves	2	EA		
48	Connect to Existing Water Main	3	EA		
49	Furnish and Install 6" line stops	2	EA		
50	Furnish and Install Sample Points	2	EA		
	SUBTOTAL PROPOSED WATER MAIN AND SANITARY SEWER ITEMS:			**$**	

TOTAL BID	**$**	

EXHIBIT *C*

ENVIRONMENTAL REVIEW

Department of Housing & Economic Sustainability

Strategic Planning

I 00 Australian Avenue - Suite #500

West Palm Beach, FL 33406

(561) 233-3600

discover.pbcgov.org/hes

Palm Beach County Board of County Commissioners

Mack Bernard, Mayor

Dave Kerner, Vice Mayor

Hal R. Valeche

Gregg K. Weiss

Robert S. Weinroth

Mary Lou Berger

Melissa McKinlay

County Administrator

Verdenia C. Baker

"An Equal Opportunity Affirmative Action Employer"

November 1, 2019

Mr. Terrence Bailey, P.E., Interim Director Public Works
City of Riviera Beach
1481 W. 15th Street
Riviera Beach, FL 33404

RE: FY 2019-2020 CDBG Activity for Infrastructure Improvements Rehabilitation of Sanitary Sewer and Water Main Services Replacement and Roadway Resurfacing, and Improvements for W. 26th Court from Avenue M north to W. 27th Street Riviera Beach

Dear Mr. Bailey:

Housing & Economic Sustainability (HES) has completed an Environmental Review (ER) in accordance with 24 CFR Part 58 for FY 2019-2020 for the Community Development Block Grant (CDBG) funded activity. The ER is based on work scope activity consisting rehabilitation of sanitary sewer and water main services replacement in the ROW of W. 26th Court to include milling, resurfacing, ADA compliant upgrades for street improvements of sidewalks and driveways, striping and signage, and associated construction activities. The location is along W. 26th Court from Avenue M north to W. 27th Street.

The ER did not identify any adverse environmental conditions for the FY 2019-2020 funded activity site. However, should construction activities require dewatering regulatory agencies should be contacted. The project area for W. 26th Court from Avenue M to W. 27th Street lies within Zones 3 and 4 of the City Riviera Beach Wellfield, Wellfield Zones of Influence. The selected contractor must follow PBC ERM's "Best Management Practices for the Construction Industry" (attached) to prevent the discharge of hazardous substances at the site, if any, during ROW improvement activities. If dewatering is required, SFWMD, PBC ERM and FDEP should be notified prior to dewatering activities to determine what permitting requirements may be necessary to ensure no adverse impacts occur to the public ROW.

Plan to inform HES if any future environmental findings or conditions are discovered during activity implementation. If needed, applicable mitigation measures must be incorporated into implementation and may affect the total project cost. The ER will be kept on file at the HES office and will be available for your inspection during regular office hours.

If you have any questions, contact Melanie Borkowski, Regulatory Specialist, at 233-3687 or mborkows@pbcgov.org.

Sincerely,

Carlos Serrano
Director S PI & Ops

Attachment: PBC ERM's BMPs for Construction Industry

c: Richard Labinsky, City Engineer, Riviera Beach
Jonathan Brown, Director
Sherry Howard, Deputy Director
Jeffrey Bolton, Contracts
Bud Cheney, CIREIS
Joe Greco, Contracts
Elena O'Keefe, CIREIS

G:\ENVIRON ERRS\ERRs\PROJECTS\2019-20\CDBG\Riviera Sch in ROW of W 26th Court north to W 2?1h St sewer potable water and roadway reconstruction Infrastructure Imprvs

PAL.M13EACH CPUNTY UNIFIED LAND DEVELOPMENT CODE, ARTICLE 14 CHAPTER B, WELLFIELD PROTECTION PROHIBITIONS, RESTRICTIONS, AND BEST MANAGEMENT PRACTICES

PROHIBITIONS AND RESTRICTIONS IN ZONES OF INFLUENCE:

The Wellfield Protection Ordinance was adopted on February 23, 1988 by the Board of County Commissioners. On June 22, 1992, the Ordinance was included as the Palm Beach County Unified Land Development Code, Article 14 Chapter B, Wellfield Protection. It's intent is to ensure safe drinking water for the residences of Palm Beach County. The majority of County's drinking water supply comes from groundwater. Hazardous and toxic chemicals present a risk of contamination to our potable water supply.

Article 14 Chapter B, Wellfield Protection, defines and maps out four zones of protection. Facilities that use, handle, store or produce chemicals in quantities greater than or equal to 5 gallons liquid or 25 pounds solid are subject to regulations of the section. Chemicals above this stated quantity are prohibited in Zone 1. Facilities in Zone 2, Zone 3 or Zone 4 may be required to obtain an Operating Permit. Facilities subject to this section are liable for expenses incurred.

The owner or developer that owns property within these zones must notify potential operators of facilities of conflicts with Article 14 Chapter B. A facility which contains tenants who are not advised of the prohibitions and requirements Article 14 Chapter B is subject to Art. 14.B.3.B. Applicability. as shown below.

> No building permit or occupational license for any nonresidential activity shall be issued by the County or any municipality located within Palm Beach County that would allow development or construction in Zones 1, 2, 3, or 4, that is contrary to the restrictions and provisions provided in this section. Permits or occupational licenses issued in violation of this section confirm no right or privilege on the grantee and such invalid permits or licenses will not vest rights.

In addition, no new "exfiltration systems", defined as a gallery, perforated or leaky pipe, or similar structure used to dispose of untreated stormwater by subsurface discharge may be constructed in Zone 1 or Zone 2. Installations of sanitary sewer mains in these zones must conform to force main standards, which are indicated in Appendix 5 Minimum Standards for Sewer Pipe Fittings.

Article 14 Chapter Bis implemented by the Palm Beach County Department of Environmental Resources Management, 2300 N. Jog Road West Palm Beach, Florida 33411-2743 telephone (561) 233-2400. The Department may take appropriate legal actions as deemed necessary under Art. 14.B.14. Violations. Enforcement and Penalties.

Examples of activities that may be subject to Article 14 Chapter B include but are not restricted to the following

1. Auto Paint and Body Shops
2. Battery Manufacturers or Repair Shops
3. Carpet Cleaners
4. Commercial Laundries
5. Dry Cleaners
6. Electroplators, Circuit Board Manufacturers or Metal Finishers
7. Equipment Rental Operations
8. Fiberglass or Acrylic Manufacturers or Formers
9. Fire Extinguisher Repair Operations
10. Food Processors
11. Funeral Homes
12. Furniture Manufacturers
13. Janitorial Suppliers and Portable Toilet Operations
14. Machine Shops
15. Manufacturers using Acids, Caustics or Solvents
16. Medical Facilities
17. Paint Manufacturers
18. Pest Control Operations
19. Photo, Chemical, Industrial and Environmental Laboratories
20. Pool Maintenance Companies
21. Printers and Blueprinters
22. Roofers
23. Service Stations and Fuel Depots
24. Soap and Detergent Manufacturers and Distributors
25. Vehicle Repair Facilities
26. Water Conditioning Companies
27. Transformer Use and Storage Areas

Prohibitions, Restrictions & Best Management Practices

Examples of the types of materials that are regulated are as follows:

Acid and basic cleaning solutions
Antifreeze and coolants
Arsenic and arsenic compounds
Bleaches and peroxides
Brake and transmission fluids
Brine solution
Casting & Foundry chemicals
Caulking agents and sealants
Cleaning solvents
Corrosion and rust prevention solutions
Cutting fluids
Degreasing and parts cleaning solvents
Disinfectants
Electroplating solutions
Explosives
Fertilizers
Fire extinguishing chemicals
Food processing wastes
Formaldehyde
Fuels and fuel additives
Glues, adhesives and resins
Greases
Hazardous waste
Hydraulic fluid
Indicators
Industrial and commercial janitorial supplies
Industrial process chemicals
Industrial sludges and stillbottoms
Inks, printing and photocopying chemicals
Laboratory chemicals
Liquid storage batteries
Medical, Pharmaceutical, dental, veterinary, and hospital solutions
Mercury and mercury compounds
Metals finishing solutions
Oils
Paints, primers, thinners, dyes, stains, wood preservatives, varnishing and cleaning compounds
Painting solvents
PCB's
Pesticides and herbicides
Plastic resins, plasticizers and catalysts
Photo development chemicals
Poisons
Polishes
Pool chemicals
Processed dust and particulates
Radioactive sources
Reagents and standards
Refrigerants
Roofing chemicals and sealers
Sanitizer, disinfectants, bactericides, and algaecides
Soaps, detergents and surfactants
Solders and fluxes
Stripping compounds
Tanning industry chemicals
Transformer and capacitor oils/fluids
Waste oils and antifreeze
Water and wastewater treatment chemicals

BEST MANAGEMENT PRACTICES FOR THE CONSTRUCTIONJNDUSTBY:

A. The general contractor, or if none, the property owner, shall be responsible for assuring that each contractor or subcontractor evaluates each site before construction is initiated to determine if any site conditions may pose particular problems for the use, handling, production or storage of any regulated substances. For instance, handling regulated substances in the proximity of water bodies or wetlands may be improper.

B. If any regulated substances are stored on the construction site during the construction process, they shall be stored in a location and manner which will minimize any possible risk of release to the environment. Any storage container of 55 gallons or 440 pounds or more containing regulated substances shall have constructed below it an impervious containment system constructed of material of sufficient thickness, density and composition that will prevent the discharge to the land, groundwater or surface water of any pollutant which may emanate from said storage container. Each containment system shall be able to contain 150% of the contents of all storage containers above or within the containment system.

C. Each contractor shall familiarize himself with the manufacturer's safety data sheet supplied with each material containing a regulated substance and shall be familiar with procedures required to contain and clean up any releases of the regulated substance. Any tools or equipment necessary to accomplish same shall be available in case of release.

D. Upon completion of construction, all unused and waste regulated substances and containment systems shall be removed from the construction site by the responsible contractor and shall be disposed of in a proper manner as prescribed by law.

AFFIDAVIT OF NOTIFICATION

Pursuant to the Palm Beach County Unified Land Development Code, Article 14 Chapter B, Wellfield Protection, you shall provide notification to the Palm Beach County Department of Environmental Resources Management for the following activities should you store, handle, use, or produce Regulated Substances that exceed the threshold of 5 gallons, if liquid, or 25 pounds, if solid, within a wellfield zone:

a. Application for nonresidential building permits.
b. Application for residential building permits of 25 units or more.
c. Applications for development subject to review by advisory planning bodies and approval by local governing authority or zoning board of appeals.

A. Project Information:
1. Name of Project_____

2. Property Control#_____

3. Address of Project_____
(Street) (City) (State) (ZIP)

B. Owner of Property, Developer or Agent Signing Affidavit (If agent, a letter of authorization to sign for the owner must be attached.)

1. If individual, provide full legal name._____

Address;_____
(Street) (City) (State) (ZIP)

Telephone_____

Owner of Property (if signed by agent)_____

2. If corporation or partnership, provide full name of corporation or partnership and relationship to corporation or partnership.

Name of Corporation or Partnership_____

Address_____

Telephone _____

Relationship to corporation or partnership_____

3. List any Regulated Substances (chemicals, fuels, oils, paints, etc.) that you intend to store, handle, use or produce at this site:

Tyg_e_J:Jf Subs _nc:e	Approximate Quantity
_____	_____gallons_____pounds
_____	_____ gallons_____ pounds
_____	_____gallons_____pounds

I have received a copy of "Palm Beach County Unified Land Development Code, Article 14 Chapter 8, Wellfield Protection Prohibitions, Restrictions, and Best Management Practices." I understand that there are restrictions and prohibitions concerning the use, handling and storage of regulated substances pursuant to the Wellfield Protection Ordinance. I also understand that certain facilities are prohibited or subject to restrictions in the various wellfield zones.

_____
Affiant

Sworn to and subscribed before me this _____day of _____20____ .

_____
Notary Public, State of Florida

Return Original to Department of Environmental Resources Management

2300 N. Jog Road West Palm Beach, Florida 33411-2743 telephone (561) 233-2400
Copy to Applicant/ Copy to Local Agency
u:\users\bfinnera\forms\FORM_affidiavit of notification-small.doc

APPENDIX IV

AACE Project Limitations and Conditions

ANDERSEN ANDRE CONSULTING ENGINEERS, INC.

(revised January 24, 2007)

Project Limitations and Conditions

Andersen Andre Consulting Engineers, Inc. has prepared this report for our client for his exclusive use, in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made herein. Further, the report, in all cases, is subject to the following limitations and conditions:

VARIABLE/UNANTICIPATED SUBSURFACE CONDITIONS

The engineering analysis, evaluation and subsequent recommendations presented herein are based on the data obtained from our field explorations, at the specific locations explored on the dates indicated in the report. This report does not reflect any subsurface variations (e.g. soil types, groundwater levels, etc.) which may occur adjacent or between borings.

The nature and extent of any such variations may not become evident until construction/excavation commences. In the event such variations are encountered, Andersen Andre Consulting Engineers, Inc. may find it necessary to (1) perform additional subsurface explorations, (2) conduct in-the-field observations of encountered variations, and/or re-evaluate the conclusions and recommendations presented herein.

We at Andersen Andre Consulting Engineers, Inc. recommend that the project specifications necessitate the contractor immediately notifying Andersen Andre Consulting Engineers, Inc., the owner and the design engineer (if applicable) if subsurface conditions are encountered that are different from those presented in this report.

No claim by the contractor for any conditions differing from those expected in the plans and specifications, or presented in this report, should be allowed unless the contractor notifies the owner and Andersen Andre Consulting Engineers, Inc. of such differing site conditions. Additionally, we recommend that all foundation work and site improvements be observed by an Andersen Andre Consulting Engineers, Inc. representative.

SOIL STRATA CHANGES

Soil strata changes are indicated by a horizontal line on the soil boring profiles (boring logs) presented within this report. However, the actual strata's changes may be more gradual and indistinct. Where changes occur between soil samples, the locations of the changes must be estimated using the available information and may not be at the exact depth indicated.

SINKHOLE POTENTIAL

Unless specifically requested in writing, a subsurface exploration performed by Andersen Andre Consulting Engineers, Inc. is not intended to be an evaluation for sinkhole potential.

MISINTERPRETATION OF SUBSURFACE SOIL EXPLORATION REPORT

Andersen Andre Consulting Engineers, Inc. is responsible for the conclusions and recommendations presented herein, based upon the subsurface data obtained during this project. If others render conclusions or opinions, or make recommendations based upon the data presented in this report, those conclusions, opinions and/or recommendations are not the responsibility of Andersen Andre Consulting Engineers, Inc.

CHANGED STRUCTURE OR LOCATION

This report was prepared to assist the owner, architect and/or civil engineer in the design of the subject project. If any changes in the construction, design and/or location of the structures as discussed in this report are planned, or if any structures are included or added that are not discussed in this report, the conclusions and recommendations contained in this report may not be valid. All such changes in the project plans should be made known to Andersen Andre Consulting Engineers, Inc. for our subsequent re-evaluation.

USE OF REPORT BY BIDDERS

Bidders who are reviewing this report prior to submission of a bid are cautioned that this report was prepared to assist the owners and project designers. Bidders should coordinate their own subsurface explorations (e.g.; soil borings, test pits, etc.) for the purpose of determining any conditions that may affect construction operations. Andersen Andre Consulting Engineers, Inc. cannot be held responsible for any interpretations made using this report or the attached boring logs with regard to their adequacy in reflecting subsurface conditions which may affect construction operations.

IN-THE-FIELD OBSERVATIONS

Andersen Andre Consulting Engineers, Inc. attempts to identify subsurface conditions, including soil stratigraphy, water levels, zones of lost circulation, “hard” or “soft” drilling, subsurface obstructions, etc. However, lack of mention in the report does not preclude the presence of such conditions.

LOCATION OF BURIED OBJECTS

Users of this report are cautioned that there was no requirement for Andersen Andre Consulting Engineers, Inc. to attempt to locate any man-made, underground objects during the course of this exploration, and that no attempts to locate any such objects were performed. Andersen Andre Consulting Engineers, Inc. cannot be responsible for any buried man-made objects which are subsequently encountered during construction.

PASSAGE OF TIME

This report reflects subsurface conditions that were encountered at the time/date indicated in the report. Significant changes can occur at the site during the passage of time. The user of the report recognizes the inherent risk in using the information presented herein after a reasonable amount of time has passed. We recommend the user of the report contact Andersen Andre Consulting Engineers, Inc. with any questions or concerns regarding this issue.

Important Information about Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely for* the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one - not even you* - should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes-even minor ones-and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ-sometimes significantly-from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final,* because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer•s Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Prolessional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely, on Your ASFE-Member Geotechnclal Engmeer lor Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.

ASFE THE GEOPROFESSIONAL BUSINESS ASSOCIATION

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

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IIGER03135.0MRP

EXHIBIT D

FEDERAL REQUIREMENTS AS PER DEPARTMENT OF HOUSING AND ECONOMIC SUSTAINABILITY

PALM BEACH COUNTY DEPARTMENT OF HOUSING & ECONOMIC SUSTAINABILITY

REQUIREMENTS FOR FEDERALLY FUNDED PROJECTS

PROJECT NAME:	

This project is funded in part, or in whole, with Federal funds and is subject to the requirements listed below. The requirements contained in this document are intended to cooperate with, to supplement, and to modify the general conditions and other specifications for this project. In case of disagreement with any other section of this bid document/ contract, the requirements contained herein shall govern. **Note: This document shall be included in the bid documents and contracts/ subcontracts for the project.**

1. General Requirements:

The following requirements are attached:

- Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)
- Equal Employment Opportunity Clause for Contracts Subject to Executive Order 11246
- Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246)
- Bonding Requirements for Construction Contracts
- Public Entity Crimes - Section 287.133, Florida Statute
- Section 109 Housing and Community Development Act of 1974
- Nondiscrimination under the Age Discrimination Act of 1975, As Amended
- Title VI of the Civil Rights Act of 1964
- Section 3 Clause
- Work on Nights, Weekends and Holidays
- Lead-based Paint Poisoning Prevention Act
- Compliance with Clean Air and Water Acts

2. Forms to be completed and submitted by all bidders with their bids:

The following forms are attached:

- Non-collusion Affidavit of Prime Bidder
- Anti-kickback Affidavit
- Certification of Eligibility of General Contractor
- Certification of Non-segregated Facilities
- Workforce Projection

3. Form for the successful bidder's subcontractors, to be submitted after contract award:

The following form is attached:

- Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion - Lower Tier Participant

4. Reports to be submitted to DHES by Subrecipient/ Contractor after contract award:

- Contract Award Report (HUD Form 2516) to be submitted as follows:
  - with the first payment request, but no later than September 30 of the year during which the construction contract was awarded, and
  - with the final payment request
- Section 3 Report and Letter of Efforts – to be submitted with the final payment request

5. Davis-Bacon Act:

Federal labor standards provisions of the Davis-Bacon Act apply to construction projects valued over $2,000. The following requirements are attached:

- Required Use of the Labor Compliance Reporting System (LCRS)
- Display of Posters and Wage Decision
- Federal Labor Standards Provisions - Form HUD-4010
- Guidance to Contractor for Compliance with Labor Standards Provisions
- The applicable wage decision(s) shown below is attached:

Wage Decision(s) No.:	

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specification" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables	Goals for minority participation for each trade	Goals for female participation in each trade
	22.4%	6.9%
Area covered:	Palm Beach County	All trades for the life of the project

These goals are applicable to all the Contractor's construction work (whether or not it is Federal or federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR-60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notifications to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of $10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is Palm Beach County, Florida.

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE FOR CONTRACTS SUBJECT TO EXECUTIVE ORDER 11246

During the performance of this contract, the contractor agrees as follows:

1. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensating; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

2. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

3. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

4. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

5. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

6. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended I whole or in pat and the contractor may be declared ineligible for further Government contracts I accordance with procedures authorized in Executive Order of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

7. The contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or order of the Secretary of Labor pursuant to section 204 of Executive Order 11246 of September 24, 1985, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

   a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

   b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

   c. "Employer identification number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U. S. Treasury Department Form 941.

   d. "Minority includes:

      (i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origins);

      (ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

      (iii) Asian and Pacific Island (all persons having origins in any or the original people of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

      (iv) American Indian or Alaskan Native (all persons having origins in any of the original people of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the Contractor, or any Subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of $10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the Contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U. S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each Contractor or Subcontractor participating in the approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other Contractors or Subcontractors toward a goal in an approved Plan does not excuse any covered Contractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The Contractor shall implement the specific affirmative action standards provided in paragraphs 7 a through p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federally or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract and Compliance Programs office or from Federal procurement contracting officers. The Contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the Contractor has a collective bargaining agreement, to refer either minorities or women shall excuse the Contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the Contractor during the training period, and the Contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U. S. Department of Labor.

7. The Contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the Contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The Contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

    a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the Contractor's employees are assigned to work. The Contractor, where possible, will assign two or more women to each construction project. The Contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

    b. Establish and maintain a current list of minority and female recruitment sources provide written notification to minority and female organizations when the Contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

    c. Maintain a current file of the names, addresses and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the Contractor by the union or, if referred, not employed by the Contractor, this shall be documented in the file with the reason therefore, along with what-ever additional actions the Contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-site-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources complied under 7a above.

f. Disseminate the Contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the Contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper; annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with onsite supervisory personnel such as Superintendents, General Foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the Contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the Contractor's EEO policy with other Contractors and Subcontractors with whom the Contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the Contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the Contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a Contractor's work force.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the Contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated except that separate or single-user toilet, and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontractors from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, f all supervisors' adherence to and performance under the Contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7a through p). The efforts of a contractor association, joint contractor-union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through p or these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the Contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the Contractor. The obligation to comply, however, is the Contractor's and failure of such a group to fulfill an obligation shall not be a defense for the Contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The Contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority.
Consequently, the Contractor may be in violating of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the Contractor has achieved its goals for women generally, the Contractor may be in violation of the Executive Order if a specific minority group of women is underutilized).

10. The Contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The Contractor shall not enter into any Subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The Contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any Contractor who fails to carry out such sanctions and penalties shall be in violating of these specifications and Executive Order 11246, as amended.

13. The Contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at last as extensive as those standards prescribed I paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the Contractor fails to company with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The Contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out; to submit reports relating to the provisions hereof as may be required by the Government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g. those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

BONDING REQUIREMENTS FOR CONSTRUCTION CONTRACTS

The requirements of 2 CFR Part 200 are applicable to this project as it relates to bid guarantees, performance bonds, and payment bonds for construction contracts exceeding the Simplified Acquisition Threshold as defined in 2 CFR 200.88. As of the publication of this part, the **Simplified Acquisition Threshold is $250,000.**

2 CFR 200.325, Bonding Requirements, established minimum requirements as follows:

1. BID GUARANTEE

A bid guarantee from each bidder equivalent to five percent (5%) of the bid price.

Each bid shall be accompanied by a bid bond, certified check, cashiers check or other negotiable instrument in the amount of five percent (5%) of the total bid. Said check or bond shall be made payable to the entity soliciting the bid as the owner of the project, and shall be given as a guarantee that the bidder, upon receipt of the notice of intent to award the contract, will enter into an agreement with the owner, and will furnish the necessary documents including, but not limited to: insurance certificates, Payment Bond and Performance Bond; each of the said bonds to be in the amount stated herein. In case of refusal or failure to enter into said agreement, the check or bid bond, as the case may be, shall be forfeited to the owner. All bonds shall be written by a surety company of recognized standing, authorized to conduct business in the State of Florida, and shall have a registered agent in the State of Florida.

2. PERFORMANCE BOND

A performance bond on the part of the contractor for 100 percent (100%) of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

3. PAYMENT BOND

A payment bond on the part of the contractor for 100 percent (100%) of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

When the successful bidder delivers the executed agreement to the owner, it must be accompanied by a Performance Bond and a Payment Bond, each in the amount of one hundred percent (100%) of the contract price, executed by a corporate surety company of recognized standing, authorized to do business in the State of Florida. The bidder shall state in the bid proposal the name, address, telephone number and full name of the authorized agent of the surety or sureties who will sign these bonds in the event the contract is awarded to the bidder. During the bidding and construction periods the surety company shall hold a current certificate of authority as an acceptable surety on Federal Bonds, in accordance with U. S. Department of Treasury Circular 570, Current Revision.

PUBLIC ENTITY CRIMES

As provided in F.S. 287.133 by entering into this contract or performing any work in furtherance hereof, the contractor certifies that it, its affiliates, suppliers, subcontractors and consultants who will perform hereunder, have not been placed on the convicted vendor list maintained by the State of Florida Department of Management Services within the 36 months immediately preceding the date hereof. This notice is required by F.S. 287.133 (3)(a)."

*** * * * * * * * * * * * ***

SECTION 109 HOUSING AND COMMUNITY DEVELOPMENT ACT OF 1974

The Nondiscrimination Clause of the Housing and Community Development Act of 1974 applies to all sections of Title 1 of the Act.

> "No person in the United States shall on the ground of race, color, national origin or sex be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds available under this title."

The contractor certifies that the above Section 109 statement forms part of the contract and is in compliance with Section 570.601 of the Community Development Block Grant Regulations.

*** * * * * * * * * * * * ***

NONDISCRIMINATION UNDER THE AGE DISCRIMINATION ACT OF 1975, AS AMENDED

To the extent required by law, the Contractor shall comply with the requirements of the Age Discrimination Act of 1975 (P.L. 94-135), as amended, which provides that no person in the United States shall, on the basis of age, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

*** * * * * * * * * * * * ***

TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

To the extent applicable to this agreement, the contractor will comply with, and agrees to include this provision in every subcontract:

Title VI of the Civil Rights Act of 1964 (P. L. 88-352), and the regulations issued pursuant thereto (24 CFR Part 1), which provides that no person in the United States shall on the grounds of race, color or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the applicant receives Federal financial assistance and will immediately take any measures necessary to effectuate This assurance/ If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the applicant, this assurance shall obligate the applicant, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits.

SECTION 3 CLAUSE

1. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U. S.C. 170 lu (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3 shall, to the greatest extent feasible, be directed to low-and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

2. The parties to this contract agree to comply with HUD's requirements in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.

3. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers representative of the contractor's commitment under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

4. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

5. The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.

6. Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

*** * * * * * * * * * * * ***

WORK ON NIGHTS, WEEKENDS, AND HOLIDAYS

Neither the prime contractor nor any subcontractor shall be allowed to perform one hundred percent (100%) of their work on this project on nights, weekends, or Palm Beach County recognized holidays. The prime contractor and all subcontractors shall, at a minimum, perform work on this project for the duration of one regular working day. The prime contractor may request a waiver to the above requirement should the nature of the project so necessitate.

LEAD-BASED PAINT POISONING PREVENTION ACT

References:
- 24 CFR Part 570
- 24 CFR Part 35
- Lead-Based Paint Poisoning Prevention Act, as amended
- Residential Lead-Based Paint Hazard Reduction Act of 1992
- 40 CFR Part 745

The aforementioned Acts and the referenced regulations prohibit the use of lead-based paint in housing receiving Federal assistance, and in child occupied facilities.
In addition, these regulations require elimination of lead-based paint hazards in housing constructed prior to 1978 which receives Federal assistance.

* * * * * * * * * * *

COMPLIANCE WITH CLEAN AIR AND WATER ACTS

In compliance with the Clean Air Act, as amended, 42 U.S.C. 1857(R) et. Seq., Section 508 pf Clean Water Pollution Control Act, as amended 33 U.S.C. 1368 and Executive Order 11738.

1251 et. Seq., and the regulations of the Environmental Protection Agency with respect thereto, the appropriate parts of 40 CFR as amended from time to time. Contractor agrees that:

(1) No facility to be utilized in the performance of this Contract or any subcontract shall not be a facility listed on the EPA list of Violating Facilities pursuant to 40 CFR 15.20.

(2) He will comply with all requirements of Section 114 of the Clean Air Act, as amended, (42 USC 1857 c-8) and Section 308 of the Federal Water Pollution Control Act, as amended, (33 USC 1368 relating to inspection, monitoring, entry, reports, and information, as well as all other requirements specified in said Section 114 and Section 308. And all regulations and guidelines issued there under.

(3) He will promptly notify the Owner of any notification received from the Director, Office of Federal Activities, EPA, indicating that a facility utilized or to be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.

(4) He will comply with mandatory standards and policies relating to energy efficiency which are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (P.L. 49-163).

(5) He will include or cause to be included the provisions of paragraph (1) through (5) of this section in every nonexempt subcontract and that he will take such action as the Government may direct as a means of enforcing such provisions.

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of Florida
County of Palm Beach

BEFORE ME, the undersigned authority, personally appeared _____, who, after being by me first duly sworn, deposes and says of his/her personal knowledge that:

(1) He is _____ of _____, the Bidder that has submitted a Bid to perform work for the following project:

Contract #: _____ Project Name: _____

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
(3) Such Bid is genuine and is not a collusive or sham Bid;
(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against Palm Beach County or any person interested in the proposed Contract: and
(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

Signature: _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____ 20___ by _____, who is personally known to me or who has produced _____ as identification.

NOTARY SEAL:

Notary Signature: _____

Notary Name: _____
Notary Public-State of Florida

PALM BEACH COUNTY DEPARTMENT OF HOUSING & ECONOMIC SUSTAINABILITY

ANTI-KICKBACK AFFIDAVIT

STATE OF FLORIDA
COUNTY OF PALM BEACH

BEFORE ME, the undersigned authority,_____, personally appeared _____who, after being by me first duly sworn, deposes and says:

(1) I am_____of_____, the bidder that has submitted a proposal to perform work for the following project:

Contract #:_____ Project Name:_____

(2) I, the undersigned, hereby depose and say that no portion of the sum bid in connection with the work to be performed at the property identified above will be paid to any employee of Palm Beach County or,_____as a commission, kickback, reward or gift, directly or indirectly by me or any member of my firm or by an officer of the corporation.

Signature: _____

Subscribed and sworn to (or affirmed) before me this____day of_____20____by _____, who is personally known to me or who has produced _____as identification.

NOTARY SEAL:

Notary Signature:_____

Notary Name:_____
Notary Public-State of Florida

PALM BEACH COUNTY DEPARTMENT OF HOUSING & ECONOMIC SUSTAINABILITY

CERTIFICATION OF ELIGIBILITY OF GENERAL CONTRACTOR

STATE OF FLORIDA
COUNTY OF PALM BEACH

BEFORE ME, the undersigned authority, personally appeared _____, who, after being by me first duly sworn, deposes and says of his/her personal knowledge that

(1) He/she is the _____ of _____, hereinafter referred to as the "General Contractor"; with State of FL Contractor License or Palm Beach County Contractors Certificate of Competency

License/ Certification No: _____ Expiration Date: _____ who submitted a proposal to perform work for the following project:

Contract #: _____ Project Name: _____

(2) He/she is fully informed that the Proposal submitted for work to be performed under the above mentioned contract, is being funded, in whole or in part, by a Federally-assisted or insured contract; and

(3) The General Contractor nor any of its officers, partners, owners or parties of interest is not named on the current General Services Administration List of Parties Excluded from Federal Procurement or Non-procurement Programs prior to award of the contract; and

(4) The General Contractor acknowledges that should the contractor be subsequently found ineligible after award of the contract, its Construction Contract shall be terminated and the matter referred to the Department of Labor, the Department of Housing and Urban Development, or the General Services Administration for its action; and

(5) The General Contractor acknowledges the responsibility of informing all of its subcontractors that this contract is being funded, in whole or in part, by a Federally-assisted or insured contract; and

(6) The General Contractor acknowledged the responsibility that all of its subcontractors are to sign a "Certification Regarding Debarment Suspension, Ineligibility and Voluntary Exclusion-Lower-Tier Participant" as a part of its contract with such subcontractors, and that the "General Contractor" will retain such certifications in its files. Furthermore, should the subcontractor be subsequently found ineligible after award of the Construction Contract, its contract with the "General Contractor" shall be terminated and the matter referred to the Department of Labor, the Department of Housing and Urban Development, or the General Services Administration, for its action.

Signature: _____

Subscribed and sworn to (or affirmed) before me this _____ day of _____, 20_____

by _____, who is personally known to me or who has produced _____ as identification.

NOTARY SEAL: Notary Signature: _____

Notary Name: _____
Notary Public-State of Florida

PALM BEACH COUNTY DEPARTMENT OF HOUSING & ECONOMIC SUSTAINABILITY

CERTIFICATION OF NONSEGREGATED FACILITIES

The Bidder certifies that he/she does not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she does not permit his/her employees to perform their services at any location, under his/her control where segregated facilities are maintained. The bidder certifies further that he/she will not maintain or provide for his/her employees any segregated facilities at any of his/her establishments, and that he/she will not permit his/her employees to perform their services at any location under his/her control where segregated facilities are maintained. The bidder agrees that a breach of this certification will be a violation of the Equal Opportunity clause in any contract resulting from acceptance of this bid. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The bidder agrees that (except where he/she has obtained identical certification from proposed subcontractors for specific time periods) he/she will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he/she will retain such certifications in his/her files.

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Project Name: _____

Company Name and Address: _____

_____

_____

_____
Signature

_____
Name and Title

_____
Date

WORKFORCE PROJECTION

PROJECT NAME:	

Instructions: Check below all the work classifications that you anticipate will be working on this project including the prime contractor's work force and all subcontractors' work forces.

POWER EQUIPMENT OPERATORS

[ ] Asphalt Distributor
[ ] Asphalt Paving Machine
[ ] Asphalt Screed
[ ] Backhoe
[ ] Boom Auger Operator
[ ] Bulldozer
[ ] Concrete Curb Machine Operator
[ ] Concrete Joint Saw Operator
[ ] Concrete Pump
[ ] Cranes with boom length less than 150 ft
[ ] Cranes with boom length 150 ft and over
[ ] Cranes, all tower cranes, and all
[ ] Derrick, or Dragline
[ ] Earthmover
[ ] Excavator
[ ] Forklift
[ ] Front End Loader
[ ] Grader/Blade
[ ] Guardrail Erector
[ ] Guardrail Erector
[ ] Guardrail Post Driver
[ ] Mechanic (type:_____)
[ ] Milling Machine Grade Checker
[ ] Milling Machine Operator
[ ] Motor Grader
[ ] Mulching Machine
[ ] Oiler, Greaseman
[ ] Pavement Striping Machine
[ ] Pavement Striping Machine Nozzleman
[ ] Pile driver
[ ] Power Sub-grade Mixer
[ ] Roller
[ ] Scraper
[ ] Sign Erector
[ ] Small Tool Operator
[ ] Tractor
[ ] Trenching Machine
[ ] Truck Driver (type:_____)
[ ] Other:
[ ] Other:

OTHER WORK CLASSIFICATIONS

[ ] Acoustical Tile Installer
[ ] Air Tool Operators
[ ] Asphalt Rakers
[ ] Bricklayer/Brickmason/Blocklayer
[ ] Carpenter
[ ] Cement Mason/Concrete Finisher
[ ] Drywall Hanger
[ ] Drywall Finisher/Taper
[ ] Electrician
[ ] Elevator Mechanic
[ ] Fence Erector
[ ] Form Setter
[ ] Glazier
[ ] Grade Checker
[ ] HVAC Mechanic (type:_____)
[ ] Ironworker - Ornamental
[ ] Ironworker - Reinforcing
[ ] Ironworker - Structural
[ ] Landscape and Irrigation laborer
[ ] Lather
[ ] Mason Tenders
[ ] Painter
[ ] Pipefitter (excluding HVAC pipe work)
[ ] Pipelayer
[ ] Plasterer
[ ] Plasterers Tenders
[ ] Plumber (excluding HVAC pipe)
[ ] Plumber (including HVAC pipe)
[ ] Roofer (including built-up, composition and single ply)
[ ] Sheet Metal Worker (including HVAC duct work)
[ ] Sprinkler Fitter (fire sprinkler)
[ ] Terrazzo Worker Mechanic
[ ] Tile Setter
[ ] Traffic Control Specialist
[ ] Traffic Signalization - Installer
[ ] Traffic Signalization - Mechanic
[ ] Unskilled Laborer
[ ] Welder
[ ] Other:

Submitted by:_____ Date: _____

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY, AND VOLUNTARY EXCLUSION-LOWER TIER PARTICIPANT

(SUBCONTRACTORS)

Certification Regarding Debarment Suspension, Ineligibility and Voluntary Exclusion-Lower-Tier Covered Transactions pursuant to 24 CFR, Code of Federal Regulations, Part 24.510(b) and HUD Handbook 1300.13 REV.1:

By signing and submitting this proposal, the prospective lower-tier participant, certifies that neither it, nor its principals, is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

Further, I, we, provide the certification set out below:

1. I, and any principals of my firm, understand that the certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that I, we, knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the Department or agency with which this transaction originated may pursue available remedies.

2. Further, I, and any principal of my firm, shall provide immediate written notice to the person to which this proposal is submitted if at any time I, we, learn that my/our certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

3 By submitting this proposal, I, and any principals of my firm, agree that should the proposed covered transaction be entered into, I, we, will not knowingly enter into any lower-tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation. In this covered transaction unless authorized by the agency with which this transaction originated.

4. I, and any principals of my firm, further agree by submitting this proposal that I/we, will include this Certification, without modification, in all lower tier covered transactions and in all solicitations for lower-tier covered transacting.

Project Name:_____

Subcontractor Name: _____

Address: _____

State of FL Contractor License or Palm Beach County Contractors Certificate of Competency

License/ Certification No:_____ Expiration Date:_____

By:

_____	_____	_____
Name and Title	Signature	Date

Contract and Subcontract Activity | **U.S. Department of Housing and Urban Development** | OMB Approval No.: 2577-0088 OMB Approval No.: 2502-0355

Public reporting burden for this collection of information is estimated to average .5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The Information is voluntary. HUD may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB Control Number.

Executive Orders dated July 14, 1983, directs the Minority Business Development Plans shall be developed by each Federal Agency and the these annual plans shall establish minority business development objectives. The information is used by HUD to monitor and evaluate MBE activities against the total program activity and the designated minority business enterprise (MBE) goals. The Department requires the information to provide guidance and oversight for programs for the development of minority business enterprise concerning Minority Business Development. If the information is not collected HUD would not be able to establish meaningful MBE goals nor evaluate MBE performance against these goals.

Privacy Act Notice = The United States Department of Housing and Urban Development, Federal Housing Administration, is authorized to solicit the Information requested in this form by virtue of Title 12, United States Code, Section 1701 et seq., and regulation. It will not be disclosed or relesed outside the United States Department of Housing and Urban Development without your consetn, except as required or permitted by Law.

1. Grantee/Project Owner/Developer/Sponsor/Builder/Agency	Check if:		2. Location (City, State Zip Code)
	PH		
	IH		
	CPD		
	Housing		

3a. Name of Contact Person	3b. Phone Number (Including Area Code)	4. Reporting Period ☐ Oct. 1 - Sept. 30 (Annual -FY)	5. Program Code (Not applicable for CPD programs.) See explanation of Codes at bottom of Page Use a separate sheet for each program code.		6. Date Submitted to Field Office

Grant/Project Number or HUD Case Number or other identification of property, subdivision, dwelling unit, etc. 7a.	Amount of Contract or Subcontact 7b.	Type of Trade Code (See below) 7c.	Contractor or Subcontractor Business Racial/Ethnic (See below) 7d.	Woman Owned Business (Yes or No) 7e.	Prime Contractor Identification (ID) Number 7f.	Sec. 3 7g.	Subcontractor Identification (ID) Number 7h	Sec. 3 7i.	Contractor/Subcontractor Name and Address 7j.				
									Name	Street	City	State	Zip

SUBMIT THIS FORM IN EXCEL FORMAT USING THE ELECTRONIC FILE PROVIDED

7c: Type of Trade Codes:			**7d: Racial/Ethnic Codes:**	**5: Program Codes (Complete for Housing and Public and Indian Housing programs only):**	
CPD:	**Housing/Public Housing:**		1 = White Americans	1 = All Insured, including Section8	5 = Section 202
1 = New Construction	1 = New Construction	6 = Professional	2 = Black Americans	2= Flexible Subsidy	6 = HUD-Held (Management)
2 = Education/Training	2 = Substantial Rehab.	7 = Tenant Services	3 = Native Americans	3 = Section 8 Noninsured, Non-HFDA	7 = Public/India Housing
3 = Other	3 = Repair	8 = Education/Training	4 = Hispanic Americans	4 = Insured (Management)	8 = Section 811
	4 = Service	9 = Arch./Engrg. Appraisal	5 = Asian/Pacific Americans		
	5 = Project Mangt.	0 = Other	6 = Hasidic Jews		

Previous editions are obsolete. form **HUD-2516** (8/98)

SECTION 3 REPORT

Subrecipient:	
Project:	

The sub-recipient hereby provides the following information in connection with the above project:

PROJECT FUNDING INFORMATION

Total amount of project funding (all funding for construction, consultant, etc.):	$
Amount funded from DHES:	$
Amount funded from Sub-recipient:	$
Amount funded from other sources: Source:	$
Amount funded from other sources: Source:	$

CONTRACT AWARD INFORMATION
For *construction work* funded in part or in whole through DHES:

This section applies to all purchase orders, contracts, and agreements (and their subcontracts) for construction work which are *funded in part or in whole through DHES*. (Note: the purchase of supplies, materials, and equipment is excluded unless installation is part of the purchase).	
Total construction contract amount (including change orders):	$
Total dollar amount of contracts/ subcontracts for *construction work* awarded to Section 3 Business Concerns:	$
Number of Section 3 Business Concerns receiving contracts/subcontracts *for construction* work:	

CONTRACT AWARD INFORMATION
For *non-construction work* funded in part or in whole through DHES:

This section applies to all purchase orders, contracts, and agreements (and their subcontracts) for non-construction work which are *funded in part or in whole through DHES* (such as professional service contracts).	
Total contract amount awarded (including change orders) (non-construction):	$
Total dollar amount of contracts/subcontracts (non-construction) awarded to Section 3 Business Concerns:	$
Number of Section 3 Business Concerns receiving contracts/subcontracts (for non-construction work):	

EMPLOYMENT AND TRAINING INFORMATION

This section applies to all purchase orders, contracts, and agreements (and their subcontracts) which are funded in part or in whole through DHES (including non-construction and professional service contracts). (Note: the purchase of supplies, materials, and equipment is excluded unless installation is part of the purchase). The information reported in this section relates to all new hires as a result of DHES funding. New hires means full-time employees for permanent, temporary or seasonal employment opportunities.	
Number of new hires as a result of this project:	0*

*** If new hires are reported above, please complete the following table:**

For the purpose of completing the table below, a Section 3 Resident is defined as:

- an individual residing in public housing, or as
- an individual residing in Palm Beach County whose household income, by household size, is at or below 80% of the median income for Palm Beach County (median income information is available at DHES).

(A) JOB CATEGORY	(B) NUMBER OF NEW HIRES	(C) NUMBER OF NEW HIRES THAT ARE SECTION 3 RESIDENTS	(D) % OF AGGREGATE NUMBER OF STAFF HOURS OF NEW HIRES THAT ARE SECTION 3 RESIDENTS	(E) % OF TOTAL STAFF HOURS FOR SECTION 3 EMPLOYEES AND TRAINEES	(F) NUMBER OF SECTION 3 TRAINEES
PROFESSIONALS					
TECHNICIANS					
OFFICE/ CLERICAL					
CONSTRUCTION TRADE:					
CONSTRUCTION TRADE:					
CONSTRUCTION TRADE:					
OTHER:					
TOTALS:					

SUBRECIPIENT CERTIFICATION

The undersigned certifies that the information in this report is true and correct:		
Name and Title:	Date:	Signature: **X**

REQUIRED USE OF THE LABOR COMPLIANCE REPORTING SYSTEM (LCRS)

As part of the County's commitment to assist the Subrecipient and its contractors/ subcontractors to conveniently comply with legal and contractual requirements including Davis Bacon and Related Acts (DBRA), the Department of Housing & Economic Sustainability has established a Labor Compliance Reporting System (LCRS) for this project. The Subrecipient's contractors/ subcontractors will no longer be required to submit paper copies of fringe benefits statements, weekly-certified payroll reports and/ or work performance reports, and shall instead use the LCRS for all DBRA reporting and tracking. The LCRS is available for use 24-hours a day, 7 days a week, at no cost for reporting weekly certified payrolls and labor compliance related documents. Utilization of this system should also prove helpful in expediting the process of reviewing payrolls, approving progress payments to contractors and reimbursement payments to subrecipients/ developers.

USER RESPONSIBILITIES

1. Subrecipients, and its contractors/subs shall NOT create internet links to the Service or Frame or mirror any content on any other server or wireless or internet-based device.
2. Subrecipient and its contractors/subs are responsible for all activity occurring under User account and shall abide by all applicable local, state, national laws, treaties and regulations in connection with the use of the service, including those related to data privacy, international communications and the transmission of technical data. The LCRS Web Address for contractors/subs use will be provided by DHES, along with Federal Requirements and Wage Decision(s).
3. Subrecipient shall require its contractor and subs to register through the Labor Compliance Reporting System. This language shall be contained in the subrecipient's Bid and Construction documents.
4. Subrecipient shall require All fringe benefits statements, weekly-certified payroll reports to be submitted through the LCRS and this language shall be contained in the Subrecipient's Bid and Construction documents.

DISCLAIMER OF WARRANTIES FOR LCRS

LCRS and its licensors make no representation, warranty, or guaranty as to the reliability, timeliness, quality, suitability, truth, availability, accuracy or completeness of the service or any content. LCRS and its licensors do not represent or warrant that:

1. The use of the service will be secure, timely, uninterrupted or error-free or operate in combination with any other hardware, software, system or data.
2. The service will meet PBC/DHES's Requirements or expectations.
3. Any stored data will be accurate or reliable.
4. The quality of any products, services, information or other material purchased or obtained by PBC/DHES through the service will meet PBC/DHES's requirements or expectations.
5. Errors or defects will be corrected.
6. The service or the servers that make the service available are free of viruses or other harmful components.

All content is provided to PBC/DHES strictly on an "AS IS" basis. All conditions, representations and warranties, whether expressed or implied, statutory or otherwise, including, without limitation, any implied warranty of merchantability or fitness for a particular purpose are hereby disclaimed to the maximum extent permitted by applicable law by LCRS and its licensors.

DISPLAY OF POSTERS AND WAGE DECISION

The contractor shall, for each federally funded project, supply a standard display of posters and the applicable wage decisions at the job site as follows:

One (1) 24" x 36" display surface with clear acrylic cover sheet for all-weather protection and easy visibility on the job site.

Said panel shall be mounted on a substantial post of steel, aluminum, or wood, with the bottom edge of the panel at 48" from ground level. Exceptions to this mounting system may be approved by Palm Beach County Department of Housing and Economic Sustainability.

The cost of poster mounting boards and posts are to be paid for by the contractor.

Posters and wage decision for display will be provided by Palm Beach County Department of Housing and Economic Sustainability at the pre-construction conference and shall be in a prominent location for the ease of exposure to all employees.

Display board must be maintained in a legible condition throughout the entire project duration. Failure to provide the above could result in suspension of contract payments until violation(s) are corrected as directed by Palm Beach County Department of Housing and Economic Sustainability.

The Project or Program to which the construction work covered by this contract pertains is being assisted by the United States of America and the following Federal Labor Standards Provisions are included in this Contract pursuant to the provisions applicable to such Federal assistance.

A. 1: (i) Minimum Wages. All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section l(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period.

Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible, place where it can be easily seen by the workers.

(ii) (a) Any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(b) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employment Standards Administration, U. S. Department of Labor, Washington, D. C. 20210.

The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB control number 1215-0140.)

(c) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the view of all interested parties and the recommendation of HUD or its designee, to the Administrator for determination. The Administrator, or an authorized representative will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30 day period that additional time is necessary. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

(d) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii)(b) or (c) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program. (Approved by the Office of Management and Budget under OMB Control Number 1215-0140.)

A.2: Withholding. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic including any apprentice, trainee or helper, employed or working on the site of the work, all or part of the wages required by the contract, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the contractor, disburse such amounts withheld for and on account of the contractor or subcontractor to the respective employee to whom they are due. The Comptroller General shall make such disbursements in the case of direct Davis-Bacon Act contracts.

A.3: (i) Payrolls and basic records. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work preserved for a period of three years thereafter for all laborers and mechanic working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for

bona fide fringe benefits or cash equivalents thereof of the types described in Section I(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5 (a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated In writing to the laborer of mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage raises prescribed in the applicable programs. (Approved by the Office of Management of Budget under OMB Control Number 1215-0140 and 1215-0017.)

(ii)(a) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant , sponsor, or owner, as the case may be, for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR Part 5.5(a)(3)(I) except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include and individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional form WH-347 is available for this purpose from the Wage and Hour Division Web Site at https://www.dol.gov/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each of each covered worker, and shall provide them upon request to HUD or its designee if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant sponsor, or owner, as the case may be, for transmission to HUD or its designee, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this subparagraph for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submissions to HUD or its designee. (Approved by the Office of Management and Budget under OMB Control Number 1215-0149.)

(b) Each payroll submitted shall be accompanied by a "Statement of Compliance." signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under 29 CFR Part 5.5(a)(3)(ii), the appropriate information is being maintained under 29 CFR 5.5(a)(3)(I), and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(c) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph A.3(ii)(b) of this section.

(d) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph A.3(i) of this section available for inspection, copying or transcription by authorized representatives of HUD or its designee or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Part 5.12.

A.4: Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U. S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship and Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not register or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice, performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship and Training, Employer and Labor Services or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U. S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program.

If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work perform until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under 29CFR Part 5 shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR Part 30.

A.5: Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR Part 3 which are incorporated by reference in this contract.

A.6: Subcontracts. The contractor or subcontractor will insert in any subcontracts the clauses contained in Subparagraphs 1 through 11 in this Paragraph A, and such other clauses as HUD or its designee may by appropriate instructions require and a copy of the applicable prevailing wage decision, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contractor with all the contract clauses in this paragraph.

A.7: Contracts termination; debarment. A breech of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

A.8: Compliance with Davis-Bacon and Related Act Requirements. All rulings and interpretations of the Davis-Bacon Acts contained in 29 CFR Part 1, 3, and 5 are herein incorporated by reference in this contract.

A.9: Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5,6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and HUD or its designee, the U.S. Department of Labor, or the employees or their representatives.

A.10: (i) Certification of Eligibility. By entering into this contract the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1) or to be awarded HUD contracts or participate in HUD programs pursuant to 24 CFR Part 24.

(iii) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001. Additionally, U.S.C., Section 1010, Title 18, U.S.C., "Federal Housing Administration transactions, provides in part "Whoever, for the purpose of ... influencing in any way the action of such Administration...makes, utters or publishes any statement, knowing the same to be false...shall be fined not more than $5,000 or imprisoned not more than two years or both."

A. 1: Complaints, Proceedings, or Testimony by Employees. No laborer or mechanic to whom the wage, salary, or other labor standards provisions of this Contract are applicable shall be discharged or in any other manner discriminated against by the Contractor or any subcontractor because such employee has filed any complaint or instituted or caused to be instituted any proceeding or has testified or is about to testify in any proceeding under or relating to the labor standards applicable under this Contract to his employer.

B. Contract Work Hours and Safety Standards Act

The provisions of this Paragraph B are applicable where the amount of prime contract exceeds $100,000. As used in this paragraph, the term "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontracting contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in subparagraph (1) of this paragraph, the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in case of work done under contract for the District of Columbia or a territory, to such District or such territory), for liquidated damages.

Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (1) of this paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in subparagraph (1) of this paragraph.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contractor or any other Federal contract with the same prime contract, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set truth in subparagraph (2) of this paragraph.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraphs (1) through (4) of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraphs (1) though (4) of this paragraph.

C. Health and Safety

The provisions of this Paragraph C are applicable only where the amount of the prime contract exceeds $100,000.

(1) No laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation.

(2) The Contractor shall comply with all regulations issued by the Secretary of Labor pursuant to Title 29 Part 1926 and failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat 96). 40 USC 3701 et seq.

(3) The Contractor shall include the provisions of this paragraph in every subcontract so that such provisions will be binding on each subcontractor. The Contractor shall take such action with respect to any subcontractor as the Secretary of Housing and Urban Development or the Secretary of Labor shall direct as a means of enforcing such provisions

GUIDANCE TO CONTRACTOR FOR COMPLIANCE WITH LABOR STANDARDS PROVISIONS

A. Contracts with Two Wage Decisions

If the contract includes two wage decisions, the contractor, and each subcontractor who works on the site, must submit either two separate payrolls (one for each wage decision) or one payroll which identifies each worker twice and the hours worked under each wage decision. One single payroll, reflecting each worker once, may be submitted provided the Contractor uses the higher rate in the wage decisions for each identical job classification. However, where a job classification is not listed in a wage decision and is needed for that portion of the work, the classification must be added to the wage decision. A worker may not be paid at the rate for a classification using the hourly rate for that same classification in another wage decision. After the additional classification is approved, the contractor may pay the higher of the two rates and submit one payroll, if desired.

B. Complying with Minimum Hourly Amounts

(1) The minimum hourly amount due to a worker in each classification is the total of the amounts in the "Rates" and "Fringe Benefits" (if any) columns of the applicable wage decision.

(2) The contractor may satisfy this minimum hourly amount by any combination of cash and bona fide fringe benefits, regardless of the individual amounts reflected in the "Rates" and "Fringe Benefits" columns.

(3) A contractor payment for a worker which is required by law is not a fringe benefit in meeting the minimum hourly amount due under the applicable wage decision. For example, contractor payments for FICA or unemployment insurance are not a fringe benefit; however, contractor payments for health insurance or retirement are a fringe benefit. Generally, a fringe benefit is bona fide if (a) it is available to most workers and (b) involves payments to a third party.

(4) The hourly value of the fringe benefit is calculated by dividing the contractor's annual cost (excluding any amount contributed by the worker) for the fringe benefit by 2080. Therefore, for workers with overtime, an additional payment may be required to meet the minimum hourly wages since generally fringe benefits have no value for any time worked over 40 hours weekly. (If a worker is paid more than the minimum rates required by the wage decision, this should not be a problem. As long as the total wages received by a worker for straight time equals the hours worked times the minimum hourly rate in the wage decision, the requirement of the Davis-Bacon and Related Acts has been satisfied.)

C. Overtime

For any project work over 40 hours weekly, a worker generally must be paid 150% of the actual hourly cash rate received, not the minimum required by the wage decision. (The Davis-Bacon and Related Acts only establishes minimum rates and does not address overtime; the Contract Work Hours Act contains the overtime requirement and uses "basic rate of pay" as the base for calculation, not the minimum rates established by the Davis-Bacon and Related Acts.)

D. Deductions

Workers who have deductions, not required by law, from their pay must authorize these deductions in writing. The authorization must identify the purpose of each deduction and the amount, which may be a specific dollar amount or a percentage. A copy of the authorization must be submitted with the first payroll containing the deduction. If deducted amounts increase, another authorization must be submitted. If deducted amounts decrease, no revision to the original authorization is needed. Court-ordered deductions, such as child support, may be identified by the responsible payroll person in a separate document. This document should identify the worker, the amount deducted and the purpose. A copy of the court order should be submitted.

E. Classifications Not Included in the Wage Decision

If a classification not in the wage decision is required, please advise the owner's representative in writing and identify the job classification(s) required. In some instances, the State agency may allow the use of a similar classification in the wage decision.

Otherwise, the contractor and affected workers must agree on a minimum rate, which cannot be lower than the lowest rate for any trade in the wage decision. Laborers (including any subcategory of the laborer classification) and truck drivers are not considered a trade for this purpose. If the classification involves a power equipment operator, the minimum cannot be lower than the lowest rate for any power equipment operator in the wage decision. The owner will provide forms to document agreement on the minimum rate by the affected workers and contractor.

The U.S. Department of Labor (USDOL) must approve the proposed classification and rate. The contractor may pay the proposed rate until the USDOL makes a determination. Should the USDOL require a higher rate, the contractor must make wage restitution to the affected worker(s) for all hours worked under the proposed rate.

F. Supervisory Personnel

Foremen and other supervisory personnel who spend at least 80% of their time supervising workers are not covered by the Davis-Bacon and Related Acts. Therefore, a wage decision will not include such supervisory classifications and their wages are not subject to any minimums under the Davis-Bacon and Related Act or overtime payments under the Contract Work Hours and Safety Standards Act. However, foremen and other supervisory personnel who spend less than 80% of their time engaged in supervisory activities are considered workers/mechanics for the time spent engaged in manual labor and must be paid at least the minimum in the wage decision for the appropriate classification(s) based on the work performed.

G. Sole Proprietorships/ Independent Contractors/ Leased Workers

The nature of the relationship between a prime contractor and a worker does not affect the requirement to comply with the labor standards provisions of this contract. The applicability of the labor standards provisions is based on the nature of the work performed.

If the work performed is primarily manual in nature, the worker is subject to the labor standards provisions in this contract. For example, if John Smith is the owner of ABC Plumbing and performs all plumbing work himself, then Mr. Smith is subject to the labor standards provisions, including minimum wages and overtime. His status as "owner" is irrelevant for labor standards purposes.

If a worker meets the IRS standards for being an independent contractor, and is employed as such, this means that the worker must submit a separate payroll as a subcontractor rather than be included on some other payroll. The worker is still subject to the labor standards provisions in this contract, including minimum wages and overtime.

If a contractor or subcontractor leases its workers, they are subject to the labor standards provisions in this contract, including minimum wages and overtime. The leasing firm must submit payrolls and these payrolls must reflect information required to determine compliance with the labor standards provisions of this contract, including a classification for each worker based on the nature of the work performed, number of regular hours worked, and number of overtime hours worked.

H. Apprentices / Helpers

A worker may be classified as an apprentice only if participating in a federal or state program. Documentation of participation must be submitted. Generally, the apprentice program specifies that the apprentice will be compensated at a percentage of journeyman rate. For Davis-Bacon Act purposes, the hourly rate cannot be lower than the percentage of the hourly rate for the classification in the applicable wage decision.

If the worker does not participate in a federal or state apprentice program, then the worker must be classified according to duties performed. This procedure may require classification in the “trade” depending on tools used, or as a laborer if specialized tools of the trade are not used. The contractor may want to consult with the Wage and Hour Division of the U.S. Department of Labor located in most large cities regarding the appropriate classification.

Presently, no worker may be classified as a “helper”. As with apprentices not participating in a formal apprentice program, the worker must be classified according to duties performed and tools used.

"General Decision Number: FL20190130 10/25/2019

Superseded General Decision Number: FL20180173

State: Florida

Construction Type: Heavy

County: Palm Beach County in Florida.

HEAVY CONSTRUCTION PROJECTS (Including Sewer and Water Lines)

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate,if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the

Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019
1	03/15/2019
2	08/30/2019
3	10/25/2019

ELEC0728-006 03/01/2019

	Rates	Fringes
ELECTRICIAN	$ 32.63	12.23

ENGI0487-014 07/01/2013

	Rates	Fringes
OPERATOR: Crane All Tower Cranes Mobile, Rail, Climbers, Static-Mount; All Cranes with Boom Length 150 Feet & Over (With or without jib) Friction, Hydraulic, Electric or Otherwise; Cranes 150 Tons & Over; Cranes with 3 Drums (When 3rd drum is rigged for work); Gantry & Overhead Cranes; Hydraulic Cranes Over 25 Tons but not more than 50 Tons;		

Hydraulic/Friction Cranes; & All Types of Flying Cranes; Boom Truck.....	$ 29.05	8.80
Cranes with Boom Length Less than 150 Feet (With or without jib); Hydraulic Cranes 25 Tons & Under, & Over 50 Tons (With Oiler); Boom Truck.....	$ 28.32	8.80
OPERATOR: Drill.....	$ 25.80	8.80
OPERATOR: Oiler.....	$ 22.99	8.80

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* IRON0402-003 01/01/2019

	Rates	Fringes
IRONWORKER, STRUCTURAL.....	$ 23.69	12.70

LABO1652-004 05/01/2018

	Rates	Fringes
LABORER: Grade Checker.....	$ 22.05	7.27

PAIN0452-007 08/01/2019

	Rates	Fringes
PAINTER: Brush, Roller and Spray.....	$ 19.96	11.05

SUFL2009-169 06/24/2009

	Rates	Fringes
CARPENTER, Includes Form Work....	$ 17.00	2.51

CEMENT MASON/CONCRETE FINISHER...	$ 16.93	0.00
LABORER: Common or General.....	$ 10.64	0.00
LABORER: Landscape.....	$ 7.25	0.00
LABORER: Pipelayer.....	$ 14.00	0.00
LABORER: Power Tool Operator (Hand Held Drills/Saws, Jackhammer and Power Saws Only).....	$ 10.63	2.20
OPERATOR: Asphalt Paver.....	$ 11.59	0.00
OPERATOR: Backhoe Loader Combo.....	$ 16.10	2.44
OPERATOR: Backhoe/Excavator....	$ 15.33	3.60
OPERATOR: Bulldozer.....	$ 14.95	0.81
OPERATOR: Grader/Blade.....	$ 16.00	2.84
OPERATOR: Loader.....	$ 16.05	0.00
OPERATOR: Mechanic.....	$ 14.32	0.00
OPERATOR: Roller.....	$ 10.95	0.00
OPERATOR: Scraper.....	$ 11.00	1.74
OPERATOR: Trackhoe.....	$ 20.92	5.50
OPERATOR: Tractor.....	$ 10.54	0.00
TRUCK DRIVER, Includes Dump		

Truck..... $ 9.60 0.00

TRUCK DRIVER: Lowboy Truck..... $ 12.73 0.00

TRUCK DRIVER: Off the Road
Truck..... $ 12.21 1.97

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average

rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION"

"General Decision Number: FL20190182 01/04/2019

Superseded General Decision Number: FL20180225

State: Florida

Construction Type: Highway

County: Palm Beach County in Florida.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.60 for calendar year 2019 applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.60 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2019. If this contract is covered by the EO and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must pay workers in that classification at least the wage rate determined through the conformance process set forth in 29 CFR 5.5(a)(1)(ii) (or the EO minimum wage rate, if it is higher than the conformed wage rate). The EO minimum wage rate will be adjusted annually. Please note that this EO applies to the above-mentioned types of contracts entered into by the federal government that are subject

to the Davis-Bacon Act itself, but it does not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60). Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/04/2019

* SUFL2013-043 08/19/2013

	Rates	Fringes
CARPENTER, Includes Form Work	$ 15.38	0.00
CEMENT MASON/CONCRETE FINISHER	$ 15.69	0.00
ELECTRICIAN	$ 18.20	0.00
FENCE ERECTOR	$ 12.82	0.00
HIGHWAY/PARKING LOT STRIPING: Operator (Striping Machine)	$ 15.09	0.00
HIGHWAY/PARKING LOT STRIPING: Painter	$ 12.13	0.00
HIGHWAY/PARKING LOT STRIPING: Operator (Spray Nozzleman)	$ 11.81	0.00
INSTALLER - GUARDRAIL	$ 13.96	0.00
IRONWORKER, ORNAMENTAL	$ 13.48	0.00

IRONWORKER, REINFORCING.....	$ 16.58	0.00
IRONWORKER, STRUCTURAL.....	$ 16.42	0.00
LABORER (Traffic Control Specialist incl. placing of cones/barricades/barrels - Setter, Mover, Sweeper).....	$ 12.97	0.00
LABORER: Asphalt, Includes Raker, Shoveler, Spreader and Distributor.....	$ 12.99	0.00
LABORER: Common or General.....	$ 10.66	0.00
LABORER: Flagger.....	$ 12.53	0.00
LABORER: Grade Checker.....	$ 12.41	0.00
LABORER: Landscape & Irrigation.....	$ 9.02	0.00
LABORER: Mason Tender - Cement/Concrete.....	$ 13.91	3.50
LABORER: Pipelayer.....	$ 14.82	0.00
OPERATOR: Backhoe/Excavator/Trackhoe.....	$ 15.66	0.00
OPERATOR: Bobcat/Skid Steer/Skid Loader.....	$ 12.88	0.00
OPERATOR: Boom.....	$ 18.95	0.00
OPERATOR: Boring Machine.....	$ 16.23	0.00

OPERATOR: Broom/Sweeper	$ 12.70	0.00
OPERATOR: Bulldozer	$ 16.00	0.00
OPERATOR: Concrete Finishing Machine	$ 15.44	0.00
OPERATOR: Concrete Saw	$ 16.22	0.00
OPERATOR: Crane	$ 21.66	0.00
OPERATOR: Curb Machine	$ 20.76	0.00
OPERATOR: Distributor	$ 14.76	0.00
OPERATOR: Drill	$ 14.78	0.00
OPERATOR: Forklift	$ 16.32	0.00
OPERATOR: Gradall	$ 15.75	0.91
OPERATOR: Grader/Blade	$ 20.25	0.00
OPERATOR: Grinding/Grooving Machine	$ 13.87	0.00
OPERATOR: Loader	$ 14.19	0.00
OPERATOR: Mechanic	$ 18.03	0.00
OPERATOR: Milling Machine	$ 15.60	0.00
OPERATOR: Oiler	$ 16.32	0.00
OPERATOR: Paver (Asphalt, Aggregate, and Concrete)	$ 14.73	2.36

OPERATOR: Piledriver..... $ 17.23 0.00

OPERATOR: Post Driver
(Guardrail/Fences)..... $ 14.45 0.00

OPERATOR: Roller..... $ 13.03 0.00

OPERATOR: Scraper..... $ 12.01 0.00

OPERATOR: Screed..... $ 15.51 0.00

OPERATOR: Tractor..... $ 10.79 0.00

OPERATOR: Trencher..... $ 14.74 0.00

PAINTER: Spray..... $ 16.52 0.00

SIGN ERECTOR..... $ 14.02 0.00

TRUCK DRIVER: Distributor
Truck..... $ 14.96 2.17

TRUCK DRIVER: Dump Truck..... $ 11.84 0.00

TRUCK DRIVER: Flatbed Truck.... $ 14.28 0.00

TRUCK DRIVER: Lowboy Truck..... $ 13.98 0.00

TRUCK DRIVER: Slurry Truck..... $ 11.96 0.00

TRUCK DRIVER: Vactor Truck..... $ 14.21 0.00

TRUCK DRIVER: Water Truck..... $ 13.25 0.00

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operation to which welding is incidental.

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WAGE DETERMINATION APPEALS PROCESS

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* an existing published wage determination
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U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

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END OF GENERAL DECISION

"

Exhibit E

PROJECT PLANS & Technical Specifications

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

BID SET

DATE OF ISSUE: 11/04/2019

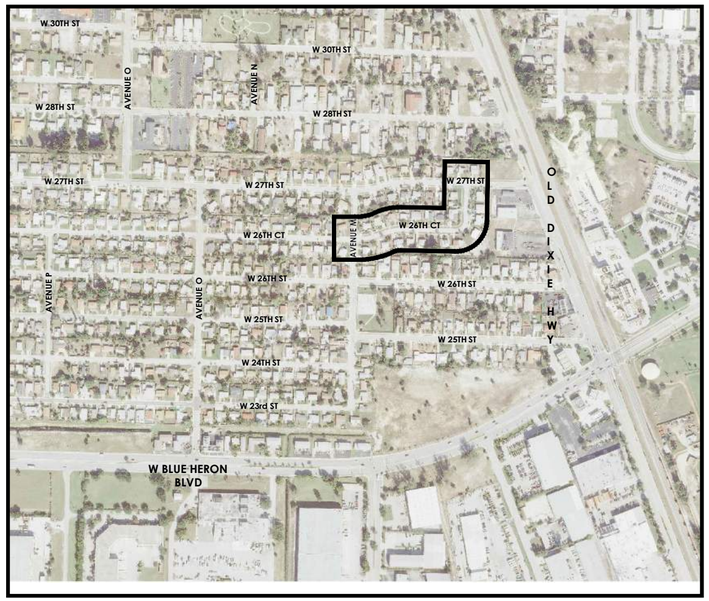
Public Works Department
1481 WEST 13TH STREET
Riviera Beach, Florida 33404
Phone: 561.845.4080

CITY COUNCIL

Ronnie Felder	Mayor
Tradick McCoy	Councilwoman, District 1
KaShamba Miller-Anderson	Councilwoman, District 2
Shirley Lanier	Councilwoman, District 3
Julia Botel	Councilwoman, District 4
Douglas Lawson	Councilman, District 5

STAFF

Jonathan E. Evans	City Manager
Terrence N. Bailey, P.E.	Interim Public Works Director



SECTION 29, TOWNSHIP 42S, RANGE 43E

LOCATION MAP

N.T.S

Sunshine811

Call 811 or www.sunshine811.com two full business days before digging to have utilities located and marked.

Check positive response codes before you dig!

INDEX OF DRAWINGS

SHT #	DWG #	DRAWING TITLE
01	COV-1	COVER SHEET
02	KEY-1	KEY SHEET
03 - 04	GN-1 - GN-2	GENERAL NOTES
05	EC-1	EXISTING CONDITION AND DEMOLITION PLANS
06	RD-1	PROPOSED ROADWAY PLANS
07	TS-1	TYPICAL SECTIONS
08 - 09	U-1 - U-2	UTILITIES PLAN AND PROFILE
10 - 11	D-1 - D-2	ROADWAY DETAILS
12	D-3	DRAINAGE DETAILS
13	WD-1	WATER DETAILS
14	WSD-1	WATER AND SANITARY SEWER DETAILS

CHEN•MOORE &ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

PROJECT NUMBER 18-221.013

CLIENT PROJECT NUMBER

DRAWING NUMBER COV-1

01 OF 14

Plot Date: 11/4/2019 12:11:07 PM Username: JHall Layout Name: COV-1
Folder Path: V:\Projects\2018\18-221.013 - Riviera Beach CDBG FY 2018-2020 Improv\Design\CAD\Plans\CDBG FY 2019-20 Filename: 18-221.013 Cover Sheet.dwg

N

GRAPHIC SCALE
0 75 150 300
1 INCH = 150 FEET

CHEN•MOORE &ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 10/11/2019

SUB-CONTRACTORS

CLIENT
CITY OF RIVIERA BEACH PALM BEACH COUNTY, FL.

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REVISIONS

DATE OF ISSUE
10/11/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE

KEY SHEET

DRAWING NUMBER
KEY-1
02 OF 14

Plot Date: 11/4/2019 12:11:17 PM Username: JHall Layout Name: KEY-1
Folder Path: V:\Projects\2018\18-221.013 - Riviera Beach CDBG FY 2018-2020 Improv\Design\CAD\Plans\CDBG FY 2019-20 Filename: 18-221.013 Key Sheet.dwg

GENERAL NOTES:

1. CONTRACTOR SHALL NOTE THAT ASBESTOS CEMENT PIPE IS PRESENT ON PROJECT SITE. CONTRACTOR SHALL FOLLOW SPECIFICATIONS AND REGULATORY AGENCY MEASUREMENTS FOR HANDLING AND DISPOSAL OF SUCH ELEMENTS.
2. THE LOCATION AND SIZE OF ALL EXISTING UTILITIES SHOWN ON THE PLAN ARE APPROXIMATE. ADDITIONAL UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EXACT LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITIES BY ELECTRONIC METHODS AND BY HAND EXCAVATION IN COORDINATION WITH ALL UTILITY COMPANIES PRIOR TO BEGINNING ANY CONSTRUCTION OPERATION. THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION AND THE LOCATIONS AND ELEVATIONS OF EXPOSED FEATURES SHALL BE CAREFULLY NOTED ON THE PROJECT RECORD "AS-BUILT" DRAWINGS. ANY AND ALL CONFLICT OF EXISTING UTILITIES WITH PROPOSED IMPROVEMENTS MUST BE RESOLVED BY THE CONTRACTOR IN AN APPROVED MANNER.
3. CONTRACTOR SHALL PROVIDE A FIVE (5) DAY NOTICE TO CITY AND ENGINEER PRIOR TO ANY CONSTRUCTION ACTIVITY.
4. 48 HOURS PRIOR TO DIGGING CONTRACTOR SHALL COORDINATE WITH ALL UNDERGROUND SERVICE COMPANIES TO VERIFY THE LOCATION OF THEIR FACILITIES. ADDITIONALLY, CONTRACTOR SHALL CONTACT SUNSHINE STATE ONE CALL OF FLORIDA, INC. AT 1-800-432-4770 PRIOR TO DIGGING.
5. THE INFORMATION PROVIDED IN THESE PLANS IS TO ASSIST THE CONTRACTOR IN ASSESSING THE NATURE AND EXTENT OF THE CONDITIONS WHICH MAY BE ENCOUNTERED DURING THE COURSE OF THE WORK. PLAN IS BASED ON AERIAL IMAGERY. A TOPOGRAPHIC SURVEY WAS NOT PERFORMED FOR THE MAJORITY OF THE PROJECT AREA. ALL CONTRACTORS ARE DIRECTED, PRIOR TO BIDDING, TO CONDUCT ANY INVESTIGATIONS THEY DEEM NECESSARY TO ARRIVE AT THEIR OWN CONCLUSIONS REGARDING THE ACTUAL CONDITIONS THAT WILL BE ENCOUNTERED, AND UPON WHICH THEIR BIDS WILL BE BASED. CONTRACTOR IS RESPONSIBLE TO VERIFY DIMENSIONS AND FIELD CONDITIONS PRIOR TO ORDERING ANY MATERIALS.
6. THE CONTRACTOR IS ADVISED TO USE EXTREME CAUTION WHEN CONSTRUCTION IS NEAR OR AROUND ANY ELECTRICAL FACILITIES.
7. THE CONTRACTOR SHALL COORDINATE THE UTILITIES TO ARRANGE RELOCATION AND TEMPORARY SUPPORT OF UTILITY FEATURES, AS NECESSARY TO COMPLETE THE WORK. ANY COST INVOLVED IS TO BE BORNE BY THE CONTRACTOR.
8. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY WHEN CONFLICTS BETWEEN DRAWINGS AND ACTUAL CONDITIONS ARE DISCOVERED.
9. THE CONTRACTOR SHALL MAINTAIN A SET OF PLANS WITH CURRENT FIELD CHANGES ACCURATELY MARKED AND SHALL DELIVER THESE PLANS TO THE ENGINEER UPON COMPLETION OF CONSTRUCTION. THE CURRENT MARKINGS SHALL BE REVIEWED WITH THE ENGINEER DAILY, OR AS NEEDED TO ASSURE THAT THEY BOTH AGREE THAT THE MARK-UPS REFLECT THE ACTUAL "AS-BUILT" CONDITIONS. THE CONTRACTOR WILL PREPARE PROJECT RECORD DRAWINGS AT THE CONCLUSION OF THE PROJECT BASED ON THE MARK-UP DRAWINGS.
10. ANY U.S.G.S. OR STATE OF FLORIDA MONUMENT OR BENCH WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF IN DANGER OF DAMAGE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND DISTRICT LOCATION SURVEYOR.
11. ANY PUBLIC LAND CORNER WITHIN THE LIMITS OF CONSTRUCTION SHALL BE PROTECTED.
12. ALL EXISTING UTILITIES ARE TO REMAIN UNLESS OTHERWISE NOTED.
13. THE CONTRACTOR IS ADVISED THAT ALL PROPERTIES ADJACENT TO THE PROJECT MAY HAVE WATER, SEWER AND IRRIGATION SERVICES WHICH MAY NOT BE SHOWN IN THE PLANS. THE CONTRACTOR MUST REQUEST THE LOCATION OF THESE LATERAL SERVICES. THE ADDITIONAL COST OF EXCAVATING, INSTALLING BACKFILLING AND COMPACTING AROUND THESE LATERALS SERVICING SAID PROPERTIES MUST BE INCLUDED IN THE BID ITEMS. IF THE CONTRACTOR ELECTS TO REPLACE PORTIONS OF THE EXISTING UTILITY LINES IN LIEU OF SUPPORTING IT IT WILL BE AT THE CONTRACTOR'S EXPENSE.
14. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS A MINIMUM OF FIFTEEN (15) DAYS OR EARLIER IF REQUIRED BY THE CITY, PRIOR TO CONSTRUCTION ON THEIR STREET.
15. THE CONTRACTOR SHALL MAINTAIN SAFE VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES AT ALL TIMES AND WILL MAINTAIN ACCOMMODATIONS FOR INTERSECTING AND CROSSING TRAFFIC. NO ROAD OR STREET CROSSING WILL BE BLOCKED OR UNDULY RESTRICTED AS DETERMINED BY THE ENGINEER.
16. ANY PAVEMENT MARKINGS OR SIGNS THAT ARE DAMAGED SHALL BE REPAIRED OR REPLACED
17. THE CONTRACTOR SHALL USE A STREET SWEEPER (USING WATER) OR OTHER EQUIPMENT CAPABLE OF CONTROLLING AND REMOVING DUST. APPROVAL OF THE USE OF SUCH EQUIPMENT IS CONTINGENT UPON ITS DEMONSTRATED ABILITY TO DO THE WORK.
18. RECONSTRUCTION OF SIDEWALKS AND DRIVEWAYS SHALL MEET FDOT MINIMUM STANDARDS, INCLUDING MINIMUM AND MAXIMUM SLOPES AS DEFINED BY THE AMERICANS WITH DISABILITIES ACT (ADA)
19. THE PERMIT PLAN SET MUST BE ON SITE AT ALL TIMES.
20. ALL ACTIVITIES SHALL BE CARRIED OUT IN STRICT ACCORDANCE WITH LOCAL RULES AND LEGISLATION REGARDING POLLUTION PREVENTION FOR WATER, SOIL AND AIR. ALSO ALL APPLICABLE RULES AND LEGISLATION REGARDING PERSONAL HEALTH AND SAFETY SHALL BE OBSERVED.
21. EXISTING ABOVE GROUND UTILITY FEATURES WITHIN THE PROPOSED UTILITY STRIP SHALL BE MAINTAINED AND PROTECTED. ELEVATIONS OF EXISTING VALVES SHALL BE ADJUSTED TO BE FLUSH WITH STAMPED CONCRETE.
22. CONTRACTOR SHALL DELIVER ALL EXISTING SIGNS THAT ARE REMOVED TO THE RIVIERA BEACH PUBLIC WORKS DEPARTMENT.
23. SIGNS SHALL BE INSTALLED IN ACCORDANCE WITH FDOT INDEX NOs. 17302 AND 17344

DEMOLITION NOTES:

1. CONDUCT DEMOLITION OPERATIONS AND REMOVE DEBRIS TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS, AND OTHER ADJACENT OCCUPIED AND USED FACILITIES.
2. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR IN-USE FACILITIES WITHOUT PERMISSION FROM CITY. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS AS REQUIRED BY THE CITY.
3. CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN. ENSURE SAFE PASSAGE OF PEOPLE AROUND DEMOLITION AREA.
4. ERECT TEMPORARY PROTECTION, SUCH AS WALKS, FENCES, BARRIERS, RAILINGS, ETC. WHERE REQUIRED BY AUTHORITIES HAVING JURISDICTION.
5. PROTECT EXISTING SITE IMPROVEMENTS, APPURTENANCES, AND LANDSCAPING TO REMAIN.
6. ADJACENT IMPROVEMENTS SHALL BE CLEANED OF DUST, DIRT, AND DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO EXISTING CONDITION.
7. FOR SELECTIVE DEMOLITION, USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION OR ADJOINING CONSTRUCTIONS. TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES, USE HAND OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING OR CHOPPING. TEMPORARILY COVER FEATURES OR APPURTENANCES NOT TO BE DISTURBED.
8. DEMOLISH CONCRETE IN SMALL SECTIONS. CUT CONCRETE AT JUNCTURES WITH CONSTRUCTION TO REMAIN, USING POWER-DRIVEN MASONRY SAW OR HAND TOOLS. DO NOT USE POWER-DRIVEN IMPACT TOOLS.
9. REMOVAL, DEMOLITION, HAULING, AND DISPOSAL SHALL COMPLY WITH REGULATIONS BY F.D.E.P., E.P.A., AND ANY OTHER AUTHORITY HAVING JURISDICTION.
10. ALL EXISTING PATHWAY AND STREET LIGHTING WILL REMAIN IN PLACE AND REMAIN IN SERVICE DURING CONSTRUCTION OPERATIONS.

SIGNING AND MARKING NOTES:

1. ALL PAVEMENT MARKINGS WITHIN CITY OF RIVIERA BEACH RIGHT-OF-WAY SHALL BE THERMOPLASTIC. THERMOPLASTIC SHALL NOT BE INSTALLED ON PAVEMENT UNTIL A MINIMUM OF FIVE CALENDAR DAYS AFTER THE FINAL LIFT OF ASPHALT HAS BEEN COMPLETED.
2. BLUE/BLUE REFLECTIVE PAVEMENT MARKERS (RPM) SHALL BE INSTALLED IN THE CENTER OF ADJACENT TRAVEL LANE TO INDICATE THE LOCATION OF ALL FIRE HYDRANTS.
3. BI-DIRECTIONAL YELLOW/YELLOW REFLECTIVE PAVEMENT MARKERS SHALL BE PROVIDED AT 40' INTERVALS CENTERED BETWEEN YELLOW SKIP STRIPES.
4. ONE BI-DIRECTIONAL YELLOW/YELLOW REFLECTIVE PAVEMENT MARKER SHALL BE PROVIDED AT EACH END OF 18' YELLOW STRIPES ON EACH SIDE OF DOUBLE YELLOW STRIPES.
5. BI-DIRECTIONAL COLORLESS/RED REFLECTIVE PAVEMENT MARKERS SHALL BE PROVIDED AT 20' INTERVALS ALONG SOLID WHITE LINES (NOT ON EDGE OF PAVEMENT LINES)
6. BI-DIRECTIONAL YELLOW/YELLOW REFLECTIVE PAVEMENT MARKERS SHALL BE PROVIDED AT 1' INTERVALS AT ALL BULLNOSES.
7. ALL SIGNING, PAVEMENT MARKINGS AND PLACEMENT OF REFLECTIVE PAVEMENT MARKERS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES MANUAL (MUTCD) LATEST VERSION.
8. ALL PAVEMENT MARKING SHALL BE HOT APPLIED THERMOPLASTIC MANUFACTURED AND APPLIED IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION SECTION 711, LATEST EDITION.
9. REFLECTIVE PAVEMENT MARKERS SHALL BE CLASS B MARKERS MANUFACTURED IN ACCORDANCE WITH FDOT STANDARD SPECIFICATION 706, LATEST EDITION AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PROCEDURES.
10. ALL SIGNS SHALL BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
11. ALL SIGNS SHALL BE DIAMOND GRADE.
12. THE PUBLIC ROADWAYS INDICATED IN THESE PLANS HAVE BEEN DESIGNED SUBSTANTIALLY IN ACCORDANCE WITH "THE MANUAL OF UNIFORM MINIMUM STANDARDS FOR DESIGN, CONSTRUCTION AND MAINTENANCE FOR STREETS AND HIGHWAYS-STATE OF FLORIDA"
13. METHOD OF REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE BY WATER JETTING OR SAND BLASTING. BLACK-OUT OF EXISTING PAVEMENT MARKING IS NOT PERMITTED.
14. THE CONTRACTOR SHALL VERIFY PROPER STREET NAMES AND NUMBERS WITH AN APPROVED ADDRESS PLAN PRIOR TO ORDERING AND INSTALLING 'D3' SIGNS.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING REFUSE PICK UP AND MAIL SERVICE TO ENSURE UNINTERRUPTED SERVICE THROUGHOUT THE CONSTRUCTION PROJECT.

EROSION AND SEDIMENT CONTROL NOTES:

1. THE INTENT OF EROSION CONTROL MEASURES IS TO PROVIDE A BARRIER TO CONTAIN SILT AND SEDIMENT ON THE PROJECT SITE. THIS REPRESENTATION IS PROVIDED FOR THE CONVENIENCE OF THE CONTRACTOR. THE TEST OF EROSION CONTROL EFFECTIVENESS IS TO BE DETERMINED BY MEETING THE REGULATIONS SET FORTH BY THE AUTHORITY HAVING JURISDICTION OVER WATER QUALITY CONTROL AND OTHER SEDIMENTATION RESTRICTION REQUIREMENTS.
2. APPROVED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY CLEARING, GRADING, EXCAVATION, FILLING, OR OTHER LAND DISTURBANCE ACTIVITIES, EXCEPT THOSE OPERATIONS NEEDED TO INSTALL SUCH MEASURES.
3. INSPECTION OF ALL EROSION CONTROL MEASURES SHALL BE CONDUCTED WEEKLY, OR AFTER EACH RAINFALL EVENT. REPAIR, AND/OR REPLACEMENT OF SUCH MEASURES SHALL BE MADE PROMPTLY AS NEEDED.
4. KEEP DUST WITHIN TOLERABLE LIMITS BY SPRINKLING OR OTHER ACCEPTABLE MEANS.
5. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED IF DEEMED NECESSARY BY ONSITE INSPECTION.
6. FAILURE TO PROPERLY INSTALL AND MAINTAIN EROSION CONTROL PRACTICES SHALL RESULT IN CONSTRUCTION BEING HALTED.
7. DRAINAGE INLETS SHALL BE PROTECTED BY FILTER OR OTHER APPROVED MATERIALS.
8. ANY ACCESS ROUTES TO SITE SHALL BE BASED WITH CRUSHED STONE, WHERE PRACTICAL.
9. EROSION CONTROL MEASURES ARE TO BE MAINTAINED UNTIL PERMANENT GROUND COVER IS ESTABLISHED.
10. UNLESS CALLED OUT ON DRAWINGS CITY APPROVAL IS REQUIRED PRIOR TO DISTURBING VEGETATION. VEGETATION REMOVAL IS NOT OPEN TO CONTRACTOR INTERPRETATION.
11. ALL WORK IS TO BE IN COMPLIANCE WITH THE RULES AND REGULATIONS SET FORTH BY THE STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION AND THE CITY OF RIVIERA BEACH.

LEGEND

Symbol	Description
x 0.00	EXIST. MEASURED ELEVATION
	EXIST. SPEED BUMP/BRICK PAVERS
	EXIST. MAILBOX
	EXIST. INFORMATION SIGN (DOUBLE POST)
	EXIST. INFORMATION SIGN (SINGLE POST)
	EXIST. TEMPORARY BENCHMARK
	EXIST. LIGHT POLE
	EXIST. CATCH BASIN
	EXIST. STORM MANHOLE
	EXIST. WATER METER
	EXIST. FIRE HYDRANT
	EXIST. WATER VALVE
	EXIST. SANITARY VALVE
	EXIST. SANITARY MANHOLE
	EXIST. ELECTRIC WIRE PULL BOX
	EXIST. GUY WIRE
	EXIST. UTILITY POLE
	EXIST. CONCRETE POWER POLE
	EXIST. CURB INLET
TBM	TEMPORARY BENCHMARK
PCN	PARCEL CONTROL NUMBER
O.R.B.	OFFICIAL RECORD BOOK
PB	PLAT BOOK
PG.	PAGE
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT OF WAY
	PAVEMENT CORE
INV.	INVERT
T.O.P	TOP OF PIPE
TYP	TYPICAL
—OE—	EXIST. OVERHEAD ELECTRIC
±-SWR	EXIST. UNDERGROUND SANITARY
—DRN—	EXIST. UNDERGROUND STORM
	EXIST. GUARDRAIL
	EXIST. CHAIN LINK FENCE
	EXIST. WOODEN STOCKADE FENCE
	EXIST. METAL FENCE
	EXIST. PLASTIC FENCE
6"	EXIST. OAK TREE AND DIAMETER
6"	EXIST. PALM TREE AND DIAMETER
6"	EXIST. BANYAN TREE AND DIAMETER
ABN 4" ACP WM	EXISTING ABANDON WATER MAIN
EX WM	EXISTING WATER MAIN
EX BT	EXISTING BURIED AT&T TELEPHONE
EX OE	EXISTING OVERHEAD ELECTRIC
EX 2" GAS	EXISTING GAS
EX VCP SAN	EXISTING VCP SAN
EX 8" VCP SAN	EXISTING SANITARY SEWER PIPE
EX RCP SD	EXISTING RCP SD
	EXISTING CURB INLET
PC #4 / TH #10	PAVEMENT CORE / TEST HOLE
X.XX	PROPOSED SPOT ELEVATIONS
	PROPOSED DRAINAGE FLOW ARROW
	PROPOSED SEWER LINING
WM	PROPOSED WATER MAIN
	PROPOSED SERVICE LATERAL
	PROPOSED VERTICAL BEND
	PROPOSED REDUCER
	PROPOSED WATER METER AND SERVICE LATERAL
	PROPOSED GATE VALVE
S1	SAMPLE POINT
	PROPOSED CURB INLET
	PROPOSED STORM MANHOLE
	PROPOSED TACTILE SURFACE
	DEMOLISH EXIST. ASPHALT PAVEMENT AND ASPHALT DRIVEWAY
	DEMOLISH EXIST. CONCRETE SIDEWALK AND CONCRETE DRIVEWAY
	LIMIT OF EXIST. FEATURE TO BE DEMOLISHED
	PROPOSED CONCRETE DRIVEWAY
	PROPOSED 5' WIDE 4" THICK CONCRETE SIDEWALK
	MILL AND OVERLAY
	FULL PAVEMENT RESTORATION
	PROPOSED STAMPED CONCRETE SPEED HUMP
	RED CONCRETE SPEED BUMP
	SOD RESTORATION
	GROUT AND ABANDON IN PLACE EXISTING PIPE

Sunshine 811
Call 811 or www.sunshine811.com two full business days before digging to have utilities located and marked.

BID SET

CHEN-MOORE & ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 11/04/2019

SUB-CONTRACTORS

CLIENT

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REVISIONS

DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE

GENERAL NOTES

DRAWING NUMBER

GN-1

Plot Date: 11/4/2019 12:11:20 PM Username: JHall Layout Name: GN-1
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GENERAL

1. FIELD CHANGES OR DEVIATIONS FROM THE DESIGN SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE OWNER/ENGINEER.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL TERMS AND CONDITIONS, DIVISION 1 THRU 16 SPECIFICATIONS AND ALL CITY, COUNTY, STATE AND FEDERAL LAWS, CODES AND ORDINANCES WHERE APPLICABLE. IN THE EVENT OF A CONFLICT BETWEEN THE GENERAL NOTES AND CONSTRUCTION SPECIFICATIONS IN THESE PLANS AND THE CONTRACT DOCUMENTS AND SPECIFICATIONS IN THE SPECIFICATION BOOKLET, THE CONTRACTOR SHALL SUBMIT WRITTEN REQUEST FOR CLARIFICATION TO THE ENGINEER.
3. THE CONTRACTOR SHALL PROVIDE FOR ALL REQUIRED CLEARING AND GRUBBING. RUBBLE, DEBRIS AND OTHER UNUSABLE OR UNSUITABLE MATERIAL SHALL BE REMOVED AND PROPERLY DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
4. CONSTRUCTION DEWATERING (WELL POINTS, SUMPS, ETC.) MAY REQUIRE A SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) WATER USE/DEWATERING PERMIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING AND PAYING FOR SUCH A PERMIT, UNLESS NOTED OTHERWISE.
5. WORK WITHIN CITY RIGHT-OF-WAY MAY REQUIRE A CITY PERMIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SECURING AND PAYING FOR SUCH A PERMIT, UNLESS NOTED OTHERWISE.
6. WORK SHALL COMPLY WITH THE STATE OF FLORIDA "TRENCH SAFETY ACT" OF OCTOBER 1, 1990 OR LATER.

STANDARD WATER/SEWER SEPARATION STATEMENT

1. WATER/SEWER SEPARATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND THE SPECIFIC CONDITIONS OUTLINED IN THE APPLICABLE PERMIT(S) FOR THE PROJECT.
2. HORIZONTAL SEPARATIONS:
   SEPARATIONS SHALL BE MEASURED OUTSIDE EDGE TO OUTSIDE EDGE BETWEEN WATER MAINS AND STORM SEWERS, STORM-WATER FORCE MAINS, OR RECLAIMED WATER LINES SHALL BE 3 FT. MINIMUM.
   BETWEEN WATER MAINS AND VACUUM TYPE SEWER PREFERABLY 10 FT. AND AT LEAST 3 FT. MINIMUM.
   GRAVITY OR PRESSURE SANITARY SEWERS, WASTE WATER FORCE MAINS OR RECLAIMED WATER PREFERABLY 10 FT. AND AT LEAST 6 FT. MAY BE REDUCED TO 3 FT. WHERE BOTTOM OF WATER MAINS IS AT LEAST 6" ABOVE TOP OF SEWER AND 10 FT. TO ANY PART OF ON-SITE SEWER TREATMENT OR DISPOSAL SYSTEM.
3. VERTICAL SEPARATIONS:
   PER FLORIDA CODE NUMBER 62-555.314, MINIMUM VERTICAL SEPARATIONS BETWEEN WATER MAINS AND GRAVITY SEWER, VACUUM TYPE SEWER, OR STORM SEWERS, TO BE PREFERABLY 12 INCHES IF WATER MAIN IS UNDER STORM OR SANITARY SEWER, OR AT LEAST 6 INCHES WHEN ABOVE.
4. CENTER 1-FULL LENGTH OF WATER MAIN PIPE AT CROSSINGS; ALTERNATIVELY ARRANGE PIPES SO JOINTS ARE AT LEAST 3 FEET FROM JOINTS IN VACUUM, STORM OR STORM FORCE MAINS, AT LEAST 6 FEET FROM JOINTS IN GRAVITY OR PRESSURE SEWERS, WASTEWATER FORCE MAINS OR RECLAIMED WATER.

TESTING

1. BACKFILL COMPACTION TESTS SHALL BE CONDUCTED BY AN INDEPENDENT TESTING LAB. FOR TYPICAL PIPE TRENCHES, DENSITY TESTS SHALL BE PERFORMED AT 500 FEET (MAXIMUM) INTERVALS. FOR OPEN-CUT PIPE TRENCHES ACROSS ROADS AND DRIVEWAYS, DENSITY TESTS SHALL BE PERFORMED AT 50 FEET (MAXIMUM) INTERVALS. TESTS SHALL BE CONDUCTED AT THE TOP OF PIPE AND FOR EVERY SIX-INCH (6") LAYER TO FINISHED GRADE. CERTIFIED TEST REPORTS SHALL BE PROVIDED TO THE OWNER/ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE TESTING LAB AS NECESSARY DURING THE PROGRESS OF WORK. THE OWNER RESERVES THE RIGHT TO APPROVE THE TESTING LAB BUT THE COST OF DENSITY TESTING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. TESTING SHALL BE PERFORMED FOR THE FOLLOWING ITEMS WITH CERTIFIED REPORTS PROVIDED TO THE OWNER/ENGINEER FOR REVIEW/APPROVAL:
   - BACKFILL GRADATION AND COMPACTION.
   - SUBGRADE STABILIZATION AND COMPACTION.
   - BASE COURSE COMPOSITION AND COMPACTION.
   - ASPHALT COMPOSITION/GRADATION AND COMPACTION.
   - CONCRETE BREAK STRENGTH.

PIPE INSTALLATION

1. BELL-AND-SPIGOT PIPE SHALL BE PLACED WITH THE BELL END POINTING IN THE DIRECTION OF PIPE LAYING. PIPE SHALL BE GRADED IN STRAIGHT LINES, TAKING CARE TO PREVENT THE FORMATION OF ANY DIPS OR LOW POINTS. PIPE SHALL NOT BE LAID WHEN THE CONDITIONS OF TRENCH OR WEATHER ARE UNSUITABLE. AT THE END OF EACH WORK DAY, OPEN ENDS OF PIPE SHALL BE CLOSED TEMPORARILY WITH WOOD BLOCKS OR BULKHEADS.
2. PIPE SHALL BE SUPPORTED AT ITS PROPER ELEVATION AND GRADE, TAKING CARE TO SECURE FIRM AND UNIFORM SUPPORT. WOOD SUPPORT BLOCKING SHALL NOT BE PERMITTED. THE FULL LENGTH OF EACH SECTION OF PIPE AND FITTINGS SHALL REST SOLIDLY ON THE PIPE BED, WITH RECESSED EXCAVATION TO ACCOMMODATE BELLS, JOINTS AND COUPLINGS. ANCHORS AND SUPPORTS SHALL BE PROVIDED WHERE NECESSARY AND WHERE INDICATED ON THE DRAWINGS FOR FASTENING WORK INTO PLACE. FITTINGS SHALL BE INDEPENDENTLY SUPPORTED.
3. PIPE SEGMENTS SHALL BE OF SHORT LENGTHS IN AND OUT OF EACH RIGID JOINT OR RIGID STRUCTURE, WITH SUFFICIENT LENGTH PROVIDED FOR PROPER INSTALLATION OF JOINTING MATERIAL. BLOCKING OR WEDGING BETWEEN BELLS AND SPIGOTS SHALL NOT BE PERMITTED.
4. PIPE SHALL BE CUT BY MEANS OF SAWS, POWER DRIVEN ABRASIVE WHEELS OR PIPE CUTTERS TO PRODUCE A SQUARE CUT. WEDGE-TYPE ROLLER CUTTERS SHALL NOT BE PERMITTED. END OF PIPE SHALL BE BEVELED AFTER CUTTING USING A BEVELING TOOL, PORTABLE TYPE SANDER OR ABRASIVE DISC.

WATER MAINS

1. PVC PIPE SHALL BE CLASS 150 (DR 18) IN ACCORDANCE WITH AWWA C900.
2. DUCTILE IRON PIPE (DIP) SHALL BE MECHANICAL OR PUSH-ON JOINT TYPE, PRESSURE CLASS 350, MANUFACTURED IN ACCORDANCE WITH AWWA C151. DIP FOR WATER MAINS SHALL BE CEMENT LINED IN ACCORDANCE WITH AWWA C104. DIP FOR FORCE MAINS SHALL BE LINED WITH PROTECTO 401 CERAMIC EPOXY.
3. FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT TYPE, MEETING THE REQUIREMENTS OF AWWA C110 OR C153. FITTINGS FOR WATER MAINS SHALL BE CEMENT LINED IN ACCORDANCE WITH AWWA C104. FITTINGS FOR FORCE MAINS SHALL BE LINED PROTECTO 401 CERAMIC EPOXY.
4. DIP SHALL BE INSTALLED IN ACCORDANCE WITH AWWA C600. PVC PIPE SHALL BE INSTALLED IN ACCORDANCE WITH AWWA M23.
5. WATER MAINS MAY BE DEFLECTED AS NECESSARY AT PIPE JOINTS TO ACHIEVE THE DESIGN ALIGNMENT. FITTINGS SHALL BE USED WHEN DEFLECTION EXCEEDS 75% OF THE MANUFACTURER'S RECOMMENDED MAXIMUM DEFLECTION.
6. WATER MAINS SHALL BE MECHANICALLY RESTRAINED AT ELBOWS, VALVES, TEES AND DEAD ENDS IN ACCORDANCE WITH THE UTILITY COMPANY DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
7. WATER MAINS SHALL BE PLACED WITH A CONTINUOUS 10 GAUGE, THWN INSULATED, STRANDED COPPER LOCATOR WIRE SECURED TO THE TOP OF THE PIPE. WIRE SHALL BE CONTINUOUS FROM VALVE BOX TO VALVE BOX, WRAPPED TWICE AROUND EACH PIPE JOINT AND EXTENDED SUFFICIENTLY INTO EACH VALVE BOX OR CONCRETE COLLAR TO PERMIT ATTACHING LOCATOR DEVICES.
8. WATER MAINS SHALL HAVE A MINIMUM COVER OF 36-INCHES UNLESS OTHERWISE NOTED. FORCE MAINS SHALL HAVE A MINIMUM COVER OF 36-INCHES UNLESS OTHERWISE NOTED. WHEN LESS 36" COVER IS SPECIFIED, PIPE SHALL BE DUCTILE IRON WITH THICKNESS CLASS 53. IN NO CIRCUMSTANCES SHALL A WATER MAIN OR FORCE MAIN HAVE LESS THAN 24" COVER.
9. WATER MAINS SHALL BE FLUSHED AFTER INSTALLATION WITH AN APPROVED POLYURETHANE PIG IN ACCORDANCE WITH A FILLING/ FLUSHING PLAN DEVELOPED BY THE CONTRACTOR AND APPROVED BY THE OWNER/ENGINEER.
10. WATER MAINS SHALL BE TESTED FOR LEAKAGE IN ACCORDANCE WITH ANSI/AWWA C600.
11. WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH ANSI/AWWA C651 AND BACTERIOLOGICALLY TESTED FOR TWO CONSECUTIVE DAYS. TEST REPORTS SHALL BE SUBMITTED TO THE OWNER/ENGINEER WITH CHAIN OF CUSTODY. CONNECTION TO THE EXISTING SYSTEM WILL NOT BE ALLOWED PRIOR TO HEALTH DEPARTMENT OR FDEP APPROVAL OF CERTIFICATION AS APPLICABLE.
12. WATER MAIN VALVES SHALL BE RESILIENT SEAT TYPE GATE VALVES IN ACCORDANCE WITH AWWA C509 OR C515.
13. ALL CONNECTIONS AND TAPS SHALL BE LOCATED AT LEAST 24 INCHES FROM A FITTING OR BELL AND MINIMUM 18" BETWEEN SUCCESSIVE TAPS.
14. NEW WATERLINE SHALL BE INSTALLED TESTED AND APPROVED BY PALM BEACH COUNTY HEALTH DEPARTMENT, SERVICES TRANSFERRED TO THE NEW MAIN PRIOR TO WORK ON DRAINAGE SYSTEM.
15. CONNECTIONS TO EXISTING WATER MAINS SHALL BE MADE UNDER THE DIRECT SUPERVISION OF THE UTILITY COMPANY. PIPES AND FITTINGS USED TO COMPLETE THE CONNECTIONS SHALL RECEIVE CHLORINATION TREATMENT. EXISTING VALVES SHALL BE OPERATED BY UTILITY COMPANY PERSONNEL OR UNDER THEIR DIRECT SUPERVISION. TAPPING SLEEVES AND VALVES SHALL BE PRESSURE TESTED PRIOR TO INSTALLATION. IF CUSTOMER SERVICES MUST BE INTERRUPTED, THE UTILITY COMPANY SHALL BE INFORMED AT LEAST 72 HOURS IN ADVANCE TO MAKE THE NECESSARY NOTIFICATIONS. CUSTOMER SERVICES SHOULD NOT BE INTERRUPTED FOR MORE THAN 4 HOURS.
16. POLYETHYLENE SERVICE TUBING SHALL BE COPPER TUBE SIZE (CTS), SDR 9, RATED FOR 200 PSI IN ACCORDANCE WITH ASTM D2737 AND AWWA C901.
17. COUPLINGS AND FITTINGS FOR POLYETHYLENE TUBING SHALL BE GRIP- JOINT TYPE AS MANUFACTURED BY FORD OR APPROVED EQUIVALENT.
18. ALL POTABLE WATER PIPE AND PIPE FITTINGS INSTALLED UNDER THIS PROJECT WILL BE COLOR CODED OR MARKED IN ACCORDANCE WITH F.A.C. 62-555.320(21)(b)3. USING BLUE AS THE PREDOMINANT COLOR. (UNDERGROUND PLASTIC PIPE WILL BE SOLID-WALL BLUE PIPE WILL HAVE A CO-EXTRUDED BLUE EXTERNAL SKIN OR WILL BE WHITE OR BLACK WITH BLUE STRIPES INCORPORATED INTO, OR APPLIED TO, THE PIPE WALL, PIPE STRIPED DURING THE MANUFACTURING OF THE PIPE WILL HAVE CONTINUOUS STRIPES THAT RUN PARALLEL TO THE AXIS OF THE PIPE, THAT ARE LOCATED AT NO GREATER THAN 90-DEGREE INTERVALS AROUND THE PIPE, AND THAT WILL REMAIN INTACT DURING AND AFTER INSTALLATION OF THE PIPE. IF TAPE OR PAINT IS USED TO STRIPE PIPE DURING AND AFTER INSTALLATION OF THE PIPE, THE TAPE OR PAINT WILL BE APPLIED IN A CONTINUOUS LINE THAT RUNS PARALLEL TO THE AXIS OF THE PIPE AND THAT IS LOCATED ALONG THE TOP OF THE PIPE; FOR PIPE WITH AN INTERNAL DIAMETER OF 24" OR GREATER, TAPE OR PAINT WILL BE APPLIED IN CONTINUOUS LINES ALONG EACH SIDE OF THE PIPE. ABOVEGROUND PIPE WILL BE PAINTED BLUE OR WILL BE COLOR CODED OR MARKED LIKE UNDERGROUND PIPE.
19. ALL METER BOXES, VALVE RISERS & COVERS AND MANHOLES TO REMAIN SHALL BE RAISED TO FINISH GRADE.
20. WATER MAIN SHALL BE TESTED UNDER CONSTANT PRESSURE OF 150 P.S.I. FOR A MINIMUM TEST PERIOD OF 2 HOURS AND SHALL NOT EXCEED THE LEAKAGE REQUIREMENTS AS PER A.N.S.I./A.W.W.A. SPECIFICATIONS OF C-600-05 LEAKAGE FORMULA: $Q = (SD\sqrt{P}) / 148,000$
    - Q = ALLOWABLE LEAKAGE, IN GALLONS PER HOUR
    - D = DIAMETER OF THE PIPE TESTED, IN INCHES.
    - S = TOTAL LENGTH OF PIPE TESTED, IN FEET.
    - P = AVERAGE TEST PRESSURE, IN POUNDS PER SQUARE INCH.
21. SANITARY LATERALS SHALL BE ADJUSTED WHERE IN CONFLICT WITH THE PROPOSED DRAINAGE OR WATER SYSTEM.
22. ALL BACKFLOW PREVENTER ASSEMBLIES SHALL BE USC APPROVED.

PIPE HANDLING AND STORAGE

1. HANDLING: PIPE, FITTINGS AND ACCESSORIES SHALL BE CAREFULLY INSPECTED BEFORE AND AFTER INSTALLATION. PIPE AND FITTINGS SHALL BE FREE FROM FINS AND BURRS. ITEMS FOUND TO BE DEFECTIVE SHALL BE REJECTED. PIPE SEGMENTS SHALL BE CAREFULLY LOWERED INTO TRENCHES WITH THE PROPER EQUIPMENT. PIPE, FITTINGS AND ACCESSORIES SHALL NOT BE DROPPED OR DUMPED INTO TRENCHES UNDER ANY CIRCUMSTANCES.
2. STORAGE: PIPE SHOULD BE STORED AT THE JOB SITE IN UNIT PACKAGES PROVIDED BY THE MANUFACTURER. CAUTION SHOULD BE EXERCISED TO AVOID COMPRESSION DAMAGE OR DEFORMATION TO BELL ENDS OF THE PIPE. PIPE SHOULD BE STORED IN SUCH A WAY AS TO PREVENT SAGGING OR BENDING AND PROTECTED FROM EXPOSURE TO DIRECT SUNLIGHT BY COVERING WITH AN OPAQUE MATERIAL THAT PERMITS ADEQUATE AIR CIRCULATION ABOVE AND AROUND THE PIPE. GASKETS SHOULD BE STORED IN A COOL, DARK PLACE OUT OF THE DIRECT RAYS OF THE SUN, IN THE ORIGINAL PACKAGING.

INTERRUPTION OF EXISTING UTILITIES

1. ANY CONSTRUCTION WORK THAT REQUIRES INTERRUPTION OF SERVICE TO ANY CUSTOMER SHALL BE DONE SO WITH A MINIMUM OF SEVENTY-TWO (72) HOUR NOTICE TO, AND WRITTEN APPROVAL BY THE APPROPRIATE UTILITY COMPANY. THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE LOCAL JURISDICTIONAL AGENCIES AND OTHER GOVERNING AGENCIES, AND OTHER AFFECTED UTILITIES PRIOR TO SCHEDULING THE SHUTDOWN TO ASSESS THE SCOPE OF WORK. ALL SYSTEM SHUT DOWNS SHALL BE SCHEDULED BY THE CONTRACTOR AT SUCH TIME THAT SYSTEM DEMAND IS LOW. THIS GENERALLY REQUIRES NIGHT TIME WORK BY THE CONTRACTOR AND REQUIRES FULL TIME INSPECTION BY A REPRESENTATIVE OF THE UTILITY. ALL COST OF OVERTIME WORK BY THE REPRESENTATIVE OF THE UTILITY SHALL BE BORNE BY THE CONTRACTOR.

MOT

1. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING REFLECTORIZED RAISED PAVEMENT MARKERS (RPM'S) USING TEMPORARY RPM'S. RPM SPACING SHALL BE PLACED ACCORDING TO EITHER AS EXISTING, STANDARD INDEX 600 SERIES OR STANDARD INDEX 17346.
2. THE CONTRACTOR SHALL PROVIDE TEMPORARY PAVEMENT MARKINGS INDICATING LANE LINES AND PAVEMENT MARKINGS SHALL COMPLETELY DEFINE TRAFFIC DURING AND AT THE END OF HE WORK PERIOD.
3. TEMPORARY LANE TRANSITIONS, SHIFTS AND CROSSOVERS SHALL HAVE SOLID LANE AND EDGE LINES FOR THE LENGTH OF THE TRANSITION, SHIFT OR CROSSOVER. IN ADDITION, SOLID LANE AND EDGE LINES SHALL EXTEND 100 FT. ON TANGENT BEYOND EACH END OF THE TRANSITION, SHIFT, OR CROSSOVER. EXCEPTION SHALL BE THROUGH INTERSECTIONS WHERE 2-4 FT. SKIP LINES WILL BE PLACED.
4. TEMPORARY RAISED PAVEMENT MARKERS (RPM'S) SHALL BE INSTALLED ON THE EDGE, CENTER AND LANE LINES OF ALL CROSSOVERS, TRANSITIONS, AND TANGENT SECTIONS WITHIN THE WORK ZONE WHERE THE VEHICLE PATHS ARE ALTERED. THE SPACING FOR THESE RPM'S SHALL BE 40 FT. ON CENTERS FOR TANGENT SECTIONS AND 5 FT. FOR TRANSITIONS, CURVES AND CROSSOVERS. THE RPM'S SHALL EXTEND 100 FT. ON THE TANGENT SECTION BEYOND EACH END OF THE CROSSOVERS OR TRANSITION AREAS. COST OF THE TEMPORARY RPM'S SHALL BE INCLUDED IN PAY ITEM FOR MAINTENANCE OF TRAFFIC.
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING A BLUE/BLUE RPM IN FRONT OF ALL FIRE HYDRANTS WITHIN PROJECT LIMITS. COST IS INCLUDED IN PAY ITEM FOR MAINTENANCE OF TRAFFIC.
6. THE USE OF BLACK PAINT TO COVER EXISTING PAVEMENT MARKINGS IS PROHIBITED.
7. INSTALL CONSTRUCTION SIGNING PRIOR TO COMMENCEMENT OF CONSTRUCTION AND MAINTAIN SIGNING DURING ALL PHASES OF CONSTRUCTION.
8. THE CONTRACTOR SHALL PROVIDE SAFE PEDESTRIAN ACCESS AND PROTECTION ADJACENT TO CONSTRUCTION THROUGHOUT THE PROJECT.
9. ANY CHANGE TO THE MAINTENANCE OF TRAFFIC PLAN PROVIDED TO THE CONTRACTOR, THAT INCLUDES PROVISIONS FOR PEDESTRIAN AND/OR SCHOOL STUDENT TRAFFIC AS WELL AS VEHICULAR TRAFFIC, SHALL BE CONSULTED AND APPROVED BY THE ENGINEER.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER MAINTENANCE AND SAFE CONTROL OF VEHICULAR AND PEDESTRIAN TRAFFIC AT ALL TIMES FOR THE DURATION OF CONSTRUCTION ACTIVITIES. DETAILED MAINTENANCE OF TRAFFIC PLANS FOR ALL PHASES OF THE WORK SHALL BE SUBMITTED TO THE OWNER/ENGINEER PRIOR TO THE BEGINNING OF CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL EMPLOY VARIABLE MESSAGE BOARDS FROM TWO WEEK PRIOR TO MOBILIZATION ONSITE TO TWO WEEK FOLLOWING ONSITE MOBILIZATION.

Sample points Data	
SAMPLE POINTS #	STATIONS, OFFSET, SIDE
1	10+62.30, 6.12', RT
2	18+44.31, 6.34', LT

	Test Hole Data			
TEST HOLES #	STATIONS, OFFSET, SIDE	Utility	Pipe Direction	Depth of Cover (ft)
6	10+07.14, 6.36', RT	2" Underground Telephone line	N-S	3.00
7	10+21.19, 1.01', LT	4" Cast iron Water Pipe	N-S	3.22
10	18+06.26, 1.49', LT	8" Clay Sanitary Sewer Pipe	E-W	4.22
11	18+45.18, 2.59', LT	6" Asbestos Concrete Water Pipe	E-W	3.19
12	18+28.22, 25.48', RT	20" Ductile Iron Water Pipe	E-W	5.52

SURVEY NOTES

1. THE SURVEY DEPICTED HEREON IS CLASSIFIED AS A TOPOGRAPHIC SURVEY AS DEFINED IN CHAPTER 5J-17.050(10)(k) FLORIDA ADMINISTRATIVE CODE.
2. ENGENUITY GROUP, INC. AND THE CERTIFYING SURVEYOR ACCEPT NO RESPONSIBILITY FOR RIGHT-OF-WAYS, EASEMENTS, RESTRICTIONS OR OTHER MATTERS AFFECTING TITLE TO THE LANDS SURVEYED OTHER THAN THOSE RECITED IN THE CURRENT DEED AND/OR OTHER INSTRUMENT OF RECORD FURNISHED BY THE CLIENT.
3. THIS SURVEY IS NOT VALID WITHOUT THE ORIGINAL SIGNATURE AND RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER. OTHERWISE THIS MAP IS FOR INFORMATIONAL PURPOSES ONLY.
4. LAST DATE OF FIELD SURVEY: OCTOBER 4, 2018
5. ALL DISTANCES SHOWN HEREON ARE IN U.S. FEET AND DECIMAL PARTS THEREOF UNLESS OTHERWISE NOTED.
6. ADDITIONS OR DELETIONS TO THIS SURVEY MAP BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
7. ACCURACY STATEMENT: A FIELD SURVEY WAS PERFORMED IN ACCORDANCE WITH CHAPTER 5J-17, FLORIDA ADMINISTRATIVE CODE PURSUANT TO SECTION 472.027 FLORIDA STATE STATUTES FOR TOPOGRAPHIC SURVEYS. THE ACCURACY OF CONTROL DATA WAS VERIFIED BY REDUNDANT MEASUREMENTS OF TRAVERSE CLOSURES AND EXCEEDS COMMERCIAL/HIGH RISK: LINEAR: 1 FOOT IN 10,000 FEET.
8. THIS MAP IS INTENDED TO BE DISPLAYED AT A SCALE OF 1/240 OR SMALLER.
9. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT.
10. ALL DIMENSIONS SHOWN HEREON ARE MEASURED UNLESS OTHERWISE NOTED.
11. ELEVATIONS SHOWN HEREON ARE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (N.G.V.D. 1929) AND REFERENCE THE FOLLOWING BENCHMARK:

NAME: POWELL PBC BM
STAMPED "POWELL PBC BM" ELEVATION=12.956' NGVD 1929

THE STATION IS LOCATED 51 FEET SOUTH OF THE CENTERLINE OF A CANAL TO THE EAST, 98.8 FEET SOUTH-SOUTHEAST OF A FIRE HYDRANT, 37.68 FEET SOUTHEAST OF A PK NAIL WITH A BROWN AND PHILLIPS WASHER, AND 21.08 FEET NORTHEAST OF ANOTHER PK/WASHER WITH THE SAME INSCRIPTION. ELEVATION 12.956 N.G.V.D. 1929 CONVERTED FROM ITS PUBLISHED ELEVATION OF 11.427 N.A.V.D. 1988 (NORTH AMERICAN VERTICAL DATUM OF 1988) USING CORPSCON V6.0.1. US ARMY CORPS OF ENGINEERS.

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EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 11/04/2019

SUB-CONTRACTORS

CLIENT
CITY OF RIVIERA BEACH, PALM BEACH COUNTY, FL.

PROJECT INFORMATION
CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS
RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
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DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE
GENERAL NOTES

DRAWING NUMBER
GN-2
04 OF 14

Plot Date: 11/4/2019 12:11:22 PM Username: JHall Layout Name: GN-2
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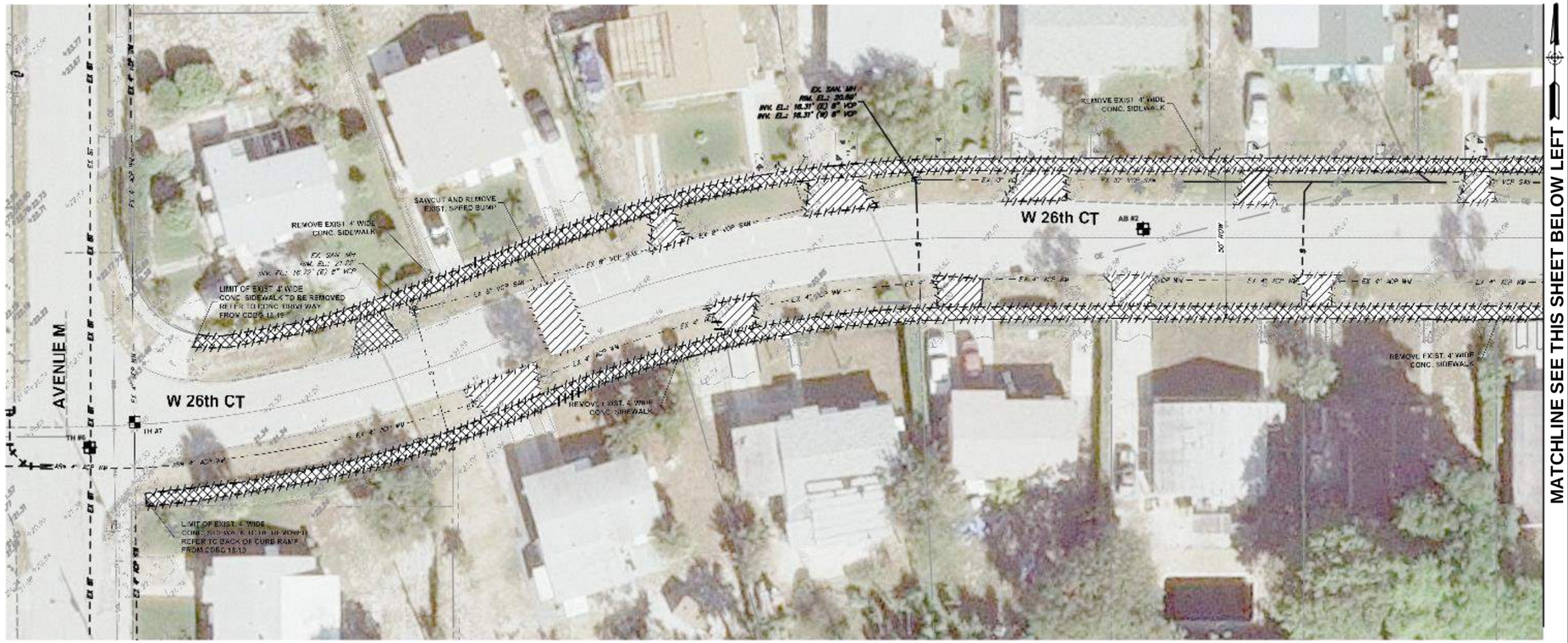

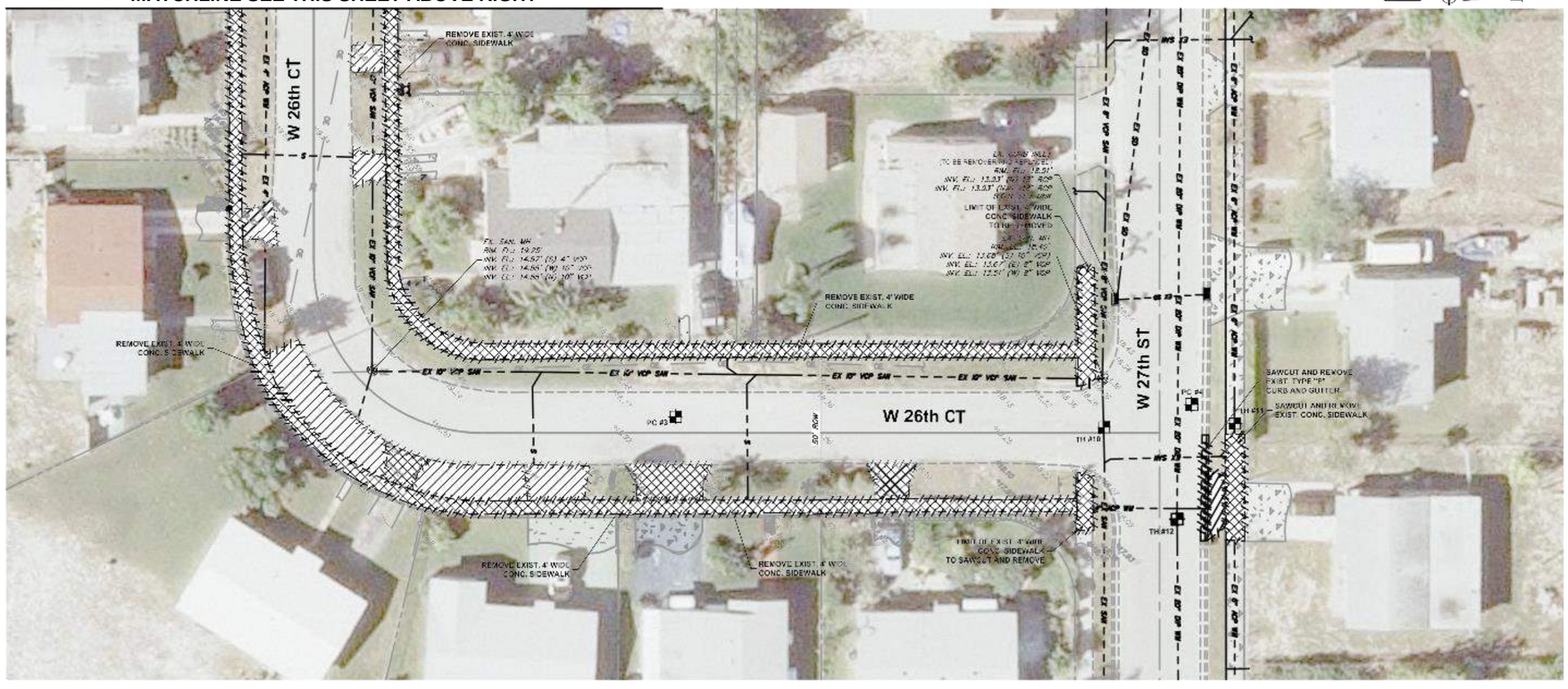

GRAPHIC SCALE
0 10 20 40
1 INCH = 20 FEET

LEGEND

- MEASURED ELEVATION
- BRICK PAVER
- CONCRETE
- DECORATIVE PAVERS
- SHELL ROCK/GRAVEL
- MAILBOX
- INFORMATION SIGN (SINGLE POST)
- CHAIN LINK FENCE
- WOODEN STOCKADE FENCE
- HOG WIRE FENCE
- SET 5/8" IRON ROD & CAP LB #6935
- SET PK NAIL & DISC LB #6935
- TEMPORARY BENCHMARK
- IRRIGATION CONTROL VALVE
- FOUND IRON PIPE
- SET 5/8" IRON ROD (NO CAP)
- CATCH BASIN
- CATCH BASIN INLET
- STORM MANHOLE
- GAS VALVE
- WATER METER
- FIRE HYDRANT
- WATER GATE VALVE
- SANITARY VALVE
- SANITARY MANHOLE
- CLEANOUT
- ELECTRIC WIRE PULL BOX
- STREET LIGHT
- UTILITY POLE
- PHASE 1 AREA
- BOLLARD
- PINE AND SIZE
- CACTUS AND SIZE
- ORNAMENTAL TREE AND SIZE
- PALM TREE AND SIZE
- OAK TREE AND SIZE
- SEA GRAPES AND SIZE
- PAVEMENT CORE / TEST HOLE
- EXISTING UNDERGROUND AT&T
- EXISTING GAS LINE
- ABANDONED EXISTING WATER MAIN
- EXISTING SANITARY SEWER PIPE
- EXISTING STORM SEWER PIPE
- DEMOLISH EXIST. ASPHALT PAVEMENT AND ASPHALT DRIVEWAY
- DEMOLISH EXIST. CONCRETE SIDEWALK AND CONCRETE DRIVEWAY
- LIMIT OF EXIST. FEATURE TOBE DEMOLISHED

EXISTING CONDITIONS NOTES:

1. EXISTING CONDITIONS PRESENTED ARE BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY (ENGENUITY GROUP, 17123.01 DATE 04/5/2018). ADDITIONAL INFORMATION WAS OBTAINED FROM AS-BUILTS AND RECORD DRAWINGS PROVIDED BY UTILITY COMPANIES, G.I.S. INFORMATION AND FIELD VISITS.
2. NATIONAL GEODETIC SURVEY (NGS) BENCHMARK USED:
   DESIGNATION = POWEL PBC BM
   DESCRIPTION = PALM BEACH COUNTY BRASS DISK
   ELEVATION = 12.956' NGVD 29
3. CONTRACTOR IS TO PROTECT ALL EXISTING TREES, SIGNS, AND ABOVE GROUND UTILITIES NOT IMPACTED BY THIS PLAN.

NOTES:

1. PARCEL LINES INDICATE APPROXIMATE PROPERTY LINES AND RIGHT OF WAY LIMITS, CONTRACTOR TO FILED VERIFY RIGHT OF WAY LIMITS.

VERTICAL DATUM INFORMATION
ALL ELEVATIONS SHOWN ARE IN NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)
CONVERSION FACTOR:
NGVD29 - 1.526 = NAVD88 IN THIS AREA

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REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 11/04/2019

KEY MAP

CLIENT

CITY OF RIVIERA BEACH PALM BEACH COUNTY, FL.

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

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DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE
EXISTING CONDITION AND DEMOLITION PLANS

DRAWING NUMBER
EC-1
05 OF 14

Plot Date: 11/4/2019 12:11:48 PM Username: JHall Layout Name: EC-1
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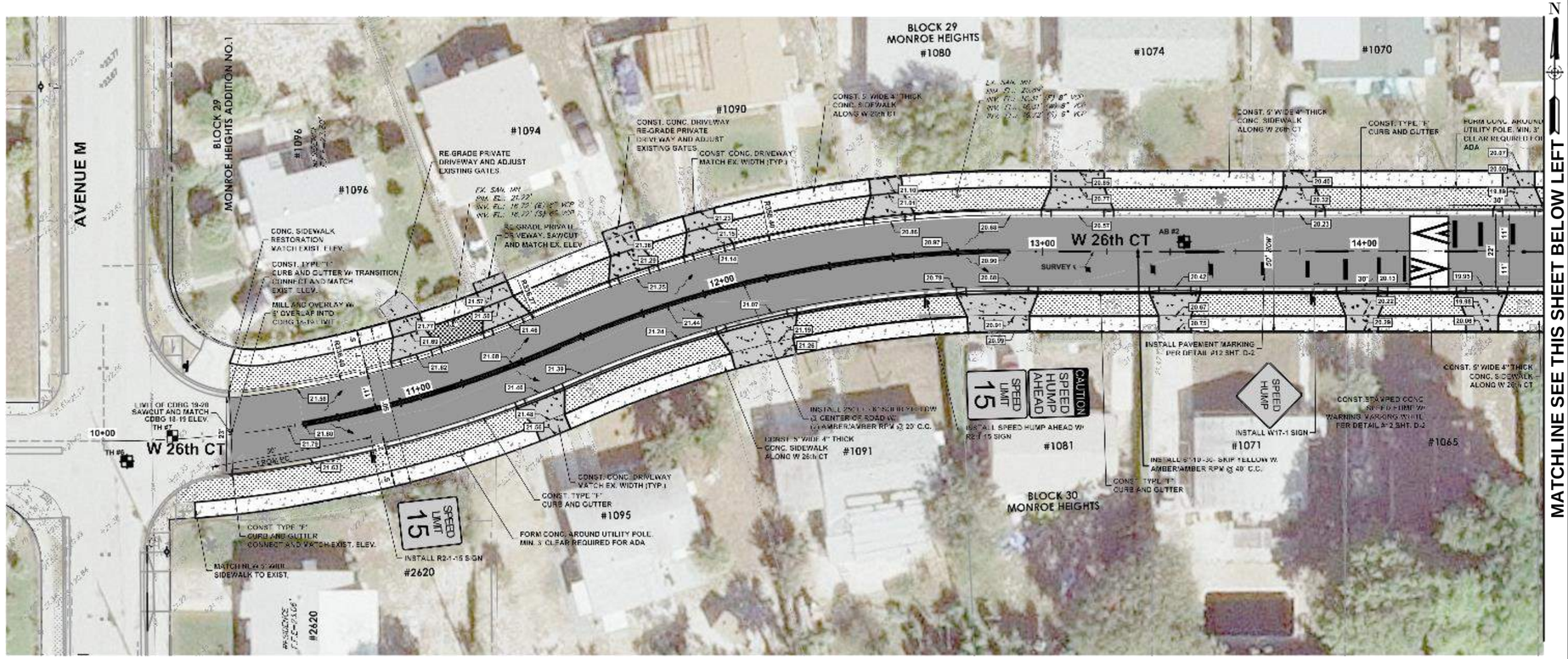

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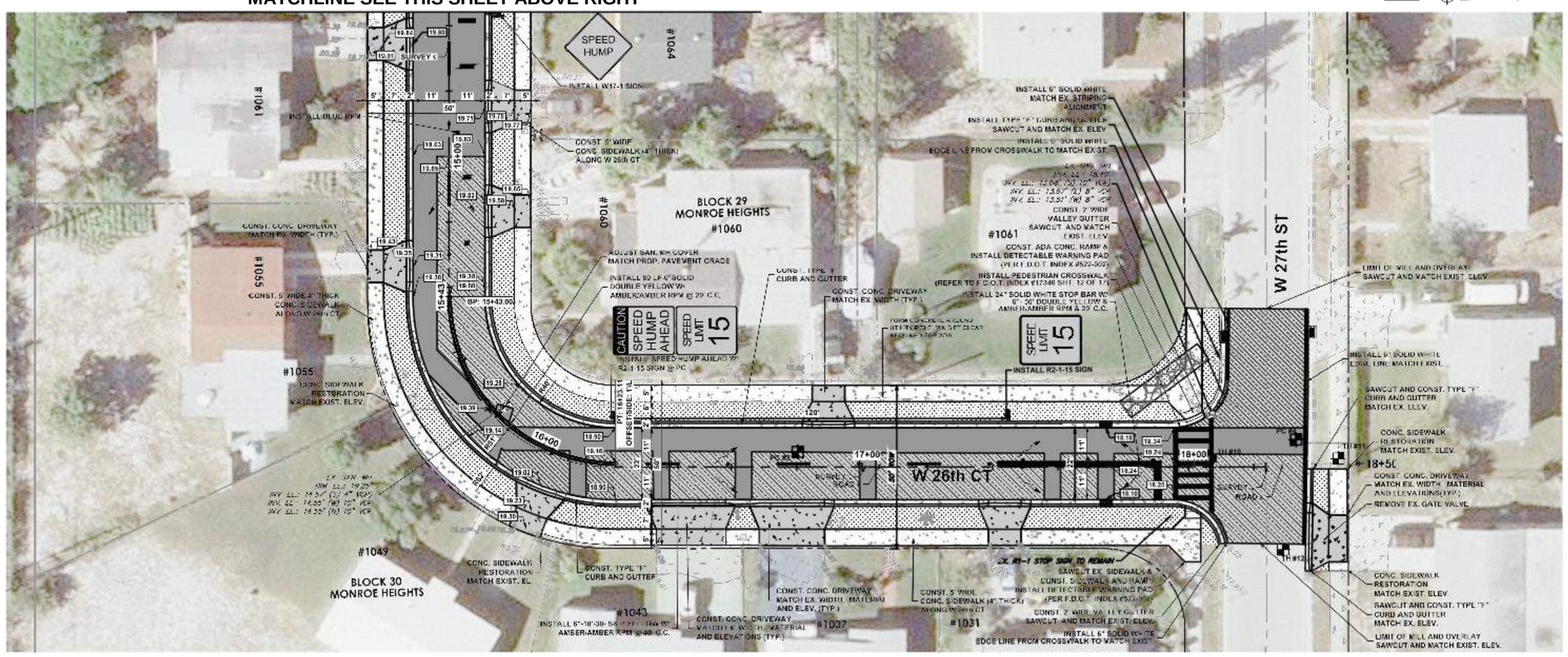

GRAPHIC SCALE

0 10 20 40

1 INCH = 20 FEET

LEGEND

- EXISTING MEASURED ELEVATION
- EXISTING BRICK PAVER
- EXISTING CONCRETE
- EXISTING DECORATIVE PAVERS
- EXISTING SHELL ROCK/GRAVEL
- EXISTING MAILBOX
- EXISTING INFORMATION SIGN (SIGN POST)
- EXISTING CHAIN LINK FENCE
- EXISTING WOODEN STOCKADE FENCE
- EXISTING HOG WIRE FENCE
- EXISTING SET 5/8" IRON ROD & CAP LB #4480
- EXISTING FOUND IRON PIPE
- EXISTING CATCH BASIN
- EXISTING CATCH BASIN INLET
- EXISTING STORM MANHOLE
- EXISTING GAS VALVE
- EXISTING WATER METER
- EXISTING FIRE HYDRANT
- EXISTING SANITARY VALVE
- EXISTING SANITARY MANHOLE
- EXISTING CLEANOUT
- EXISTING ELECTRIC WIRE PULL BOX
- EXISTING STREET LIGHT
- EXISTING UTILITY POLE
- EXISTING BOLLARD
- EXISTING PINE AND SIZE
- EXISTING ORNAMENTAL TREE AND SIZE
- EXISTING PALM TREE AND SIZE
- EXISTING OAK TREE AND SIZE
- EXISTING SEA GRAPES AND SIZE
- PAVEMENT CORE / TEST HOLE
- EXISTING CURB INLET
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED 5' WIDE 4" THICK CONCRETE SIDEWALK
- MILL AND OVERLAY
- PAVEMENT RESTORATION
- PROPOSED STAMPED CONCRETE SPEED HUMP
- GRADE AND SOD
- PROPOSED SPOT ELEVATIONS
- PROPOSED AIR RELEASE VALVE
- PROPOSED WATER METER AND SERVICE LATERAL
- PROPOSED GATE VALVE
- PROPOSED DRAINAGE FLOW ARROW
- PROPOSED CURB INLET
- PROPOSED STORM MANHOLE

NOTES:

1. FOR DRIVEWAY REPLACEMENT, SEE DETAIL 10. ADJUST AS NEEDED
2. PARCEL LINES INDICATE APPROXIMATE PROPERTY LINES AND RIGHT OF WAY LIMITS. CONTRACTOR TO FIELD VERIFY RIGHT OF WAY LIMITS.
3. CONTRACTOR SHALL RELOCATE ALL STOP SIGNS TO BE IN LINE WITH STOP BAR PAVEMENT MARKING.
4. SIDEWALK RESTORATION SHALL EXTEND TO THE NEAREST JOINT.
5. CONTRACTOR SHALL PROTECT ALL LANDSCAPING WITHIN RIGHT-OF-WAY THAT CONFLICT WITH THE PROPOSED IMPROVEMENTS UNLESS PRIOR APPROVAL IS OBTAINED FROM CITY.
6. CONTRACTOR SHALL COORDINATE WITH CITY OF RIVIERA BEACH PROJECT No: 603-16 AND No:604-16
7. CONTRACTOR SHALL PROVIDE MINIMUM TRENCH WIDTH REQUIRED FOR PIPE INSTALLATION. ASPHALT AND ROAD QUANTITIES WILL BE PAID BASED ON WHAT IS ACTUALLY INSTALLED.
8. SEE UTILITY PLAN FOR PROPOSED DRAINAGE STRUCTURES.

VERTICAL DATUM INFORMATION
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CONVERSION FACTOR:
NGVD29 - 1.526 = NAVD88 IN THIS AREA

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REGISTRATION
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REGISTRATION NO. 68598
DATE: 11/04/2019

KEY MAP

CLIENT

CITY OF RIVIERA BEACH PALM BEACH COUNTY, FL.

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

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DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

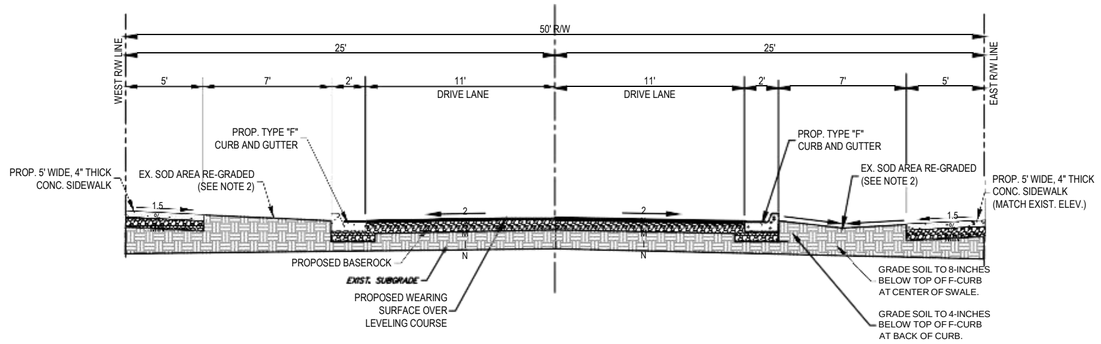
CHECKED BY
SD

DRAWING TITLE

PROPOSED ROADWAY PLANS

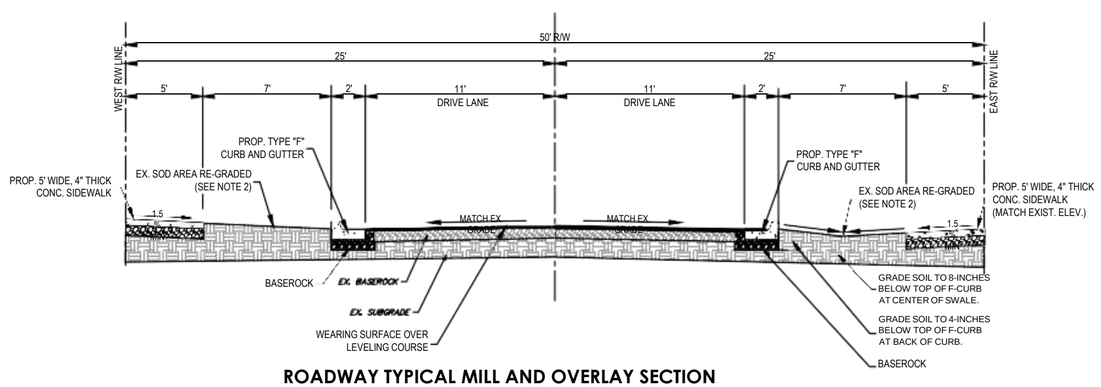
DRAWING NUMBER
RD-1
06 OF 14

Plot Date: 11/4/2019 12:58:00 PM Username: JHall Layout Name: RD-1
Folder Path: V:\Projects\2018\18-221.013 - Riviera Beach CDBG FY 2018-2020 Improv\Design\CAD\Plans\CDBG FY 2019-20 Filename: 18-221.013 Proposed Roadway Plans.dwg



ROADWAY TYPICAL PAVEMENT RESTORATION SECTION
REFER TO SHEET D-1 DETAIL 2
(W 26th CT FROM STA.: 10+40 TO STA.: 15+00) - 50' R/W

1 N.T.S.



ROADWAY TYPICAL MILL AND OVERLAY SECTION
REFER TO SHEET D-1 DETAIL 3
(W 26th CT FROM STA.: 15+00 TO STA.: 18+22) - 50' R/W

2 N.T.S.

PAVEMENT SPECIFICATIONS			
CORE	STATION, OFFSET, SIDE	EXISTING PAVEMENT SECTION	PROPOSED PAVEMENT SECTION
AB-2	13+43.84, 3.09', LT	1.75" ASPHALT, 6.25" LIMEROCK BASE	12" LIMEROCK BASE (LBR 100), 1.5" TYPE S-1 BOTTOM LIFT AND 1" TYPE S-3 FINAL LIFT.
PC-3	16+79.81, 4.63', LT	1.75" ASPHALT, 10.25" LIMEROCK	1" MILL AND 1" TYPE S-3 ASPHALT OVERLAY
PC-4	18+32.37, 8.38', LT	1.75" ASPHALT, 14.50" LIMEROCK BASE	1" MILL AND 1" TYPE S-3 ASPHALT OVERLAY

PAVING AND SIDEWALK NOTES:

1. GRADING SHOWN IN SWALE INDICATES SOIL HEIGHTS PRIOR TO INSTALLATION OF SOD.
2. REGRADED SOD AREAS SHALL USE THE EAST SIDE GRADING PATTERN WHERE PROPOSED SIDEWALK IS EQUAL TO OR LOWER THAN GUTTER. REGRADED SOD AREAS SHALL USE THE WEST SIDE GRADING PATTERN WHERE SIDEWALK IS HIGHER THAN GUTTER
3. FOR ALL PAVEMENT REPAIR TECHNIQUES, ANY EXPOSED BASEROCK SHALL BE PREPARED FOR PAVING WITH PRIME AND TACK COAT PER FDOT SECTION 300.
4. ALL CONCRETE SIDEWALK, CURB AND GUTTER SHALL MEET SPECIFICATIONS DEFINED IN DETAILS.
5. THE FINAL GRADE ON THE BACK OF THE F-CURBS SHALL NOT BE DEEPER THAN 4 INCHES BELOW THE TOP OF CURB.
6. REFER TO SHEET D-1 DETAIL 3 FOR ASPHALT PAVEMENT RESTORATION AND ASPHALT MILL AND OVERLAY

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MIKE ALBERT
REGISTRATION NO. 68598
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SUB-CONTRACTORS

CLIENT
CITY OF RIVIERA BEACH PALM BEACH COUNTY, FL.

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CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

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CLIENT PROJECT NUMBER

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11/04/2019

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DRAWING TITLE

TYPICAL SECTIONS

DRAWING NUMBER
TS-1
07 OF 14

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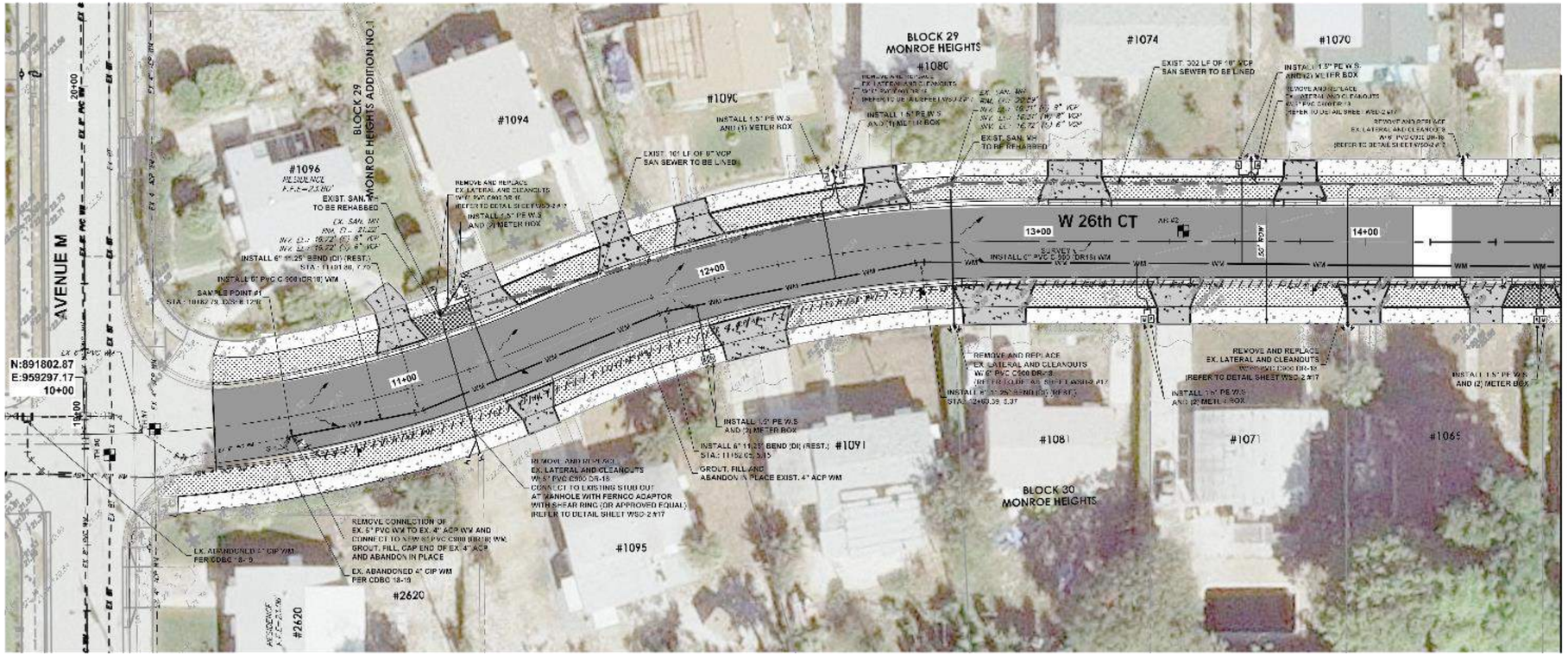
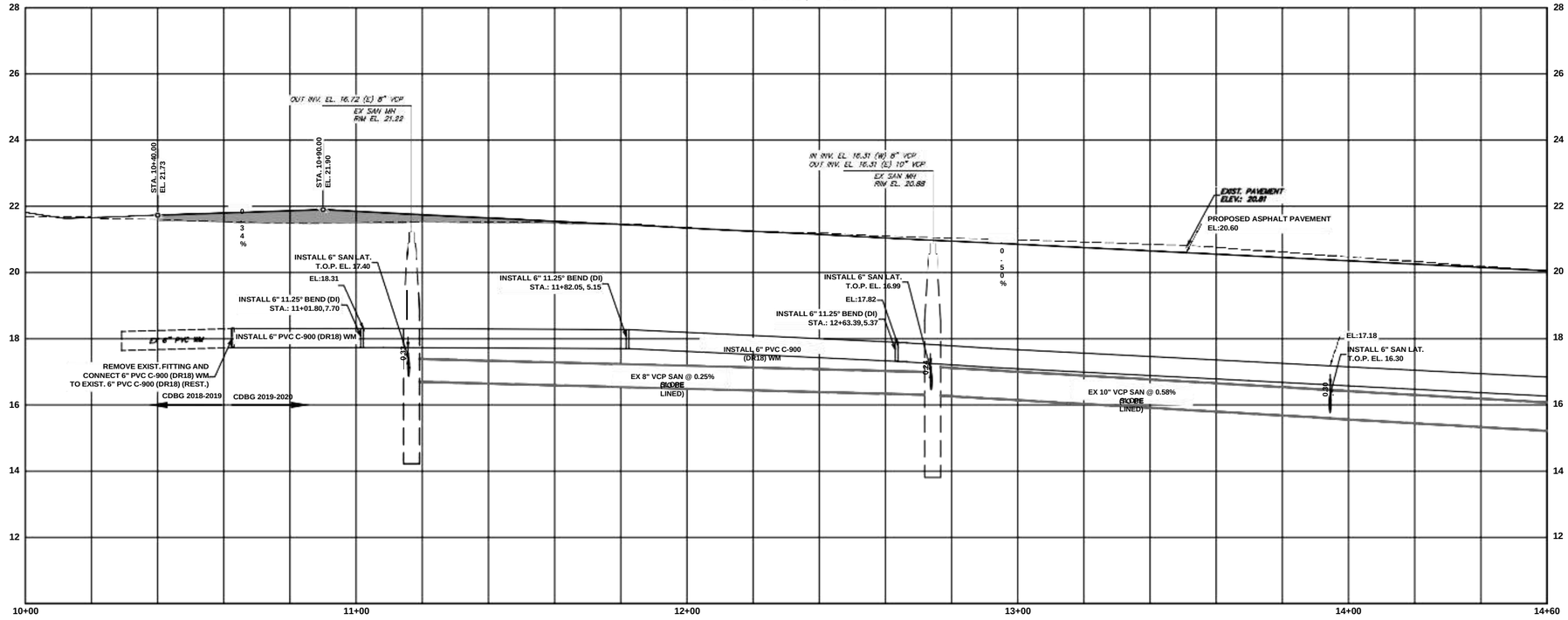


Alignment - (Proposed W 26 CT)

SCALE: 1"=20' HORZ | 1"=2' VERT



GRAPHIC SCALE
0 10 20 40
1 INCH = 20 FEET

LEGEND

- MEASURED ELEVATION
- BRICK PAVER
- CONCRETE
- DECORATIVE PAVERS
- SHELL ROCK/MARL/GEL
- MAILBOX
- INFORMATION SIGN (SINGLE POST)
- CHAIN LINK FENCE
- WOODEN STOCKADE FENCE
- HOG WIRE FENCE
- SET 5/8" IRON ROD & CAP LB #6885
- SET PK NAIL & DISC LB #6885
- FOUND IRON PIPE
- SET 5/8" IRON ROD (NO CAP)
- CATCH BASIN
- CATCH BASIN INLET
- STORM MANHOLE
- GAS VALVE
- WATER METER
- FIRE HYDRANT
- SANITARY VALVE
- SANITARY MANHOLE
- CLEANOUT
- ELECTRIC WIRE PULL BOX
- STREET LIGHT
- UTILITY POLE
- BOLLARD
- 24" PINE AND SIZE
- 24" CACTUS AND SIZE
- 24" ORNAMENTAL TREE AND SIZE
- 24" PALM TREE AND SIZE
- 24" OAK TREE AND SIZE
- 24" SEA GRAPES AND SIZE
- PAVEMENT CORE / TEST HOLE
- EXISTING UNDERGROUND AT&T
- EXISTING GAS LINE
- ABANDONED EXISTING WATER MAIN
- GROUT, FILL AND ABANDON IN PLACE EXISTING PIPE
- EXISTING SAN. SEWER PIPE TO BE LINED
- WM PROPOSED WATER MAIN
- PROPOSED REDUCER
- PROPOSED AIR RELEASE VALVE
- PROPOSED WATER METER AND SERVICE LATERAL
- PROPOSED GATE VALVE
- S1 SAMPLE POINT
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED 5' WIDE 4" THICK CONCRETE SIDEWALK
- MILL AND OVERLAY
- PAVEMENT RESTORATION
- PROPOSED STAMPED CONCRETE SPEED HUMP
- GRADE AND SOD

NOTES:

1. EXISTING WATER METERS TO REMAIN. CONTRACTOR TO REPLACE WATER METER BOXES.
2. PAVEMENT MARKINGS AND REFLECTIVE PAVEMENT MARKINGS TO BE RESTORED TO MATCH EXISTING TYPE AND SIZE UNLESS NOTED OTHERWISE. PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AND SHALL CONFORM TO PALM BEACH COUNTY TRAFFIC ENGINEERING DIVISION STANDARDS.
3. REFER TO PROPOSED ROADWAY PLANS FOR A COMPLETE SIDEWALK, DRIVEWAY, CURB AND ROADWAY DESIGN.
4. SIDEWALK RESTORATION SHALL EXTEND TO THE NEAREST JOINT.
5. THE SIZE AND LENGTH OF SANITARY SEWER PIPE TO BE LINED IS TAKEN FROM MANHOLE TO MANHOLE.
7. SANITARY SEWER PIPE LINING TO BE 6" MM THICKNESS, CURED IN PLACE.
9. CONTRACTOR SHALL DISPOSE OF ALL MATERIAL FROM DEMOLITION AT CONTRACTOR'S EXPENSE.
10. CONTRACTOR SHALL REMOVE ALL VALVE BOXES FROM EXISTING VALVE TO BE ABANDONED PRIOR TO REPAIRING PAVEMENT SURFACE

VERTICAL DATUM INFORMATION
ALL ELEVATIONS SHOWN ARE IN NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD29)
CONVERSION FACTOR:
NGVD29 - 1.526 = NAVD88 IN THIS AREA

Sunshine 811
Call 811 or www.sunshine811.com two full business days before digging to have utilities located and marked.
Have positive response code, ticket you dig!

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500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 11/04/2019

KEY MAP

CLIENT

CITY OF RIVIERA BEACH PALM BEACH COUNTY, FL.

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REVISIONS

DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE
UTILITIES PLAN AND PROFILE

DRAWING NUMBER
U-1
08 OF 14

Plot Date: 11/4/2019 12:13:10 PM Username: JHall Layout Name: U-1
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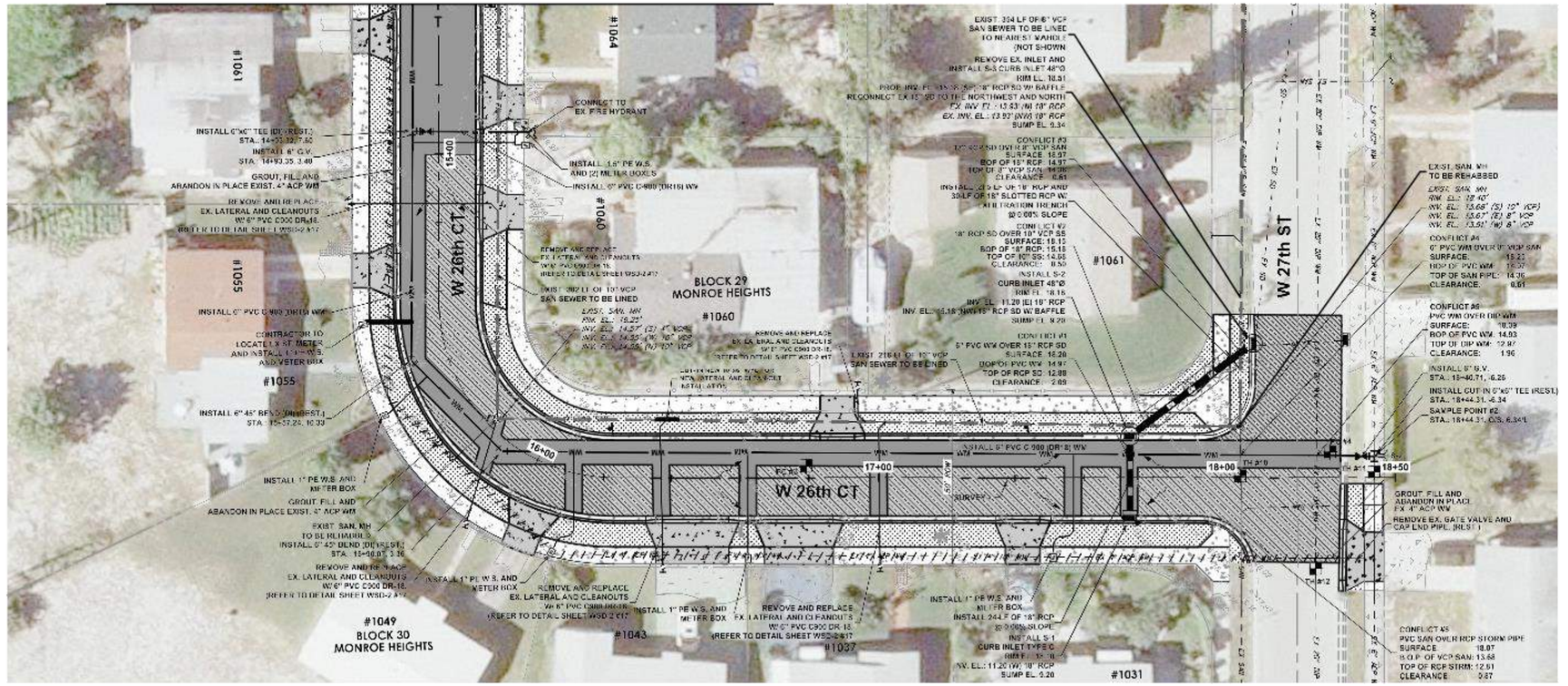
MATCHLINE SEE SHEET U-1



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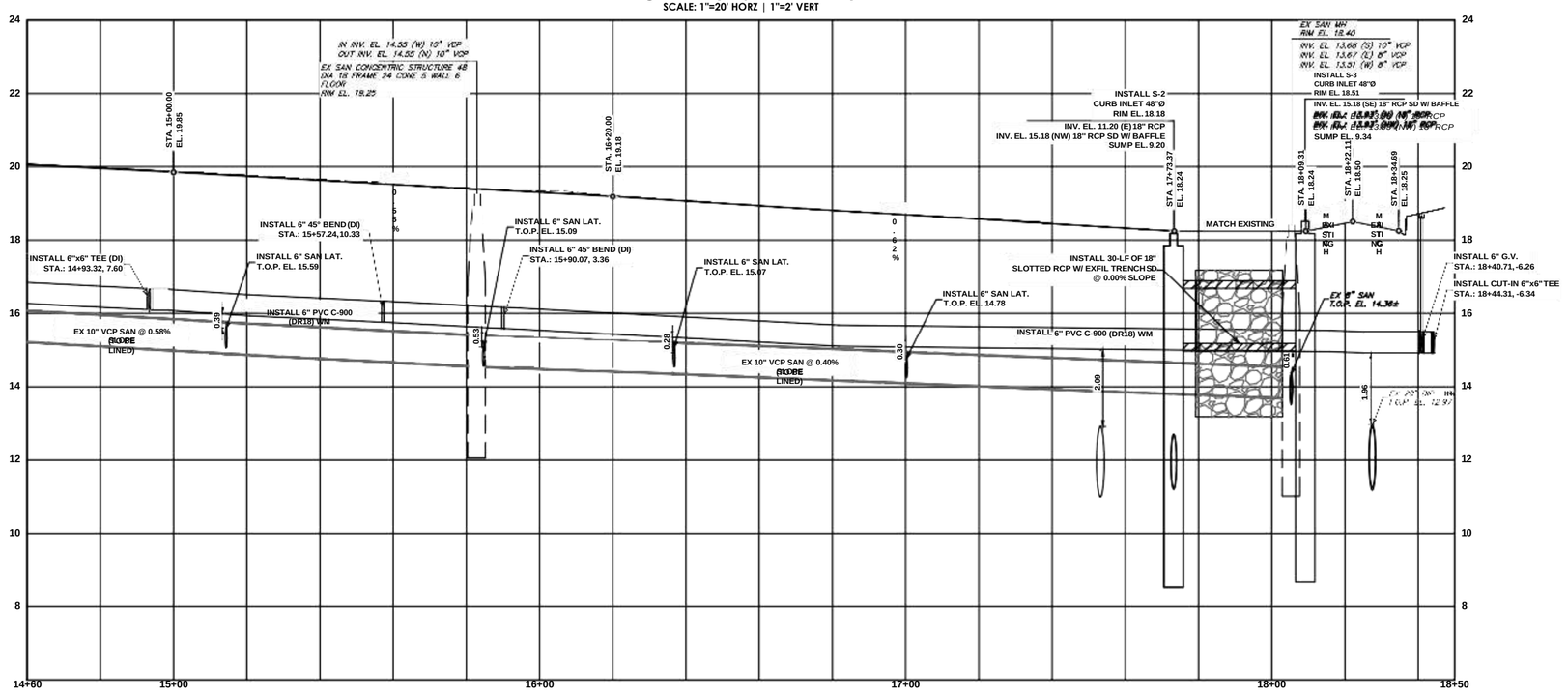

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JH

CHECKED BY
SD

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UTILITIES PLAN AND PROFILE

DRAWING NUMBER
U-2
09 OF 14

Plot Date: 11/4/2019 12:13:22 PM Username: JHall Layout Name: U-2
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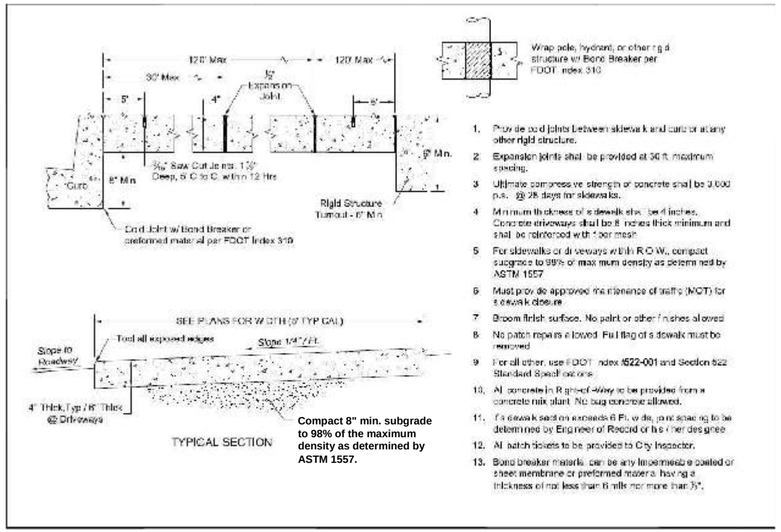
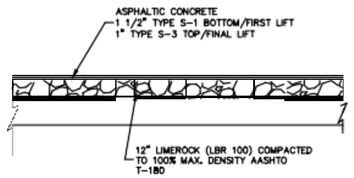


1. Provide cold joints between sidewalk and curb or at any other rigid structure.
2. Expansion joints shall be provided at 30 ft. maximum spacing.
3. Ultimate compressive strength of concrete shall be 3,000 p.s.i. @ 28 days for sidewalks.
4. Minimum thickness of sidewalk shall be 4 inches. Concrete driveways shall be 8 inches thick minimum and shall be reinforced with 6 per mesh.
5. For sidewalks or driveways within R.O.W., compact subgrade to 98% of maximum density as determined by ASTM 1557.
6. Must provide approved maintenance of traffic (MOT) for sidewalk closure.
7. Broom finish surface. No paint or other finishes allowed.
8. No patch repairs allowed. Full flag of sidewalk must be removed.
9. For all other, use FDOT Index 522-001 and Section 522 Standard Specifications.
10. All concrete in R.O.W. to be provided from a concrete mix plant. No hand concrete allowed.
11. For sidewalk section exceeds 6 Ft. wide, joint spacing to be determined by Engineer of Record or his / her designee.
12. All batch tickets to be provided to City Inspector.
13. Bond breaker materials can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than ½".

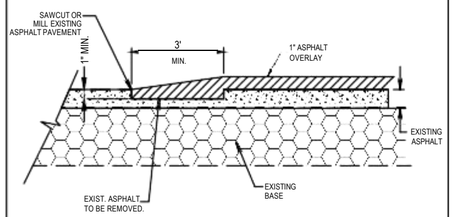
1 CONCRETE SIDEWALK DETAIL
N.T.S.



CITY OF RIVIERA BEACH TYPICAL PAVEMENT SECTION

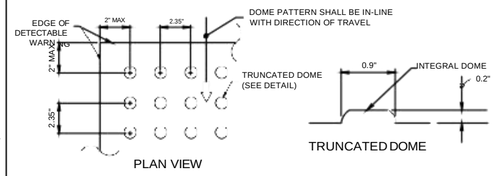
NOTES:
1. WHERE MILL AND OVERLAY IS SPECIFIED ON THE DRAWINGS MILLING DEPTH SHALL BE A MINIMUM OF 1-INCH BUT SHALL EXTEND DEEPER IN LOCATIONS WHERE EVIDENCE OF EXISTING CRACKING BELOW 1-INCH IS NOTED.
2. TYPE S-3 ASPHALT TO BE PLACED WITH A MINIMUM LIFT THICKNESS OF 1-INCH.
3. FOR ALL PAVEMENT REPAIR TECHNIQUES, ANY EXPOSED BASEROCK SHALL BE PREPARED FOR PAVING WITH A PRIME AND TACK COAT PER FDOT SECTION 300.
4. WHERE PAVEMENT RESTORATION IS IDENTIFIED ON THE PLANS, CONTRACTOR SHALL PLACE 12" LIMEROCK BASE IN TWO - 6" COMPACTED LIFTS.

2 PAVEMENT AND BASE REPAIR
N.T.S.



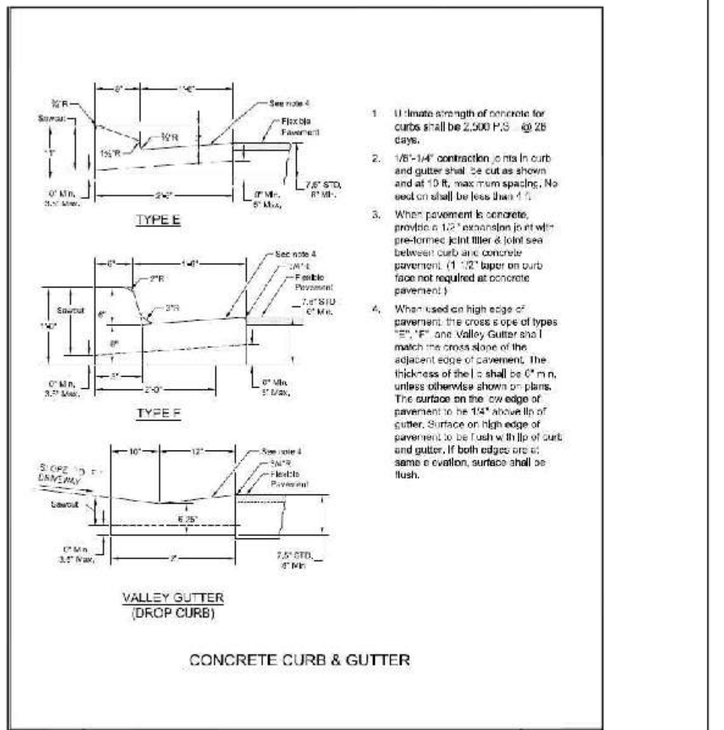
NOTES:
1. THIS METHOD OF PAVEMENT JOINT SHALL BE USED FOR ANY APPLICATION OR CONSTRUCTION WHERE PROPOSED PAVEMENT WILL BE CONNECTED TO EXISTING PAVEMENT.

3 NEW OVERLAY PAVEMENT JOINT DETAIL
N.T.S.



NOTES
1. DETECTABLE WARNING SURFACE AS REQUIRED PER AMERICAN WITH DISABILITIES ACT DESIGN STANDARDS REQUIRED AT ALL CONCRETE SIDEWALK LANDINGS WITHIN PROJECT LIMITS.
2. STAMPED CONCRETE IS NOT PERMITTED FOR DETECTABLE WARNING SURFACES. ARMOR TILE OR AN APPROVED EQUAL SHALL BE USED.
3. WHEN NOT PLACED ON CURB RAMPS, DETECTABLE WARNINGS SHALL BE PLACED ON THE WALKING SURFACES ADJOINING A VEHICULAR WAY. THE BOUNDARY BETWEEN THE AREAS SHALL BE DEFINED BY A CONTINUOUS DETECTABLE WARNING WHICH IS 36" WIDE.
4. UNLESS NOT PLACED DIRECTLY ON A RAMP, DETECTABLE WARNING SURFACE MUST NOT EXCEED 2% SLOPE IN ANY DIRECTION.
5. WHEN PLACED ON CURB RAMPS, DETECTABLE WARNING SURFACE SHALL EXTEND THE FULL LENGTH AND WIDTH OF THE RAMP. FOR RAMPS WITHIN FDOT RIGHT-OF-WAY, REFER TO THE LATEST VERSION OF THE FDOT DESIGN STANDARDS INDEX #304.
6. CONSTRUCTION OF DETECTABLE WARNING SURFACE IS NOT LIMITED TO CONCRETE MATERIAL, HOWEVER, PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST INFORM TO THE ENGINEER OF RECORD THE PROPOSED MATERIAL FOR THE DETECTABLE WARNING SURFACE. CONTRACTOR MUST ENSURE THAT THE FOLLOWING TRUNCATED DOME CRITERIA IS MET:
   A. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES. THE MATERIAL USED TO PROVIDE CONTRAST SHOULD CONTRAST BY AT LEAST 70%
   B. 90% OF THE INDIVIDUAL TRUNCATED DOMES MUST COMPLY WITH THE SPECIFIED DIMENSIONS AND DESIGN CRITERIA.
   C. NO TWO ADJACENT DOMES MAY BE NON-COMPLIANT.
   D. SURFACE MAY NOT DEVIATE MORE THAN 0.1" FROM A TRUE PLAN.

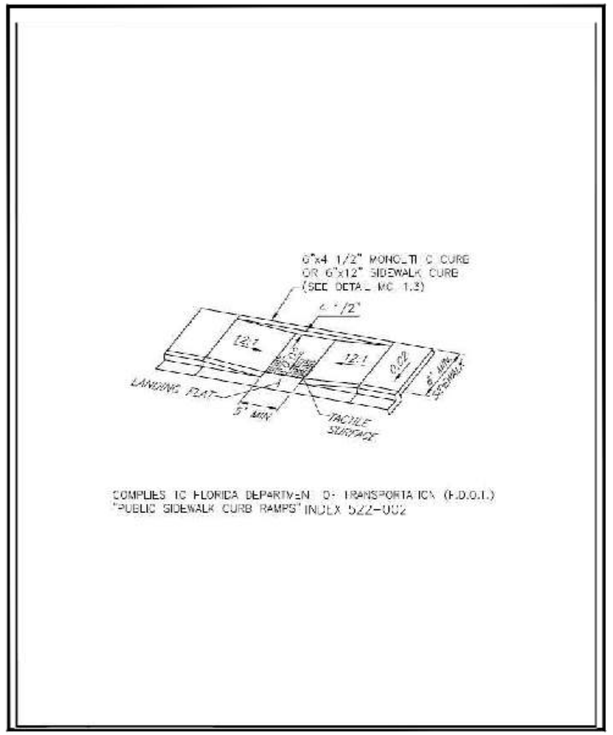
4 ADA DETECTABLE WARNING PAD
N.T.S.



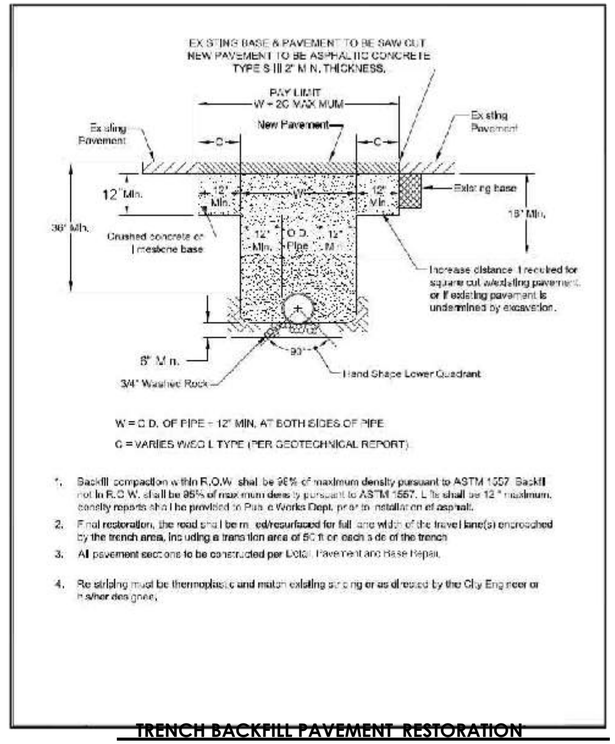
1. Ultimate strength of concrete for curbs shall be 2,500 P.S.I. @ 28 days.
2. 1/8"-1/4" contraction joints in curb and gutter shall be cut as shown and at 10 ft. maximum spacing. No seed on shall be less than 4 ft.
3. When pavement is concrete, provide a 1/2" expansion joint with pre-formed joint filler & joint seal between curb and concrete pavement. (1 1/2" taper on curb face not required at concrete pavement.)
4. When used on high edge of pavement, the cross slope of types "E", "F" and Valley Gutter shall match the cross slope of the adjacent edge of pavement. The thickness of the lip shall be 6" min. unless otherwise shown on plans. The surface on the low edge of pavement to be 1/4" above lip of gutter. Surface on high edge of pavement to be flush with lip of curb and gutter. If both edges are at same elevation, surface shall be flush.

CONCRETE CURB & GUTTER

5 CONCRETE CURB AND GUTTER DETAIL
N.T.S.



6 SIDEWALK RAMP WITH UPPER LANDING DETAIL
N.T.S.



1. Backfill compaction within R.O.W. shall be 98% of maximum density pursuant to ASTM 1557. Backfill not in R.O.W. shall be 95% of maximum density pursuant to ASTM 1557. Lifts shall be 12" maximum. Density reports shall be provided to Public Works Dept. prior to installation of asphalt.
2. Final restoration, the road shall be milled/resurfaced for full lane width of the travel lane(s) encroached by the trench area, including a transition area of 50 ft. on each side of the trench.
3. All pavement sections to be constructed per Detail: Pavement and Base Repair.
4. Re-striping must be thermoplastic and match existing striping or as directed by the City Engineer or his/her designee.

7 TRENCH BACKFILL PAVEMENT RESTORATION
N.T.S.

BID SET

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SUB-CONTRACTORS

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ROADWAY DETAILS

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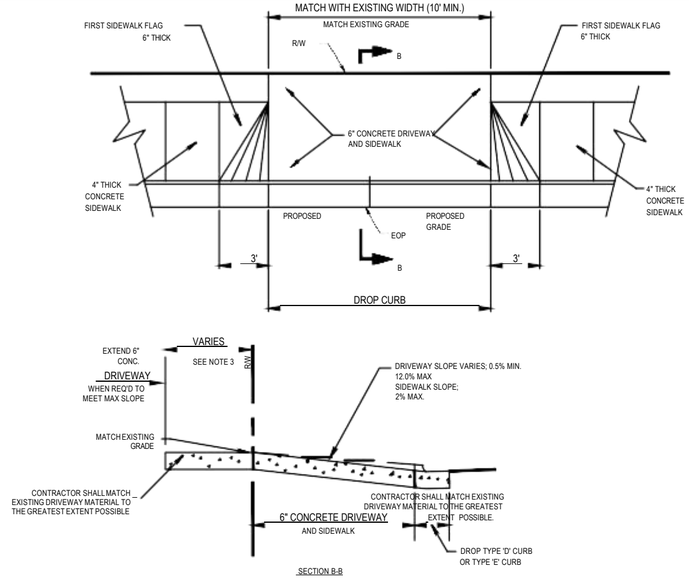
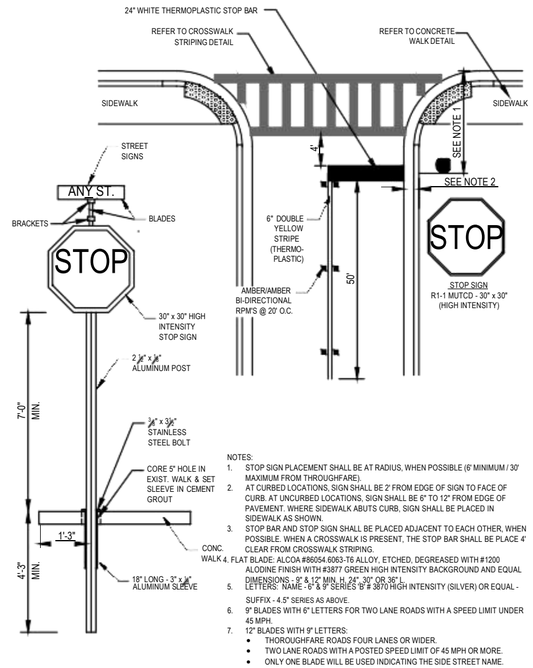


NOTES:

1. CONTRACTOR SHALL COORDINATE WITH CITY STAFF PRIOR TO DEMOLITION OF EXISTING DRIVEWAYS.
2. COMPLY WITH F.D.O.T. DESIGN STANDARDS.
3. FOR LOCATIONS WHERE EXISTING CROSS SLOPE IS LESS THAN 7.0% DRIVEWAY REPAIR MAY EXTEND 5-FT BEYOND RIGHT OF WAY. FOR LOCATIONS WHERE EXISTING CROSS SLOPE IS MORE THAN 7.0% DRIVEWAY REPAIR MAY EXTEND 10-FT BEYOND RIGHT OF WAY.
4. SLOPES CAN BE ADJUSTED WITHIN THE RANGES SHOWN TO IMPROVE TIES TO ADJACENT PROPERTY AND ARE TO BE TRANSITIONED TO AVOID DISTORTION IN SIDEWALK CONTINUITY AND MEET A.D.A. REQUIREMENTS.
5. CONCRETE STRENGTH SHALL BE MINIMUM 3000 PSI @ 28 DAYS.

8 RESIDENTIAL CONCRETE DRIVEWAY

N.T.S.



NOTES:

1. STOP SIGN PLACEMENT SHALL BE AT RADIUS, WHEN POSSIBLE (6' MINIMUM / 30' MAXIMUM FROM THROUGHFARE).
2. AT CURBED LOCATIONS, SIGN SHALL BE 2' FROM EDGE OF SIGN TO FACE OF CURB. AT UNCURBED LOCATIONS, SIGN SHALL BE 6" TO 12" FROM EDGE OF PAVEMENT. WHERE SIDEWALK ABUTS CURB, SIGN SHALL BE PLACED IN SIDEWALK AS SHOWN.
3. STOP BAR AND STOP SIGN SHALL BE PLACED ADJACENT TO EACH OTHER, WHEN POSSIBLE. WHEN A CROSSWALK IS PRESENT, THE STOP BAR SHALL BE PLACE 4' CLEAR FROM CROSSWALK STRIPING.
4. FLAT BLADE: ALCOA #86054-6063-T6 ALLOY, ETCHED, DEGREASED WITH #1200 ALODINE FINISH WITH #3877 GREEN HIGH INTENSITY BACKGROUND AND EQUAL DIMENSIONS - 9" & 12" MIN. H, 24", 30" OR 36" L.
5. LETTERS: NAME - 6" & 9" SERIES 9" # 3870 HIGH INTENSITY (SILVER) OR EQUAL - SUFFIX - 4.5" SERIES AS ABOVE.
6. 9" BLADES WITH 6" LETTERS FOR TWO LANE ROADS WITH A SPEED LIMIT UNDER 45 MPH.
7. 12" BLADES WITH 9" LETTERS:
   - THOROUGHFARE ROADS FOUR LANES OR WIDER.
   - TWO LANE ROADS WITH A POSTED SPEED LIMIT OF 45 MPH OR MORE.
   - ONLY ONE BLADE WILL BE USED INDICATING THE SIDE STREET NAME.

9 STOP SIGN AND STOP BAR

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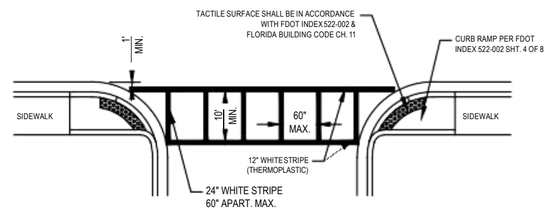
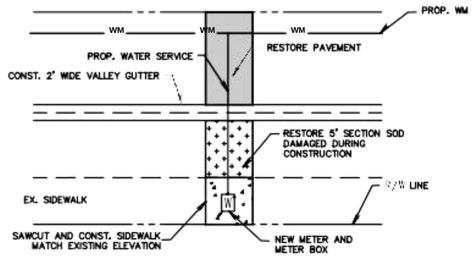


- STANDARD CROSSWALK STRIPING TO BE INSTALLED IN THE FOLLOWING LOCATIONS:
- ALONG COLLECTORS OR ARTERIALS
- BIKE PATH CROSSINGS
- CROSS WALKS WITH HIGH EXPECTED PEDESTRIAN VOLUME
- SCHOOL ACCESS ROUTES
- SIGNING REQUIRED AS PER FDOT STANDARDS

10 SPECIAL EMPHASIS CROSSWALK MARKING DETAIL

N.T.S. (REFER TO F.D.O.T. INDEX 711-001 SHT. 10)

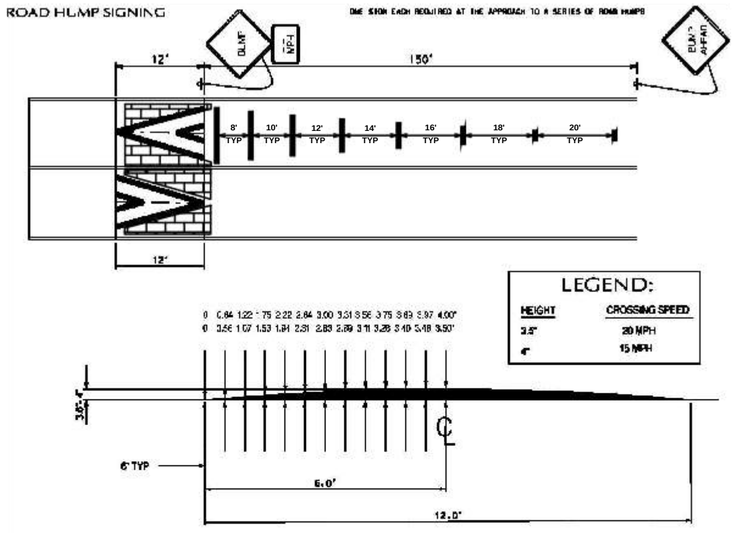


NOTES:

1. SAWCUT ALL EXIST. PAVEMENT, SIDEWALK AND CURB SUBJECT TO DEMOLITION/RESTORATION.
2. CONSTRUCT 2' WIDE VALLER GUTTER.
3. THE TRENCH RESTORATION SHALL BE 5' WIDE FOR THE SERVICES.
4. SIDEWALK INSTALLATION SHALL BE REPLACED ONLY IN AREAS WITH EXISTING SIDEWALK.
5. LANDSCAPE/SOD SHALL BE RESTORED TO EXISTING CONDITION OR BETTER.
6. DRIVEWAYS DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO EXISTING CONDITION OR BETTER.

11 RESTORATION DETAIL

N.T.S.



NOTES:

1. COLOR AND MATERIAL FOR STAMPED CONCRETE SHALL BE APPROVED BY THE CITY PRIOR TO INSTALLATION.

12 STAMPED CONCRETE SPEED HUMP

N.T.S. PALM BEACH COUNTY, TRAFFIC DIVISION (MODIFIED)

BID SET

CHEN•MOORE &ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 11/04/2019

SUB-CONTRACTORS

CLIENT

CITY OF RIVIERA BEACH, PALM BEACH COUNTY, FL.

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

REVISIONS

DATE OF ISSUE
11/04/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE

ROADWAY DETAILS

DRAWING NUMBER
D-2
11 OF 14

Plot Date: 11/4/2019 12:13:37 PM Username: JHall Layout Name: D-2
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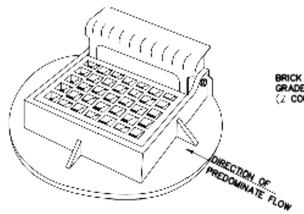
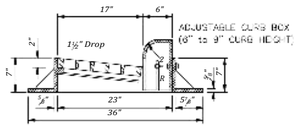
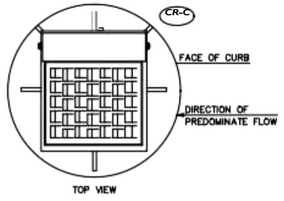
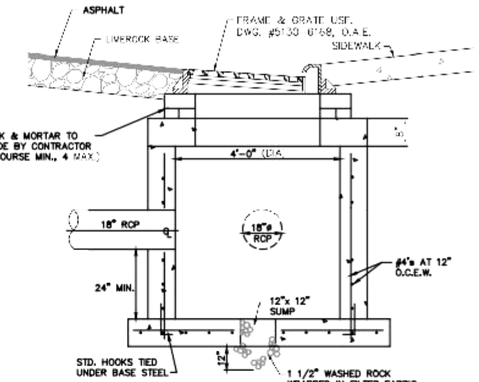




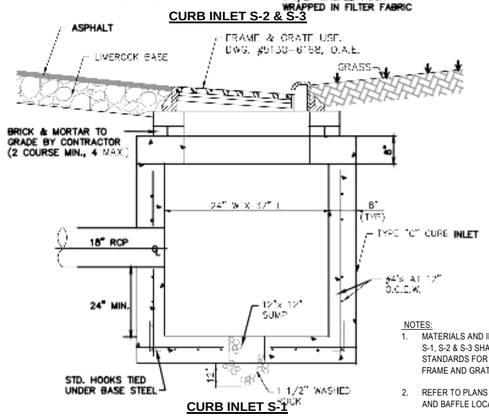
TRANSVERSE SECTION



TOP VIEW



CURB INLET S-2 & S-3



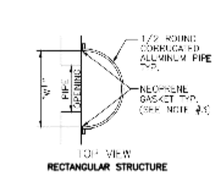
CURB INLET S-1

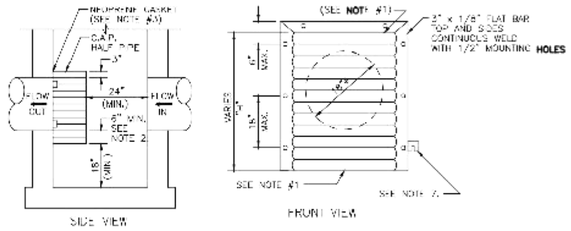
NOTES:

1. MATERIALS AND INSTALLATION TECHNIQUES FOR STRUCTURES S-1, S-2 & S-3 SHALL CONFORM WITH THE LATEST FDOT DESIGN STANDARDS FOR INDEX 425-052 AND 425-025 FOR TYPE 10 FRAME AND GRATE.
2. REFER TO PLANS FOR SD PIPE ELEVATIONS, PENETRATIONS AND BAFFLE LOCATIONS.

13 CURB INLET (S-1, S-2 & S-3) DETAILS

N.T.S.





PIPE DIA.	W¹ (IN.)	W² (IN.)	T (GAUGE)	H (IN.)
18"	24"	24"	16	VARIES

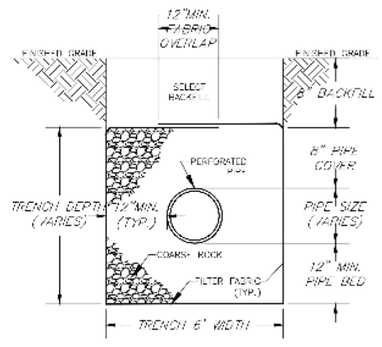
1. RECTANGULAR STRUCTURE
2. ROUND STRUCTURE

NOTES:

1. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING. WHERE BAFFLE IS NOTED ON PLANS PROVIDE AN OPEN BOTTOM AND SOLID TOP. WHERE WEIR IS NOTED ON PLANS PROVIDE A CLOSED BOTTOM AND OPEN TOP WITH CORRUGATED PIPE EXTENDING TO THE ELEVATION SHOWN ON PLANS.
2. ALUMINUM SHEET OF SAME THICKNESS (GAUGE) AS PIPE SHALL BE WELDED TO CLOSE OPENING AT THE TOP.
2. THE BOTTOM ELEVATION OF THE POLLUTION RETARDANT BAFFLE MUST BE AT LEAST 2' BELOW CONTROL ELEVATION.
3. NEOPRENE ADHESIVE BACKED GASKET, OR APPROVED EQUAL (1" x 2") SHALL BE INSTALLED ON THE SIDES AND TOP OF ALL BAFFLES.
4. POLLUTION RETARDANT BAFFLE TO BE FASTENED IN PLACE WITH 3/8"x4" STAINLESS STEEL "RED HEADS", OR APPROVED EQUAL.
5. ALL EXFILTRATION TRENCHES SHALL HAVE A POLLUTION RETARDANT BAFFLE AT EACH CONNECTION POINT TO A STRUCTURE (SEE EXFILTRATION TRENCH DETAIL).
6. FIBERGLASS BAFFLES ARE NOT PERMITTED.
7. MOUNTING BRACKETS MAY BE ADDED TO FLAT BARS TO EASE INSTALLATION IN ROUND STRUCTURES. SPACING TO MATCH HOLES IN FLAT BARS.
8. REFER TO PLANS FOR SD PIPE ELEVATIONS, PENETRATION LOCATIONS AND BAFFLE LOCATIONS.

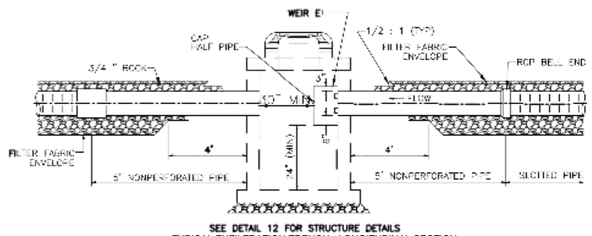
14 POLLUTION RETARDANT BAFFLE DETAILS

N.T.S.



FILTER FABRIC SHALL BE SUBSURFACE DRAINAGE TYPE MEETING THE REQUIREMENTS OF FDOT STANDARD SPECIFICATIONS SECTION 985. ALL FILTER FABRIC JOINTS SHALL LAP A MINIMUM OF ONE (1) FOOT.

EXFILTRATION TRENCH



SEE DETAIL 12 FOR STRUCTURE DETAILS

TYPICAL EXFILTRATION TRENCH - LONGITUDINAL SECTION

15 TYPICAL EXFILTRATION TRENCH DETAIL

N.T.S.

GENERAL NOTES: STORMWATER DRAINAGE SYSTEMS

1. ALL STORM DRAINAGE SYSTEMS AND COMPONENTS SHALL COMPLY WITH THE DESIGN STANDARDS AND SPECIFICATIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) LATEST EDITION.
2. STORM DRAINAGE STRUCTURES SHALL BE MANUFACTURED USING EITHER TYPE I OR TYPE II CEMENT WITH A CONCRETE MIX DESIGNED TO ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI IN 28 DAYS.
3. CONCRETE SHALL BE CLASS I; EXCEPT ASTM C478 (4,000 PSI) CONCRETE MAY BE SUBSTITUTED FOR PRECAST ITEMS MANUFACTURED IN PLANTS MEETING THE REQUIREMENTS OF SECTION 449 OF THE FDOT SPECIFICATIONS.
4. ALL REINFORCING IS GRADE 60 BARS WITH 2 MIN. COVER UNLESS OTHERWISE NOTED IN THE FDOT DESIGN STANDARDS.
5. MAXIMUM STRUCTURE OPENINGS FOR PIPE SHALL BE THE PIPE OUTSIDE DIAMETER PLUS 6-INCHES. MORTAR USED TO SEAL THE PIPE INTO THE OPENING WILL BE SUCH A MIX THAT SHRINKAGE WILL NOT CAUSE LEAKAGE INTO OR OUT OF THE STRUCTURE.

BID SET

CHEN•MOORE &ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
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REVISIONS

DATE OF ISSUE
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DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE

DRAINAGE DETAILS

DRAWING NUMBER
D-3
12 OF 14

Plot Date: 11/4/2019 12:13:42 PM Username: JHall Layout Name: D-3
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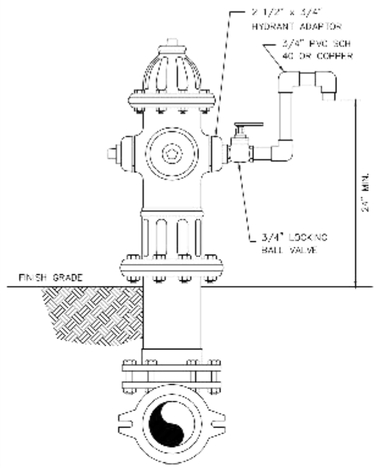
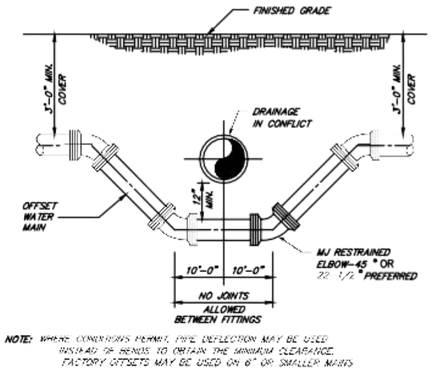


SAMPLE POINT (HYDRANT) STANDARD DETAIL

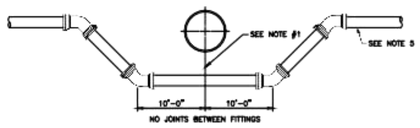
1 N.T.S.

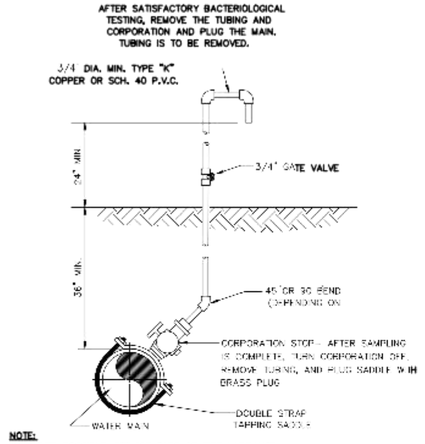


NOTE: WHERE CONDITIONS PERMIT, PIPE DEFLECTION MAY BE USED INSTEAD OF BENDS TO OBTAIN THE MINIMUM CLEARANCE. FACTORY OFFSETS MAY BE USED ON 6" OR SMALLER MAINS

GENERAL - TYPICAL CONFLICT DETAIL

2 N.T.S.





NOTE:
WHENEVER POSSIBLE, SERVICE TAPS OR FIRE HYDRANTS (SEE "SAMPLE POINT (HYDRANT)" DETAIL) SHALL BE USED AS SAMPLE POINTS.

SAMPLE POINT (ON MAIN) STANDARD DETAIL

3 N.T.S.

MIN. LENGTH OF PIPE (FEET) TO BE RESTRAINED

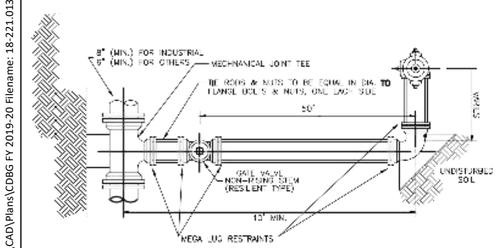
(SOURCES: EBAA IRON RESTRAINT LENGTH CALCULATION PROGRAM FOR PVC PIPE, RELEASE 3.1, AND DIPRA THRUST RESTRAINT FOR DUCTILE IRON PIPE, RELEASE 3.2)

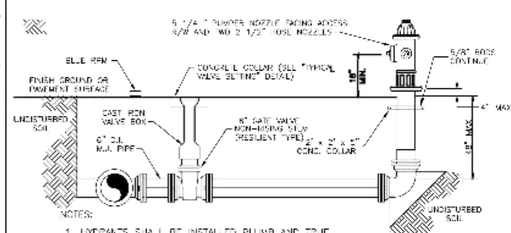
FITTING TYPE		PIPE SIZE								ZOOSs			
		4"	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"
90° HORIZ. BEND		14	20	26	33	39	45	54	67	96	112	124	135
45° HORIZ. BEND		6	8	11	13	15	19	22	26	41	46	51	56
22.5° HORIZ. BEND		3	4	5	6	7	9	11	12	19	22	25	27
11.25° HORIZ. BEND		1	2	3	3	4	4	5	6	10	11	12	13
90° VERT. OFFSET	UPPER BEND	28	41	58	84	74	98	115	134	214	248	278	304
	LOWER BEND	7	10	13	16	19	25	30	33	57	66	74	82
45° VERT. OFFSET	UPPER BEND	12	19	24	29	34	38	45	56	86	102	114	126
	LOWER BEND	3	4	6	7	8	10	12	15	25	27	31	34
22.5° VERT. OFFSET	UPPER BEND	6	9	12	14	17	19	23	27	43	48	53	60
	LOWER BEND	1	2	4	4	4	5	6	7	11	13	15	16
11.25° VERT. OFFSET	UPPER BEND	3	4	6	7	8	9	11	13	21	24	27	30
	LOWER BEND	1	1	1	2	2	2	3	3	6	6	7	8
PLUG (DEAD END)		32	45	58	73	89	107	128	151	214	248	278	304
IN-LINE VALVE		32	45	45	45	45	56	65	80	110	125	140	155
TEE (BRANCH RESTRAINT)	4"X ø	22	–	–	–	–	–	–	–	–	–	–	–
	6"X ø	21	35	–	–	–	–	–	–	–	–	–	–
	8"X ø	18	34	47	–	–	–	–	–	–	–	–	–
	10"X ø	16	32	46	58	–	–	–	–	–	–	–	–
	12"X ø	13	30	44	57	69	–	–	–	–	–	–	–
	16"X ø	7	26	41	55	67	98	–	–	–	–	–	–
	20"X ø	1	21	36	52	65	88	108	–	–	–	–	
	24"X ø	1	16	34	48	62	86	105	128	–	–	–	–
	30"X ø	1	8	28	44	58	83	105	127	208	–	–	–
	36"X ø	1	1	22	38	54	80	102	124	208	240	–	–
	42"X ø	1	1	15	32	48	77	100	122	205	238	270	–
	48"X ø	1	1	7	27	44	73	97	120	203	236	268	298
REDUCER (LARGER PIPE RESTRAINT)	6"X ø	23	–	–	–	–	–	–	–	–	–	–	–
	8"X ø	36	25	–	–	–	–	–	–	–	–	–	–
	10"X ø	57	43	24	–	–	–	–	–	–	–	–	–
	12"X ø	72	60	44	41	–	–	–	–	–	–	–	–
	16"X ø	98	90	76	73	45	–	–	–	–	–	–	–
	20"X ø	122	116	107	105	81	43	–	–	–	–	–	–
	24"X ø	148	140	132	131	111	82	45	–	–	–	–	–
ZOOSs	30"X ø	208	204	197	195	177	152	116	75	–	–	–	–
	36"X ø	265	258	253	228	217	196	168	136	74	–	–	–
	42"X ø	275	270	265	258	252	234	211	183	153	72	–	
	48"X ø	311	298	284	282	268	248	226	198	131	71	–	

NOTES:
1. THE DATA IN THE ABOVE TABLE ARE BASED UPON THE FOLLOWING INSTALLATION CONDITIONS:
   SOIL TYPE-SAND TEST PRESSURE-150 PSI/200 PSI DEPTH OF BURY-3'
   TRENCH TYPE-3 SAFETY FACTOR- 1.5 VERTICAL OFFSET-3'
   MINIMUM PIPE LENGTH ALONG TEE RUN-5'
2. THE RESTRAINED PIPE LENGTHS APPLY TO DUCTILE IRON AND PVC PIPE.
3. ALL JOINTS BETWEEN UPPER AND LOWER BENDS SHALL BE RESTRAINED.
4. RESTRAINED PIPE LENGTHS APPLY TO PIPE ON BOTH SIDES OF VALVES AND FITTINGS.
5. MULTIPLY PIPE LENGTH BY 1.4 FOR POLYETHYLENE ENCASED PIPE.

MECHANICAL THRUST RESTRAINT MINIMUM PIPE LENGTHS STANDARD DETAIL

6 N.T.S.



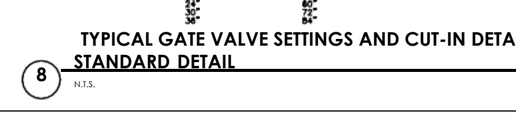


1. HYDRANTS SHALL BE INSTALLED PLUMB AND TRUE.
2. HYDRANTS SHALL BE PAINTED PER CITY OF RIVIERA BEACH STANDARDS: RED BODY REFLECTIVE AND WHITE CAP REFLECTIVE.
3. HEEL AND THRUST BLOCKS TO REST ON UNDISTURBED SOIL.
4. FIRE HYDRANTS SHALL BE THE FOLLOWING OR APPROVED EQUAL
   A) KENNEDY
   B) AMERICAN-DARLING
   C) MUELLER BREAK-A-WAY
   D) CLOW
5. JOINTS TO BE RESTRAINED
6. WHEN DISTANCE BETWEEN VALVE AND HYDRANT EXCEED 50 FEET INSTALL SECOND VALVE.

FIRE HYDRANT INSTALLATION DETAILS STANDARD DETAIL

7 N.T.S.

FITTING TYPE



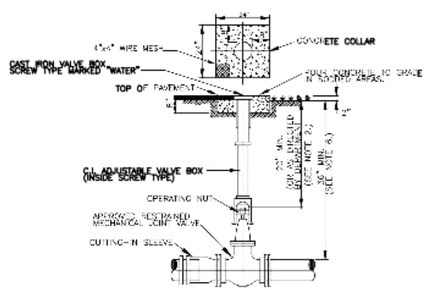
DEFLECTION TYPE

NOTES: (PLEASE REFER TO WRITTEN SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS)

1. PROVIDE 12" MINIMUM VERTICAL SEPARATION FOR NEW WATERMAIN UNDER CONFLICT PIPE.
2. ONE OF THE FOLLOWING FORMS OF RESTRAINT SHALL BE USED FROM FITTING TO FITTING FOR PIPE SIZES UP TO AND INCLUDING 12", FOR PIPE SIZES GREATER THAN 12" BOTH FORMS OF RESTRAINT SHALL BE USED.
   A) APPROVED MECHANICAL JOINT RESTRAINT. (i.e. MEGALUG)
   B) TIE RODS AND NUTS EQUAL IN DIA. TO TEE BOLTS AND NUTS, COATED WITH KOP-COAT 300-M OR APPROVED EQUAL.
3. THE DEFLECTION TYPE CROSSING IS PREFERRED, BUT IN INSTANCES WHERE THE FITTING TYPE DEFLECTION IS USED, 22 1/2° BENDS ARE PREFERRED.
4. DO NOT EXCEED 75% OF MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION.
5. PIPE SHALL BE RESTRAINED FOR A MINIMUM DISTANCE OF 60' FROM EACH TOP DEFLECTION, SEE "PIPE RESTRAINT TABLE" DETAIL FOR ADDITIONAL RESTRAINT DISTANCES FOR PIPE GREATER THAN 12".

PRESSURE PIPE DEFLECTION STANDARD DETAIL

4 N.T.S.

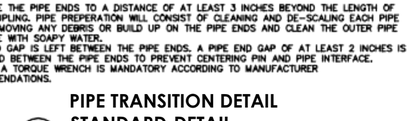


NOTES:
1. CONCRETE COLLAR IS NOT REQUIRED IN PAVED AREAS IF PAVEMENT SURFACE IS FINISHED PRIOR TO CONDITIONAL FINAL INSPECTION.
2. WHEN OPERATING NUT IS DEEPER THAN 36" A ONE PIECE EXTENSION WILL BE REQUIRED TO BRING OPERATING NUT 20"-30" BELOW FINISHED GRADE. EXTENSION BOLTS & NUTS ARE TO BE STAINLESS STEEL. A HIGH STRENGTH STEEL CENTERING PLATE, WELDED TO THE EXTENSION, IS ALSO REQUIRED.
3. VALVE BOXES SHALL HAVE COVERS MARKED "WATER".
4. VALVE BOX EXTENSION TO BE D.I.P. OR C-900 PVC SDR 18 (BLUE)
5. A CUT-IN INSTALLATION SHALL REQUIRE MEGALUGS OR EQUAL THROUGHOUT ASSEMBLY.
6. IN ORDER TO MAINTAIN ADEQUATE COVER OVER VALVE NUT, THE FOLLOWING MINIMUM COVERS OVER PIPE ARE REQUIRED

GATE VALVE SIZE	MIN. COVER OVER PIPE
12"	48"
16"	60"
20"	66"
24"	72"
30"	78"
36"	84"

TYPICAL GATE VALVE SETTINGS AND CUT-IN DETAIL STANDARD DETAIL

8 N.T.S.

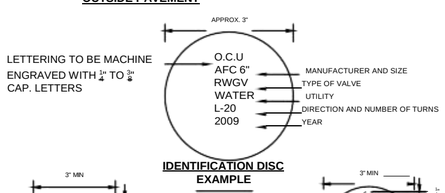


NOTES:
1. PREPARE THE PIPE ENDS TO A DISTANCE OF AT LEAST 3 INCHES BEYOND THE LENGTH OF THE COUPLING. PIPE PREPERATION WILL CONSIST OF CLEANING AND DE-SCALING EACH PIPE END, REMOVING ANY DEBRIS OR BUILD UP ON THE PIPE ENDS AND CLEAN THE OUTER PIPE SURFACE WITH SOAPY WATER.
2. THE END GAP IS LEFT BETWEEN THE PIPE ENDS. A PIPE END GAP OF AT LEAST 2 INCHES IS REQUIRED BETWEEN THE PIPE ENDS TO PREVENT CENTERING PIN AND PIPE INTERFACE.
3. USE OF A TORQUE WRENCH IS MANDATORY ACCORDING TO MANUFACTURER RECOMMENDATIONS.

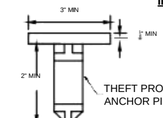
PIPE TRANSITION DETAIL STANDARD DETAIL

5 N.T.S.

OUTSIDE PAVEMENT

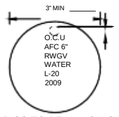


IDENTIFICATION DISC EXAMPLE



DISC TO BE EMBEDDED IN PAD

OUTSIDE PAVEMENT



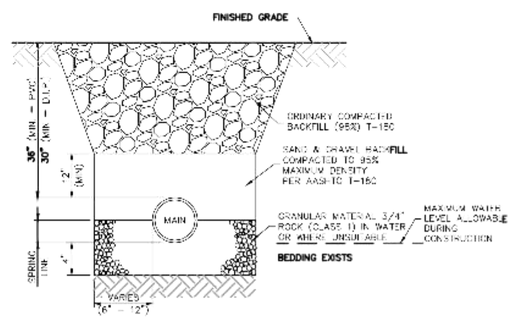
DISC TO BE HANGING IN THE BOX ANCHORED TO THE LOCATING WIRE.

INSIDE PAVEMENT

NOTES:
1. BRONZE (OR STAINLESS STEEL) IDENTIFICATION DISC SHALL BE REQUIRED FOR ALL VALVES, EXCEPT HYDRANT VALVES.
2. IN LIEU OF PRECAST CONCRETE PAD, A 6" THICK X 24" (SQUARE) POURED CONCRETE PAD WITH TWO #4 REBAR AROUND PERIMETER MAY BE USED.

TYPICAL VALVE IDENTIFICATION TAG STANDARD DETAIL

9 N.T.S.



GENERAL - PIPE TRENCH SECTION

10 N.T.S.

BID SET

CHEN·MOORE &ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
CERTIFICATES OF AUTHORIZATION
EB4593 LC26000425

REGISTRATION
MIKE ALBERT
REGISTRATION NO. 68598
DATE: 10/11/2019

SUB-CONTRACTORS

CLIENT

PROJECT INFORMATION

CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

PROJECT NUMBER
18-221.013

CLIENT PROJECT NUMBER

VERIFY SCALES
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REVISIONS

DATE OF ISSUE
10/11/2019

DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE

WATER DETAILS

DRAWING NUMBER
WD-1
13 OF 14

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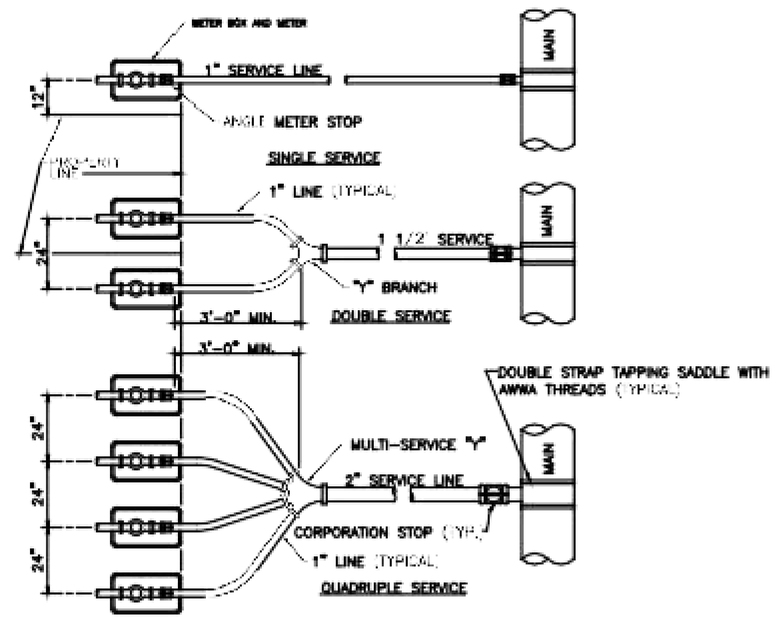
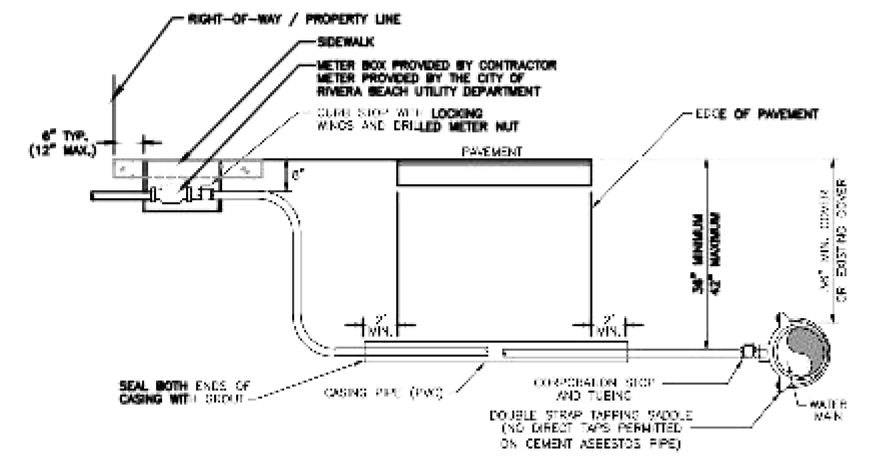


NOTES:

1. AUTHORIZED SERVICE LINE MATERIAL:
   A) TYPE "K" COPPER TUBING WITH COMPRESSION FITTINGS.
   B) POLYETHYLENE TUBING SDR 9, COPPER TUBE SIZE.
2. ANGLE METER STOP SHALL BE 1" MINIMUM.
3. 1" ANGLE METER STOPS WITH 3/4" VALVES SHALL NOT BE PERMITTED.
4. MULTIPLE SERVICE/METER INSTALLATIONS OF MORE THAN 4 METERS PER SERVICE AND SERVICE LINES LARGER THAN 2" DIAMETER SHALL BE HANDLED ON AN INDIVIDUAL BASIS.
5. ANGLE METER STOPS 1 1/2" AND 2" IN SIZE SHALL BE PROVIDED WITH BOTH A LOCKING CAP AND METER FLANGE.
6. NO FITTINGS BETWEEN CORP STOP AND ANGLE METER STOP ALLOWED WHEN USING POLYETHYLENE TUBING.
7. 1" WATER SERVICE FOR 5/8" METER; 1 1/2" WATER SERVICE FOR (2) 5/8" METERS; 2" WATER SERVICE FOR 1" METER OR (4) 5/8" METERS.

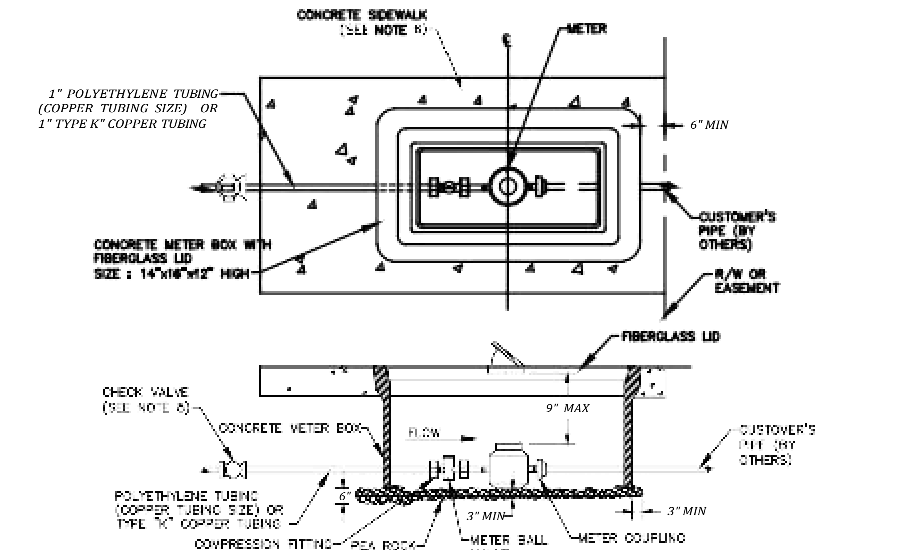
TYPICAL WATER SERVICES
STANDARD DETAIL
11
N.T.S.



NOTES:

1. CASINGS SHALL BE REQUIRED FOR ALL LONG SIDE SERVICES AND ANY SERVICES UNDER PAVEMENT.
2. SUCCESSIVE TAPS INTO THE WATER MAIN SHALL BE SPACED A MINIMUM OF 18" OFFSET.
3. WHERE NO SIDEWALK EXISTS, METER BOXES SHALL BE SET TO CONFORM TO FINISH GRADE.
4. COPPER TUBING SHALL BE TYPE "K" WITH COMPRESSION FITTINGS.
5. USE EMS MARKER #1252 COLOR BLUE DIRECTLY OVER THE CORPORATION STOP, AS APPROVED BY THE CITY OF RIVIERA BEACH.
6. ALL SERVICE LINES SHALL BE EQUIPPED WITH A CORPORATION STOP AT THE MAIN AND A CURB STOP (LOCKING CONNECTION TYPE) AT THE METER.
7. THE COPPER SERVICE LINE SHALL BE CONTINUOUS FROM CORPORATION STOP TO CURB STOP WITH NO FITTINGS IN BETWEEN. POLYETHYLENE TUBING SHALL BE SDR 9, COPPER TUBE SIZE.
8. TAPPING SADDLES AND CORPORATION STOPS SHALL HAVE AWWA INLET THREADS. TAPPING SADDLES SHALL BE BRASS WITH STAINLESS STEEL (TYPE 304) DOUBLE BANDS AND THREADED STUDS.
9. ALL EXPOSED FITTINGS TO BE COATED WITH COAL TAR EPOXY.
10. GALVANIZED CASING REQUIRED FOR ANY INSTALLATION REQUIRING A JACK AND BORE, SCH. 40 PVC MAY BE USED FOR AN OPEN CUT INSTALLATION WITH THE APPROVAL OF THE CITY OF RIVIERA BEACH UTILITIES DEPARTMENT CASING SHOULD EXTEND TWO (2) FEET BEYOND EDGE OF PAVEMENT AND SIZED AS FOLLOWS:
    A.) 1" SERVICE USE 2" CASING
    B.) 1 1/2" SERVICE USE 3" CASING
    C.) 2" SERVICE USE 4" CASING

TYPICAL WATER SERVICE
INSTALLATION FOR 1", 1-1/2" & 2"
STANDARD DETAIL
12
N.T.S.



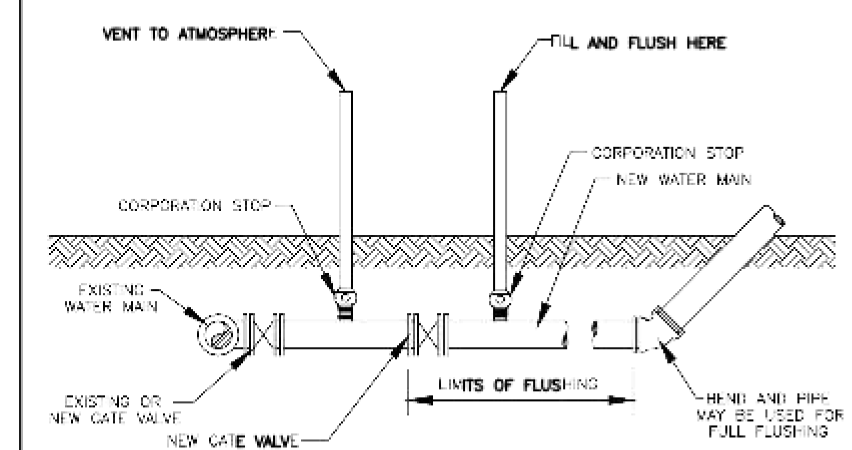
NOTES:

1. ALL STRUCTURES TO BE TRAFFIC BEARING TYPE.
2. R/W LINE OR EASEMENT LINE IS THE CUSTOMER'S SIDE OF METER BOX.
3. RBUD RESPONSIBILITY ENDS AT THE CUSTOMER'S SIDE OF METER.
4. CURVE IN SERVICE LINE SHALL BE AS CLOSE TO METER BOX AS PRACTICAL, WITH A MINIMUM RADIUS SHALL BE 14" FOR 1" TUBING.
5. ALL METERS WILL BE SUPPLIED AND INSTALLED BY RBUD. METER HAS IRON PIPE THREAD MALE CONNECTION ON EACH END.
6. WHEN SIDEWALKS ARE PRESENT, OR PLANNED FOR IN THE R/W, THE BACK EDGE OF THE METER BOX SHALL LINE UP WITH THE BACK EDGE OF THE SIDEWALK.
7. METER SHALL BE CENTERED IN BOX DIRECTLY UNDER THE ACCESS LID.
8. THE CHECK VALVE IS TO BE INSTALLED 5 FEET BEFORE THE METER BALL VALVE.
9. WHEN THERE ARE NO SIDEWALKS, CONSTRUCT 6" WIDE X 6" THICK CONCRETE COLLAR AT GRADE.
10. METER BOX SHALL HAVE FIBERGLASS LID.

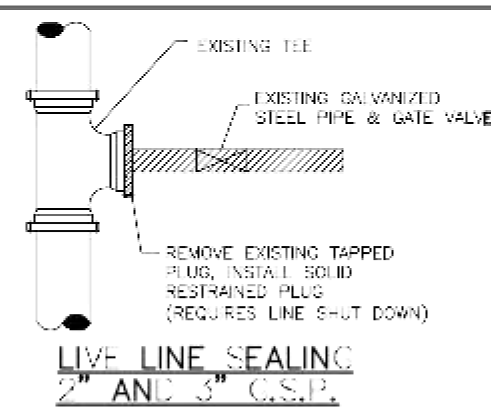
METER SIZE	LAYING LENGTH (IN)	HEIGHT (IN)
5/8"	7.5	4.56
1"	10.75	5.75

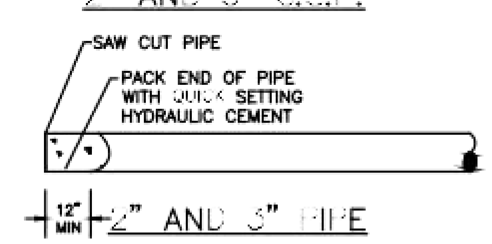
METER SIZE	BOX SIZE (IN)	DBL BOX SIZE (IN)
5/8"	10 1/2" X 18 1/2"	10 X 20 X 12
1"	12" X 20"	

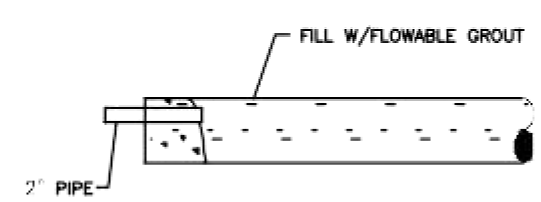
WATER METER INSTALLATION FOR 5/8" AND 1" METERS
STANDARD DETAIL
13
N.T.S.



FILLING & FLUSHING DETAIL
STANDARD DETAIL
14
N.T.S.



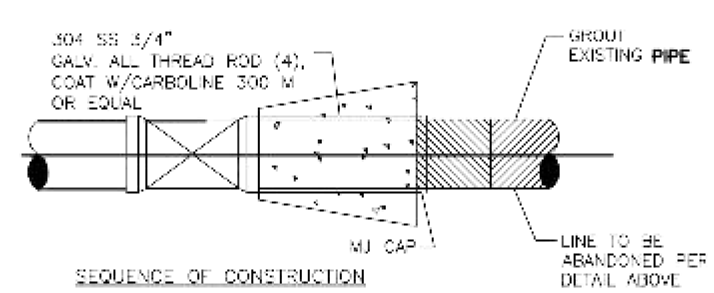




NOTES:

1. INSTALL 2" PIPE AT BOTH ENDS OF LINE TO BE ABANDONED. GROUT IN PLACE WITH QUICK SETTING HYDRAULIC CEMENT.
2. PUMP FLOWABLE GROUT FROM ONE END OR INTERMEDIATE POINTS ALONG THE PIPELINE, UNTIL PIPE IS FILLED AS WITNESSED BY THE DISCHARGE FROM 2" PIPE(S). REMOVE 2" PIPE AND FILL WITH QUICK SETTING HYDRAULIC CEMENT.

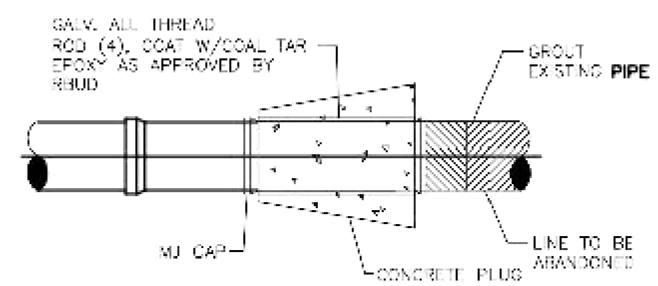
4" AND LARGER PIPE



SEQUENCE OF CONSTRUCTION

1. RESTRAIN VALVE
2. REMOVE EXISTING PIPE
3. INSTALL PLUG INTO BELL OF VALVE
4. POUR CONCRETE PLUG

AT EXISTING VALVE

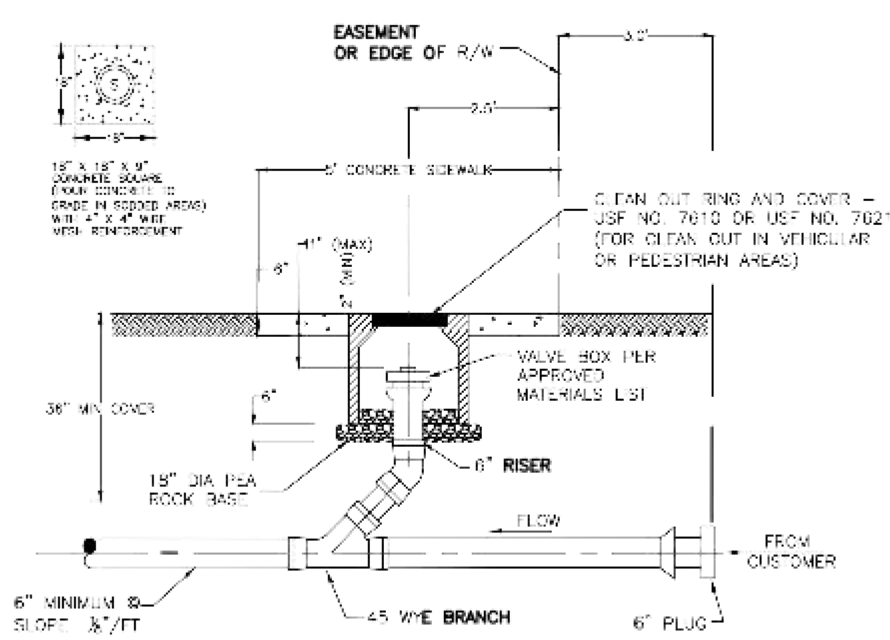


1. CONTRACTOR TO PROVIDE TEMPORARY RESTRAINT AS REQUIRED.

AT FITTING ALONG RUN

LIVE LINE SEALING 4" AND LARGER

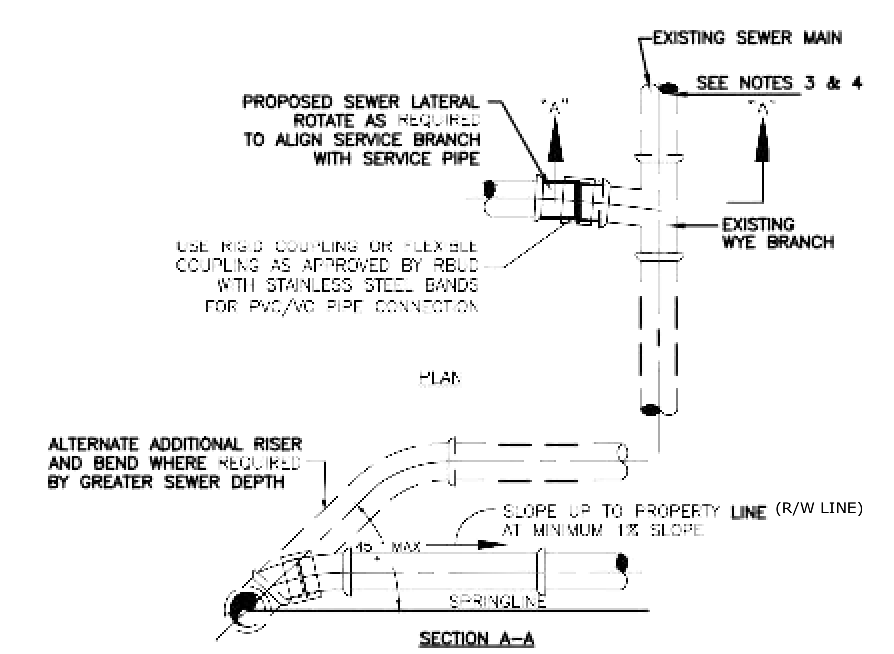
PIPE TO BE PLACED OUT OF SERVICE
STANDARD DETAIL
15
N.T.S.



NOTES:

1. CLEAN OUT TO BE LOCATED IN GRASS WHENEVER POSSIBLE. IF NOT THE CLEAN OUT SHALL BE INSTALLED IN THE MIDDLE OF THE SIDEWALK. THIS DIMENSION WILL VARY DEPENDING UPON THE WIDTH OF THE SIDEWALK. 2.5' APPLIES TO 5' SIDEWALK WIDTH. IF SIDEWALKS DO NOT EXIST, THE CLEAN OUT SHALL BE INSTALLED 2.5' FROM THE RIGHT OF WAY LINE.
2. A NEW SECTION OF SIDEWALK SHALL BE POURED AROUND THE VALVE BOX WHEN WORKING IN AN AREA WITH EXISTING SIDEWALKS.
3. IN GRASS AREA USE 30"x30" CONCRETE COLLAR.
4. DEPTH OF COVER TO BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION.
5. CLEANOUTS TO BE INSTALLED PRIOR TO WATER METER RELEASE.
6. NO 90 BENDS SHALL BE USED FOR CLEAN OUT INSTALLATION.

SEWER SERVICE CONNECTION AT
PROPERTY LINE OR EASEMENT LINE
STANDARD DETAIL
16
N.T.S.



NOTES:

1. SINGLE SERVICE CONNECTIONS SHALL USE C900 PIPE AND FITTINGS.
2. USE RISER CONNECTIONS WHERE INVERT OF SEWER IS MORE THAN 7'-0" DEEP.
3. WHERE BELL OF WYE AND SPIGOT OF EXISTING MAIN ARE NOT COMPATIBLE, USE A SECOND COUPLING.
4. MAINTAIN 36" MINIMUM COVER FROM TOP OF SERVICE TO FINISH GRADE WHERE NOT TECHNICALLY FEASIBLE, CONTACT RBUD.
5. PVC SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH MINIMUM STANDARDS OF THE UNI-BELL HANDBOOK OF PVC PIPE DESIGN AND CONSTRUCTION, LATEST EDITION.

WYE SERVICE CONNECTION
STANDARD DETAIL
17
N.T.S.

BID SET

CHEN•MOORE & ASSOCIATES
500 Australian Avenue South
Suite 850
West Palm Beach, FL 33401
561.746.6900
www.chenmoore.com
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REGISTRATION NO. 68598
DATE: 11/04/2019

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CDBG 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

RIVIERA BEACH, FL

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DATE OF ISSUE
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DESIGNED BY
MA

DRAWN BY
JH

CHECKED BY
SD

DRAWING TITLE
WATER AND SANITARY SEWER DETAILS

DRAWING NUMBER
WSD-1
14 OF 14

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CITY OF RIVIERA BEACH

CONTRACT SPECIFICATIONS

For

CDB FY 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

OCTOBER 2019

Prepared by:

_____
Project Engineer

Chen Moore and Associates
500 Australian Avenue South, Suite 850
West Palm Beach, FL 33401
Tel. 561-746-6900
CMA Project No. 221.008

TABLE OF CONTENTS

CITY OF RIVIERA BEACH, FLORIDA

CDBG FY 19-20 PUBLIC INFRASTRUCTURE IMPROVEMENTS

TECHNICAL SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

		Pages
01000	Special Provisions	4
01010	Summary of Work	3
01015	General Requirements	3
01025	Measurement and Payment	10
01039	Coordination and Meetings	3
01045	Cutting and Patching	3
01050	Field Engineering	2
01090	References	5
01152	Applications for Payment	2
01310	Construction Schedules	3
01340	Submittals and Substitutions	3
01370	Schedule of Values	2
01380	Construction Photographs	3
01410	Testing and Testing Laboratory Services	2
01505	Control of Work	2
01510	Temporary Utilities	1
01520	Construction Aids	2
01540	Security	1
01550	Maintenance of Traffic	2
01560	Temporary Controls	2
01570	Traffic Regulations	2
01580	Project Identification and Signs	3
01600	Materials and Equipment	5
01640	Product Handling	2
01700	Project Closeout	4
01710	Cleaning	2
01720	Project Record Documents	2
01740	Warranties and Bonds	2

DIVISION 2 – SITE CONSTRUCTION

02010	Subsurface Investigation	1
02050	Demolition	6
02060	Utility Pipe Removal	2
02100	Site Preparation	2
02110	Clearing	2
02151	Shoring and Bracing of Excavations	2
02220	Earthwork	20
02221	Trenching, Bedding and Backfill for Pipe	6

DIVISION 2 – SITE CONSTRUCTION (CONT.)

		Pages
02240	Dewatering	4
02260	Finished Grading	2
02510	Concrete Sidewalk	3
02513	Asphaltic Concrete Paving	3
02515	Portland Cement Concrete Paving	7
02520	Concrete Curbs and Headers	2
02525	Surface Restoration	5
02580	Pavement Marking & Signing	4
02609	Water Distribution System	11
02610	Piping, General	9
02641	Valves, General	8
02720	Storm Drain System	5
02723	Sanitary Sewer Pipe Liner	10
02724	Bypass Pumping	5
02727	Manhole Rehabilitation and Lining	7
02931	Sodding	3

DIVISION 3 – CONCRETE

03200	Concrete Reinforcements	3
03251	Joints	2
03300	Cast-in-Place Concrete	22
03315	Grout	2
03350	Concrete Finishing	6
03480	Precast Concrete Specialties	4
03610	Flowable Fill	3
03700	Modifications & Repairs to Existing Concrete	5

DIVISION 4 – MASONRY – Not Used

DIVISION 5 – METALS – Not Used

05500	Metal Fabrications	5

DIVISION 6 – 8 - Not Used

DIVISION 9 – COATINGS

09900	Coatings (for Manhole Rehabilitation)	11

DIVISIONS 10 - 16 - Not Used

ATTACHMENT 1 – Pavement Core Report from Geotechnical Investigation

SECTION 01000

SPECIAL PROVISIONS

1.01 NOTICES

A. In conformance with the requirements of the General Conditions all notices or other documents or papers required to be delivered by the Contractor to the Owner.

1.02 COORDINATION OF DRAWINGS, SPECIFICATIONS AND SPECIAL PROVISIONS

A. In case of discrepancy, computed dimensions shall govern over scaled dimensions; supplemental specifications shall govern over Standard Specifications; and Special Conditions shall govern over Drawings, Supplemental and Standard Specifications.

1.03 LAYING OUT THE WORK

A. The Contractor shall be responsible for establishing all lines and grades together with all reference points as required by the various trades. All layout work shall be done using competent and experienced personnel under the supervision of a Land Surveyor registered in the State of Florida.

B. The Contractor shall provide all labor, instruments and stakes, templates, and other materials necessary for marking and maintaining all lines and grades. The lines and grades shall be subject to any field modification the Owner or Engineer may decide necessary.

C. No separate cost item is provided for laying out the work, the cost of which is considered incidental to the work and shall be included in the unit prices for items in the Proposal.

D. The Contractor shall safeguard all existing and known Property corners, monuments and marks adjacent to but not related to the work and shall bear the cost of re-establishing them if disturbed or destroyed. He shall also safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of re-establishing them if disturbed and bear the cost of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.

1.04 PERMITS AND LICENSES

A. Before starting work, the Contractor shall obtain and pay for all required licenses and permits.

1.05 CONTRACTOR'S OFFICE

A. The Contractor shall provide and maintain an office with telephone facilities where he or a responsible representative of his organization may be reached at any time while work is in progress.

1.06 USE OF EXPLOSIVES

A. No blasting shall be performed.

1.07 USE OF PUBLIC STREETS

A. The use of public streets and alleys shall be such as to provide a minimum of inconvenience to the public and to other traffic. Any earth or other excavated material spilled from trucks shall be removed immediately by the Contractor and the streets cleaned to the satisfaction of the Owner.

1.08 CARE OF TREES, SHRUBS AND GRASS

A. The Contractor shall be fully responsible for maintaining in good condition all cultivated grass plots, trees and shrubs. Where maintained shrubbery, grass strips or area must be removed or destroyed incident to the construction operation, the Contractor shall, after completion of the work, replace or restore to the original condition all destroyed or damaged shrubbery or grass areas. Tree limbs which interfere with equipment operation and are approved for pruning shall be neatly trimmed and the tree cut coated with a tree paint.

1.09 OBSTRUCTIONS

A. All water pipes, storm drains, force mains, gas or other piping, telephone or power cables or conduits, and all other obstructions, whether or not shown, shall be temporarily removed from or supported across pipeline excavations. Before disconnecting any pipes or cables, the Contractor shall obtain permission from the owner, or shall make suitable arrangements for their disconnection by the owner. The Contractor shall be responsible for any damage to any such pipes, conduits or cables, and shall restore them to service promptly as soon as the work has progressed past the point involved. Approximate locations of known water, sanitary, drainage, power and telephone installations along route of new pipelines or in vicinity of the work are shown, but must be verified in the field by the Contractor. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand, to verify location and depth of cover. Any discrepancies or differences found shall be brought to the attention of the Owner in order that necessary changes may be made. These conditions are supplemental to general requirements elsewhere in these specifications. Where fences, walls or other man-made obstructions exist illegally in the public right-of-way, the Owner will have them removed upon adequate prior notice by the Contractor.

1.10 DAMAGE TO EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall be responsible for and make good all damage to pavement beyond the limits of this Contract, to buildings, telephone or other cables, water pipes, sanitary pipes, or other structures which may be encountered, whether or not shown on the Drawings. Pavement restorations shall follow Owner standards.

B. Information shown on the Drawings as to the location of existing utilities has been prepared from the most reliable data available to the Engineer. This information is not guaranteed, however, and it shall be this Contractor's responsibility to determine the location, character and depth of any existing utilities. He shall assist the utility companies, by every means possible to determine said locations. Extreme caution shall be exercised to eliminate possibility of damage to utilities resulting from his activities.

1.11 NOTIFICATION TO UTILITY COMPANIES

A. The excavators shall comply with Florida Statute 553.851 regarding notification of existing gas and oil pipeline company owners and shall also notify "SUNSHINE STATE" at 1- (800) - 432-4770 at least forty-eight (48) hours prior to excavating. Evidence of such notice shall be furnished to the Owner prior to excavating.

1.12 TESTS

A. The Contractor will pay for all required tests, including those proving satisfactory operation of equipment, pressure/leakage tests and disinfection. Materials tests will be compaction and soil density tests, limerock quality tests, concrete quality tests (cylinder breaks). Water required for pressure/leakage tests shall be furnished by the Contractor.

1.13 RECORD DRAWINGS

A. During the entire construction operation, the Contractor shall maintain records of all deviations from the Drawings and Specifications and shall prepare there from "record" drawings showing correctly and accurately the locations of all improvements to reflect the work as it was actually constructed. Final acceptance of the project will be withheld until delivery of the set of "record" drawings is made to the Owner.

1.14 SUBSURFACE INVESTIGATION

A. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the ground water conditions, the character of equipment and facilities needed preliminary to and during the execution of the work, the general and local conditions and all other matters which can in any way affect the work under this contract. The prices established for the work to be done will reflect all costs pertaining to the work. Any claims for extras based on substrata or ground water table conditions will not be allowed.

1.15 SUSPENSION OF WORK

A. Should the Owner be prevented or enjoined from proceeding with work either before or after the start of construction because of any litigation or other reason beyond the control of the Owner, the Contractor shall not be entitled to make or assert claim for damage by reason of said delay; but time for completion of the work will be extended to such reasonable time as the Owner may determine to compensate for time lost by such delay, with such determination to be set forth in writing.

1.16 PAYMENT FOR UTILITIES

A. The Contractor shall obtain the necessary utility service by making application for the service and paying such fees and charges required by the utility companies, including construction water meters, if required.

1.17 MAINTENANCE OF TRAFFIC

A. General:
   1. The Contractor shall be responsible for the proper maintenance control and detour of traffic in the area of construction, during the course of construction. All traffic control and maintenance procedures shall be in accordance with the requirements of either the Florida Department of Transportation or the City of Riviera Beach.
   2. Traffic shall be maintained at all times where practical and as more particularly specified hereinafter. No traffic shall be detoured without prior knowledge and approval of the respective traffic control agency having jurisdiction. The Contractor shall notify such agencies 48 hours in advance of such time he proposes to detour

traffic.

3. The Contractor shall keep all law enforcement, fire protection and ambulance agencies informed, in advance, of his construction schedules, and shall notify all such agencies, 48 hours in advance, in the event of detour of any roadway.
4. All traffic control signs and devices, barricades, flashers, flambeaus and similar devices shall be furnished and maintained by the Contractor.
5. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic and pedestrian safety at all times. Necessary access to adjacent property shall be provided at all times.
6. The work shall be conducted in a manner to cause the least possible interruption to traffic. Where traffic must cross excavations, the Contractor shall provide suitable bridges at street intersections and driveways.

B. Traffic Lanes:

1. At least one lane of traffic shall be maintained at all times; coordination is required with the Owner and all applicable governmental agencies, within their respective area of jurisdiction.

2. In the event the Contractor must detour or close off residential street traffic, he shall submit a plan (or field sketch) for approval depicting a method of providing one way operation or run-around detour route to the respective traffic agency having jurisdiction a minimum of five days prior to any street closing.

1.18 BARRICADES AND PROTECTION OF WORK

A. The Contractor shall protect his work throughout its length by the erection of suitable barricades and handrails, where required. He shall further indicate this work at night by the maintenance of suitable lights or flares, especially along or across through-fares. Wherever it is necessary to cross a public walk, he shall provide suitable safe walkways with handrailings. He shall also comply with all laws or ordinances covering the protection of such work and the safety measures to be employed therein. The Contractor shall carry out his work so as not to deny access to private property. All utility access manholes, valves, fire hydrants and letter boxes shall be kept accessible at all times.
B. No trenches or holes near walkways, in roadways or road shoulders are to be left open during night hours without the permission of the Owner.

1.19 STATE WATER QUALITY STANDARDS

A. Submit a temporary erosion and pollution control plan. Plan shall detail means and methods proposed to prevent violation of state water quality standards. Plan shall include placement of turbidity barriers and a turbidity monitoring plan in accordance with the guidelines described in Chapter 6 of the Florida Land Development Manual: A Guide to Sound Land & Water Management (Dept. of Environmental Regulation 1988). Refer to Rule 40E 4.091 FAC.

B. Turbidity barriers and plan shall remain active until all work is completed.

C. Remove barriers and other equipment upon completion of the project.

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1.01 LOCATION OF WORK

A. Work is located on in Riviera Beach on West 26th Court from Avenue M to W 27th St.

1.02 WORK TO BE PERFORMED

A. The Work to be performed under this Contract shall consist of providing equipment, materials, supplies, and manufactured articles; and for furnishing transportation and services, including fuel, power, water, and essential communications; and for the performance of labor, work, or other operations in strict accordance with the Contract Documents.

B. Wherever the Contract Documents address a third party, i.e., subcontractor, manufacturer, vendor, etc., it is to be considered as the Contractor through the third party.

C. Wherever a reference to number of days is noted, it shall mean calendar days.

1.03 GENERAL DESCRIPTION OF CONTRACT

A. Pavement Improvements.

B. Install new Concrete Sidewalks.

C. Concrete curbing.

D. Driveway Restoration.

E. Pavement Marking and Signage.

F. Install Watermain and Appurtenances.

G. Install storm drain pipes, exfiltration drain, curb inlets and manholes.

H. Install Cured-In-Place Sewer Lining

I. Perform manhole rehabilitations.

J. Other work as shown on the Construction Plans.

1.04 SEQUENCE OF CONSTRUCTION

A. Following receipt of Notice-to-Proceed with the Work, the Contractor shall notify the Engineer and the Owner at least five days before he is ready to start actual construction to allow the Owner time to make arrangements for inspection of the Work.

B. Work under the Contract shall be scheduled and performed in such a manner as to result in the least possible disruption to the operation of the systems. Work shall be performed in such a manner that will protect the utilities. No compensation will be paid for damages to utilities due to phasing of work.

C. Submit a sequence of construction schedule for the entire project.

1.05 ABANDONMENT AND REMOVAL OF EXISTING FACILITIES

A. Remove or abandon in-place utilities shown on drawings. Provide by-pass pump and/or system re-routing as required.

B. Salvage equipment if shown on Drawings.

1.06 REHABILITATION

A. Right of Ways will be affected by work necessary to complete this Contract. The Contractor shall be responsible to restore those areas affected by its construction activities.

B. Disposal of Debris: All debris, materials, piping, and miscellaneous waste products from the Work described in the section shall be removed from the project as soon as possible. They shall be disposed of in accordance with applicable federal, state, and local regulations. The Contractor is responsible for determining these regulations and shall bear all costs or retain any profit associated with disposal of these items.

1.07 CONTRACTOR USE OF PROJECT SITE

A. The Contractor's use of the project site shall be limited to its construction operations, including on-site storage of materials, on-site fabrication facilities, and field offices, as noted on the Contract Drawings.

1.08 OWNER USE OF THE PROJECT SITE

A. The Owner may utilize all or part of the existing facilities during the entire period of construction for the conduct of the Owner's normal operations. The Contractor shall cooperate with the Owner to minimize interference with the Contractor's operations and to facilitate the Owner's operations.

1.09 COORDINATION WITH OTHER CONTRACTS

A. Coordinate work with that of other Contractors on site.

1.10 PARTIAL UTILIZATION OF THE WORK BY THE OWNER

A. The Contractor is hereby advised that the Owner may accept the responsibility for the maintenance and protection of a specific portion of the Project if utilized prior to Completion. However, the Contractor shall retain full responsibility for satisfactory completion of the project.

1.12 PERMITS

A. It shall be the Contractor's responsibility to secure all permits required to complete the work under this contract, except permits obtained by the Owner.

B. No separate or direct payment will be made to the Contractor for permits and inspection requirements, but all such costs shall be included in the bid proposal. The Owner will furnish signed and sealed sets of Contract Documents for permit use as required.

1.13 FIELD ENGINEERING

A. The Contractor shall employ a Land Surveyor registered in the State of Florida and acceptable to the Engineer. The Contractor shall locate and protect survey control and reference points.

B. Provide Field Engineering Services: Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

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 the Contract Documents.

1.14 DIMENSIONS AND LOCATIONS OF EXISTING STRUCTURES, PIPING AND UTILITIES

A. Where the dimensions and locations of existing structures, piping, and utilities are of critical importance in the installation or connection of new work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any materials or equipment which is dependent on the correctness of such information.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01015

GENERAL REQUIREMENTS

PART 1 – GENERAL

1.01 RELATED REQUIREMENTS

A. General provisions of Contract, including General Terms and Conditions.

B. Requirements for determining completed Work - Section 01025.

1.02 PROJECT DESCRIPTION

A. The work is located in Riviera Beach on West 26th Court from Avenue M to W 27th St.

1.03 CONTRACTOR USE OF PREMISES

A. Contractor shall have use of the project site for construction operations. The Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

B. The Contractor shall be responsible for coordinating his daily activities in conjunction with any Contractors presently working within the vicinity of this project.

C. Confine operations to areas within rights-of-way and easements.

D. Keep existing driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times.
   1. Do not use these areas for parking or storage of materials.
   2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

E. Do not dispose of organic and hazardous material on site, either by burial or by burning.

1.04 ENVIRONMENTAL PROTECTION

A. Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.

1.05 SUBMITTALS

A. General: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

B. Progress Schedule: Fully developed, horizontal bar chart type Contractor's construction schedule. Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue updated schedules monthly. Updated schedules are required to be submitted with each pay application.
   1. Each station shall be a separate activity

C. Daily Construction Report: Record of construction activities, delivery tickets, on-site work force and equipment including progress and events at the site; submit two (2) copies to the Engineer at weekly intervals.

D. Shop Drawings: Newly prepared information, drawn to accurate scale. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not acceptable.
   1. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.
   2. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

E. Product Data: Collect into a single submittal for each element of construction or system. Includes printed information such as manufacture's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves.

F. Samples: Full size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed.

G. Submit shop drawings/product data for each item to be incorporated in the project.

1.06 QUALITY CONTROL

A. The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity.
   1. Costs for these services shall be included in the Contract Sum.
   2. The Owner will engage and pay for the services of an independent agency to perform inspections and tests specified as the Owner's responsibility.

B. The Contractor is responsible for and shall pay costs of retesting when required by Engineer or Owner and of additional testing needed or required by the Contractor.

C. The Contractor shall pay costs for additional trips to the project by the agency when scheduled times for tests and inspections are canceled and agency is not notified sufficiently in advance of cancellation to avoid the trip.

1.07 MATERIAL AND EQUIPMENT

A. Substitutions: After Bidding period, up to 30 days after date of Notice to Proceed, the Engineer will consider written requests from Contractor for proposed substitutions of products. Subsequent requests will only be considered when proof is given to the Engineer of product unavailability or other condition beyond control of the Contractor. Submit a separate request for each proposed substitution; two (2) copies each on the Substitution Request (SR) available from the Engineer.

1. Do not order or install substitute products without written acceptance from the Engineer.
2. Do not imply or indicate substitutions on shop drawings or product data submittals without a separate formal request.
3. Engineer will determine acceptability of substitution.
4. Only one request for substitution for each product will be considered. If not accepted, Contractor shall provide specified product.

B. Product selection is governed by the Contract Documents and governing regulations, not by previous project experience.
1. Where a single or multiple products or manufacturers are named, provide one of the products indicated or submit a request for substitution for any product or manufacturer not named.
2. Where the Specifications only require compliance with performance requirements, an imposed code, standard or regulation, select a product that complies with the requirements, standards, codes or regulations specified.
3. Manufacturers named in a Specification section are those manufacturers considered capable of manufacturing products conforming to the specified requirements. The naming of a particular manufacturer does not imply acceptance or approval of just any standard product of that manufacturer.
4. The Owner reserves the right to remove or have removed any installation material which is not approved by the Engineer. The total cost for such replacement shall be borne by the Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

A. Payment for various items of the Bid Schedule, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor operations and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA). No separate payment will be made for any item that is not specifically set forth in the Bid Schedule, and all costs therefore shall be included in the prices named in the Bid Schedule for the various appurtenances needed to complete the items of work.

B. Payment for the various items of the Bid Schedule shall constitute full compensation for CONTRACTOR's superintendent at the job site full-time during construction, for constructing all roadway and sidewalk features, furnishing and installing all pipe and structures complete in place; including protecting and replacing if necessary existing monuments, control points, found iron rods, including all earthwork, trench excavation as shown on the Drawings, removal and disposal of waste, unsuitable and excess material, furnishing and installing pipe bedding material, all backfill and compaction of native material, and dewatering as required; the restoration of interfering portions of existing service and utility lines that are not included in other bid items and shown on the Drawings, cleanup; and restoration of all improvements incidental to construction for which there are no other bid items; including but not limited to, existing sprinkler systems, and all other work not included in other bid items.

C. Payment shall also include providing the necessary equipment and labor power to pothole and verify depths and locations of existing utilities sufficiently ahead of construction to avoid conflicts with the design alignment and grade of structures, culverts, storm drains. Conflicts with utilities shown on the Drawings which result from the Contractor's negligence to pothole sufficiently ahead of construction (a minimum of two days ahead of construction of the pipeline or as approved by the ENGINEER) shall be resolved by the Contractor at no additional cost to the CITY.

D. Payment for all bid items shall constitute full compensation for the complete installation of each bid item including but not limited to excavation, dewatering, backfill and compaction. The work shall include for all bid items to be completed, tested and ready for acceptance by the appropriate government agency.

E. Support of utilities during construction shall be included in the line item cost for work that is adjacent to the utility. This includes pole support, pipe support, overhead wire protection, protection of above and below ground pedestals, boxes, and transformers, and all other appurtenances related to the existing utilities. CONTRACTOR is responsible for coordinating with the utility agencies.

1.02 BONDS AND INSURANCE

A. Payment will be made at the lump sum price named in the Bid Schedule.

B. Bonds and Insurance is limited to 2.5% of the Total Bid Price.

1.03 MOBILIZATION

A. Payment will include stormwater pollution prevention. Payment will be made at the lump sum price named in the Bid Schedule.

B. Payment for mobilization will be made in equal monthly amounts during the duration of the original contract time. Mobilization is limited to 10% of the Total Bid Price.

1.04 MAINTENANCE OF TRAFFIC

A. See Section 01570 "Traffic Regulation" and all other references to traffic control and maintenance in this document and any regulatory requirements.

B. Payment for maintenance of traffic will be made at the lump sum price named in the Bid Schedule. Payment for maintenance of traffic will be made in equal monthly amounts during the duration of the contract time. Maintenance of Traffic is limited to 5% of the Total Bid Price.

1.05 PERMIT FEE

A. Measurement for payment for permit fees will be based upon the actual permit fees required by the CONTRACTOR from the various agencies having jurisdiction for construction of the project, all in accordance with the Contract Documents. The allowance for permit fee amounts shown on the bid schedule is an estimate of permit fees required for the project and is a cost pass through item. The permit fees are based on allowances and CITY will reconcile the actual cost with the CONTRACTOR by change order. The CONTRACTOR shall produce documentation upon request verifying actual cost. Only permit fees substantiated and approved by the ENGINEER will be paid as part of this bid item.

B. Payment for permit fees will be made as reimbursement for actual cost of permitting.

1.06 PROFESSIONAL AUDIO/VISUAL OF CONSTRUCTION SITE

A. Payment for a professional audio/visual of construction site will be made at the lump sum price named in the Bid Schedule.

1.07 SURVEY (LAYOUT AND AS-BUILT) RECORD DRAWINGS

A. Payment for survey associated with project layout and as-built record drawings will be made at the lump sum price named in the Bid Schedule.

B. As-built record drawings are limited to the lump sum price named in the Bid Schedule.

1.08 REMOVE CONCRETE SIDEWALK (4-INCH)

A. Measurement for payment to remove and dispose of existing sidewalk will be based upon the actual number of square yards of such sidewalk actually removed and disposed of, all in accordance with the Contract Documents.

B. Payment for removing and disposing of existing sidewalk will be made at the unit price per square yard of sidewalk named in the Bid Schedule which price shall constitute full compensation for the excavation, saw cut, removal and disposal of driveway. Any damages to property or features outside the limits of the sidewalk will be restored by the CONTRACTOR at no additional cost.

1.09 REMOVE CONCRETE DRIVEWAY APRON AND SIDEWALK (6-INCH)

A. Measurement for payment to remove and dispose of existing driveway and associated 6-inch thick sidewalk within the public right-of-way will be based upon the actual number of square yards of such driveway actually removed and disposed of, all in accordance with the Contract Documents and as approved by the CITY or CITY's representative.

B. Payment for removing and disposing of existing driveway will be made at the unit price per square yard of sidewalk named in the Bid Schedule which price shall constitute full compensation for the excavation, saw cut, removal and disposal of driveway. Any damages to property or features outside the limits of the driveway will be restored by the CONTRACTOR at no additional cost.

1.10 REMOVE EXISTING DRIVEWAY APRON (ASPHALT)

A. Measurement for payment to remove and dispose of existing asphalt driveway within the public right-of-way will be based upon the actual number of square yards of such driveway actually removed and disposed of, all in accordance with the Contract Documents and as approved by the CITY or CITY's representative.

B. Payment for removing and disposing of existing driveway will be made at the unit price per square yard of sidewalk named in the Bid Schedule which price shall constitute full compensation for the excavation, saw cut, removal and disposal of driveway. Any damages to property or features outside the limits of the driveway will be restored by the CONTRACTOR at no additional cost.

1.11 REMOVE CONCRETE DRIVEWAY - PRIVATE PROPERTY CONTINGENCY (6-INCH)

A. Measurement for payment to remove and dispose of existing driveway and associated sidewalk outside of the public right-of-way will be based upon the actual number of square yards of such driveway actually removed and disposed of, all in accordance with the Contract Documents and with approvals by the CITY or CITY's representative.

B. Payment for removing and disposing of existing driveway apron will be made at the unit price per square yard of driveway outside of the public right of way named in the Bid Schedule which price shall constitute full compensation for the excavation, saw cut, removal and disposal. Any damages to property or features outside the limits of the sidewalk will be restored by the CONTRACTOR at no additional cost.

1.12 GROUT AND ABANDON EXISTING WATER MAIN

A. Measurement for payment to grout and abandon existing pipe shall be based upon the total linear feet of pipe abandoned, all in accordance with the requirements of the Contract Documents.

B. Payment for placing existing pipe out of service will be made at the unit price per linear foot of such pipe actually grouted and abandoned as named in the Bid Schedule. Payment shall constitute full compensation for the grouting (if necessary), plugging, capping and abandoning of such pipe, including pumping out and disposing of existing water, removing and disposing of existing valves and valve boxes, backfilling trench and all restoration work.

C. All caps required to adequately grout existing water mains shall be included in this bid items and shall not be paid for under any other line item.

1.13 CONSTRUCT CONCRETE ADA CURB RAMP (VARIOUS CONFIGURATIONS)

A. Measurement for payment for forming and constructing an ADA accessible curb ramp, including detectable warning mat, that connects the existing sidewalk to the street will be based upon the actual number, each, constructed, all in accordance with requirements of the Contract Documents.

B. Payment for constructing ADA ramps will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the complete construction of the ramp, installing detectable warning mat, and restoring any adjacent property or facilities impacted. In the case of new ramp construction, payment for a new ADA ramp shall include the cost of the associated detectable warning mat and no separate payment shall be made for the detectable warning mat materials or labor.

1.14 CONSTRUCT CONCRETE SIDEWALK (4-INCH)

A. Measurement and payment for furnishing and installing concrete sidewalk at 4-inch thickness will be based upon the actual number of square yards of such sidewalks constructed as shown in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing sidewalks will be made at the unit price per square yard and thickness and type named in the Bid Schedule and detailed on the drawings which price shall constitute full compensation for completing said work, including earthwork, construction of the concrete sidewalk to thickness specified in the plans, furnishing and setting for expansion joint material, disposal of excess material, restoration/replacement of sod disturbed on private property to equal condition as existing, restoration of driveways disturbed due to sidewalk forms, and the appurtenant items for which separate payment is not specifically included in the Bid Schedule. Readjusting water meter boxes that need to be raised or lowered to meet sidewalk elevation will also be included in compensation for the installation of sidewalk (any meter box relocation which does not include plumbing services will be included in the price of sidewalk installation). No additional compensation will be granted for bumping out sidewalks or sloping sidewalks as required by Contract Documents.

A. No payment will be made for construction of sidewalks outside the limits shown on the drawings or not approved by the ENGINEER. Sidewalks must be approved and accepted by the CITY to be eligible for payment.

1.15 CONSTRUCT CONCRETE DRIVEWAY APRON (6-INCH)

A. Measurement for payment for construction of concrete driveways will be based upon the actual number of square yards of such driveways and aprons constructed as shown in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for construction of driveways will be made at the unit price per square yard named in the Bid Schedule which price shall constitute full compensation for completing said work, including grading, construction of the concrete driveway to 6" deep, furnishing and setting for expansion joint material, disposal of excess material, and the appurtenant items for which separate payment is not specifically included in the Bid Schedule.

C. Extent of driveway restoration shown in plans is estimated based on measured slopes. Contractor shall only replace material as required to meet driveway slope requirements. If, in the Contractor's opinion, additional restoration is required than what is shown on the plans, Contractor shall get approval from ENGINEER prior to work. No payment will be made for construction of driveways and aprons outside the limits shown on the drawings or not approved by the ENGINEER. Driveway must be approved and accepted by the CITY to be eligible for payment.

1.16 CONSTRUCT TYPE F CURB AND GUTTER

A. Measurement for payment for furnishing and installing type 'F' curb and gutter will be based upon the number of linear feet of such curb actually constructed as determined by measurement along the centerline of the curb in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing curb and gutter or drop curb will be made at the unit price per linear foot curb named in the Bid Schedule, which shall constitute full compensation for complete installation including, grading, 4" rock curb pad, forming, saw cutting of pavement and cleanup of all areas disturbed by this construction.

1.17 MILL AND RESURFACE EXISTING ASPHALT (1-INCH)

A. Measurement for payment for milling and resurfacing existing pavement will be based on the number of square yards of such pavement actually milled to a depth of 1-inch and followed by tack coat and Type S-3 asphalt placed and compacted to a finished depth of 1-inch, as detailed in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for milling existing asphalt pavement and resurfacing with 1-inch of Type S-3 asphalt will be made at the unit price per square yard of such as named in the Bid Schedule which price shall constitute full compensation for milling, removal and disposal of asphalt, removal of reflective pavement markers, any temporary striping necessary between the milling and resurfacing phase, tack coat, resurfacing and restoration. No separate payment shall be made for temporary asphalt placed during construction. Any damage by the CONTRACTOR to existing curbs that are to remain are to be repaired by the CONTRACTOR at no cost to the CITY.

1.18 PAVEMENT RESTORATION

A. Measurement for payment for pavement restoration will be based on the number of square yards performed. Pavement restoration will include base repair and resurfacing of existing road as shown on the plans and restoration of the road surface over the trenches associated with water main installation. Pavement restoration shall include in the unit price per square yard asphalt demolition and removal, 12" limerock (LBR 100), tack coat, 1.5" Type S-1 asphalt and 1" Type S-3 asphalt, as shown in the City standard detail for Pavement and Base Repair.

B. Existing base material may be re-used and incorporated into the base repair, however, the CITY makes no guarantees as to the suitability or quantity of existing base material available. No additional payments will be made by the CITY to account for the CONTRACTOR's assumptions.

C. Unit price shall not include work associated with the installation of the watermain, services or sewer laterals and the associated backfill to the bottom of the road base. Trench backfill shall be included in the appropriate utility line item.

1.19 CONSTRUCT STAMPED CONCRETE SPEED HUMP

A. Measurement for payment for construction of stamped concrete speed hump will be based on the number of each one constructed, as detailed in the drawings, all in accordance with the requirements of the Contract Documents.

B. Payment for constructing a speed hump shall be made at the unit price per each as named in the Bid Schedule which price shall constitute full compensation for removal of the existing speed hump, disposal of debris, removal of reflective pavement markers, any temporary striping necessary, construction of the new speed hump and restoration. Any damage by the

CONTRACTOR to existing curbs that are to remain are to be required by the CONTRACTOR at no cost to the CITY.

1.20 FURNISH AND INSTALL 24” WHITE STOP BAR

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of 24-inch wide white marking actually constructed as determined by measurement along the centerline of the pavement markings in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing 24-inch wide white marking including layout, temporary marking and removal of existing striping if necessary, will be made at the unit price per linear foot of pavement markings named in the Bid Schedule, which price shall constitute payment for all associated materials and effort. No additional payments will be made for temporary markings and the unit price shall be inclusive of all costs required to obtain a final product.

1.21 FURNISH AND INSTALL 12" WHITE EXTERIOR CROSSWALK STRIPES

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of 12-inch wide white marking actually constructed as determined by measurement along the centerline of the pavement markings in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing 12-inch wide white marking including layout, temporary marking and removal of existing striping if necessary, will be made at the unit price per linear foot of pavement markings named in the Bid Schedule, which price shall constitute payment for all associated materials and effort. No additional payments will be made for temporary markings and the unit price shall be inclusive of all costs required to obtain a final product.

1.22 FURNISH AND INSTALL 6” SOLID DOUBLE YELLOW STRIPES

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of double yellow stripes, with each stripe being 6-inches wide, actually constructed as determined by measurement along the centerline of the double yellow marking in place, all in accordance with the requirements of the Contract Documents. No additional payments will be made for temporary markings and the unit price shall be inclusive of all costs required to obtain a final product.

B. Payment for furnishing and placing both of the double wide yellow stripes that are each 6-inches wide, shall including layout, temporary striping and removal of existing striping if necessary and will be made at the unit price per linear foot of double striping named in the Bid Schedule, which price shall constitute payment for all associated materials and effort. Reflective pavement markers shall be counted in this item.

1.23 FURNISH AND INSTALL 6” SOLID YELLOW 10-30 SKIP

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of solid yellow stripes, with each stripe being 6-inches wide, actually constructed as determined by measurement along the centerline of the yellow marking in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing both of the yellow stripes that are each 6-inches wide, shall including layout, temporary striping and removal of existing striping if necessary and will be made at the unit price per linear foot of double striping named in the Bid Schedule, which price shall constitute payment for all associated materials and effort. Reflective pavement markers shall be counted in this item. No additional payments will be made for temporary markings and

the unit price shall be inclusive of all costs required to obtain a final product.

1.24 FURNISH AND INSTALL 6” SOLID WHITE EDGE LINES

A. Measurement for payment for furnishing and placing pavement markings will be based upon the number of linear feet of solid, 6-inch wide, white line, actually constructed as determined by measurement along the centerline of the marking in place, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and the 6-inches wide white lines, shall include layout, temporary striping and removal of existing striping if necessary and will be made at the unit price per linear foot of named in the Bid Schedule, which price shall constitute payment for all associated materials and effort. Reflective pavement markers shall be counted in this item. No additional payments will be made for temporary markings and the unit price shall be inclusive of all costs required to obtain a final product.

1.25 FURNISH AND INSTALL SOLID WHITE STRIPING FOR SPEED HUMP PER DETAIL

A. Measurement for payment for furnishing and placing pavement symbols associated with the speed hump will be based paid per each speed hump location, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and placing pavement symbols associated with the speed hump will be made at the unit price, each, of markings named in the Bid Schedule. Payment for pavement symbols shall constitute full payment for all such symbols required.

1.26 FURNISH AND INSTALL ST. AUGUSTINE SOD

A. Measurement for payment to furnish and install St. Augustine sod will be based upon actual quantity, square yards, of such sod furnished and installed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing the St. Augustine sod will be made at the unit price, square yards, named in the Bid Schedule which price shall constitute full compensation for the necessary grading and placement of sod as well as coordination with the homeowner to insure irrigation is in place to sustain the placed sod including irrigation adjustments and restoration.

1.27 ADJUST RESIDENT GATES AT DRIVEWAY

A. Measurement for payment to adjust driveway gates will be based upon actual quantity, each, of such work furnished and installed, all in accordance with the requirements of the Contract Documents.

B. Payment for adjusting resident gates will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the necessary work to adjust existing residential fencing and gates associated with changing elevations of driveways due to proposed roadwork.

1.28 INSTALL PROJECT IDENTIFICATION AND TRAFFIC SIGNS AND POSTS

A. Measurement for payment to install project and traffic signs will be based upon actual quantity, each, of such signs installed, all in accordance with the requirements of the Contract Documents.

B. Payment for installing the traffic signs will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the removal of existing sign and the

installation of the new sign including sign post. The sign post is considered an in-sequential cost from the actual sign installation. Signs damaged by the CONTRACTOR will be replaced by the CONTRACTOR at no cost to the City.

1.29 FURNISH AND INSTALL TYPE “C” CURB INLET AND GRATE

A. Measurement for payment to furnish and install new curb inlet and grate including Type “C” catch basin will be based upon actual quantity, each, of each catch basin and grate furnished and installed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing the curb inlet and grate will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the completed installation and restoration of impacted property and facilities.

1.30 FURNISH AND INSTALL 48-INCH DIAMETER STORM INLET BOTTOM AND CATCH BASIN

A. Measurement for payment to furnish and install 48-inch storm inlet and catch basins will be based upon actual quantity, of each inlet furnished and installed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing the manhole will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the completed installation and restoration of impacted property and facilities. This shall include all labor and materials necessary to connect to existing drainage pipes as well as proposed drainage pipes.

1.31 FURNISH AND INSTALL INLET POLLUTION RETARDANT BAFFLE/WEIR

A. Measurement for payment to furnish and install inlet pollution retardant baffles and weirs will be based upon actual quantity of each furnished and installed, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing the inlet pollution retardant baffles and weirs will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the completed fabrication, hardware, labor and installation.

1.32 FURNISH AND INSTALL 18-INCH RCP (CLASS V) STORM DRAIN

A. Measurement for payment for furnishing and installing 18-inch Reinforced Concrete Pipe (Class V) will be made at the unit price for each linear foot installed in accordance with requirements of the Contract Document.

B. Payment for furnishing and installing 18-inch Reinforced Concrete Pipe (Class V) will be made at the unit price, linear feet, named in the Bid Schedule which price shall constitute full compensation for the preparation of pipe bedding, installation of new pipe, and restoration of the surface.

1.33 FURNISH AND INSTALL 18-INCH RCP (CLASS V) PIPE WITH EXFILTRATION TRENCH

A. Measurement for payment for furnishing and installing 18-inch Reinforced Concrete Pipe (Class V) with exfiltration trench will be made at the unit price for each linear foot installed in accordance with requirements of the Contract Document.

B. Payment for furnishing and installing 18-inch Reinforced Concrete Pipe (Class V) will be made at the unit price, linear feet, named in the Bid Schedule which price shall constitute full compensation for the preparation of pipe bedding, installation of new perforated drain pipe, geotextile fabric, backfilling, compaction, testing, trench safety and restoration of the

surface.

1.34 FURNISH AND INSTALL C-900 PVC WATERMAIN PIPE VIA OPEN CUT

A. Measurement for payment for furnishing and installing C-900 PVC and HDPE SDR 11water main pipe via open cut will be based upon the number of linear feet of such pipe installed as determined along the centerline of the pipe, according to coordinates As-Built, all in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing PVC C-900 water main pipe will be made at the unit price per linear foot of such pipe installed including restraints and all clearing and grubbing, pipe cleaning, cutting, unloading, sheeting, excavation, utility pole protection, root barrier installation, temporary relocation and restoration of existing fences, trench protection and trench safety, replacement of sewer laterals in conflict with alignment, dewatering, bedding (including rock), laying, backfilling, compaction, pressure testing and flushing and filling as named in the Bid Schedule.

C. Payment does not include Pavement Restoration for the limerock base and asphalt described in Item 1.18 above.

D. Tracer wire is included in the cost of water main pipe.

1.35 FURNISH AND INSTALL 8-INCH CURED-IN-PLACE SEWER LINING

A. Measurement and payment for cured-in-place (CIP) sewer lining shall be based upon the total linear feet of sewer lining installed in accordance with the requirements of the Contract Documents.

B. Payment for placing CIP sewer lining will be made at the unit price per linear foot of 6 mm lining actually installed as named in the Bid Schedule. Payment shall constitute full compensation for the TV inspections, cleaning, sewer lateral connections and sewer lining installed. Costs for design calculations, shop drawings or other submittal information required per the technical specifications shall be included in the unit price.

C. In part, the intent of the cured-in-place sewer lining is to provide support to existing sewer mains and to mitigate potential breaks or leaks in the existing sewer mains during construction activities. As such, the CONTRACTOR is responsible for protecting the existing sewer and no compensation will be paid for repairs of un-lined structurally deficient sewer mains damaged during construction.

1.36 CONTINGENCY FOR SEWER PIPE REPAIR (C900 PVC)

A. Measurement and payment for sewer pipe repair shall be based upon the total linear feet of C900 PVC sewer pipe actually repaired in accordance with the requirements of the Contract Documents. Locations of sewer pipe repairs are not identified in the plans but, rather, will be identified based on the results of the TV inspections performed during the work associated with installation of the CIP sewer lining. Sewer deficiencies identified during the inspections shall be communicated immediately to the CITY for coordination and no repairs shall be made without the prior approval of the CITY.

B. The CITY shall be the sole owner of the contingency and its intent is to be used for repairs required to facilitate the installation of the lining or repair existing deficiencies identified during execution of the work. The contingency is not intended to be used by the CONTRACTOR to repair sewer damaged during construction activities.

1.37 GRAVITY SANITARY SEWER MANHOLE REHABILITATION

A. Measurement for payment to rehabilitate sewer manholes will be based upon the actual quantity, each, of such sewer manholes rehabilitated, all in accordance with the requirements of the Contract Documents.

B. Payment for rehabilitating sewer manholes will be made at the unit price each, named in the Bid Schedule which price shall constitute full compensation for all materials and labor needed to rehabilitate sewer manholes regardless of depth including but not limited to surface preparation and cleaning, manhole lining, manhole inspections, sealing of leaks, necessary reshape and/or repair of manhole components, installation of rain guards, proper resident notification, and area clean-up.

1.38 FURNISH AND INSTALL SEWER LATERAL AND CLEANOUTS

A. Measurement for payment furnishing and installing sewer lateral and cleanouts will be based upon the actual number, each, installed in accordance with requirements of the Contract Documents. This includes the excavation, grubbing, removal of asphalt, removal of base rock and subbase, connection to existing sewer lateral, bypass pumping, customer notifications, shear rings, couplings, clean out caps, concrete collars, PVC sewer lateral pipes and fittings, trenching, and trench restoration..

B. CONTRACTOR shall be responsible for locating existing sewer laterals. CONTRACTOR to coordinate with the CITY.

C. Each double sewer lateral with two cleanouts is counted as one unit.

1.39 FURNISH AND INSTALL WATER SERVICES

A. Measurement for payment furnishing and installing water service will be based upon the actual number, each, of water service and meter boxes furnished and installed as well as relocating existing meter (if applicable) all in accordance with requirements of the Contract Documents. This includes the tapping of the new water main and providing saddle, corporation ball valve and service piping to the meter box (including service piping inside casing under pavement where necessary), key angle meter stop, stainless steel inserts, spring washers on saddles, setting the new meter boxes and relocating existing water meters. The CONTRACTOR is responsible for completing all private side service connections and for the restoration of any disturbed surface features including, but not limited to clearing and grubbing, saw cut and removal of asphalt, remove of lime rock and subbase, trench excavation, dewatering, backfilling, fencing, driveways, walkways, mailboxes, decorations, irrigation and landscaping inside and outside of the public right-of-way to their original condition or better.

B. CONTRACTOR shall be responsible for locating existing water service. CONTRACTOR to coordinate with the City.

C. Each double water service is counted as one unit.

1.40 FURNISH AND INSTALL DIP PRESSURE MAIN FITTINGS

A. Measurement for payment to furnish and install fittings, unless specifically listed separately in the bid schedule, shall be based upon actual quantity, in tons, for such fittings, including but not limited to crosses, reducing crosses, tees, side outlet tees, reducing tees, laterals, reducing laterals, bends and elbows of all angles and radius, reducing bends and elbows, concentric and eccentric reducers, offsets, wyes, true wyes, sleeves, plugs, caps, restraining glands and gaskets, base bends, base tees, reducing flanges, couplings for dissimilar materials or sizes, furnished all in accordance with the Contract Documents. Pipe

restraints will not be counted in this item, they shall be included in the cost of the pipe.

B. Payment for furnishing and installing fittings complete and in place shall be at the unit bid price, named in the Bid Schedule and shall include furnishing, storing, transporting and installing the fittings.

1.41 FURNISH AND INSTALL GATE VALVE

A. Measurement for payment to furnish and install gate valves will be based upon actual quantity, each, of gate valves furnished and installed, all in accordance with the requirements of the Contract Documents. Test valves or temporary valves will not be compensated for under this line item.

B. Payment for furnishing and installing gate valves will be made at the unit price each, named in the Bid Schedule which price shall constitute full compensation for the completed installation of the gate valve, including valve box, extension to surface, 3” brass ID disk and restraining glands.

C. If the contractor elects to use double valves for connections to the existing system, there will be no additional compensation for valves under this line item. Only valves that are on the plans will be paid under this line item.

1.42 CONNECTION TO EXISTING WATER MAIN

A. Measurement and payment for performing all connections of new water main to existing water main pipe will be based on the actual quantity, each, of such connections made all in accordance with the Contract Documents and drawings.

B. Payment for connecting to existing water main shall be made at the unit price, each, named in the Bid Schedule which shall constitute full compensation for all coordination, materials (regardless of water main size) and labor needed to complete connections at each end of proposed main which shall include additional valves and/or double valve systems exclusively for the purpose of water main connections, fittings, sleeves, spool pieces, 2-inch polyurethane pipes or less for connections, corporation stops, cutting, removal and disposal of existing piping and fittings to prepare for connection and filling and flushing of main. All coordination needed for water main shut offs shall be the responsibility of the CONTRACTOR and is included in the scope of this item.

1.43 FURNISH AND INSTALL 6” LINE STOPS

A. Measurement for payment to furnish and install line stops will be based upon the actual quantity, each, in accordance with the requirements of the Contract Documents.

B. Payment for furnishing and installing a line stop will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the completed installation of the fixture including but not limited to excavation, and restoration of the surrounding area.

1.44 FURNISH AND INSTALL SAMPLE POINTS

A. Measurement for payment for furnishing and installing sample points will be based upon the actual number, each, of such sample points furnished and installed, all in accordance with requirements of the Contract Documents.

B. Payment for furnishing and installing sample points will be made at the unit price, each, named in the Bid Schedule which price shall constitute full compensation for the complete installation of sample point and removal and disposal after sampling is complete.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01025

SECTION 01039

COORDINATION AND MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Coordination and project conditions
B. Field engineering
C. Preconstruction meeting
D. Progress meetings

1.02 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment. Coordinate work with Owner operations.

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs. Obtain Owner acceptance of conduit runs and alignments prior to installation.

D. In finished areas, except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.03 FIELD ENGINEERING

A. Employ a Land Surveyor registered in the State of Florida and acceptable to Engineer.

B. Contractor shall protect survey control and reference points.

C. Control datum for survey is that established by Owner provided survey.

D. Verify set-backs and easements; confirm drawing dimensions and elevations.

E. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

F. Submit a copy of site drawing and certificate signed and sealed by the Land Surveyor that the elevations and locations of the Work are in conformance with the Contract Documents.

1.04 PRE-CONSTRUCTION MEETING

A. Engineer will schedule a meeting after Notice of Award.

B. Attendance Required: Owner, Engineer, Contractor, Contractor Superintendent, and major sub-contractors.

C. Agenda:

1. Execution of Owner-Contractor Agreement
2. Submission of executed bonds and insurance certificates
3. Distribution of Contract Documents
4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule
5. Designation of personnel representing the parties in Contract, Utilities, and the Engineer
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling, sequence of work
8. Use of premises by Owner and Contractor
9. Owner's requirements and partial occupancy
10. Construction facilities and controls provided by Owner.
11. Temporary utilities provided by Owner.
12. Security and housekeeping procedures
13. Application for payment procedures
14. Procedures for testing
15. Requirements for start-up of equipment
16. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within five days after meeting to participants and those affected by decisions made, with two copies to Engineer.

1.05 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bimonthly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Engineer, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions
4. Identification of problems which impede planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule
8. Corrective measures to regain projected schedules
9. Planned progress during succeeding work period
10. Coordination of projected progress
11. Maintenance of quality and work standards
12. Effect of proposed changes on progress schedule and coordination
13. Other business relating to Work

E. Record minutes and distribute copies within three days after meeting to participants, and those affected by decisions made.

PART 2 – PRODUCTS - (Not Used)

PART 3 – EXECUTION - (Not Used)

END OF SECTION

SECTION 01045

CUTTING AND PATCHING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification sections, apply to the work specified in this Section.

1.02 REQUIREMENTS INCLUDED

A. All necessary cutting, coring, drilling, grouting, and patching to fit together the several parts of the work will be done by the Contractor, except as may be specifically noted otherwise under any particular section of the specifications.

B. Definition: Cutting and Patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition. Cutting and Patching is performed to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

1.03 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural work in a way that would result in a reduction of load-carrying capacity or of a load-deflection ratio.

B. Visual Requirements: Do not cut and patch work, in a way that would result in reducing the strength of structures. Do not cut and patch work in a manner that would result in substantial visual evidence. Remove and replace work judged by the Owner to be cut and patched in a visually unsatisfactory manner.

1.04 SUBMITTALS

A. Procedure for Cutting and Patching: Where prior approval of cutting and patching is required, submit procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal:
   1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work operation and visual changes as well as other significant elements.
   2. List products to be used and firms that will perform work.
   3. Give dates when work is expected to be performed.

B. Approval by Owner to proceed with cutting and patching work does not waive the Owner's right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Except as otherwise indicated, or as directed by the Owner, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible. Use material for cutting and patching that will result in equal-or-better performance characteristics.

PART 3 EXECUTION

3.01 INSPECTION

A. Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

B. Before the start of cutting work, meet at the work site with all parties involved in cutting the patching. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.02 PREPARATION

A. Temporary Support: To prevent failure, provide temporary support of work to be cut.

B. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.03 PERFORMANCE

A. Employ skilled workman to perform cutting and patching work. Except as otherwise indicated or as approved by the Owner, proceed with cutting and patching at the earliest feasible time and complete work without delay.

B. Cut the work using methods that are least likely to damage work to be retained or adjoining work.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

C. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
   1. Where feasible, inspect and test patched areas to demonstrate integrity of work.
   2. Restore exposed finishes of patched areas and where adjoining work in a manner which will eliminate evidence of patching and refinishing.

D. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection. For an assembly, refinish entire unit.

E. Damaged Surfaces: Patch or replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching material.

3.04 TRANSITION FROM EXISTING TO NEW WORK

A. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance unless otherwise noted so that the patch or transition is invisible at a distance of five feet.

B. When finished surfaces are cut in such a way that a smooth transition with new work is not possible, terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface.

3.05 CLEANING

A. Thoroughly clean area and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putting and items of similar nature.

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide and pay for field engineering services required for Project as follows:
   1. Land Surveying work required to lay out the work and for execution of the structures.
   2. Civil, structural or other professional engineering services specified, or required to execute the Contractor's construction methods.

B. The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and property line corner stakes indicated on the Drawings, as required. Verify all existing structure locations and all proposed building corner locations, tank locations and equipment locations.

1.02 RELATED WORK

A. Section 01010: Summary of Work.

B. Section 01720: Project Record Documents.

1.03 QUALIFICATIONS OF PROFESSIONAL

A. Qualified Engineer or Registered Land Surveyor, acceptable to the Owner and the Engineer.

B. Registered Professional Engineer of the specialty required for the specific service on the Project, currently licensed in the State of Florida.

1.04 SURVEY REFERENCE POINTS

A. Horizontal and vertical control points for the Project are to be established by the Contractor.

B. Locate and protect control points prior to starting work, and preserve all permanent reference points during construction.
   1. Make no changes or relocations without prior written notice to the Engineer.
   2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
   3. Require surveyor to replace project control points which may be lost or destroyed.

      a. Establish replacements based on original survey control.

1.05 PROJECT SURVEY REQUIREMENTS

A. Establish a minimum of five temporary bench marks on site, referenced to data by survey control points.
   1. Record locations, with horizontal and vertical data, on Project Record Documents.
   2. Two bench marks shall be at ends of project.

B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
   1. Site Improvements
      a. Stakes for grading, fill and topsoil placement.
      b. Utility slopes and invert elevations.
   2. Batter boards for structures.
   3. Building foundation, column locations and floor levels.
   4. Controlling lines and levels required for mechanical and electrical trades.

C. From time to time, verify layouts by same methods.

1.06 RECORDS

A. Maintain a complete, accurate log for all control and survey work as it progresses.

B. At the end of the project, submit certified as-built information at the same scale as the Engineer's line drawings indicating elevations and stations of the project at 100 foot increments and at rapid changes in grade. Provide as-built drawings for all portions of the project that have been completed and for which payment is requested.

C. Contractor prior to commencement of work shall obtain cross sections at maximum 100 foot intervals for length of proposed improvements.

1.07 SUBMITTALS

A. Submit name and address of registered land surveyor to the Engineer.

B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.

C. Submit certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements.

D. Submit drawings showing locations of all structures constructed. This drawing shall be included with the project record documents.

PART 2 – PRODUCTS

NOT USED

PART 3 – EXECUTION

NOT USED

END OF SECTION

SECTION 01090

REFERENCES

PART 1 - GENERAL

1.01 GENERAL

A. Applicable Publications: Whenever in these specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the Work is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the drawings shall be waived because of any portion of, or omission from, said standards or requirements.

B. Specialists, Assignments: In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the Contractor has no choice or option. These assignments shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the Work; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as “expert” for the indicated construction processes or operations. The final responsibility for fulfillment of the entire set of contract requirements remains with the Contractor.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Without limiting the generality of other requirements of the specifications, all work specified herein shall conform to or exceed the requirements of the following documents to the extent that the provisions of such documents are not in conflict with the requirements of these Specifications nor the applicable codes.

B. References herein to “Building Code” or FBC shall mean the Florida Building Code, current edition. The latest edition of the code as approved and used at the local agency having jurisdiction, shall apply to the Work herein, including all addenda, modifications, amendments, or other lawful changes thereto.

C. In case of conflicts between codes, reference standards, drawings and other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the attention of the Engineer for clarifications and directions prior to ordering or providing any materials or labor. The Contractor shall bid the most stringent requirements.

D. Applicable Standard Specifications: The Contractor shall construct the Work specified herein in accordance with the requirements of the Contract Documents and the referenced portion of those referenced codes, standards, and specifications listed herein; except, that wherever references to “Standard Specifications” are made, the provisions therein for measurement and payment shall not apply.

E. References herein to “OSHA Regulations for Construction” shall mean Title 29, Part 1926, Construction Safety and Health Regulations, Code of Federal Regulations (OSHA), including all changes and amendments thereto.

F. References herein to “OSHA Standards” shall mean Title 29, Part 1910, Occupational Safety and Health Standards, Code of Federal Regulations (OSHA), including all changes and amendments hereto.

1.03 TRADE NAMES AND ALTERNATIVES

A. For convenience in designation in the Contract Documents, materials to be incorporated in the Work may be designated under a trade name or the name of a manufacturer and its catalog information. The use of alternative material which is equal in quality and of the required characteristics for the purpose intended will be permitted, subject to the following requirements:
   1. The burden of proof as to the quality and suitability of such alternative equipment, products, or other materials shall be upon the Contractor.
   2. The Engineer will be the sole judge as to the comparative quality and suitability of such alternative equipment, products, or other materials and its decisions shall be final.

B. Whenever in the Contract Documents the name and address of the manufacturer or distributor is given for a product or other material, or if any other source of a product or material is indicated therefore, such information is given for the convenience of the Contractor only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the Contractor to determine the accurate identity and location of any such manufacturer, distributor, or other source of any product or material called for in the Contract Document.

C. The Contractor may offer any material, process, or equipment which it considers equivalent to that indicated. Unless otherwise authorized in writing by the Engineer, the substantiation of offers of equivalency must be submitted within 60 days after execution of the Agreement. The Contractor, at its sole expense, shall furnish data concerning items it has offered as equivalent to those specified. The Contractor shall have the material as required by the Engineer to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the items will fulfill its intended function. Installation and use of a substitute item shall not be made until accepted by the Engineer. If a substitute offered by the Contractor is found not equal to the specified material, the Contractor shall furnish and install the specified material.

D. The Contractor’s attention is further directed to the requirement that failure to submit data substantiating a request for the substitution of an “or equal” item within said 60-day period after the execution of the Agreement, shall be deemed to mean that the Contractor intends to furnish one of the specific brand-named products named in the specification, and the Contractor does hereby waive all rights to offer or use substitute products in each such case. Wherever a proposed substitute product has not been submitted within said 60-day period, or wherever the submission of a proposed substitute product fails to meet the requirements of the specifications and an acceptable resubmittal is not received by the Engineer within said 60-day period, the Contractor shall furnish only one of the products originally-named in the Contract Document.

1.04 ABBREVIATION

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

1.05 ABBREVIATIONS AND ACRONYMS

AAMA	Architectural Aluminum Manufacturer's Association
AAR	Association of American Railroads
AASHTO	American Association of the State Highway and Transportation Officials
AATCC	American Association of Textile Chemists and Colorists
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ACPPA	American Concrete Pressure Pipe Association
AFBMA	Anti-Friction Bearing Manufacturer's Association, Inc.
AGA	American Gas Association
AGC	American General Contractors
AGMA	American Gear Manufacturer's Association
AHAM	Association of Home Appliance Manufacturers
AI	The Asphalt Institute
AIA	American Institute of Architects
AISC	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Movement and Control Association
ANS	American Nuclear Society
ANSI	American National Standards Institute, Inc.
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineering Association
ASA	Acoustical Society of America
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating, and Air-Conditioning Engineers
ASLE	American Society of Lubricating Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASQC	American Society for Quality Control
ASSE	American Society of Sanitary Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood Preserves Association
AWPI	American Wood Preserves Institute
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BHMA	Builders Hardware Manufacturers Association
CBM	Certified Ballast Manufacturers
CEMA	Conveyors Equipment Manufacturers Association
CGA	Compressed Gas Association
CLPCA	California Lathing and Plastering Contractors Association
CMA	Concrete Masonry Association
CRSI	Concrete Reinforcing Steel Institute
CSI	Construction Specifications Institute
DCDMA	Diamond Core Drill Manufacturers Association
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
HI	Hydraulic Institute

ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IME	Institute of Makers of Explosives
IP	Institute of Petroleum (London)
IPC	Institute of Printed Circuits
IPCEA	Insulated Power Cable Engineers Association
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MBMA	Metal Building Manufacturers Association
MPTA	Mechanical Power Transmission Association
MTI	Marine Testing Institute
NAAM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NGLI	National Grease Lubricating Institute
NMA	National Microfilm Association
NRCA	National Roofing Contractors Association
NWMA	National Woodwork Manufacturers Association
NWWA	National Water Well Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PDI	Portland and Drainage Institute
RIS	Redwood Inspection Service
RVIA	Recreational Vehicle Industry Association
RWMA	Resistance Welder Manufacturers Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SBC	Southern Building Code Congress International, Inc. (SBCCI)
SIS	Swedish Standards Association
SJI	Steel Joint Institute
SMA	Screen manufacturers Association
SMACCNA	Sheet Metal and Air Conditioning Contractors National Association
SPR	Simplified Practice Recommendation
SSBC	Southern Standard Building Code, Southern Building Code Congress
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications of Public Works Construction
TAPPI	Technical Association of the Pulp and Paper Industry
TFI	The Fertilizer Institute
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
WCLIB	West Coast Lumber Inspection Bureau
WCRSI	Western Concrete Reinforcing Steel Institute
WIC	Woodwork Institute of California
WPCF	Water Pollution Control Federation
WRI	Wire Reinforcement Institute, Inc.
WWPA	Western Wood Products Association

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01152

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

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

1.02 RELATED REQUIREMENTS

A. Agreement between Owner and Contractor consisting of an approved payment schedule by the Owner.

B. Conditions of the Contract: Progress Payments, Retainages, Final Payment and Record Documents.

1.03 FORMAT AND DATA REQUIRED

A. Submit applications types on forms approved by the Owner, Application for Payment, with itemized data typed on 8 ½ inch x 11 inch white paper and continuation sheets.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:
   1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
   2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
   3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets:
   1. Fill in total list of scheduled component items of work, with item number and scheduled dollar value for each item.
   2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored.
      a. Round off values to nearest dollar, or as specified.
   3. List each Change Order Number, and description, as for an original component item or work.
      a. List by Change Order Number, and description, as for an original component item or work.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer substantiating data, Contractor shall submit suitable information, with cover letter identifying:
   1. Project
   2. Application number and date
   3. Detailed list of enclosures
   4. For stored products:
      a. Item number and identification as shown on application.
      b. Description of specific material.

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

C. As a prerequisite for payment, Contractor is to submit a “Surety Acknowledgment of Payment Request” letter showing amount of progress payment which the Contractor is requesting.

D. The Contractor shall maintain an updated construction schedule in accordance with Section 01310. As a prerequisite for monthly progress payments, the Contractor shall submit the updated construction schedule.

E. The Contractor shall maintain an updated set of drawings to be used as a record drawings in accordance with Section 01720. As a prerequisite for monthly progress payments, the Contractor shall exhibit the updated record drawings for review by the Engineer.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

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

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 – Contract Closeout.

1.07 SUBMITTAL PROCEDURE

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

B. Number: Five copies of each Application.

B. When the Engineer and Owner find Application properly completed and correct, Owner will process the Application in accordance with the Agreement.

PART 2 – PRODUCTS

(NOT USED).

PART 3 – EXECUTION

(NOT USED).

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly after Award of the Contract and within ten days after the effective date of the Agreement, prepare and submit to the Engineer estimated construction progress schedules for the work, with subschedules of related activities which are essential to its progress.

B. Submit revised progress schedules on a monthly basis.

C. No partial payments shall be approved by the Engineer until there is an approved construction progress schedule on hand.

D. The Contractor shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the Contractor shall have direct project control and complete authority to act on behalf of the Contractor's schedule.

1.02 RELATED REQUIREMENTS

A. Project Conditions of the Contract
B. Section 01010: Summary of Work
C. Section 01039: Coordination and Meetings
D. Section 01340: Submittals and Substitutions

1.03 FORM OF SCHEDULES

A. Prepare schedules in the form of a horizontal bar chart.
   1. Provide separate horizontal bar for each trade or operation within each structure or item.
   2. Horizontal time scale: In weeks from start of construction and identify the first work day of each month.
   3. Scale and spacing: To allow space for notations and future revisions.
   4. Minimum sheet size: 11-inches x 17-inches.

B. Format of listings: The chronological order of the start of each item of work for each structure.

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

1.04 CONTENT OF SCHEDULES

A. Construction Progress Schedule:
   1. Show the complete sequence of construction by activity.
   2. Show the dates for the beginning of, and completion of, each major element of construction in no more that a two week increment scale. Specifically list, but not limited to:

a. Site Clearing
b. Site Utilities
c. Subcontractor Work
d. Equipment Installations
e. Finishings
f. Paintings
g. Testing
h. Receipt of Spare Parts
i. Site Work
j. Record Drawings
k. Restoration

3. Show projected percentage of completion for each item, as of the first of each month.
4. Show projected dollar cash flow requirements for each month of construction.

B. Submittals Schedule for Shop Drawings, and Samples in accordance with Section 01340. Show:
1. The dates for Contractor's submittals.
2. The dates submittals will be required for owner furnished products, if applicable.
3. The dates approved submittals will be required from the Engineer.

C. A list of all long lead items (equipment, materials, etc).

1.05 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:
1. Major changes in scope.
2. Activities modified since previous submission.
3. Revised projections of progress and completion.
4. Other identifiable changes.

C. Provide a narrative report as needed to define:
1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective actions recommended, and its effect.
3. The effect of changes on schedules of other prime contractors.

1.06 SUBMISSIONS

A. Submit initial schedules to the Engineer within 10-days after the effective date of the Agreement.
1. The Engineer will review schedules and return review copy within 21-days after receipt.
2. If required, resubmit within 7-days after return of review copy.

B. Submit 5-copies of revised monthly progress schedules with that month's application for payment.

1.07 DISTRIBUTION

A. Distribute copies of reviewed schedules to:
1. Engineer (Two Copies)

2. Job Site File
3. Subcontractors
4. Other Concerned Parties
5. Owner (Two Copies)

B. Instruct recipients to report promptly to the Contractor, in writing, any problems anticipated by the projections shown in the schedule.

PART 2 – PRODUCTS

(NOT USED).

PART 3 – EXECUTION

(NOT USED)

END OF SECTION

SECTION 01340

SUBMITTALS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Make submittals required by the Contract Documents, and revise and resubmit as necessary to establish compliance with the specified requirements.

1.02 RELATED SECTIONS

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

B. Individual requirements for submittals also may be described in pertinent Sections of these Specifications.

C. Work not included:
1. Submittals which are not required will not be reviewed by the Engineer.
2. The Contractor may require his subcontractors to provide drawings, setting diagrams, and similar information to help coordinate the Work, but such data shall remain between the Contractor and his subcontractors and will not be reviewed by the Engineer.

1.03 SUBMITTALS FOR REVIEW

A. Make submittals of Shop Drawings, Samples, substitution requests, and other items in accordance with the provisions of this Section.

1.04 QUALITY ASSURANCE

A. Coordination of submittals:
1. Prior to each submittal, carefully review and coordinate all aspects of each item being submitted.
2. Verify that each item and the submittal for it conform in all respects with the specified requirements.
3. By affixing the Contractor's signature to each submittal, certify that this coordination has been performed.

B. Substitutions:
1. The Contract is based on the standards of quality established in the Contract Documents. Substitutions will be considered only after the Bidding period, up to 30 days after date of Notice to Proceed, the Engineer will consider written requests from Contractor for proposed substitutions of products. Subsequent requests will only be considered when proof is given to the Engineer of product unavailability or other condition beyond control of the Contractor.

2. The following products do not require further approval except for interface within the Work:
a. Products specified by reference to standard specifications such as ASTM and similar standards.

b. Products specified by manufacturer's name and catalog model number.

3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved in writing for this Work by the Engineer.

C. "Or Equal":

1. Where the phrase "or equal," or "or equal as approved by the Engineer," appears in the Contract Documents, do not assume that the materials, equipment, or methods will be approved as equal unless the item has been specifically so approved for this Work by the Engineer.
2. The decision of the Engineer shall be final.

PART 2 - PRODUCTS

2.01 SHOP DRAWINGS

A. Scale and Measurements: Make Shop Drawings accurately to a scale sufficiently large to show all pertinent aspects of the item and its method of connection to the Work.

B. Review comments of the Engineer will be shown on the shop drawings when these are returned to the Contractor. The Contractor may make and distribute such copies as are required for his purposes. The Engineer will retain at least one copy of the reviewed shop drawings; therefore, submit the number of copies that are required to be returned, plus one additional copy.

2.02 MANUFACTURER'S LITERATURE

A. Where contents of submitted literature from manufacturers includes data not pertinent to the submittal, clearly show which portions of the contents is being submitted for review.

B. Submit the number of copies which are required to be returned, plus one copy which will be retained by the Engineer.

2.03 SAMPLES

A. Provide Samples identical to the precise materials proposed to be utilized in the Work. Identify as described under "Identification of Submittals" below.

B. Number of Samples required:

1. Unless otherwise specified, submit Samples, in the quantity, which is required to be returned, plus one which will be retained by the Engineer.
2. By prearrangement in specific cases, a single Sample may be submitted for review and, when approved, be installed in the Work at a location agreed upon by the Engineer.

PART 3 - EXECUTION

3.01 IDENTIFICATION OF SUBMITTALS

A. Consecutively number all submittals.

1. When material is resubmitted for any reason, transmit under a new letter of transmittal and with a new transmittal number.
2. On resubmittals, cite the original submittal number for reference.

B. Accompany each submittal with a letter of transmittal showing all information required for

identification and checking.

C. On at least the first page of each submittal, and elsewhere as required for positive identification, show the appropriate submittal number.

D. Maintain an accurate submittal log for the duration of the Work, showing current status of all submittals at all times. Make the submittal log available to the Engineer for his review upon request.

3.02 GROUPING OF SUBMITTALS

A. Unless otherwise specified, make submittals in groups containing all items associated with the particular portion of the Work to assure that all necessary information is available for checking each item when it is received.
   1. Partial submittals may be rejected as not complying with the provisions of the Contract.
   2. The Contractor may be held liable for delays so occasioned.

3.03 TIMING OF SUBMITTALS

A. Make submittals far enough in advance of scheduled dates for installation to provide time required for reviews, for securing necessary approvals, for possible revisions and re-submittals, and for placing orders and securing delivery.

B. In scheduling, allow at least ten working days for review by the Engineer following his receipt of the submittal.

3.04 ENGINEER'S REVIEW

A. Review by the Engineer does not relieve the Contractor from responsibility for errors, which may exist in the submitted data.

B. Revisions:
   1. Make revisions required by the Engineer.
   2. If the Contractor considers any required revision to be a change, he shall so notify the Engineer within ten calendar days in writing. **IF** after the review of the Engineer it is determined that the required revisions are in fact a legitimate change in work or time the procedures set forth in the General Conditions shall be followed.
   3. Make only those revisions directed or approved by the Engineer.

C. Reimbursement of Engineer's costs:
   1. In the event substitutions are proposed to the Engineer after the Contract has been awarded, the Engineer will record all time used by him and by his consultants in evaluation of each such proposed substitution.
   2. Whether or not the Engineer approves a proposed substitution, the Contractor promptly upon receipt of the Engineer's billing shall reimburse the Engineer at the rate of three times the direct cost to Engineer and his consultants for all time spent by them in evaluating the proposed substitution.

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within 10-days after the effective date of the Agreement.

B. Upon request of the Engineer, support the values with data which will substantiate their correctness.

C. The Schedule of Values, unless objected to by the Engineer, shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

A. General Terms and Conditions of the Contract

B. Section 01152: Applications for Payment

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on an 8-1/2- inch x 11-inch or 8-1/2- inch x 14-inch white paper furnished by the Contractor; Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
   1. Title of Project and location
   2. Engineer and Project number
   3. Name and Address of Contractor
   4. Contract designation
   5. Date of submission

B. Schedule shall list the installed value of the component part of the Work in sufficient detail to serve as a basis for computing values for progress payment during construction.

C. Identify each line item with the number and title of the respective major section of the specifications.

D. For each major line item, list sub-values of major products or operations under the item.

E. For the various portions of the Work:
   1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
   2. For items on which progress payments will be requested for stored materials, break down the value into:
      a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the Engineer.
      b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

PART 2 – PRODUCTS

NOT USED

PART 3 – PRODUCTS

NOT USED

END OF SECTION

01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 GENERAL

A. Employ competent photographer to take construction record photographs periodically, monthly at a minimum, during course of the work.

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work.

B. Section 01720: Project Record Documents.

1.03 PHOTOGRAPHY REQUIRED

A. Provide photographs taken on cutoff date for each scheduled application for Payment.

B. Provide photographs taken at each major stage of construction.

C. Provide photographs taken of change order work.

D. Provide five prints of each view.

E. Negatives:

1. Remain property of photographer.

2. Require that photographer maintain negatives for a period of two years from Date of Substantial Completion of entire Project.

3. Photographer shall agree to furnish additional prints to OWNER and the ENGINEER at commercial rates applicable at time of purchase.

1.04 COSTS OF PHOTOGRAPHY

A. CONTRACTOR shall pay costs for specified photography and prints.

1. Parties requiring additional photography or prints will pay photographer directly.

1.05 DIGITAL PHOTOGRAPHY

A. At OWNER and ENGINEER's discretion, digital photography may be used for all construction photographs except aerial progress photographs.

PART 2 PRODUCTS

2.01 PRINTS

A. Color:

1. Paper: Single weight, color print paper.
2. Finish: Smooth surface, glossy.
3. Size: 8-inch x 10-inch.

B. Identify each print on back, listing:

1. Name of Project.
2. Specific Location.
3. Date and time of exposure.
4. Name and address of photographer.
5. Photographer's numbered identification of exposure.

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Factual presentation.

B. Correct exposure and focus.

1. High resolution and sharpness.
2. Maximum depth-of-field.
3. Minimum distortion.

3.02 VIEWS REQUIRED

A. Photograph from locations to adequately illustrate condition of construction and state of progress.

B. Photographs shall include aerial photographs showing the entire construction area.

3.03 DELIVERY OF PRINTS

A. Deliver prints to the ENGINEER to accompany each Application for Payment.

B. Distribution of prints as soon as processed, is anticipated to be as follows:

1. OWNER (one set).
2. ENGINEER (two sets).
3. Project Record File (one set to be stored by CONTRACTOR).
4. CONTRACTOR (one set).

3.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the price of all other work.

END OF SECTION 01380

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Contractor shall employ and pay for the services of an Independent Testing Laboratory to perform testing as required by the Owner to verify conformity with the Contract Documents.
   1. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
   2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.

B. Testing laboratory, sampling and testing is required for, but not limited to foundations, concrete walls, concrete slabs, soil densities, and soil compaction and any materials requiring testing.

1.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

A. Laboratory is not authorized to:
   1. Release, revoke, alter or enlarge on requirements of Contract Documents
   2. Approve or accept any portion of the Work
   3. Perform any duties of the Contractor
   4. Release reports or analysis to other than Owner, Engineer and Contractor.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel, and provide access to Work and pay for testing.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contractor Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.

D. Furnish incidental labor and facilities:
   1. To provide access to Work to be tested
   2. To obtain and handle samples at the Project site or at the source of the product to be tested
   3. To facilitate inspections and tests
   4. For storage and curing of test samples

F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience.

1.05 TESTING

A. The Contractor shall obtain the services of a professional testing laboratory approved by the Engineer to perform the following type of tests and test frequencies. Copies of all reports are to be sent to the Engineer as soon as possible.

B. Concrete compression-strength tests.

C. Laboratory Proctor and LBR tests; one per material type.

D. Density tests for any backfill at the rate of three tests per lift.

E. Density tests for subgrade compaction.

F. Density tests for limerock base compaction.

G. If in the opinion of the Engineer, suitable compaction has not been achieved around structures, density tests may be required.

H. Should the above test results indicate deficiencies, the Engineer may order additional tests at the Contractor's expense, and all reworked areas shall be re-tested at the Contractor's expense.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 PAYMENT

A. Payment for testing shall be included in the cost for each individual pay item requiring testing as specified in the bid schedule.

END OF SECTION

SECTION 01505

CONTROL OF WORK

PART 1 - GENERAL

1.01 QUALITY OF WORK

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

1.02 PRIVATE LAND

A. The Contractor shall not enter or occupy private land outside of easements, except by written permission of the private property owner.

1.03 PIPE LOCATIONS

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

1.04 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access to private property during construction shall be removed when no longer required. The length of open trench will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such a limiting the length of open trench, prohibiting stacking excavated material in the street, and requiring that the trench shall not remain open overnight.

B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

1.05 TEST PITS

A. Test pits for the purpose of locating underground pipeline or structures in advance of the construction shall be excavated and backfilled by the Contractor at his cost at the direction of the Engineer. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with the General Contractor and his subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

3.02 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed work shall be carefully protected from damage in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions damaged shall be reconstructed by the Contractor at his own expense.

B. All structures shall be protected in a manner approved by the Engineer. Should any of the floor or other parts of the structures become heaved, cracked or otherwise damaged, all such damaged portions of the work shall be completely repaired and made good by the Contractor at his own expense and to the satisfaction of the Engineer. Special attention is directed to substructure bracing requirements described in Section 02220. If, in the final inspection of work, any defects, faults or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required. Further, the Contractor shall be fully responsible for the satisfactory maintenance and repair of the construction and other work undertaken herein, for at least the guarantee period described in the contract.

C. Further, the Contractor shall take all necessary precaution to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted and taken over by the Owner.

END OF SECTION

SECTION 01510

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 DESCRIPTION

A. Temporary Utilities: The Contractor shall provide for electricity, ventilation, water, and sanitary facilities as noted below. The Contractor shall furnish, install and maintain all temporary utilities during the Contract period including removal upon completion of work.

1.02 TEMPORARY ELECTRICITY

A. Cost: Contractor to make separate arrangements with Florida Power & Light and make provisions for all electrical power needs during construction. Contractor shall make, and pay for, any modifications to the existing power service.

B. Exercise measures to conserve energy

1.03 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.04 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for suitable quality water service required for construction operations at time of project mobilization.

B. Exercise measures to conserve water.

C. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.05 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01520

CONSTRUCTION AIDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain required construction aids, remove on completion of Work

1.02 RELATED REQUIREMENTS

A. Section 01010: Summary of Work

PART 2 – PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 CONSTRUCTION AIDS

A. Provide construction aids and equipment required by personnel and to facilitate execution of the Work; Scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other facilities and equipment. Refer to respective sections for particular requirements for each trade.

B. Maintain facilities and equipment in first-class condition.

2.03 TEMPORARY ENCLOSURES

A. Provide temporary weather-tight enclosure of exterior walls for storage of materials as work progresses, as necessary to, provide weather protection for materials, and to prevent entry of unauthorized persons.
   1. Provide temporary exterior doors with self-closing hardware and padlocks.
   2. Other enclosures shall be removable as necessary for work and for handling of materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Consult with the Engineer, review site conditions and factors which affect construction procedures and construction aids, including adjacent properties and public facilities which may be affected by execution of the Work.

3.02 GENERAL

A. Comply with applicable requirements specified in sections of Division 2 through 16.

B. Relocate construction aids as required by progress of construction, by storage or work requirements, and to accommodate legitimate requirements of Owner and other contractors employed at the site.

3.03 REMOVAL

A. Completely remove temporary materials, equipment and services:
   1. When construction needs can be met by use of permanent construction.
   2. At completion of Work.

B. Clean and repair damage caused by installations for construction aids.
   1. Remove foundations and underground installations for construction aids.
   2. Grade areas of site affected by temporary installations to required elevations and slopes, and clean the area.

C. Restore permanent facilities used for temporary purposes to specified condition or in kind if not specified.

END OF SECTION

SECTION 01540

SECURITY

PART 1 - GENERAL

1.01 SECTIONS INCLUDES

A. Security Program
B. Entry Control
C. Personnel Identification
D. Guard Service
E. Miscellaneous Restrictions

1.02 RELATED SECTIONS

A. Section 01010 – Summary of Work
B. Section 01510 – Temporary Utilities

1.03 SECURITY PROGRAM

A. Protect Work, existing premises and Owner's operations from theft, vandalism and unauthorized entry.

B. Initiate program in coordination with Owner's security system at job mobilization.

C. Maintain program throughout construction period until Owner occupancy as directed by Engineer.

1.04 ENTRY CONTROL

A. Restrict entrance of persons and vehicles into project site existing facilities.

B. Allow entrance only to authorized persons with proper identification.

C. Maintain log of workmen and visitors, make available to Owner on request.

D. Coordinate access of Owner's personnel to site in coordination with Owner's security forces.

1.05 PERSONNEL IDENTIFICATION

A. Become familiar with Owner and Engineer representatives.

B. Restrict access to job site to these representatives.

1.06 GUARD SERVICE

A. When required, employ guard service to provide watchmen at site during all non-working hours, seven days a week.

PART 2 – PRODUCTS Not Used
PART 3 – EXECUTION Not Used

END OF SECTION

SECTION 01550

MAINTENANCE OF TRAFFIC

PART 1 - GENERAL

1.1 DESCRIPTION

A. The Contractor shall furnish all equipment, supplies, personnel, labor and services to accomplish maintenance of traffic at all locations required to complete this project and as authorized by the Engineer.

B. The intent is to maintain safe and expeditious movement of traffic around every work area where the public may be exposed to the potential hazards of the contract operations.

C. The term "Maintenance of Traffic" as used in the contract drawings or in these Specifications shall mean the maintenance of traffic movement through and/or around any work site within a public right-of-way in a manner such as to provide minimum disruption and maximum safety to both the public and project personnel and equipment.

D. General:

1. The Contractor shall be responsible for the proper maintenance control and detour of traffic in the area of construction, during the course of construction. All traffic control and maintenance procedures shall be in accordance with the requirements of either the Florida Department of Transportation or the Owner.
2. Traffic shall be maintained at all times where practical and as more particularly specified hereinafter. No traffic shall be detoured without prior knowledge and approval of the respective traffic control agency having jurisdiction. The Contractor shall notify such agencies 48-hours in advance of such time he proposes to detour traffic.
3. The Contractor shall keep all law enforcement, fire protection and ambulance agencies informed, in advance, of his construction schedules, and shall notify all such agencies, 48-hours in advance, in the event of detour of any roadway.
4. All traffic control signs and devices, barricades, flashers, flambeaus and similar devices shall be furnished and maintained by the Contractor.
5. Excavated or other material stored adjacent to or partially upon a roadway pavement shall be adequately marked for traffic and pedestrian safety at all times. Necessary access to adjacent property shall be provided at all times.
6. The work shall be conducted in a manner to cause the least possible interruption to traffic. Where traffic must cross excavations, the Contractor shall provide suitable bridges at street intersections and driveways.

E. Traffic Lanes:

1. At least one lane of traffic shall be maintained at all times; coordination is required with the Owner and all applicable governmental agencies, within their respective area of jurisdiction.
2. In the event the Contractor must detour or close off residential street traffic, he shall submit a plan (or field sketch) for approval depicting a method of providing one way operation or run-around detour route to the respective traffic agency having jurisdiction a minimum of five days prior to any street closing.

F. BARRICADES AND PROTECTION OF WORK

1. The Contractor shall protect his work throughout its length by the erection of suitable barricades and handrails, where required. He shall further indicate this work at night by the maintenance of suitable lights or flares, especially along or across through-fares. Wherever it is necessary to cross a public walk, he shall provide suitable safe walkways with hand railings. He shall also comply with all laws or ordinances covering the protection of such work and the safety measures to be employed therein. The Contractor shall carry out his work so as not to deny access to private property. All utility access manholes, valves, fire hydrants and letter boxes shall be kept accessible at all times.

2. No trenches or holes near walkways, in roadways or road shoulders are to be left open during night hours without the permission of the Owner.

1.2 QUALITY ASSURANCE

A. Maintenance of Traffic in the public rights-of-way shall be in strict accordance with the manual of uniform traffic control devices (M.U.T.C.D.).

B. Maintenance of Traffic on F.D.O.T. roads shall be as indicated on the contract drawings and as specified in F.D.O.T. index 600.

C. All traffic control and warning devices so specified; which are not on F.D.O.T. roadways, shall unless otherwise specified by the Department of Traffic and Transportation, be furnished, installed according to the Owner Public Works Manual, and maintained by the Contractor involved.

D. The traffic control and safety plan shall be submitted to the Owner for approval and shall be furnished by the Contractor without cost to the Owner. The Contractor is required to retain the services of the Owner Officers for the supervision, as required. Further, any and all additional traffic measures deemed necessary by such offices shall be carried out by the Contractor without cost to the Owner.

1.3 ADDITIONAL REQUIREMENTS

A. All open trenches and holes adjacent to roadway or walkways shall be properly marked and barricaded to assure the safety of both vehicular and pedestrian traffic.

B. No trenches or holes near walkways, in roadways or their shoulders are to be left open during night-time hours without express permission of the Owner, Public Works Department, and the Engineer, in writing. Trenches shall be backfilled or covered with steel plates and spiked.

C. Flagmen will be used during this project when traffic is reduced to single lanes or special detours are employed. Only certified flaggers will be accepted, in accordance with the M.U.T.C.D.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Temporary Controls to protect the Work during construction and until final acceptance of the Work.

1.02 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owners use of site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide protection for plant life designated to remain. Replace damaged plant life.

C. Protect vehicular traffic, stored materials, site, and structures from damage.

1.03 FENCING

A. Provide commercial grade chain link fence or other similar type fencing as needed to protect work.

B. If required in the plans, provide 4 foot high fence around construction site; equip with vehicular gates with lock

1.04 DRAINAGE CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water.

1.05 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual Sections of these Specifications.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.06 SECURITY

A. Provide security and facilities to protect Work, and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

B. Coordinate with Owners security program.

1.07 DUST CONTROL

A. Execute Work by methods to minimize dust generation from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.08 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize amount of bare soil exposed at one time.

C. Provide temporary measures as needed to prevent water flow into the Work.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.09 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise from noise produced by construction operations.

1.10 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

END OF SECTION

SECTION 01570

TRAFFIC REGULATIONS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide, operate and maintain equipment, services and personnel, with traffic control and protective devices, as required to expedite vehicular traffic flow on haul routes, at site entrances, on-site access roads, and parking areas.

B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or specified conditions.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 TRAFFIC SIGNALS AND SIGNS

A. Provide and operate traffic control and directional signals or signs required to direct and maintain an orderly flow of traffic in all areas under CONTRACTOR's control, or affected by CONTRACTOR's operations.

1.04 FLAGPERSON

A. Provide qualified and suitably equipped flagperson when construction operations encroach on traffic lanes, as required for regulation of traffic.

1.05 FLARES AND LIGHTS

A. Provide flares and lights during periods of low visibility:

1. To clearly delineate traffic lanes and to guide traffic

2. For use of flagperson in directing traffic

B. Provide illumination of critical traffic and parking areas.

1. Maintain free vehicular access to and through parking areas.

2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

1.06 HAUL ROUTES

A. Consult with OWNER and governing authorities, establish public thoroughfares which will be used as haul routes and site access.

B. Confine construction traffic to designated haul routes.

C. Provide traffic control at critical areas of haul routes to expedite traffic flow, to minimize interference with normal public traffic.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION

3.01 MEASUREMENT AND PAYMENT

A. There shall be no special measurement and payment for work under the section, it shall be included in the lump sum price bid for Maintenance of Traffic.

END OF SECTION 01570

SECTION 01580
PROJECT IDENTIFICATION AND SIGNS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install and maintain project identification sign(s).

B. Provide temporary on-site informational signs to identify key elements of construction facilities.

C. Remove signs on completion of construction.

D. Allow no other signs to be displayed.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 PROJECT IDENTIFICATION SIGN

A. One painted sign, of not less than 18 square feet area per the Project Identification Sign Detail shown in the Construction Plans, with painted graphic content to include:

1. The phrase “YOUR TAX DOLLARS WORKING FOR YOU”

2. Title of project.

3. Name of Funding Source(s)

4. Names and titles of:

a. Mayor.

b. Council Members.

2. Name of OWNER.

B. Graphic design, style of lettering, and colors: As designated by CITY.

C. Erect on the site at a lighted location of high public visibility, adjacent to main entrance to site, as approved by CITY.

1.04 INFORMATIONAL SIGNS

A. Painted signs and painted lettering, or standard products.

1. Size of signs and lettering: As required by regulatory agencies, or as appropriate to usage.

2. Colors: As required by regulatory agencies, otherwise of uniform colors throughout project.

B. Erect at appropriate locations to provide required information.

1.05 QUALITY ASSURANCE

A. Sign Painter: Professional experience in type of work required.

B. Finishes, Painting: Adequate to resist weathering and fading for scheduled construction period.

PART 2 - PRODUCTS

2.01 SIGN MATERIALS

A. Structure and Framing: May be new or used, wood or metal, in sound condition structurally adequate to work and suitable for specified finish.

B. Sign Surfaces: Exterior softwood plywood with medium density overlay, standard large sizes to minimize joints.

1. Thickness: As required by standards to span framing members, to provide even, smooth surface without wave or buckles.

C. Rough Hardware: Galvanized

D. Paint: Exterior quality.

1. Use Bulletin colors for graphics.

2. Colors for structure, framing, sign surfaces and graphics: As selected by CITY.

PART 3 - EXECUTION

3.01 PROJECT IDENTIFICATION SIGN

A. Paint exposed surfaces of supports, framing and surface material; one coat of primer and one coat of exterior paint.

B. Paint graphics in styles, sizes and colors selected.

C. Location as specified by CITY or CITY's Representative.

3.02 INFORMATIONAL SIGNS

A. Paint exposed surfaces: One coat of primer and one coat of exterior paint.

B. Paint graphics in styles, sizes and colors selected.

C. Install at a height for optimum visibility, on ground-mounted poles or attached to temporary structural surfaces.

3.03 MAINTENANCE

A. Maintain signs and supports in a neat, clean condition; repair damages to structure, framing or sign.

B. Relocate informational signs as required by progress of the work.

3.04 REMOVAL

A. Remove signs, framing, supports and foundations at completion of project.

3.05 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the lump sum price bid for mobilization.

END OF SECTION 01580

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

1.03 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.
   1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   2. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.
   3. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.
   4. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
   5. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.04 SUBMITTALS

A. Product List: Prepare a list showing products specified in tabular form acceptable to the Engineer. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
   1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
   2. Form: Prepare product list with information on each item tabulated under the following column headings:
      a. Related Specification Section number.

b. Generic name used in Contract Documents.
c. Proprietary name, model number, and similar designations.
d. Manufacturer's name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date or time span of delivery period.

3. Initial Submittal: Within 30-days after date of commencement of the Work, submit 3-copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
   a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
4. Completed List: Within 60-days after date of commencement of the Work, submit 3-copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
5. Engineer’s Action: The Engineer will respond in writing to Contractor within two weeks of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Engineer’s response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Engineer to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project; the product selected shall be compatible with products previously selected, even if previously selected products were also options.
   1. Each sub-contractor is responsible for providing products and construction methods that are compatible with products and construction methods of other sub-contractors.
   2. If a dispute arises between sub-contractors over concurrently selectable, but incompatible products, the Engineer will determine which products shall be retained and which are incompatible and must be replaced.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:
   1. No available domestic product complies with the Contract Documents.
   2. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

D. Locate Labels and Nameplates according to the following:
   1. Labels: Locate required product labels and stamps on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
   a. Name of product and manufacturer.
   b. Model and serial number.
   c. Capacity.
   d. Speed.
   e. Ratings.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
   1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
   2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
   3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
   5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
   6. Store heavy materials away from the immediate Project area in a manner that will not endanger the supporting construction.
   7. Store products subject to damage by the elements above ground, under cover in a weather-tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

B. Delivery of asphalt and concrete materials shall require delivery tickets that are legible and indicate the material mix, delivery times and quantities. Delivery tickets are required to be submitted to the City on a daily basis.

   1. Payment for asphalt and concrete shall be based on the quantity of material actually installed. Payment will not be made for excess material delivered but not utilized on site.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.
   1. Provide products complete with accessories, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and Specifications govern product selection. Procedures governing product selection include the following:
   1. Proprietary Specification Requirements: Where Specifications name only a single product or manufacturer, provide the product indicated. No substitutions will be permitted.
   2. Semi-proprietary Specification Requirements: Where Specifications name two or more products or manufacturers, provide one of the products indicated. No substitutions will be permitted.
      a. Where Specifications specify products or manufacturers by name, accompanied by the term "or equal" or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   3. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
   4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
   5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.
      a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.
   6. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.
   7. Visual Matching: Where Specifications require matching an established Sample, the Engineer’s decision will be final on whether a proposed product matches satisfactorily.
      a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.
   8. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Engineer will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

B. Install all equipment as indicated in the Contract Documents, and according to the manufacturer’s recommendation to assure proper alignment and operation.

END OF SECTION

SECTION 01640

PRODUCT HANDLING

PART 1 GENERAL

1.01 DESCRIPTION

A. General: Protect products scheduled for use in the Work by means including, but not necessarily limited to, those described in this Section.

B. Related Work:
1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions and Sections in Division 1 of the Specifications.
2. Additional procedures also may be prescribed in other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Include within the Contractor's quality assurance program such procedures as are required to assure full protection of all work and materials.

1.03 MANUFACTURER'S RECOMMENDATIONS

A. Except as otherwise approved by the Engineer determine and comply with manufacturer's recommendations on product handling, storage, and protection.

1.04 PACKAGING

A. Deliver products to the job site in their manufacturer's original packaging with labels intact and legible.
1. Maintain packaged materials with seals unbroken and labels intact until time of use.
2. Promptly remove damaged material and unsuitable items from the job site, and promptly replace with material meeting the specified requirements at no additional cost to the Owner.

B. The Engineer may reject as non-complying such material and products that do not bear identification satisfactory to the Engineer as to manufacturer, grade, quality, and other pertinent information.

1.05 PROTECTION

A. Protect all finished work, including access lids or hatches, and other structure openings through which equipment and materials are handled.

B. Maintain finished surfaces clean, unmarred, and suitably protected until accepted by the Owner.

1.06 REPAIRS AND REPLACEMENTS

A. In the event of damage, promptly make replacements or repairs to the approval of the Engineer and at no additional cost to the Owner.

B. Additional time required to secure replacements and to make repairs will not be considered by the Engineer to justify an extension in the Contract Time of Completion.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700

PROJECT CLOSE OUT

PART 1 GENERAL

1.01 DESCRIPTION

A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the work.

B. The items listed in this Section shall not be considered as a complete listing and shall in no way limit requirements that may be stated in other parts of the Contract Documents, but rather should be considered as an aid in preparing for final inspection and project close out.

1.02 RELATED REQUIREMENTS

A. All applicable sections of the Specifications.

B. Conditions of the Contract.

1.03 SUBSTANTIAL COMPLETION

A. When CONTRACTOR considers the work is substantially complete, CONTRACTOR shall submit to OWNER's Representative.

1. A written notice that the work, or designated portion thereof, is substantially complete.

2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, OWNER's Representative and ENGINEER will make an inspection to determine the status of completion.

C. Should OWNER's Representative determine that the work is not substantially complete:

1. OWNER's Representative will promptly notify the CONTRACTOR in writing, giving the reasons therefore.

2. CONTRACTOR shall remedy the deficiencies in the work, and send a second written notice of substantial completion to the OWNER's Representative.

3. OWNER's Representative and ENGINEER will reinspect the work.

D. When OWNER's Representative and ENGINEER concur that the work is substantially complete, OWNER's Representative will:

1. Prepare a Certificate of Substantial Completion form accompanied by CONTRACTOR's list of items to be completed or corrected, as verified and amended by the OWNER's Representative.

2. Submit the Certificate to the OWNER and the CONTRACTOR for their written acceptance of the responsibilities assigned to them in the Certificate.

1.04 FINAL INSPECTION

A. When CONTRACTOR considers the work is complete, CONTRACTOR shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the OWNER's Representative and are operational.

5. Work is completed and ready for final inspection.

B. OWNER's Representative and ENGINEER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should OWNER's Representative and ENGINEER consider that the work is incomplete and defective:

1. OWNER's Representative will promptly notify the CONTRACTOR, in writing, listing the incomplete or defective work.

2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to OWNER's Representative that the work is complete.

3. OWNER's Representative and ENGINEER will reinspect the work.

D. When the OWNER's Representative find that the work is acceptable under the Contract Documents, CONTRACTOR shall request the CONTRACTOR to make closeout submittals.

1.05 REINSPECTION FEES

A. Should OWNER's Representative perform re-inspections due to failure of the work to comply with the claims of status of completion made by the CONTRACTOR:

1. OWNER will compensate OWNER's Representative and ENGINEER for such additional services.

2. OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO OWNER'S REPRESENTATIVE

A. Evidence of compliance with requirements of governing authorities.

1. Certificate of Occupancy.

2. Certificates of Inspection.

(a) Mechanical

(b) Electrical

(c) Other, as may be required.

B. Project Record Documents: To requirements of Section 01720.

C. Warranties and Bonds: To requirements of Section 01740.

D. Evidence of Payment and Release of Liens: To requirements of General and Supplementary General Conditions.

E. Certificate of Insurance for Products and Completed Operations.

1.07 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to OWNER's Representative.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

(a) Previous Change Orders.

(b) Allowances.

(c) Unit Prices.

(d) Deductions for uncorrected work.

(e) Penalties and Bonuses.

(f) Deductions for liquidated damages.

(g) Deductions for re-inspection payments.

(h) Other adjustments.

3. Total Contract Sum, as required.

4. Previous payments.

5. Sum remaining due.

C. OWNER's Representative will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.08 FINAL APPLICATION FOR PAYMENT

A. CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01710

CLEANING

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract.

B. Each Specification Section: Cleaning for specific Products or work.

1.03 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Use only equipment and cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by the manufacturer, installer or engineer for all materials and areas to be cleaned.

PART 3- EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the Work, the site and adjacent properties, free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

C. Site work to be kept dust free by watering with use of water truck daily as needed. Engineer shall direct the Contractor as necessary.

3.03 FINAL CLEANING

A. Employ skilled workmen for final cleaning.

B. All areas adjacent to project shall be re-established to equal or better conditions than was exsiting prior to construction. As a minimum, the contractor shall replace all sod, plants, shrubs and irrigation damaged during construction.

C. The City and Engineer shall have final approval of site cleanup and shall direct contractor during punch list inspections to make all necessary repairs.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

A. Maintain at the site for Owner review one record copy of:
   1. Drawings
   2. Specifications
   3. Addenda
   4. Change Orders and other Modifications to the Contract
   5. Engineer's Field Orders or Written Instructions
   6. Approved Shop Drawings, Working Drawings, and Samples
   7. Field Test Reports

1.02 RELATED REQUIREMENTS

A. Section 01340: Submittals and Substitutions

B. Section 01700: Project Closeout

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.

B. File documents and samples in accordance with CSI format number system.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by the Engineer.

E. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "record documents" for review by the Engineer and the Owner.

1.04 RECORDING

A. Label each document "PROJECT RECORD" in neat large printed letters.

B. Record information concurrently with construction progress.

C. Drawings; Legibly mark record actual construction:
   1. Field changes of dimensions and details.
   2. Changes made by Field Order or by Change Order.
   3. Details not on original contract drawings.

D. Specifications and Addenda; legibly mark each Section to record:
   1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
   2. Changes made by field order or by Change Order.

E. Shop Drawings (after final review and approval):
   1. One set of record shop drawings for each process equipment, piping, (including casings) electrical system and instrumentation system.

F. Certified site survey and line elevations, and stationing at increments by registered surveyor.

1.05 SUBMITTAL

A. At close-out, deliver Record Documents to the Engineer for the Owner.

B. Accompany submittal with transmittal letter in duplicate, containing:
   1. Date
   2. Project Title and Number
   3. Contractor's Name and Address
   4. Title and Number of each Record Document
   5. Signature of Contractor or his Authorized Representative

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 -GENERAL

1.01 REQUIREMENTS INCLUDED

A. Compile specified warranties and bonds.

B. Co-execute submittals when so specified.

C. Review submittals to verify compliance with Contract Documents.

D. Submit to the Engineer for review and transmittal to Owner.

1.02 RELATED REQUIREMENTS

A. Instructions to Bidders: Bid Bonds

B. Conditions of the Contract: Performance Bond and Payment Bond

C. Section 01700: Project Closeout

1.03 SUBMITTAL REQUIREMENTS

A. Assemble warranties, bond, service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of original signed copies required: Two each.

C. Table of Contents: neatly typed, in orderly sequence. Provide complete information for each item.
   1. Product or work item
   2. Firm, with name of principal, address and telephone number
   3. Scope
   4. Date of beginning of Warranty, bond or service and maintenance contract
   5. Duration of warranty, bond or service maintenance contract
   6. Provide information for Owner's personnel:
      a. Proper procedure in case of failure
      b. Instances which might affect the validity of warranty or bond
   7. Contractor, name of responsible principal, address and telephone number

1.03 FORM OF SUBMITTALS

A. Prepare in duplicate packets

B. Format:
   1. Size 8 ½-inches x 11-inches, punch sheets for standard 3-post binder
   2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
      a. Title of Project
      b. Name of Contractor

C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of 2-inches.

1.04 WARRANTY SUBMITTAL REQUIREMENTS

A. For all major pieces of equipment, submit a 1-year warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with the Contractor's for 1- year commencing at the time of acceptance by the Owner.

B. The Contractor shall be responsible for obtaining certificates for equipment warranty for all major equipment specified under Division 15 and which has a1/4 HP motor or which lists for more than $500. The Engineer reserves the right to request warranties for equipment not classified as major. The Contractor shall still warrant equipment not considered to be "major" in the Contractor's 1-year warranty period even though certificates of warranty may not be required.

C. In the event that the equipment manufacturer or supplier is unwilling to provide a 1-year warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a 2-year warranty commencing at the time of equipment delivery to the job site. This 2-year warranty from the manufacturer shall not relieve the Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 02010
SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the subsurface investigation work, as indicated on the drawings, as specified herein or both.

B. The subsurface investigation for conditions of the project site is the sole responsibility of the CONTRACTOR. In preparing the Proposal, the CONTRACTOR shall make all subsurface or surface investigations necessary to provide proper background and knowledge to determine the nature and extent of work required.

C. OWNER or OWNER's Representative has provided subsurface information at the end of this section, and makes no warranties or guarantees concerning the nature of materials to be encountered on the site.

1.03 RELATED WORK

A. Section 02110 – Clearing and Grubbing.

B. Section 02200 - Earthwork.

C. Section 02720 - Storm Drainage Facilities.

D. All applicable sections under Divisions 1, 2, and 3.

1.04 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the lump sum price bid for mobilization.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END SECTION 02010

SECTION 02050
DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the site demolition work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as "NIC ITEMS."

1.03 RELATED WORK

A. Section 02200 - Earthwork.

B. All applicable Sections under Divisions 1, 2, and 3.

1.04 QUALITY ASSURANCE

A. Demolition contractor qualifications: Minimum of five (5) years experience in demolition of comparable nature.

B. Requirements of All Applicable Regulatory Agencies:

1. All applicable Building Codes and other Public Agencies having jurisdiction upon the work.

1.05 SUBMITTALS

A. Certificates of severance of utility services.

B. Permit for transport and disposal of debris.

C. Demolition procedures and operational sequence for review and acceptance by ENGINEER.

1.06 JOB CONDITIONS

A. Existing Conditions

1. The demolition work shall be done as indicated on the construction plans.

2. Remove all demolition debris from the site the same day the work is performed. Leave no deposits of demolished material on site over night.

3. Structural demolition, excavation, backfill and compaction as indicated in drawings.

B. Protection:

1. Erect barriers, fences, guard rails, enclosures, and shoring to protect personnel, structures, and utilities remaining intact.

2. Protect designated trees and plants from damages.

3. Use all means necessary to protect existing objects and vegetation designated to remain, and, in the event of damage, immediately make all repairs, replacements and dressings to damaged plants necessary, to the approval of the ENGINEER at no additional cost to the OWNER.

C. Maintaining Traffic:

1. Ensure minimum interference with roads, streets, driveways, sidewalks, and adjacent facilities.

2. Do not close or obstruct streets and sidewalks without written approval from the ENGINEER.

3. If required by governing authorities, provide alternate routes around closed or obstructed traffic ways.

D. Dust Control:

1. Use all means necessary for preventing dust from demolition operations from being a nuisance to adjacent property owners. Methods used for dust control are subject to approval by the ENGINEER prior to use.

E. Burning:

1. Burning will not be permitted.

F. No explosives will be permitted.

1.07 GENERAL ITEMS

A. Scope of work shall comprise the following: Provide all labor, materials, necessary equipment and services to complete the demolition and clearing work, as indicated on the contract plans, and as specified herein.

B. The CONTRACTOR shall provide references to the OWNER to demonstrate a minimum of five years experience in demolition of a comparable nature. Current occupational licenses held by CONTRACTOR shall be submitted to OWNER.

C. The CONTRACTOR shall be responsible for adherence to all applicable codes of all

regulatory agencies having jurisdiction upon the works.

1.08 PRE-DEMOLITION MEETING

A. A meeting shall be held with the OWNER or his representative at the jobsite to describe intended demolition and cleaning procedures and schedules. This shall include identifying access routes for bringing necessary equipment in, removing debris from site, and designation of any trees, drives or other items to remain.

1.09 EXISTING CONDITIONS

A. The CONTRACTOR shall become thoroughly familiar with the site, and of existing utilities and their connections, and note all conditions which may influence the work.

B. By submitting a bid, the CONTRACTOR affirms that CONTRACTOR has carefully examined the site and all conditions affecting work. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

C. The removal of A.C. pipe shall be done in strict compliance with local, state, and federal regulations. The OWNER shall be notified immediately by the CONTRACTOR should any hazardous materials be discovered during demolition.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 INSPECTION

A. Verify that structures to be demolished are discontinued in use and ready for removal.

B. Do not commence work until all conditions and requirements of all applicable public agencies are complied with.

3.02 PREPARATION

A. Arrange for, and verify termination of utility services to include removing meters and capping lines.

B. Notification:

1. Notify the OWNER at least three (3) full working days prior to commencing the work of this Section.

3.03 CLARIFICATION

A. The drawings do not purport to show all objects existing on the site.

B. Before commencing the work of this Section, verify with the OWNER all objects to be removed and all objects to be preserved.

3.04 SCHEDULING

A. Schedule all work in a careful manner with all necessary consideration for the public and the OWNER.

B. Avoid interference with the use of, and passage to and from, adjacent facilities.

3.05 DISCONNECTION OF UTILITIES

A. Before starting site operations, disconnect or arrange for the disconnection of all effected utility service.

1. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Disconnect and stub off. Notify affected utility company in advance and obtain approval before starting this work.

2. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction.

3. Place markers to indicate location of disconnected services.

4. On-site drainage structures and drain fields shall be removed in their entirety by methods approved by the OWNER's representative.

3.06 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

A. Utility Services: Maintain existing off-site utilities, keep in service, and protect against damage during demolition operations.

B. Prevent movement or settlement of adjacent structures. Provide and place bracing or shoring and be responsible for safety and support of structures. Assume liability for such movement, settlement, damage, or injury.

C. Cease operations and notify OWNER immediately if safety of adjacent structures appears to be endangered. Take precautions to properly support structures. Do not resume operations until safety is restored.

D. Prevent movement, settlement, damage, or collapse of adjacent services, sidewalks, driveways and trees. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the OWNER.

E. Ensure safe passage of persons around areas of demolition.

3.07 MAINTAINING TRAFFIC

A. Do not interfere with use of adjacent buildings and facilities. Maintain free and safe passage to and from. Conduct demolition operations and removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed travel ways if required by governing authorities.

3.08 POLLUTION CONTROLS

A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

B. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations as directed by the OWNER or his representative or governing authorities. Return adjacent areas to condition existing prior to start of work.

3.09 INSPECTION AND PREPARATION

A. Verify that structures to be demolished are discontinued in use and ready for removal.

B. Do not commence work until all conditions and requirements of all applicable public agencies are complied with.

C. Arrange for, and verify termination of utility services to include removing meters and capping lines.

D. The drawings do not purport to show all objects existing on the site; at the pre-demolition meeting before commencement of the work, verify with the OWNER all objects to be removed and all objects to be preserved.

3.10 DEMOLITION

A. Pull out any existing utility lines designated for abandonment, irrigation, electrical lines, pull boxes and splice boxes, manholes and catch basins to be removed and all other objects designated to be removed or interfering with the work. Contact the utility company or agency involved for their requirements for performing this work. No equipment and materials shall be allowed to remain in the work area after the day it was removed.

B. Remove all debris from the site and leave the site in a neat, orderly condition to the full acceptance of the ENGINEER, or the OWNER. No debris shall be left on the site over night.

C. Clear and Grub and dispose of all trees, shrubs and other organic matter not otherwise addressed on tree removal and relocation plans and specifications.

3.11 DEMOLITION OF SITE STRUCTURES

A. Demolish all site structure items designated to be removed or which are required to be removed to perform the work. This item does not include buildings.

3.12 REMOVAL OF DEBRIS AND DISPOSAL OF MATERIAL

A. Material resulting from demolition and not scheduled for salvaging shall become the property of the CONTRACTOR and shall be removed from site and legally disposed of off-site. Disposal shall be timely, performed as promptly as possible and not left until the

final cleanup. Material shall not be left on the job site for more than 60 days.

B. Remove from site contaminated, vermin infested, or dangerous materials encountered and dispose of by safe means so as not to endanger health of workers and public.

C. Burning of removed materials from demolished structures will not be permitted.

3.13 COMPLETION OF WORK

A. Leave the site in a neat, orderly condition to the full acceptance of the OWNER.

B. Dirt remaining after demolition shall be graded level and compacted, in preparation for filling operations to follow demolition. Trenches shall be filled in layers of 12" maximum thickness and compacted in accordance with the technical specifications applicable to backfilling of trenches.

END OF SECTION

SECTION 02060

UTILITY PIPE REMOVAL

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Attention is directed to the fact that Asbestos Containing Material (ACM) pipe is present on this project. Known ACM pipe locations are shown on the plans with notations for removal, connections, or abandonment in place by pressure grouting. Interpret references and notations in the plans as to AC or ACM pipe to mean Asbestos Containing Material (ACM) pipe. Take special precaution for any disturbance of the asbestos contained in these ACM pipes and any other ACM pipes that may be identified during construction.

B. To protect the health and safety of the traveling public, OWNER employees, contractors and consultants, this Technical Special Provision (TSP) directs to protect and/or remove and dispose as applicable those sections of ACM pipe disturbed during the excavation of the project and are not identified to remain as active utility lines.

C. Follow Federal, State and local laws, rules and regulations, including the following:
1. Florida Department of Transportation Procedure No. 425-000-005-b: Asbestos Management Program
2. US DOT Title 49, Sub-Chapter C – Hazardous Material Regulations, Parts 171 and 172
3. Occupation and Safety and Health Administration (OSHA) OSHA Title 29, Parts 1910 and 1926 (General Industry and Construction Standards)
4. State of Florida Statutes 469 and 255.551 to 25.565
5. United States Environmental Protection Agency, US EPA 40 CFR, Part 61, Subpart M “NESHAP” (National Emission Standards for Hazardous Air Pollutants)
6. Florida Administrative Code, Chapters 62-257 and 62-701.520, FAC
7. FDLES Rules 38140.001-38140.019
8. Florida Department of Business and Professional Regulation (FDPR) regarding the licensing and regulation of Asbestos Consultants and Contractors
    a. General Industry Guidelines
    b. Any other applicable Federal, State and Local government agency

PART 2 - PRODUCTS

2.01 GENERAL

A. A utility survey was completed and water pipe lines (Asbestos Containing Material, ACM) are present on this project. Known ACM pipe locations are shown on the plans which may be removed during construction. Some lines will require connection of the new utility pipes to existing ACM pipe.

PART 3 - EXECUTION

3.01 GENERAL

A. In conformance with the above stated procedures, laws, rules and regulations, the services of both a Florida Licensed Asbestos Consultant and a Florida Licensed Asbestos Abatement Contractor shall be required.

B. Duties include, but are not limited to the following:

1. Make all required agency notifications, secure permits, prepare work plans, plans and specifications for Asbestos removal, handling and disposal of ACM pipe, monitoring the abatement (including clearance sampling when determined to be necessary by the Consultant and/or as required by regulation), following the required specifications for the operation and maintenance (O&M) plan for any asbestos remaining in place following completion of removal of the sections of utility lines identified for removal, approval of pre-job and post-job submittals, project monitoring, keeping daily logs, air monitoring and final clearance samples, preparation of the final report, etc.
2. Submit required agency notifications.
3. Approval of Abatement Contractor's pre-job and post-job submittals.

C. The CONTRACTOR is responsible for notifying and complying with FDEP Asbestos Removal Program and contacting the applicable local health and/or environmental agencies as required in the jurisdiction where the work will be performed.

3.02 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual number of linear feet of removed and properly disposed ACM pipes as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION

SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Section covers cleaning, grubbing, stripping and demucking of the construction site, complete as specified herein.

B. Clear and demuck the areas within the limits of construction as required, including drainage easements. The width of the area to be cleared and demucked shall be established by the Engineer prior to the beginning of any work.

1.02 RELATED WORK

A. Section 02220: Structural Excavation, Backfill & Compaction

B. Section 02221: Trenching, Bedding & Backfill for Pipe

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

3.01 CLEARING

A. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish and all other objectionable obstructions resting on or protruding through the surface of the ground. However, those trees which are designated by the Engineer shall be preserved as hereinafter specified. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, so as to provide for the safety of employees and others. Clearing for structures shall consist of topsoil and vegetation removal. Clearing for pipelines shall consist of vegetation removal.

3.02 GRUBBING

A. Grubbing shall consist of the complete removal of all stumps, roots larger than 1 ½ inches in diameter, mattered roots, brush, timber, logs and any other organic or metallic debris resting on, under or protruding through the surface of the ground to a depth of 18 inches below the subgrade. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

3.03 STRIPPING

A. In areas so designated, top soil, not muck shall be stockpiled. Topsoil so stockpiled shall be protected until it is placed as specified. Any topsoil remaining after all work is in place shall be disposed of by the Contractor.

3.04 DEMUCKING

A. When encountered, organic material (muck) shall be excavated and removed. This material may be stockpiled temporarily, but must be disposed of as directed by the Engineer or the Owner.

3.05 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

A. The Contractor shall dispose of all material and debris from the clearing and grubbing operation by shipping such material and debris and disposing such material to a suitable location as required by the Engineer or the governmental agencies. Disposal by deep burial will not be permitted. The cost of disposal of material (including hauling) shall be considered a subsidiary obligation of the Contractor, the cost of which shall be included in the contract prices.

3.06 PRESERVATION OF TREES

A. Those trees which are designated by the Engineer or as shown on the drawings for preservation shall be carefully protected from damage. The Contractor shall erect such barricades, guards, and enclosures as may be considered necessary by him for the protection of the trees during all construction operations.

3.07 PRESERVATION OF DEVELOPED PRIVATE PROPERTY

A. The Contractor shall exercise extreme care to avoid necessary disturbance of developed private property as applicable. Trees, shrubbery, gardens, lawn and other landscaping, which in the opinion of the Engineer must be removed, shall be replaced and replanted to restore the construction easement to the condition existing prior to construction.

B. All soil preparation procedures and replanting operations shall be under the supervision of nurseryman experienced in such operations.

C. Improvements to the land such as fences, walls, outbuildings, etc., which of necessity must be removed shall be replaced with equal quality materials and workmanship.

D. The Contractor shall clean up the construction site across developed private property directly after construction is complete upon approval of the Engineer.

3.08 PRESERVATION OF PUBLIC PROPERTY

A. The appropriate paragraphs of Articles 3.06 and 3.07, of these specifications shall apply to the preservation and restoration of all damaged areas of public lands, rights-of-way, easements, etc.

END OF SECTION

SECTION 02110

CLEARING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the clearing work, as indicated on the drawings, as specified herein or both.

B. Under this section, the CONTRACTOR shall do all clearing, grubbing, root-raking, and necessary clean-up operations in connection with the construction of the work and its related site work.

C. The work shall consist of the removal and disposal of trees, stumps, roots, limbs, brush, fences, asphalt, etc. from all project areas as designated on the drawings as specified herein, and as directed by the ENGINEER on the site.

D. The CONTRACTOR shall remove all refuse, asphalt pavement, concrete pavement, glass, metal, stone, plaster, lumber, paper materials, and any and all trash found in clearing and adjacent areas as directed by the ENGINEER.

E. The CONTRACTOR shall furnish all services, labor, transportation, materials, and equipment necessary for the performance of these operations. All clearing and cleanup operations shall be accomplished to the complete satisfaction of the ENGINEER.

1.03 RELATED WORK

A. Section 02010 – Sub-surface Investigation

B. Section 02200 - Earthwork.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 TREE REMOVAL AND TREE PRESERVATION

A. No trees shall be removed if located outside of the right-of-way and dedicated easement.

B. Within the rights-of-way and easements, no trees shall be removed without the approval of the OWNER and approved tree permit. Trees shall be evaluated on an individual basis in accordance with following:
   1. Type and size of tree.
   2. Proximity to proposed and/or existing utility lines and/or exfiltration trench.
   3. Change in adjacent grades for swale excavation.
   4. Proximity to proposed sidewalk.
   5. Proximity to proposed edge of roadway.
   6. Living condition of the tree.

C. If trees are determined to remain, Biobarrier, or approved equal, root barrier shall be installed as directed by the ENGINEER.

3.02 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section. It shall be included in the appropriate unit price bid.

END OF SECTION

SECTION 02151

SHORING AND BRACING OF EXCAVATIONS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Work included: Provide shoring at excavations and else where as required to protect workmen, materials, other properties, and the public.

1.02 RELATED WORK

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

B. As established in the General Conditions of the Contract, the Contractor is solely responsible for means and methods of construction and for the sequences and procedures to be used.

1.03 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are familiar with the specified requirements and the methods required for proper performance of the work of this Section.

B. Employ a Professional Engineer registered in the State of Florida, who is qualified to design the shoring system and to inspect and report on the quality of its construction. All drawings must bear the signature and seal of this engineer.

C. Comply with pertinent requirements of governmental agencies having jurisdiction, specifically the Florida Trench Safety Act.

D. The shoring design and construction shall take into consideration all the information regarding the following:
   1. Soil investigation report prepared for this Work.
   2. Existing Utilities.

1.04 SUBMITTALS

A. Comply with pertinent provisions of Section 01340 “Submittals and Substitutions”.

B. Submit shoring design for approval by Owner.
   1. Should changes in the shoring design be required coordinate all such changes with the Engineer and secure the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS, GENERAL

A. Provide list of materials as required for the shoring system.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 DESIGN

A. Design a shoring system which will safely and adequately prevent collapse of adjacent materials and which will permit construction of the Work to the arrangement shown on the Drawings.

B. Secure approval from Owner.

3.03 INSTALLATION

A. Construct and install the shoring system in accordance with the design as approved by the Owner.

END OF SECTION

SECTION 02200

EARTHWORK

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Earthwork, as indicated on the drawings, as specified herein or both.

B. Including but not necessarily limited to the following:

1. Excavation, including demucking
2. Backfilling
3. Filling
4. Grading, general site and building pads
5. Compaction

C. There shall be no classification of excavation for measurement of payment regardless of materials encountered.

D. The work of this Section includes all earthwork required for construction of the WORK. Such earthwork shall include, but not be limited to, the loosening, removing, loading, transporting, depositing, and compacting in its final location of all materials wet and dry, as required for the purposes of completing the work specified in the Contract Documents, which shall include, but not be limited to, the furnishing, placing, and removing of sheeting and bracing necessary to safely support the sides of all excavation; all pumping, ditching, draining, and other required measures for the removal or exclusion of water from the excavation; the supporting of structures above and below the ground; all backfilling around structures and all backfilling of trenches and pits; the disposal of excess excavated materials; borrow of materials to makeup deficiencies for fills; and all other incidental earthwork, all in accordance with the requirement of the Contract Documents.

1.03 RELATED WORK

A. Section 02210 - Site Grading.

B. All applicable sections of Division 1, 2, and 3.

1.04 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".

B. Commercial Standards:

ASTM D 422	Method for Particle-Size Analysis of Soils.
ASTM D 698	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop.
ASTM D 1556	Test Method for Density of Soil in Place by the Sand Cone Method.
ASTM D 1557	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in (457-mm) Drop.
ASTM D 1633	Test Method for Compressive Strength of Molded Soil-Cement Cylinders.
ASTM D 2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
ASTM D 2487	Classification of Soils for Engineering Purposes.
ASTM D 2901	Test Method for Cement Content of Freshly-Mixed Soil-Cement.
ASTM D 2922	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
ASTM D 4253	Test Methods for Maximum Index Density of Soils Using a Vibratory Table.
ASTM D 4254	Test Methods for Minimum Index Density of Soils and Calculation of Relative Density.

1.05 SUBSOIL INFORMATION

A. Geotechnical information is not being provided as part of this project.

1.06 SITE INSPECTION

A. CONTRACTOR shall visit the site and acquaint with all existing conditions. CONTRACTOR shall investigate the site and sub-surface conditions at no cost to the OWNER if CONTRACTOR chooses to. Such sub-surface investigations shall be performed only under time schedules and arrangements approved in advance by the OWNER's Representative and ENGINEER.

1.07 TOPOGRAPHIC INFORMATION

A. The existing grades shown on the drawings are approximate only and no representation is made as to their accuracy or consistency. The CONTRACTOR shall verify all existing grades to the extent necessary to insure completion of the job to the proposed grades indicated on the drawings.

1.08 DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL

A. Unsuitable material encountered during the course of construction shall be removed from the construction site at the expense of the CONTRACTOR. Unsuitable material shall not be stockpiled on-site. All suitable material shall be stockpiled on-site at areas approved by the ENGINEER.

1.09 BENCH MARKS AND MONUMENTS

A. CONTRACTOR shall employ a registered surveyor to lay out lines and grades as indicated. A surveyor registered in the State of Florida shall establish benchmarks. Benchmarks shall be permanent and easily accessible and maintained and replaced if disturbed or destroyed. All benchmarks shall be NAVD 88.

1.10 UTILITIES

A. Before starting site operations, disconnect or arrange for the disconnection of all utility services designated to be removed.

B. Locate all existing active utility lines traversing the site and determine the requirements for their protection. Preserve in operating condition all active utilities adjacent to or traversing the site and/or designated to remain.

C. Observe rules and regulations governing respective utilities in working under requirements of this section. Adequately protect utilities from damage, remove or replace as indicated, specified or required. Remove, plug or cap inactive or abandoned utilities encountered in excavation. Record the location of all utilities.

1.11 QUALITY ASSURANCE

A. A SOILS ENGINEER may be retained by the OWNER to observe performance of work in connection with excavating, filling, grading, and compaction. The CONTRACTOR shall re-adjust all work performed that does not meet technical or

design requirements but make no deviations from the Contract documents without specific and written acceptance of the ENGINEER.

B. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556, ASTM D 2922, or by such other means acceptable to the ENGINEER.

C. In case the tests of the fill or backfill show non-compliance with the required density, the CONTRACTOR shall accomplish such remedy as may be required to insure compliance. Subsequent testing to show compliance shall be by a testing laboratory selected by the OWNER and shall be at the CONTRACTOR's expense.

D. Particle size analysis of soils and aggregates will be performed using ASTM D 422.

E. Determination of sand equivalent value will be performed using ASTM D 2419.

F. Unified Soil Classification System: References in these specifications to soil classification types and standards are set forth in ASTM D 2487. The CONTRACTOR shall be bound by all applicable provisions of said ASTM D 2487 in the interpretation of soil classifications.

G. Requirements of all applicable building codes and other public agencies having jurisdiction upon the work.

PART 2 - PRODUCTS

2.01 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENTS

A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock, or sand, free from grass, roots, brush, or other vegetation.

B. Fill and backfill materials to be placed within 6 inches of any structure or pipe shall be free of rocks or unbroken masses of earth materials having a maximum dimension larger than 3 inches.

C. Suitable Materials: Soils not classified as unsuitable as defined in Paragraph entitled, "Unsuitable Material" herein, are defined as suitable materials and may be used in fills, backfilling, and embankment construction subject to the specified limitations. In addition, when acceptable to the ENGINEER, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.

D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the requirements of this Section or to meet the quantity requirements of the project the CONTRACTOR shall provide the imported materials at no additional expense to the OWNER, unless a unit price item is included for imported materials in the bidding schedule.

E. The following types of suitable materials are designated and defined as follows:

1. Type A (one inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1-inch sieve and a sand equivalent value not less than 50.

2. Type B (one half inch minus granular backfill): Crushed rock, gravel, or sand with 100 percent passing a 1/2-inch sieve and a sand equivalent value not less than 50.

3. Type C (sand backfill): Sand with 100 percent passing a 3/8-inch sieve, at least 90 percent passing a number 4 sieve, and a sand equivalent value not less than 30.

4. Type D (coarse rock backfill): Crushed rock or gravel with 100 percent passing a 1-inch sieve and not more than 10 percent passing a Number 4 sieve.

5. Type E (pea gravel backfill): Crushed rock or gravel with 100 percent passing a 1/2-inch sieve and not more than 10 percent passing a Number 4 sieve.

6. Type F (coarse drainrock): Crushed rock or gravel meeting the following gradation requirements:

Sieve Size	Percentage Passing
2-inch	100
1-1/2-inch	90-100
1-inch	20-55
3/4-inch	0-15
No. 200	0-3

7. Type G (aggregate base): Crushed rock aggregate base material of such nature that it can be compacted readily by watering and rolling to form a firm, stable base for pavements. At the option of the CONTRACTOR, the grading for either the 1-1/2-inch maximum size or 3/4-inch maximum size shall be used. The sand equivalent value shall be not less than 22, and the material shall meet the following gradation requirements.

	Percentage Passing	
Sieve Size	1-1/2 inch Max.	3/4-inch Max.

2-inch	100	-
1-1/2 inch	90-100	-
1-inch	-	100
3/4-inch	50-85	90-100
No. 4	25-45	35-55
No. 30	10-25	10-30
No. 200	2-9	2-9

8. Type H (graded drainrock): Drainrock shall be crushed rock or gravel, durable and free from slaking or decomposition under the action of alternate wetting or drying. The material shall be uniformly graded and shall meet the following gradation requirements.

Sieve Size	Percentage Passing
1-inch	100
3/4-inch	90-100
3/8-inch	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

The drainrock shall have a sand equivalent value not less than 75. The finish-graded surface of the drainrock immediately beneath hydraulic structures shall be stabilized to provide a firm, smooth surface upon which to construct reinforced concrete floor slabs.

9. Type I: Any other suitable material as defined herein.

10. Type J (cement-treated backfill): Material which consists of Type H material, or any mixture of Types B, C, G and H materials which has been cement-treated so that the cement content of the material is not less than 5 percent by weight when tested in accordance with ASTM D 2901. The ultimate compressive strength at 28 days shall be not less than 400 psi when tested in accordance with ASTM D 1633.

11. Type L (Class I crushed stone): Manufactured angular, granular crushed stone, rock, or slag, with 100 percent passing a 1-inch sieve and less than 5 percent passing a Number 4 sieve.

12. Type M (aggregate subbase): Crushed rock aggregate subbase material that can be compacted readily by watering and rolling to form a firm stable base. The sand equivalent value shall be not less than 18 and shall meet the following gradation requirements.

Sieve Size	Percentage Passing
3-inch	100
2-1/2 inch	87-100
No. 4	35-95
No. 200	0-29

13. Type N (trench plug): Low permeable fill material, a nondispersible clay material having a minimum plasticity index of 10.

2.02 UNSUITABLE MATERIAL

A. Unsuitable soils for fill material shall include soils which, when classified under ASTM D 2487, fall in the classifications of Pt, OH, CH, MH or OL.

B. Topsoil: Stockpiled topsoil materials, which have been obtained at the site by removing soil to a depth not exceeding 2 feet. Removal of the topsoil shall be done after the area has been stripped of vegetation and debris as specified.

C. In addition, any soil, which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

2.03 USE OF FILL, BACKFILL, AND EMBANKMENT MATERIAL TYPES

A. The CONTRACTOR shall use the types of materials as designated herein for all required fill, backfill, and embankment construction hereunder.

B. Where these Specifications conflict with the requirements of any local agency having jurisdiction, or with the requirements of a material manufacture, the ENGINEER shall be immediately notified. In case of conflict therewith, the CONTRACTOR shall use the most stringent requirement, as determined by the ENGINEER.

C. Fill and backfill types shall be used in accordance with the following provisions:

1. Embankment fills shall be constructed of Type I material, as defined herein, or any mixture of Type I and Type A through Type H materials.

2. Pipe zone backfill, as defined under "Pipe and Utility Trench Backfill" herein, shall consist of the following materials for each pipe material listed below. Where pipelines are installed on grades exceeding 4 percent, and where backfill materials are graded such that there is less than 10 percent passing a Number 4 sieve, trench plugs of Type J or N material shall be provided at maximum intervals of 200 feet or as shown on the Drawings.

a. Mortar coated pipe, concrete pipe, and uncoated ductile iron pipe shall be provided Type A, B, C, D, E, or L pipe zone backfill material.
b. Coal tar enamel coated pipe, polyethylene encased pipe, tape wrapped pipe, and other non-mortar coated pipe shall be backfilled with Type C pipe zone backfill material.
c. Plastic pipe and vitrified clay pipe shall be backfilled with Type L pipe zone backfill material.

3. Trench zone backfill for pipelines as defined under "Pipe and Utility Trench Backfill" shall be Type I backfill material or any of Types A through H backfill materials or any mixture thereof, except that Type K material may be used for trench zone backfill in agricultural areas unless otherwise shown or specified.

4. Final backfill material for pipelines under paved area, as defined under "Pipe and Utility Trench Backfill" shall be Type G backfill material. Final backfill under areas not paved shall be the same material as that used for trench backfill, except that Type K material may be used for final backfill in agricultural areas unless otherwise shown or specified.

5. Trench backfill and final backfill for pipelines under structures shall be the same material as used in the pipe zone, except where concrete encasement is required by the Contract Documents.

6. Aggregate base materials under pavements shall be Type G material constructed to the thickness shown or specified. Where specified or shown, aggregate subbase shall be Type M Material.

7. Backfill around structures shall be Type I material, or Types A through Type H materials, or any mixture thereof.

8. Backfill materials beneath structures shall be as follows:

   a. Drainrock materials under hydraulic structures or other water retaining structure with underdrain systems shall be Type H material.
   b. Under concrete hydraulic structures or other water retaining structures without underdrain systems, Types G or H materials shall be used.
   c. Under structures where groundwater must be removed to allow placement of concrete, Type F material shall be used.
   d. Under all other structures, Type D, E, G, or H material shall be used.

9. Backfill used to replace pipeline trench over-excavation shall be a layer of Type F material with a 6-inch top filter layer of Type E material or filter fabric to prevent migration of fines for wet trench conditions or the same material as used for the pipe zone backfill if the trench conditions are not wet. Filter fabric shall be Mirafi 140 N, Mirafi 700X, or equal.

10. The top 6 inches of fill on reservoir roofs, embankment fills around hydraulic structures, and all other embankment fills shall consist of Type K material, topsoil.

2.04 EMBANKMENT

A. The maximum sizes of rock, which will be permitted in the completed fill areas, are as follows:

Depth Below Finish Grade	Maximum Allowable Diameter
Top 4 inches	1 inch
4 inches to 12 inches	3-1/2 inches
12 inches to 2 feet	6 inches
2 feet to 4 feet	12 inches
4 feet to 8 feet	24 inches
Below 8 feet	36 inches

B. 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, and material designated as undesirable shall be removed from the site. Where embankments are constructed adjacent to bridge end bents or abutments, rock larger than 3-1/2 inches in diameter shall not be placed within three feet of the location of any abutment.

C. Fill material containing debris, sod, and biodegradable materials shall not be used as fill in construction areas.

D. Fill material required for the building pads and for pavement subgrade shall be granular fill, free of organic material.

E. Fill material required for pervious and sodded areas shall have a maximum organic component of 10%. CONTRACTOR shall provide, at CONTRACTOR'S cost, organic content test results for approval by the ENGINEER.

PART 3 - EXECUTION

3.01 JOB CONDITIONS

A. Protection: Use all means necessary to protect existing objects and vegetation. In the event of damage, immediately make all repairs, and replacements necessary to the acceptance of the OWNER's Representative and ENGINEER at no cost to the OWNER.

3.02 BACKFILL, FILLING & GRADING

A. Grades:

1. Cut, backfill, fill and grade to proper grade levels indicated. The proposed grades shown on the drawings are for establishing a finished grade over the site.

B. Filling:

1. Fill material shall be placed in horizontal layers and spread to obtain a uniform thickness.

2. After compaction, layers of fill are not to exceed twelve (12) inches for cohesive soils or eight (8) inches for noncohesive soils.

3.03 STRUCTURE, ROADWAY, AND EMBANKMENT EXCAVATION

A. General: Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of said materials shall conform to the lines and grades shown or ordered. Unless otherwise provided, the entire construction site shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The CONTRACTOR shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other measure for the removal or exclusion of water, including taking care of storm water, groundwater, and wastewater reaching the site of the work from any source so as to prevent damage to the work or adjoining property. Excavations shall be sloped or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

B. Excavation Beneath Structures and Embankments: Except where otherwise specified for a particular structure or ordered by the ENGINEER, excavation shall be carried to the grade of the bottom of the footing or slab. Where shown or ordered, areas beneath structures or fills shall be over-excavated. The subgrade areas beneath embankments shall be excavated to remove not less than the top [6 inches] of native material and where such subgrade is sloped, the native material shall be benched. When such over excavation is shown, the CONTRACTOR shall perform both over-excavation and subsequent backfill to the required grade. When such over-excavation is not shown but is ordered by the ENGINEER, such over-excavation and any resulting backfill will be paid for under a separate unit price bid item if such bid item has been established; otherwise payment will be made in accordance with a negotiated price. After the required excavation or over-excavation has been completed, the exposed surface shall be scarified to a depth of 6 inches, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I.

C. Excavation Beneath Paved Areas: Excavation under areas to be paved shall extend to the bottom of the aggregate base or subbase, if such base is called for; otherwise it shall extend to the paving thickness. After the required excavation has been completed, the top 12 inches of exposed surface shall be scarified, brought to optimum moisture content, and rolled with heavy compaction equipment to obtain density as specified in Paragraph 3.14.I. The finished subgrade shall be even, self-draining, and in conformance with the slope of the finished pavement. Areas that could accumulate standing water shall be regraded to provide a self-draining subgrade.

D. Notification of ENGINEER: The CONTRACTOR shall notify the ENGINEER at least 3 days in advance of completion of any structure excavation and shall allow the ENGINEER a review period of at least one day before the exposed foundation is scarified and compacted or is covered with backfill or with any construction materials.

3.04 PIPELINE AND UTILITY TRENCH EXCAVATION

A. General: Unless otherwise shown or ordered, excavation for pipelines and utilities shall be open-cut trenches. Trench widths shall be kept as narrow as is practical for the method of pipe zone densification selected by the CONTRACTOR, but shall have a minimum width at the bottom of the trench equal to the outside diameter of the pipe plus 24 inches for mechanical compaction methods and 18 inches for water consolidation methods. The maximum width at the top of the pipe shall be equal to the outside diameter of the pipe plus 36 inches for pipe diameters 18 inches and larger and to the outside diameter of the pipe plus 24 inches for pipe diameters less than 18 inches, or as shown on the Drawings.

B. Trench Bottom: Except when pipe bedding is required, the bottom of the trench shall be excavated uniformly to the grade of the bottom of the pipe. The trench bottom shall be given a final trim, using a string line for establishing grade, such that each pipe section when first laid will be continually in contact with the ground along the extreme bottom of the pipe. Rounding out the trench to form a cradle for the pipe will not be required. Excavations for pipe bells and welding shall be made as required.

C. Open Trench: The maximum amount of open trench permitted in any one location shall be 300 feet, or the length necessary to accommodate the amount of pipe installed in a single day, whichever is greater. All trenches shall be fully backfilled at the end of each day or, in lieu thereof, shall be covered by heavy steel plates adequately braced and capable of supporting vehicular traffic in those locations where it is impractical to backfill at the end of each day. The above requirements for backfilling or use of steel plate will be waived in cases where the trench is located further than 100 feet from any traveled roadway or occupied structure. In such cases, however, barricades and warning lights meeting OSHA requirements shall be provided and maintained.

D. Trench Over-Excavation: Where the Drawings indicate that trenches shall be over-excavated, they shall be excavated to the depth shown, and then backfilled to the grade of the bottom of the pipe.

E. Over-Excavation: When ordered by the ENGINEER, whether indicated on the Drawings or not, trenches shall be over-excavated beyond the depth shown. Such over-excavation shall be to the depth ordered. The trench shall then be backfilled to the grade of the bottom of the pipe. All work specified in this Section shall be performed by the CONTRACTOR when the over-excavation ordered by the ENGINEER is 6 inches or less below the limits shown. When the over-excavation ordered by the ENGINEER is greater than 6 inches below the limits shown, additional payment will be made to the CONTRACTOR for that portion of the work which is located below said 6-inch distance. Said additional payment will be made under separate unit price bid items for over-excavation and bedding if such bid items have been established; otherwise payment will be made in accordance with a negotiated price.

F. Where pipelines are to be installed in embankment or structure fills, the fill shall be constructed to a level at least one foot above the top of the pipe before the trench is excavated.

3.05 OVER-EXCAVATION NOT ORDERED, SPECIFIED, OR SHOWN

A. Any over-excavation carried below the grade ordered, specified, or shown, shall be backfilled to the required grade with the specified material and compaction. The CONTRACTOR at its own expense shall perform such work.

3.06 EXCAVATION IN LAWN AREAS

A. Where excavation occurs in lawn areas, the sod shall be carefully removed, kept damp, and stockpiled to preserve it for replacement. Excavated material may be placed on the lawn; provided that a drop cloth or other suitable method is employed to protect the lawn from damage. The lawn shall not remain covered for more than 72 hours. Immediately after completion of backfilling and testing of the pipeline, the sod shall be replaced and lightly rolled in a manner so as to restore the lawn as near as possible to its original condition. CONTRACTOR shall provide new sod if stockpiled sod has not been replaced within 72 hours.

3.07 EXCAVATION IN VICINITY OF TREES

A. Except where trees are shown to be removed, trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the ENGINEER. Trees shall be supported during excavation by any means previously reviewed and approved by the ENGINEER.

3.08 ROCK EXCAVATION

A. Rock is defined as follows:

1. Rock shall be classified as material having a blow count in excess of 30 blows per foot from a Standard Penetration Test (ASTM D-1586) and exceeding 1000 psi from an Unconfined Compression Strength Test (ASTM D-2938); and,

2. General Excavation - Any material that cannot be excavated with a single-toothed ripper drawn by a crawler tractor having a minimum draw bar pull rated at not less than 71,000 lbs. (Caterpillar D9N or equivalent), and occupying an original volume of at least 2 cubic yards or more; and,

3. Trench Excavation - Any material that cannot be excavated with a backhoe having a break out force rated at not less than 44,000 lbs. (Caterpillar 235D or equivalent), and occupying an original volume of at least 2 cubic yards.

B. Rock excavation shall include removal and disposal of the following: (1) all boulders measuring 1/3 of a cubic yard or more in volume; (2) all rock material in ledges, bedding deposits, and unstratified masses which cannot be removed without systematic drilling and blasting; (3) concrete or masonry structures which have been abandoned; and (4) conglomerate deposits which are so firmly cemented that they possess the characteristics of rock as described in Paragraph 3.09(A).

C. Additional compensation for excavation in hard rock will only be granted for rock as defined in this section, 3.08 (A) and with an N-value larger than 50. Compensation will not be provided for rock that does not meet these criteria.

D. Explosives and Blasting: Blasting will not be permitted, except by express permission of the ENGINEER on a case-by-case basis. The use of explosives will be subject to the approval and regulations of all agencies having jurisdiction. If blasting is utilized at the site of the WORK, the CONTRACTOR shall take all precautions and provide all protective measures necessary to prevent damage to property and structures or injury to person. Prior to blasting, the CONTRACTOR shall secure all permits required by law for blasting operations and shall provide any additional hazard insurance required by the OWNER. The CONTRACTOR shall have a fully qualified and experienced blasting foreman in charge of all blasting operations.

E. The CONTRACTOR will be held responsible for all and shall make good any damage caused by blasting or resulting from its possession or use of explosives on the WORK.

F. All operations involving the handling, storage, and use of explosives shall be conducted in accordance with the requirements of the OSHA Standards for Construction, and in accordance with all local laws and regulations.

3.09 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. The CONTRACTOR shall remove and dispose of all excess excavated material at a site selected by the CONTRACTOR and reviewed by the ENGINEER.

3.10 DISPOSAL OF UNSUITABLE EXCAVATED MATERIAL

A. The CONTRACTOR shall remove and dispose of all unsuitable excavated material. This shall include muck, tree roots, rocks, garbage, debris, or any other material designated as unsuitable by Paragraph 2 of this Section. Disposal shall be at a site selected by the CONTRACTOR that is designated as an approved disposal site for the unsuitable material.

3.11 BACKFILL - GENERAL

A. Backfill shall not be dropped directly upon any structure or pipe. Backfill shall not be placed around or upon any structure until the concrete has attained sufficient strength to withstand the loads imposed. Backfill around water retaining structures shall not be placed until the structures have been tested, and the structures shall be full of water while backfill is being placed.

B. Except for drainrock materials being placed in over-excavated areas or trenches, backfill shall be placed after all water is removed from the excavation.

3.12 PLACING AND SPREADING OF BACKFILL MATERIALS

A. Backfill materials shall be placed and spread evenly in layers. When compaction is achieved using mechanical equipment the layers shall be evenly spread so that when compacted each layer shall not exceed 6 inches in thickness.

B. During spreading each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer. Pipe zone backfill materials shall be manually spread around the pipe so that when compacted the pipe zone backfill will provide uniform bearing and side support.

C. Where the backfill material moisture content is below the optimum moisture content water shall be added before or during spreading until the proper moisture content is achieved.

D. Where the backfill material moisture content is too high to permit the specified degree of compaction the material shall be dried until the moisture content is satisfactory.

3.13 COMPACTION - GENERAL

A. Compact each layer of fill in designated areas with approved equipment to achieve a maximum density at optimum moisture, AASHTO T 180 - latest edition.

1. Building Pads: compaction shall be to 98% of maximum density, unless otherwise shown on the drawings or specifications. Building pads shall be within plus or minus one-tenth (0.1) of a foot of the elevations shown on the plans.

2. Refer to Sections 02513 Asphaltic Concrete Paving - General and 02515 Portland Cement Concrete Paving for compaction requirements in the affected areas.

3. Under landscaped area, compaction shall be to density as specified in Paragraph 3.14.I., unless otherwise shown on the Drawings.

B. No backfill shall be placed against any masonry or other exposed building surface until permission has been given by the OWNER's Representative, and in no case until the masonry has been in place seven days.

C. Heavy construction equipment will not be permitted within ten (10) feet of any masonry or other exposed building surface.

D. Compaction in limited areas shall be obtained by the use of mechanical tampers or approved hand tampers. When hand tampers are used, the materials shall be deposited in layers not more than four inches thick. The hand tampers used shall be suitable for this purpose and shall have a face area of not more than 100 square inches. Special precautions shall be taken to prevent any wedging action against masonry, or other exposed building surfaces.

3.14 COMPACTION OF FILL, BACKFILL, AND EMBANKMENT MATERIALS

A. Each layer of Types, A, B, C, G, H, I, and K backfill materials as defined herein, where the material is graded such that at least 10 percent passes a No. 4 sieve, shall be mechanically compacted to the specified percentage of maximum density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content.

B. Each layer of Type D, E, F, and J backfill materials shall be compacted by means of at least 2 passes from a flat plate vibratory compactor. When such materials are used for pipe zone backfill, vibratory compaction shall be used at the top of the pipe zone or at vertical intervals of 24 inches, whichever is the least distance from the subgrade.

C. Type L material requires mechanical spreading and placement to fill voids but does not require mechanical compaction or vibration.

D. Fill on reservoir and structure roofs shall be deposited at least 30 days after the concrete roof slab has been placed. Equipment weighing more than 10,000

pounds when loaded shall not be used on a roof. A roller weighing not more than 8,000 pounds shall be used to compact fill on a roof.

E. Flooding, ponding, or jetting shall not be used for fill on roofs, backfill around structures, backfill around reservoir walls, for final backfill materials, or aggregate base materials.

F. Pipe zone backfill materials that are granular may be compacted by a combination of flooding and vibration using concrete vibrators or by jetting, when acceptable to the ENGINEER.

G. Pipeline trench zone backfill materials, containing 5 percent or less of material passing a No. 200 sieve, may be compacted using flooding and jetting or vibration if the CONTRACTOR uses effective procedures that yield the specified compaction test results. Flooding and jetting shall not be done in such a manner that the pipe or nearby utilities are damaged, in areas of poorly draining or expansive soils, or where the use of the procedure is prohibited by any agency having jurisdiction over the street or right-of-way. Approved jet pipes or immersible vibrators shall be used so that each backfill layer is saturated and consolidated to its full depth before the next layer is placed. Jet pipes shall be kept at least 6 inches away from the pipe where the backfills being consolidated and 2 feet away from other pipes or utilities.

H. Equipment weighing more than 10,000 pounds shall not be used closer to walls than a horizontal distance equal to the fill at that time. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.

I. Compaction Requirements: The following compaction test requirements shall be in accordance with AASHTO T-180. Where agency or utility company requirements govern, the highest compaction standards shall apply.

Location or Use of Fill	Percentage of Maximum Density
Pipe zone backfill portion above bedding for flexible pipe.	98
Pipe zone backfill bedding and over-excavated zones under bedding/pipe for flexible pipe, including trench plugs.	98
Pipe zone backfill portion above bedding for rigid pipe.	98
Pipe zone backfill bedding and over-excavated zones under bedding/pipe for rigid pipe.	98

Final backfill, beneath paved areas or structures	98
Final backfill, not beneath paved areas or structures	95
Trench zone backfill, not beneath paved areas or structures, including trench plugs	98
Embankments	98
Embankments, beneath paved areas or structures	98
Backfill beneath structures, hydraulic structures	98
Backfill around structures	98

Location or Use of Fill	Percentage of Maximum Density
Topsoil (Type K material)	80
Aggregate base or subbase Type G or M material)	98

J. Trench Backfill Requirements: the pipe has been structurally designed based upon the trench configuration specified herein.

K. The CONTRACTOR shall maintain the indicated trench cross section up to a horizontal plane lying 6 inches above the top of the pipe.

L. If, at any location under said horizontal plane, the CONTRACTOR slopes the trench walls or exceeds the maximum trench widths indicated in the Contract Documents, the pipe zone backfill shall be “improved” or the pipe class increased as specified herein, at no additional cost to the OWNER. “Improved” backfill shall mean sand-cement backfill or other equivalent materials acceptable to the ENGINEER.

M. If the allowable deflection specified for the pipe is exceeded, the CONTRACTOR shall expose and reground or replace the pipe, repair all damaged lining and coating, and reinstall the pipe zone material and trench backfill as specified at no additional expense to the OWNER.

3.15 PIPE AND UTILITY TRENCH BACKFILL

A. Pipe zone Backfill: The pipe zone is defined as that portion of the vertical trench cross-section lying between a plane 6 inches below the bottom surface of the pipe, i.e., the trench subgrade, and a plane at a point 6 inches above the top surface of the pipe. The bedding for flexible pipe is defined as that portion of pipe zone backfill material between the trench subgrade and the bottom of the pipe. The bedding for rigid pipe is defined as that portion of the pipe zone backfill material between the trench subgrade and a level line which varies from the bottom of the pipe to the springline as shown.

B. Bedding shall be provided for all potable water pipes, sewers, drainage pipelines, and other gravity flow pipelines. Unless otherwise specified or shown, for other pipelines the bedding may be omitted if all the following conditions exist.

1. The pipe bears on firm, undisturbed native soil, which contains only particles that will pass a one-inch sieve.

2. The trench excavation is not through rock or stones.

3. The trench subgrade soils are classified as suitable fill and backfill materials per Paragraph 2.01.

4. The trench subgrade soils have, as a maximum, a moisture content that allows compaction.

C. Where bedding is required, after compacting the bedding the CONTRACTOR shall perform a final trim using a stringline for establishing grade, such that each pipe section when first laid will be continually in contact with the bedding along the extreme bottom of the pipe. Excavation for pipe bells and welding shall be made as required.

D. The pipe zone shall be backfilled with the specified backfill material. The CONTRACTOR shall exercise care to prevent damage to the pipeline coating, cathodic bonds, or the pipe itself during the installation and backfill operations.

E. Trench Zone Backfill: After the pipe zone backfill has been placed as specified above, and after all excess water has completely drained from the trench, backfilling of the trench zone may proceed. The trench zone is defined as that portion of the vertical trench cross-section lying between a plane 6 inches above the top surface of the pipe and a plane at a point 18 inches below the finished surface grade, or if the trench is under pavement, 18 inches below the roadway subgrade. If flooding, ponding, or jetting is used the pipe shall be filled with water to prevent flotation.

F. Final Backfill: Final backfill is all backfill in the trench cross-sectional area within 18 inches of finished grade, of if the trench is under pavement, all backfill within 18 inches of the roadway subgrade.

3.16 EMBANKMENT CONSTRUCTION

A. The area where an embankment is to be constructed shall be cleared of all vegetation, roots and foreign material. Following this, the surface shall be moistened, scarified to a depth of 6 inches, and rolled or otherwise mechanically compacted as specified in Paragraph 3.14.I. Embankment fill material shall be placed and spread evenly in approximately horizontal layers. Each layer shall be moistened or aerated, as necessary. Unless otherwise approved by the ENGINEER, each layer shall not exceed 6 inches of compacted thickness. The embankment fill and the scarified layer of underlying ground shall be compacted to 95 percent of maximum density under structures and paved areas, and 90 percent of maximum density elsewhere.

B. When an embankment fill is to be made and compacted against hillsides or fill slopes steeper than 4:1, the slopes of hillsides or fills shall be horizontally benched to key the embankment fill to the underlying ground. A minimum of 12 inches normal to the slope of the hillside or fill shall be removed and recompacted as the embankment fill is brought up in layers. Material thus cut shall be recompacted along with the new fill material at the CONTRACTOR's expense. Hillside of fill slopes 4:1 or flatter shall be prepared in accordance with Paragraph A, above.

C. Where embankment or structure fills are constructed over pipelines, the first 4 feet of fill over the pipe shall be constructed using light placement and compaction equipment that does not damage the pipe. Heavy construction equipment shall maintain a minimum distance from the edge of the trench equal to the depth of the trench until at least 4 feet of fill over the pipe has been completed.

3.17 CORRECTION OF GRADE

A. Bring to required grade levels areas where settlement, erosion or other grade changes occur.

3.18 MAINTENANCE AND PROTECTION OF WORK

A. While construction is in progress adequate drainage for the roadbed shall be maintained at all times.

The CONTRACTOR shall maintain all earthwork construction throughout the life of the contract, unless otherwise provided, and shall take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. CONTRACTOR shall repair at CONTRACTOR'S expense, except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work.

All channels excavated as a part of the contract work shall be maintained against natural shoaling or other encroachments to the lines, grades, and cross sections shown on the plans, until final acceptance of the project.

3.19 AS-BUILT SURVEY

A. At the completion of the work and prior to final inspection of the area, the CONTRACTOR shall provide the ENGINEER with an as-built topographic survey made by a registered Surveyor, of the State of Florida.

B. The surveyor is to certify on the survey whether or not the as-built conditions conform to the elevations shown on the Drawings to within plus or minus two-hundredth (0.02) of a foot.

3.20 MEASUREMENT AND PAYMENT

A. There shall be no special measurement or payment for the work under this section, it shall be included in the unit price per square yard bid for compaction of subgrade when constructing new roads and shall be included in the cost of all other work called out in the bid schedule requiring earth work.

END OF SECTION

SECTION 02221

TRENCHING, BEDDING, AND BACKFILL FOR PIPE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish all labor, equipment, and incidentals necessary to perform all excavation, backfill, fill, grading and slope protection required to complete the sewer piping and utility work shown on the Drawings and specified herein. The work shall include, but not necessarily be limited to: sewer structures, duct work, conduit, pipe, paving, backfilling, fill, grading, disposal of surplus and unsuitable materials, and all related work such as sheeting, and bracing.

1.02 RELATED WORK

A. Section 02151: Shoring and Bracing of Excavations

B. Section: 02209: Water Distribution Systems

1.03 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation work in compliance with applicable requirements of Owner.

1.04 JOB CONDITIONS

A. The Contractor shall examine the site and undertake his own soil borings prior to submitting his bid, taking into consideration all conditions that may affect his work. The Owner and Engineer will not assume responsibility for variations of sub-soil quality or conditions.

B. Existing Utilities: Locate existing underground utilities in the areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.
   1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the Engineer and the owner of such piping or utility immediately for directions.
   2. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.05 SUBMITTALS

A. For each material obtained from other than on-site sources, the Contractor shall notify the

Engineer of the source of the material and shall furnish the Engineer, for approval, a representative sample weighing approximately 50-pounds, at least 10-calendar days prior to the date of anticipated use of such material.

1.06 TRENCH PROTECTION

A. Contractor shall construct and maintain sheeting and bracing as required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction; and to protect adjacent structures, existing piping and/or foundation material from disturbance, undermining, or other damage. Care shall be taken to prevent voids outside of the sheeting, and if voids are formed, they shall be immediately filled and rammed.

B. For pipe trench sheeting, no sheeting is to be withdrawn if driven below mid-diameter of any pipe, and no wood sheeting shall be cut off at a level lower than 1 foot above the top of any pipe unless otherwise directed by the Engineer. If during the progress of the work the Engineer decides that additional wood sheeting should be left in place, he may direct the Contractor in writing. If steel sheeting is used for trench sheeting, removal shall be as specified above unless written approval is given by the Engineer for an alternate method of removal.

C. All sheeting and bracing not specified to be left in place shall be carefully removed in such a manner as not to endanger the construction or other structures, utilities, existing piping, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, by watering, or otherwise as may be directed.

D. The right of the Engineer to order sheeting and bracing to be left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property, occurring from or upon the work, occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:
   1. Materials for use as base, fill and backfill shall be as described below:
      a. Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M-145, soil classification Groups A-1, A-2-4. A-2-5, and A-3.
      b. Unsatisfactory soil materials are those defined in ASSHTO M-145 soil classification Groups A-2-6, A-2-7, A-6, and A-7 along with peat and other highly organic soils.

B. Structural Fill: Structural fill material shall be satisfactory soil material consisting of a minimum of 60-percent clean medium to fine grain sized quartz sand, free of organic, deleterious and/or compressible material. Rock in excess of 2-1/2- inches in diameter shall not be used in the fill material. Structural fill shall not contain hardpan, stones, rocks, cobbles or other similar materials.

C. Common Fill:

1. Common fill material shall be satisfactory soil material containing no more than 20-percent by weight finer than No. 200-mesh sieve. The material shall be free from organic matter, much, marl, and rock exceeding 2-1/2- inches in diameter. Common fill shall not contain broken concrete, masonry, rubble or other similar materials.
2. Material falling within the above specification, encountered during the excavation, may be stored in segregated stockpile(s) for reuse. All material which, in the opinion of the Engineer, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable materials.

D. Rock bedding shall be 3/8-inch to 3/4-inch washed and graded limerock. This rock shall be graded so that 99 percent will pass a 3/4-inch screen and 80 percent will be retained on a No. 8 screen.

PART 3 - EXECUTION

3.01 GENERAL

A. All excavation, backfill and grading necessary to complete the Work shall be made by the Contractor and the cost thereof shall be included in the contract price.

B. Material may be obtained on-site with the approval of the Owner, or shall be furnished as required from off site sources and hauled to the site.

C. The Contractor shall take all the necessary precautions to maintain the work area in a safe and workable condition.

D. The Contractor shall protect his work at all times by flagging, marking, lighting and barricading. It shall also be the Contractor's responsibility to preserve and protect all above and underground structures, pipe lines, conduits, cables, drains or utilities which are existing at the time he encounters them. Failure of the Drawings to show the existence of these obstructions shall not relieve the Contractor from this responsibility. The cost of repair of any damage which occurs to these obstructions during or as a result of construction shall be borne by the Contractor without additional cost to the Owner.

3.02 TRENCH EXCAVATION

A. Excavation for all trenches required for the installation of pipes and electrical ducts shall be made to the depths indicated on the Drawings. Excavate trench to provide a minimum of 36-inch clear cover over the pipe bell unless otherwise noted on the Drawings, and to sufficient depth to provide the bedding depth indicated on the Drawings. Excavate in such manner and to such widths as will give suitable room for laying the pipe. The trench width at the top of the pipe shall not exceed the allowable as determined by the depth of cut and these specifications.

B. Rock shall be removed to provide a minimum clearance of 8-inches around the bottom and sides of all the pipe or ducts being laid.

C. Where pipe or ducts are to specified be laid in limerock bedding or encased in concrete, the trench may be excavated by machinery to or just below the designated subgrade, provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

D. Where the pipes or ducts are specified to be laid directly on the trench bottom, the lower parts of the trenches shall not be excavated to the trench bottom by machinery. The last of

the material being excavated shall be done manually in such a manner that will give a flat bottom true to grade so that pipe or duct can be evenly and uniformly supported along its entire length on undisturbed material or bedding rock. Bell holes shall be made as required manually so that there is no bearing surface on the bells and pipes are supported along the barrel only.

3.03 DEWATERING

A. Prevent surface water and subsurface or groundwater from flowing into excavations, and from flooding project site and surrounding area.
   1. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting structure bases, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.
   2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey stormwater runoff and water removed from excavations into collection areas or to direct stormwater runoff in the historical flow direction. Do not use trench excavations as temporary drainage ditches. Maintain proper erosion and sedimentation control measures to avoid siltation of existing stormwater management systems.

3.04 PIPE INTERFERENCE AND ENCASEMENT

A. The Contractor shall abide by the following schedule of criteria concerning interference with other facilities.
   1. In no case shall there be less than 18-inches of vertical separation between any two pipe lines, or 4-inches of separation between pipe lines and structures.
   2. Where the above conditions cannot be met, or unless otherwise specified on the Drawings, the Contractor shall consult with the Engineer.

B. The Engineer shall have full authority to direct the placement of the various pipes and structures in order to facilitate construction, expedite completion and to avoid conflicts.

3.05 BACKFILLING

A. Backfilling over pipes shall begin as soon as practicable after the pipe has been laid, jointed, and inspected, and the trench filled with suitable compacted material to the mid-diameter of the pipe.

B. All backfilling shall be performed expeditiously and as detailed on the Drawings.

C. Any space remaining between the pipe and sides of the trench shall be packed full by hand shovel with selected earth, free from stones having a diameter greater than 2-inches and thoroughly compacted with a tamper as fast as fill is placed, up to a level of one foot above the top of the pipe. Compact to 100-percent of maximum dry density as determined by AASHTO T-99 in layers not to exceed 6-inches in depth up to the centerline of the pipe from the trench bottom and in layers not to exceed 6-inches from the pipe centerline to 12-inches above the pipe.

D. The backfill shall be carried up evenly on both sides with at least one person tamping for each person shoveling material into the trench.

E. The remainder of the trench above the compacted backfill, as just described above, shall be filled and thoroughly compacted with common fill by rolling, ramming, or puddling, as the Engineer may direct. Where pavement is to be constructed over the pipe, compact common fill in 6-inch layers to 98-percent of maximum dry density as determined by AASHTO T-180. Where no pavement is to be constructed over the pipe, compact common fill in 6-inch layers to 95-percent of maximum dry density as determined by AASHTO T-180.

F. The bedding rock shall consist of at least 6-inches of washed and graded limerock placed in the trench to the proposed elevation of the centerline of the pipe prior to laying the piping. The bedding shall not be used under any circumstances as a drain for groundwater. The Contractor shall take all precautions necessary to maintain the bedding in a compacted state and to prevent washing, erosion or loosening of this bed.

G. In location where pipes pass through building walls, the Contractor shall take the following precautions to consolidate the backfill up to an elevation of at least 1-foot above the bottom of the pipes:
   1. Place structural fill in such areas for a distance of not less than 3-feet on either side of the center line of the pipe in level layers not exceeding 6-inches in depth.
   2. Wet each layer to the extent directed and thoroughly compact each layer with a power tamper to the satisfaction of the Engineer.

3.06 GRADING

A. Grading shall be performed at such places as are indicated on the Drawings, to the lines, grades, and elevations shown or as directed by the Engineer and shall be made in such a manner that the requirements for formation of embankments can be followed. All unacceptable material encountered, of whatever nature within the limits indicated, shall be removed and disposed of as directed. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times. When directed, temporary drains and drainage ditches shall be installed to intercept or divert surface water, which may affect the performance or condition of the work.

B. If at the time of excavation it is not possible to place all available material in its proper section of the permanent structure, the excess material shall be stockpiled in approved areas for later use. Stockpiling or double handling of excavation material shall not bear any additional cost to the Owner.

C. The Owner, through his Engineer, reserves the right to make adjustments or revisions in lines or grades, if found necessary as the Work progresses, due to discrepancies on the Drawings, adverse field conditions, or in order to obtain satisfactory construction.

D. Stones or rock fragments larger than 2-1/2-inches in their greatest dimensions will not be permitted in the top 6-inches below the subgrade line of all dikes, fills or embankments.

E. All fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings, or as directed by the Engineer.

F. In cuts, all loose or protruding rocks on the side slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut slopes shall be uniformly graded to the slope, cross-section and alignment shown on the Drawings or as directed by the Engineers.

G. No grading is to be done in areas where existing pipe lines that may be uncovered or damaged until such lines which must be maintained are projected or relocated; or, where lines are to be abandoned, all required valves are closed and drains plugged at manholes.

H. The Contractor shall replace all pavement cut or otherwise damaged during the progress of the Work as specified elsewhere herein.

3.07 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. All surplus and unsuitable excavated material shall be disposed of in one of the following ways as directed by the Engineer.
   1. Transport to designated soil storage area on Owner's property and stockpile or spread as directed by the Engineer.
   2. Transport from Owner's property and legally dispose of off-site. Any permit required for the hauling and disposing of this material beyond Owner's property shall be obtained prior to commencing hauling operations.

B. Suitable excavated material may be used for fill if it meets the specifications for common fill and is approved by the Engineer. Excavated material so approved may be neatly stockpiled at the site where designated by the Owner/Engineer provided there is an area available where it will not interfere with the operation of the facility nor inconvenience traffic or adjoining property owners.

END OF SECTION

SECTION 02240
Dewatering

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

B. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, (Current Edition).

C. Florida Department of Transportation Design Standards, (Current Edition).

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to design, permit, install and maintain, a complete and adequate dewatering system, to dewater excavations as indicated on the drawings, as specified herein or both, except as for items specifically indicated as “NIC ITEMS". The CONTRACTOR will be responsible for all means and methods of dewatering for obtaining dewatering (water use) permits from South Florida Water Management District and all other Governmental Agency’s having dewatering (water use) jurisdiction and for compliance with all conditions set forth by Governmental Agency permits and licenses.

1.03 RELATED WORK

A. Section 02221 – Trenching, Bedding and Backfilling for Pipe.

B. Section 02609 – Water Distribution Systems.

C. Section 02723 – Sanitary Sewer Pipe Liner.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Dewatering, where required, may include the use of temporary reservoirs and diking, well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means. Standby pumping equipment must be maintained on the jobsite and operate within any local noise ordinance limits. All safety requirements, fencing, etc. shall be installed and maintained by the CONTRACTOR.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. The CONTRACTOR shall provide continuous dewatering until completion of construction and backfill. The CONTRACTOR shall provide all equipment necessary for normal dewatering, including, but not limited to, surface pumps, sump pumps, wellpoints and header pipe and trenching/digging machinery. Normal dewatering methods include, but are not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, perforated pipe drains, sumps and siphons, wells and wellpoints. Contractor

shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent workmen for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

B. The CONTRACTOR shall construct structures, trenches and embankments in the Dry, and maintain the water level 1 foot or more below the bottom of excavation, whenever normal dewatering equipment and methods can accomplish the needed dewatering. Dewatering for structures and pipelines shall commence when groundwater is first encountered, and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this Section or other requirements.

C. At all times, site grading shall promote drainage. Surface runoff shall be diverted from excavations. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and be pumped or drained by gravity from the excavation to maintain a bottom free from standing water.

D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

E. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with pea rock at no additional cost to the CITY.

F. Where wet conditions are such that dewatering by normal pumping methods would not be effective, the procedure outlined below may be used when specifically authorized by the Engineer in writing. The City will permit the use of granular material below the elevation at which mechanical tampers would be effective, but only material classified as A-3. Place and compact the material using timbers or hand tampers until the backfill reaches an elevation such that the backfill moisture content will permit the use of mechanical tampers. When the backfill has reached such elevation, use normally acceptable backfill material. Compact the material using mechanical tampers in such manner and to such extent as to transfer the compacting force into the material previously tamped by hand. The City will permit the use of coarse aggregate below the elevation at which mechanical tampers would be effective. Use ASTM D 2321 Class II material (well graded) coarse aggregate such as #57 or #67 rock as specified in FDOT Section 901. Place the coarse aggregate such that it will be stable and firm.

G. Flotation shall be prevented by the CONTRACTOR by maintaining a positive and continuous removal of water. The CONTRACTOR shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.

H. If well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the subsurface. A continual check by the CONTRACTOR shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

I. The CONTRACTOR shall dispose of water from the WORK in a suitable manner without damage to adjacent property. CONTRACTOR shall be responsible for obtaining any permits that may be necessary to dispose of water. Contractor may utilize existing City

drainage structures and drainage structures constructed under this contract, for disposal of water. Water shall be filtered using a silt box or another approved method to remove sand and fine-sized soil particles before disposal into any drainage system. Dewatering disposal points shall be approved by the ENGINEER prior to being used. All drainage structures, lines and junction boxes, used by the CONTRACTOR for disposal of water shall be cleaned by a jet vac or other method and approved by the ENGINEER after dewatering is complete.

J. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, and sewers.

K. The CONTRACTOR shall retain a State of Florida Licensed Professional Engineer or Registered Professional Geologist to prepare a dewatering plan and submit dewatering permit application to the South Florida Water Management District. Permitting required by this paragraph “K” shall be considered “normal permitting”.

L. Normal dewatering of trenches and other excavations shall be considered as incidental to the construction of the WORK and all costs thereof shall be included in the various contract prices in the Bid Forms, unless a separate bid item has been established for dewatering.

3.02 QUALITY CONTROL

A. It shall be the sole responsibility of the CONTRACTOR to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence.

B. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the CONTRACTOR.

C. Where critical structures or facilities exist immediately adjacent to areas of proposed dewatering, reference points shall be established and observed at frequent intervals to detect any settlement which may develop. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the CONTRACTOR. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the CONTRACTOR.

3.03 CONTRACTOR SUBMITTALS

A. Prior to commencement of excavation, the CONTRACTOR shall submit a detailed plan and operation schedule for dewatering of excavations. The CONTRACTOR may be required to demonstrate the system proposed and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times. The CONTRACTOR's dewatering plan is subject to review by the ENGINEER and regulatory agencies.

3.04 MEASUREMENT AND PAYMENT

A. There shall be no separate measurement and payment for the work under this section for “normal dewatering” or “normal permitting”. No separate Bid Item has been established for such “normal dewatering”. Construction and operation and permitting work for “normal dewatering” and “normal permitting” shall be included in the appropriate

unit prices bid, and will be full compensation for all work related to the permitting and for successful construction and operation of “normal dewatering”.

END OF SECTION

SECTION 02260
FINISH GRADING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. The Contractor shall, under this Section, supply, place, and compact and roll finish grade materials prior to landscaping work.

B. Finish grade sub-soil.

C. Cut out areas to receive stabilizing base course materials for paving and sidewalks.

D. Place, finish grade and compact topsoil.

1.02 RELATED WORK

A. Section 02100 - Site Preparation.

B. Section 02220 - Structural Excavation, Backfill and Compaction.

C. Section 02481 - Tree Relocation and Protection.

D. Section 02931 - Sodding.

1.03 PROTECTION

The Contractor shall prevent damage to existing fencing, trees, landscaping, natural features, bench marks, pavement, utility lines, and sprinkler system. Correct damage at no cost to the Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

Topsoil shall be friable loam free from subsoil, roots, grass, excessive amount of weeds, stones and foreign matter; acidity range (ph) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter. (Use topsoil stockpiled on site if conforming to these requirements, or as directed by the Engineer.)

PART 3 - EXECUTION

3.01 SUB-SOIL PREPARATION

A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc., in excess of 2 inches in size. Remove sub-soil which has been contaminated with petroleum products.

B. Cut out areas, to sub-grade elevation, which are to receive stabilizing base for paving and sidewalks.

C. Bring sub-soil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes in to level areas.

D. Slope grade away from building minimum 4 inches in 10 feet (unless indicated otherwise on Drawings).

3.02 PLACING TOPSOIL

A. Place topsoil in area where seeding, sodding and planting is to be performed. Place to the following minimum depths, up to finished grade elevations:

1. 6-inches for seeded areas.
2. 4 1/2-inches for sodded areas.
3. 24-inches for shrub beds.
4. 18-inches for flower beds.

B. Use topsoil in relatively dry state. Place during dry weather.

C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.

D. Remove stones, roots, grass, weeds, debris and other foreign material while spreading.

E. Manually spread topsoil around trees, plants, buildings and other structures to prevent damage which may be caused by grading equipment.

F. Lightly compact placed topsoil.

3.03 SURPLUS MATERIAL

A. Remove surplus sub-soil and topsoil from site.

B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping.

END OF SECTION

SECTION 02510
CONCRETE SIDEWALK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. The work specified in this Section consists of the construction of concrete sidewalk in accordance with these Specifications and in conformity with the lines, grades, dimensions and notes shown on the plans.

1.03 RELATED WORK

A. Section 1600 – Materials and Equipment
B. Section 02100 – Site Preparation
C. Section 03300 – Cast-in-Place Concrete

PART 2 - PRODUCTS

2.01 CONCRETE

A. Concrete shall be Class I Concrete, with a minimum compressive strength of 3,000 psi in accordance with Section 345, Florida Department of Transportation Standard Specifications for Road and Bridge Construction.

2.02 FORMS

A. Forms for this work shall be made of either wood or metal and shall have a depth equal to the plan dimensions for the depth of concrete being deposited against them. They shall be straight, free from warp or bends, and of sufficient strength when staked, to resist the lateral pressure of the concrete without displacement from lines and grade. Forms shall be cleaned each time they are used and shall be oiled prior to placing the concrete.

2.03 SUBGRADE AND GRADING

A. Excavation shall be made to the required depth, and the foundation material upon which the sidewalk is to be set shall be compacted to a firm, even surface, true to grade and cross-section, and shall be moist at the time that the concrete is placed.

2.04 JOINTS

A. Expansion joints between the sidewalk and the curb, point of curvature, point of tangency and at all other locations indicated on the plans, shall be 1/2-inch wide, formed with a preformed joint filler and the joint shall be edged with a tool having

a 1/4-inch radius. Preformed joint filler shall meet the requirements of AASHTO M153 or AASHTO M213.

B. Contraction joints shall be 1/8-inch wide x 3/4-inch deep and may be of the open type or may be sawed. Open type contraction joints shall be formed by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, the bulkhead shall be removed. After the sidewalk has been finished over the joint, the slot shall be edged with a tool having a 1/8-inch radius.

If the CONTRACTOR elects to saw the contraction joints, shall be cut with a concrete saw after the concrete has set.

Contraction joints shall be constructed at not more than five (5) foot intervals, and shall be in place within twelve (12) hours after finishing.

PART 3 - EXECUTION

3.01 PRODUCT DELIVERY

A. All ready-mix concrete delivered to site shall be furnished with a delivery ticket from the batch plant indicating the mix delivered, delivery times from the batch plant to the site, and quantity delivered.

B. The CONTRACTOR is responsible of ensuring proper material, handling and quantity of delivered products.

C. The CONTRACTOR shall provide the delivery tickets to the CITY on a daily basis.

3.02 PLACING

A. The concrete shall be placed in the forms to the required depth and shall be vibrated and spaded until mortar entirely covers its surface.

3.03 FINISHING

A. Screeding: The concrete shall be struck-off by means of a wood or metal screed, used perpendicular to the forms, and floated in order to obtain the required grade and remove surplus water and laitance.

B. Surface requirements: The concrete shall be given a broom finish. The surface variations shall not be more than 1/4 inch under a ten-foot straightedge, nor more than 1/8 inch on a five-foot transverse section. The exposed edge of the slab shall be carefully finished with an edging tool having a radius of 1-1/2 inch.

3.04 CURING

A. The concrete shall be continuously cured for a period of at least 72 hours. Curing shall be commenced after finishing has been completed and as soon as

the concrete has hardened sufficiently, to permit application of the curing material without marring the surface.

B. Wet burlap, white-pigmented curing compound, waterproof paper or polyethylene sheets may be used for the curing.

END OF SECTION

SECTION 02513

ASPHALTIC CONCRETE PAVING

PART - 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and place asphaltic concrete pavement in accordance with the grades and typical sections shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Section 02221: Trenching, Bedding & Backfill for Pipe
B. Section 02580: Pavement Marking & Signing

1.03 SUBMITTALS

A. Submit shop drawings as specified in Section 01340.

PART 2 – PRODUCTS

2.01 MATERIALS

A. The limerock base shall consist of crushed limerock as specified by the Florida Department of Transportation with minimum LBR of 100 or a crushed, or recycled concrete meeting the same requirements as LR base.

B. The material used for the prime coat shall conform to the Florida Department of Transportation Specifications for primer to be used on Miami Oolite limerock base.

C. Bituminous material for tack coat shall meet the standard specifications of the Florida Department of Transportation for the grade used and may be any suitable grade of RC.

D. The materials of the asphaltic concrete surface shall conform with applicable sections of the Florida Department of Transportation Standard Specification. Asphaltic mix designs shall be as specified in the plans. A tack coat shall be used between paving courses.

E. The paint used for parking and traffic stripes shall be yellow or white traffic paint which shall be of a type approved by the Florida Department of Transportation under their Specifications for Traffic paint (Sec. 971-12.3), Code T-2.

PART 3 - EXECUTION

3.01 INSTALLATION

A. The sub-grade preparation shall comply with the requirements of Section 160 of the Florida Department of Transportation Specifications. All soft and yielding material and other portions of the sub-grade which will not compact readily shall be removed and replaced with suitable material and the whole sub-grade brought to line and grade and to a foundation of uniform compaction and supporting power. The cost of removing and replacing unsuitable material shall be included in the bid for the paving.

B. The top 12-inches of the sub-grade, in both cut and fill sections, shall be compacted to a density of not less than 98-percent of the maximum density as determined by the AASHTO Method T-180. If shown on the Drawings, compact sub-grade to a Limerock Bearing Value of 40 psi. Unless the sub-grade material at the time of compacting contains sufficient moisture to permit proper compaction it shall be moistened as necessary and then compacted. Sub-grade material containing excess moisture shall be permitted to dry to the proper consistency before being compacted. The sub-grade shall be shaped prior to making the density tests. The required density shall be maintained until the base or pavement has been laid or until the aggregate materials for the base or pavement course have been spread in place.

C. The minimum compacted thickness of the limerock base shall be 12- inches applied in three layers of equal depth unless otherwise shown on the Drawings. The width of the limerock base shall be 3-feet wider than the pavement, 1-1/2-ft. on each side.

D. Before the prime coat is applied, all loose material, dust, dirt or other foreign material which might prevent bond with existing surface shall be moved to the shoulders to the full width of the base by means of revolving brooms, mechanical sweepers, blowers, supplemented by hand sweeping or other approved methods. The glazed finish shall have been removed from the base. The prime coat shall be applied by a pressure distributor so that approximately 0.1 gallons per square yard is applied uniformly and thoroughly to a clean surface.

E. Prior to the application of the surface course, all loose material, dust, dirt and all foreign material which might prevent proper bond with the existing surface shall be removed to the full width of the repair by means of approved mechanical sweepers and supplemented by hand sweeping if required.

F. Submit as-builts of the finished limerock and curbing to the Engineer of Record for review and approval prior to paving.

G. Apply bituminous tack coat at a rate between 0.02 and 0.10 gallons per square yard. Bituminous material shall be heated as per manufacturer’s recommendations.

H. The asphaltic concrete shall be placed at an average thickness of 2-inches unless otherwise shown on the drawings.

I. All manhole castings, valve boxes or other utility castings within the area to be surfaced shall be adjusted to the proposed surface elevation by the Contractor. The work shall be accomplished in such a manner as to leave the casting fixed permanently in its correct position.

3.02 PAVEMENT REPAIR

A. All damage to pavement as a result of the work (construction or maintenance) under this contract shall be repaired according to the plans and specifications at the Contractors cost. Pavement shall be repaired to match the original surface material and original grade; however, the asphalt concrete thickness shall not be less than 1-inch. The repair shall include the preparation of the sub-grade, the placing and compacting of the limerock base, the preparation and priming of the base, the placing

and maintaining of the surface treatment, all as specified herein and as shown on the Drawings.

B. The width of all repairs shall extend at least 12-inches beyond the limit of the damage or as shown on the Drawings. The edge of the pavement to be left in place shall be saw cut to a true edge and should provide a clean edge to abut the repair. The line of the repair shall be reasonably uniform with no unnecessary irregularities.

3.03 TESTING

A. Should any test indicate that any portion of the materials or workmanship does not comply with these Specifications; that portion of the work shall be removed and replaced or reworked at no additional cost to the Owner until satisfactory compliance is attained.

3.04 PARKING AND TRAFFIC STRIPES

A. The Contractor shall paint the stripes indicated on the Drawings. The paint shall be applied in strict accordance with printed specifications of the manufacturers of the paint being applied, and the latest Florida Department of Transportation Standard Specifications. Unless otherwise indicated the width of stripes shall be 6-inches.

END OF SECTION

02515

PORTLAND CEMENT CONCRETE PAVEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Contract Documents.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Portland Cement Concrete Paving work, as indicated on the drawings, as specified herein orboth, except as for items specifically indicated as "NIC ITEMS".

B. Including, but not necessarily limited to the following:

1. Fill, subgrade, and limerock base.

2. Concrete formwork.

3. Concrete reinforcement.

4. Expansion and contraction joints.

5. Concrete paving.

1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02513 - Asphaltic Concrete Paving - General

1.04 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Perform work in accordance with local building and other applicable codes.

B. Applicator Qualifications: Minimum of five years experience on 5 comparable concrete projects.

C. Inspection and Testing: Performed in accordance with Section 01410 unless otherwise specified.

1. Test cylinders - as per ASTM C-39.

a. Minimum of three (3) concrete test cylinders shall be taken for every 75 or less cubic yards of concrete placed.

b. Minimum of one (1) additional test cylinder shall be taken during any cold weather concreting, and be cured on job site under same conditions as the concrete it represents.

2. Slump test - as per ASTM C-143:

a. Minimum of one (1) slump test shall be taken for each set of test cylinders taken.

1.05 SUBMITTALS

A. Test Reports: Reports of concrete compression, yield, air content, and slump tests.

B. Certificates:

1. Manufacturer's certification that materials meet specification requirements.

2. Material content per cubic yard of each class of concrete furnished.

a. Dry weights of cement.

b. Saturated surface-dried weights of fine and coarse aggregate.

c. Quantities, type and name of admixtures.

d. Weight of water.

3. Ready-mix delivery tickets, ASTM C-94.

C. Shop Drawings:

1. Show sizes and dimensions for fabrication and placing of reinforcing steel and bar supports.

2. Indicate bar schedules, stirrup spacing, and diagrams of bend bars.

3. Detail items of form systems affecting appearance of Architectural concrete surfaces such as joints, tie holes liners, patterns and textures. Show items in relation to entire form system.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size and length.

B. Handle and store materials to prevent contamination.

1.07 JOB CONDITIONS

A. Allowable concrete temperatures:

1. Hot weather: Maximum 90 degrees F as per ASTM C-94.

B. Do not place concrete during rain, unless protection is provided.

PART 2 - PRODUCTS

2.01 FILL

A. As specified in Section 02513 - Asphaltic Concrete Paving - general.

2.02 SUBGRADE

A. As specified in Section 02513 - Asphaltic Concrete Paving – general.

2.03 LIMEROCK BASE

A. As specified in Section 02513 - Asphaltic Concrete Paving - general.

2.04 READY-MIXED CONCRETE

A. Cement: ASTM C-150, normal Type 1.

B. Admixtures:

1. Air entraining: ASTM C-260.

2. Chemical: Type (as required) ASTM C-494.

3. Fly ash and pozzolans: ASTM C-618.

C. Coarse aggregate: Not less than 50% clean, hard, crushed stone conforming to requirements of Table 2, size number 467 ASTM C-33.

D. Slump Range: 2-4 inches - tested according to ASTM designation C143 (AASHTO T119).

E. Air content: 5% + 1%.

F. Mix proportioning:

1. 28 day compressive strength of cured laboratory samples 3,000 psi.

2. Minimum cement content 5-sacks/cubic yard.

G. Curing Material: Liquid membrane, ASTM C-309, Type 1.

H. Mixes:

1. ASTM C-94.

2. Mix concrete only in quantities for immediate use.

3. Do not retemper or use set concrete.

2.05 REINFORCEMENT

A. Reinforcing Steel Bars: 60 psi yield strength; deformed billet steel bars; ASTM A-615, plain finish.

B. Welded Steel Wire Fabric: Plain type, ASTM A-185, hot dip galvanized, plain finish.

C. Tie Wire: FS QQ-W-461-G, annealed steel, black, 16-gage minimum.

D. Bar Supports: Conform to "Bar Support Specifications," CRSI Manual of Standard Practice.

2.06 FORMWORK AND ACCESSORIES

A. Formwork: Matched, tight fitting and adequately stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of concrete, conform with ACU 347, Chapter 3, Material and Form Work.

B. Lumber:

1. Softwood framing lumber: Kiln dried, PS-20.

2. Boards less than 1-1/2 inch thick and 2 inches wide, used for basic forms and form liners: Kiln dried.

3. Grade marked by grading rules agency approved by American Lumber Standards Committee.

4. Light framing or studs for board or plywood forms, 2 inches to 4 inches width and thickness, construction standard grade.

5. Boards for basic forms, construction standard grade.

6. Board surface: Smooth.

C. Plywood:

1. Exterior type softwood plywood, PS 1-66.

2. Each panel stamped or branded indicating veneer grades, species, type and identification.

3. Wood faced plywood for Architectural concrete surfaces.

a. Panel veneer grades: B-C.

b. Mill-oiled sides and mill-sealed edges of panels.

D. Ties:

1. Material: Steel

2. Type: Snap ties

3. Depth of breakback: 1 in.

4. Maximum diameter, 1/4 in.

E. Form coatings:

1. Non-staining type.

2. Agent: Pine oil derivative.

2.07 EXPANSION AND CONTRACTION JOINTS

A. Minimum 3/4-inch thick asphaltic impregnated fiberboard as per ASTM D-1751.

2.08 OTHER

A. Water: Clean and potable.

PART 3 - EXECUTION

3.01 BARRICADES

A. Provide substantial temporary barricades around all areas of operation and maintain until work under this section is completed and approved.

B. Install temporary traffic, markers, signals, and signs as per D.O.T. Standard Specifications to:

1. Eliminate potentially hazardous conditions.

2. Maintain adequate traffic patterns free of conflict with work under this Contract.

3.02 PREPARATION OF SUBGRADE

A. Ensure rough grading has brought subgrade to required elevations.

B. Fill soft spots and hollows with additional fill.

C. Level and compact subgrade, to receive limerock base for concrete walks, curbs and gutters, to a density as specified in Section 02200, Paragraph 3.14.I.

3.03 FORMWORK

A. CONTRACTOR is responsible for the design, construction, removal and complete safety of formwork and shoring.

B. Form construction shall be provided to shape, lines dimensions of members shown: substantial, tight enough to prevent leakage, and properly braced or tied to maintain position and size, form sides and bottoms of members unless specifically excepted.

C. Fill voids of plywood joints with sealant and tool smooth.

D. Form vertical surfaces to full depth and securely position to required lines and levels. Ensure form ties are not placed so as to pass through concrete.

E. Arrange and assemble formwork to permit easy dismantling and stripping, and to prevent damage to concrete during formwork removal.

3.04 REINFORCING

A. Reinforce concrete curbs and gutters. Allow for minimum 1-1/2 inch concrete cover.

B. Do not extend reinforcing through expansion and contraction of joints. Provide dowelled joints through expansion and contraction joints, with one end of dowels fitted with capping sleeve to allow free movement.

3.05 FORMING EXPANSION AND CONTRACTION JOINTS

A. Place expansion and contraction joints at 20 foot intervals or as indicated on drawings. Where possible, make joints of curbs coincide with joints in paving slabs. When sidewalks abut building, provide continuous joint filled.

B. Fill joints with filler of required profiles set perpendicular to longitudinal axis of walks, curbs and gutters. Recess 1/2 inch below finished concrete surface.

3.06 INSPECTION

A. Assure that excavation and formwork are completed, and excess water is removed.

B. Check that reinforcement is secured in place.

C. Verify that expansion joint material, anchors, and other embedded items are secured in position.

3.07 PREPARATION FOR PLACEMENT

A. Notify the ENGINEER and other inspectors at least 36 hours prior to inspection.

B. Equipment forms, and reinforcing shall be clean and wet down, reinforcing firmly secured in place, runways set up and not resting on or displacing reinforcing.

3.08 PLACING CONCRETE

A. Place concrete, screed and wood float surfaces to a smooth and uniform finish, free of open texturing and exposed aggregate.

B. Avoid working mortar to surface.

C. Round all edges, including edges of expansion and contraction joints, with 1/2 inch of radius edging tool.

D. Where concrete curbs are adjacent to pavement slabs, make concrete curbs and gutters integral with slabs. Make expansion and contraction joints of curbs coincide with slab joints.

E. Ensure finished surfaces do not vary from true lines, levels or grade by more than 1/8 inch in 10 feet when measured with straightedge.

F. Apply curing compound on finished surfaces immediately after finishing. Apply in accordance with manufacturer's recommendations.

3.09 PROTECTION OF COMPLETED WORK

A. During curing period, protect concrete from damaging mechanical disturbances, water flow, loading, shock, and vibration.

3.10 CLEAN UP

A. Remove all debris and excess material immediately from project site.

B. Take down all barricades and temporary traffic markers, signals and signs only after all work included in this section is finished and inspected, and only after so directed by OWNER's Representative.

C. Leave project area neat, orderly and free of any hazardous conditions.

3.11 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION 02515

SECTION 02520
CONCRETE CURBS AND HEADERS

PART 1 - GENERAL

1.01 SCOPE

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials and performing all operations in connection with the construction of concrete curbs and headers, complete and in place, in strict accordance with these specifications and the applicable drawings and subject to the terms and conditions of this contract.

1.02 REFERENCES

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, (latest edition)

PART 2 - PRODUCTS

2.01 MATERIALS

A. The concrete mix shall produce standard weight concrete with the following properties to be verified by the use of the appropriate listed test methods.

- *Compressive strength*: 3,000 psi at 28 days - tested according to ASTM designation C31 (AASHTO T23)
- *Slump Range*: 2-4 inches - tested according to ASTM designation C143 (AASHTO T119)

B. Joint materials shall be in accordance with FDOT Specification Section 932

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

Concrete curbs and headers shall be constructed of the type and in the locations as shown on the plans.

A. FORMS: Forms for this work shall be made of either wood or metal. They shall be straight, free from warp or bends, and of sufficient strength, when staked, to resist the pressure of the concrete without springing. If made of wood, they shall be of two (2) inch surfaced plank; if made of metal, they shall be of approved section and shall have a flat surface on top.

B. CONSTRUCTION: Excavation shall be made to the required depth; and the sub-grade or base upon which the curb or header is placed shall be compacted to 98% AASHTO T-180.

The concrete shall be placed in the forms to the depth specified, and tamped and spaded to prevent honeycomb and until the top of the structure can be floated smooth and the edges rounded to the radius shown on the plans.

Contraction joints shall be placed 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.

Contraction joints shall be created while the concrete is still plastic by using a grooving tool or by inserting a premolded filler strip, or a groove may be saw cut into the concrete soon after it has hardened. Curb with irregular cracks due to late contraction joint construction will not be accepted.

Expansion joints shall be constructed at all radius points and at other locations indicated on the plans. They shall be located at intervals of 500 feet between other expansion joints, or ends of a run. The joint shall be 1/2 inch in width.

The forms shall be removed within twenty-four (24) hours after the concrete has been placed, and minor defects then filled with mortar composed of one (1) part Portland Cement and two (2) parts fine aggregate. Plastering shall not be permitted on the face of the curb; and all rejected curb, or header shall be removed and replaced without additional compensation. The curb top, face and/or header top shall be given a surface finish while the concrete is still green. A brush finish will be required unless noted otherwise; however, additional finishing may be required in areas considered too rough or with minor defects.

After the concrete has been rubbed smooth, it shall be rubbed again until a uniform color is produced, using a thin grout composed of one (1) part Portland Cement and one (1) part fine aggregate.

After concrete has set sufficiently, the spaces in front and back of the curb shall be refilled to the required elevation with suitable material, which shall be placed and thoroughly compacted in layers of not more than six (6) inches in thickness.

END OF SECTION

SECTION 02525
SURFACE RESTORATION

PART 1 - GENERAL

1.01 SCOPE

A. The work to be performed under this item shall include completing of surface restoration as specified herein. This work does include pavement paver restoration, concrete curb and/or sidewalk restoration and landscaping. Surface restoration shall follow completion of backfilling within 7 calendar days. Where work is on private property the Contractor shall photograph the area of work before construction and not proceed with the work until clearance has been received through the City. Where work is in FDOT or County right-of-way, restoration shall conform to the conditions of the permit and/or FDOT or County standards.

1.02 REFERENCES

A. Work and materials shall conform to the applicable requirements from the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction", most current edition at time of bid.

B. American Association of State Highway and Transportation Officials (AASHTO).
1. AASHTO T-180 - Test for Moisture-Density Relations of Soils Using a 10 lb. Rammer and an 18-Inch Drop Modified Protector Test.

PART 2 - PRODUCTS

2.01 SUBGRADE

A. Subgrade shall be compacted in accordance with the plans and specifications.

2.02 BASE COURSE

A. The base course shall consist of Grade No. 2 limerock conforming to Section 911-3 of FDOT "Standard Specifications for Road and Bridge Construction".

2.03 PRIMER

A. Primer shall be hot bituminous material in accordance with Section 300-2 of FDOT Standard Specifications, most current edition at time of bid. Alternate primers shall be acceptable only with prior approval of the Engineer.

2.04 TACK COAT

A. Tack coat shall be in accordance with Section 300-2.3 of FDOT Standard Specifications, most current edition at time of bid.

2.05 SURFACE COURSE

A. If required, the temporary surface course shall be SP 9.5 (1”) asphaltic concrete in accordance with all applicable requirements of FDOT "Standard Specifications for Road and Bridge Construction," most current edition at time of bid.

2.06 GRASS, SHRUBBERY, TREES, ETC.

A. All planted vegetation which is removed, damaged or destroyed by project construction Shall be replaced by like kind and in the same manner.

2.07 CONCRETE

A. The concrete used shall be Class I (3,000 psi in 28 days) in accordance with FDOT Standard Specification Section 345. Concrete in right-of-way shall be 3,000 psi in 28 days

2.08 PAVERS

A. Pavers shall be replaced in kind and shall match style and pattern of existing pavers.

PART 3 - EXECUTION

3.01 NON STATE-OWNED PUBLIC PAVEMENT

A. Base Course: The base course shall be constructed to the details shown on the Plans and at the Engineer's direction. Any variance from the Plan details shall not be allowed without the prior written consent of the Engineer.

B. The limerock shall be transported to the point where it is to be used, over rock previously placed, if practicable, and dumped on the end of the preceding spread.

C. In no case shall rock be dumped directly on the subgrade.

D. The limerock shall be spread uniformly with equipment approved by the Engineer.

E. All segregated areas of fine or coarse rock shall be removed and replaced with well graded rock.

F. The equipment to be used shall include a self-propelled blade grader weighing not less than 3 tons, with wheel base not less than 15 feet and blade length not less than 10 feet; scarifiers shall have teeth spaced not to exceed 4-½ inches apart; at least one three-wheel roller weighing not less than 10 tons; provision for furnishing water at the site of work by tank truck or hose at a rate not less than 50 gallons per minute.

G. Alternate equipment approved by the Engineer may be used where narrow widths preclude use of larger equipment.

H. After spreading is completed, the entire surface shall be scarified and shaped so as to produce the exact grade and cross section after compaction.

I. The full depth of base shall be compacted to an average density of 98% of maximum density as determined by AASHTO T-180 (Modified Proctor). The minimum density acceptable at any location shall be 98%.

J. The finished surface of rock base shall be true to the required cross section

throughout. Any irregularities in the surface greater than ¼-inch, as determined by placing a 10 foot straightedge parallel or perpendicular with the centerline, shall be corrected by scarifying to a depth of 3-inches, removing or adding rock as may be required and again watering, rolling and compacting the scarified area.

K. Priming: Before any bituminous material is applied, all loose material, dust, dirt and other foreign material which might prevent proper bond shall be removed from the base for the full width of application.

L. The surface to be primed shall have the glazed finish removed by "hard-planing" prior to the application.

M. The bituminous material to be used shall be RC-70 or other material approved by the Engineer. The temperature of the material shall be between 100 degrees F and 150 degrees F, the exact temperature being such as will insure uniform distribution.

N. The surface to be primed shall be clean and dry. No bituminous material shall be applied when the temperature of the air is less than 60 degrees F in the shade, or when, in the opinion of the Engineer, the weather conditions or the condition of the existing surface is unsuitable.

O. The rate of application shall not be less than 0.10 gal. per square yard, and shall be sufficient to coat the surface thoroughly and uniformly without having any excess to puddle or flow off the base.

P. Application shall be by self-propelled pressure distributor, operating under a pressure not less than 20 lbs. per square inch.

Q. The prime shall be allowed to stand, without sanding, for a period of at least 4 hours. A uniform application of clean sand shall be applied prior to opening the primed base to traffic, in which case the sand shall be rolled with a traffic roller in conjunction with traffic to cure the prime coat.

R. The sand to be used shall be free of silt, rock, particles, sticks, trash, vegetation, or other deleterious material.

S. Asphaltic Surface Course: Saw cut and square edges of existing asphalt. After the prime coat has had adequate time to cure, and prior to the installation of a temporary surface course, the Contractor shall clean the prepared base of all loose sand and other deleterious materials.

T. If, in the opinion of the Engineer, the prepared surface is unsuitable to receive the temporary surface course without tacking, a tack coat shall be applied in accordance with FDOT Section 300-7.

U. Once the surface has been properly prepared, the Contractor shall install SP 9.5 (1”) Asphaltic Concrete in accordance with the details shown on the Plans as a temporary surface course. Said Asphaltic Concrete shall conform to all of the applicable requirements of the Florida Department of Transportation "Standard Specifications for Road and Bridge Construction," current edition at time of bid, except that "Job Mix Formula" will not be required.

V. The temporary surface course may be spread with a spreader box in lieu of a

self-propelled mechanical spreader.

3.02 STATE OR COUNTY OWNED PUBLIC PAVEMENT

A. Restoration within all State or County owned and maintained rights-of-way shall be made in strict compliance with the construction permit.

B. All work shall be subject to final inspection and approval of the Florida Department of Transportation or the County and shall be completed as expeditiously as possible.

3.03 DRIVEWAYS, PARKING LOTS AND MISCELLANEOUS PAVEMENT

A. Driveways, parking lots and miscellaneous pavement shall be replaced in kind and restored to a condition equal to or better than that which existed previously.

B. The Contractor is to repair all improvements at no extra cost whether shown or not shown by the Plans.

3.04 UNIMPROVED STREETS

A. Unimproved streets shall be restored to a condition equal to that which existed prior to this construction.

3.05 PAVER RESTORATION

A. The work to be performed under this item shall include delivering and the installation of pavers to replace pavers which have been removed and/or damaged during the course of construction of the work performed under this contract.

B. All pavers shall be replaced in kind and shall be installed in accordance with manufacturer’s specifications.

C. No separate pay item for pavement restoration. Cost of pavement restoration to be included in price of item such as pipe, sidewalk, pavers, etc.

3.06 CONCRETE SIDEWALK AND/OR CURB RESTORATION

A. The work to be performed under this item shall include the selling and delivering and the installing of concrete sidewalk which have been removed and/or damaged during the course of construction of the work performed under this Contract. The sidewalk shall be replaced to the same width as the original sidewalk.

B. Work shall conform to Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, Section 520 and 522 "Concrete, Gutter, Curb Elements and Traffic Separator" and “Concrete Sidewalk”.

C. All material, labor, forms, tools and equipment for restoration of the sidewalk shall be supplied by the Contractor. All disturbed sidewalk shall be replaced with 4-inch thick (6-inches thick at driveways) to the widths required. The sidewalk
finish shall match as near as possible the original finish. Broken or cracked sidewalk shall be removed and disposed of as directed by the Engineer. Subgrade shall be fully

compacted, scored joints shall be placed at a maximum of 5 foot intervals, 3/4" expansion joints shall be placed at changes in direction and at maximum 20 foot intervals.

3.07 SWALE RESTORATION

A. Where the Contractor is to construct a new watermain/storm sewer pipe in the swale area, the swale shall be excavated and replaced in conformance to the City's Swale Restoration Standards, as shown on the plans detail sheet. No separate payment shall be made for landscape or swale construction/restoration, it is part of the unit bid price for new watermain/storm sewer pipe.

3.08 RIGHT-OF-WAYS AND/OR EASEMENTS IN GRASS AND SHRUBBERY PLOTS

A. Rights-of-way and/or easements in grass and shrubbery plots shall be restored to the condition existing prior to making the excavation. All shrubbery, ornamental trees and others plantings shall be fully protected. If it is found necessary to remove any grass, shrubbery or plants to accomplish the work, they shall be satisfactorily replaced before the work will be accepted or paid for. Grass shall be replaced with sod.

3.09 CLEANUP

A. Cleanup is an essential part of the project and this portion of the work will not be considered complete and no payment made until the cleanup is complete to the satisfaction of the Engineer.

END OF SECTION

SECTION 02580

PAVEMENT MARKING AND SIGNING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required and place pavement markings and signing in accordance with the Drawings and Specifications as shown herein.

1.02 RELATED WORK

A. Section 02513 – Asphaltic Concrete Paving

PART 2 - PRODUCTS

2.01 MATERIALS

A. Paint: In accord with requirements as specified in Section 971 of the FDOT Specifications.

1. Paint shall be factory mixed, quick drying and non-bleeding type.
2. Color shall be as per D.O.T. requirements.
3. Striping, arrows, lane markers and stop bars shall be provided with paint containing reflective additive.

B. Thermoplastic paint: In accord with the applicable Technical Specifications (Section 711) of the Florida Department of Transportation.

C. Reflectors: In accord with Palm Beach County Minimum Standards.

D. Sign Panels:

1. Aluminum or galvanized steel in accordance with the applicable requirements of Section 700 "Highway Signing" of the FDOT Standard Specifications.
2. Size, shape and color as indicated on the drawings or as directed by the Engineer.

E. Sign Support Posts:

1. Aluminum or Galvanized Steel in accordance with the applicable requirements of Section 700 "Highway Signing" of the FDOT Specifications.
2. Size, shape and color of posts and mountings as indicated on drawings or as directed by the Engineer.

2.02 EQUIPMENT

A. All equipment shall be of a type and design which will readily obtain the required uniformity of application of the stripes, both as to thickness of coating and as to alignment.

B. The traveling unit shall be capable of traveling at a uniform predetermined rate of speed, both uphill and downhill, in order to produce a uniform application of paint.

C. The paint machine shall be of the spray type and shall be capable of spraying the paint to the required spread without thinning of the paint. The paint tank shall be equipped with a mechanical agitator. The nozzles shall have cut-off valves which will apply broken or skip lines automatically. The nozzles shall be quipped with a mechanical bead dispenser that will operate simultaneously with the spray nozzle and distribute the beads in a uniform pattern at the rate specified. Each nozzle shall also be provided with suitable line guides, either metallic shrouds or air blasts.

D. Misalignment, defective surfaces, etc., shall be corrected by sand blasting or by any other type of mechanical device which, in the opinion of the Engineer, will effectively remove the paint without damage to the pavement surface.

PART 3 - EXECUTION

3.01 ALIGNMENT FOR STRIPES

A. Tack points will be established at appropriate intervals for use in aligning stripes, and if found to be necessary to achieve accuracy a stringline will be set from such points.

B. Tolerances:

1. Dimensions
    a. Longitudinal Lines: No stripe shall be less than the specified width. No stripe shall exceed the specified width by more than ½ inch.

    b. Transverse markings, gore markings, arrows, and messages: When the specified width of the markings cannot be made with a single pass and multiple passes are required, the width of the line may be plus or minus one inch.

2. Alignment: On tangents, and on curves up to one degree, the alignment of the painted stripe shall not deviate from the stringline by more than one inch. On curves exceeding one degree the maximum permissible deviation will be two inches. In addition, the outer edges of the edge stripe shall fall uniformly at not less than two nor more than four inches from the edge of the pavement, and shall have no noticeable breaks or deviations in alignment or width.

3. Correction Rates: Any corrections or variations in the width or in the alignment of the stripes shall not be made abruptly but the stripes shall be returned to the design width at the rate of at least ten feet for each ½ inch of correction, and returned to the stringline at the rate of at least 25 lineal feet per inch of correction.

C. Application of Paint and Spheres: Painting shall be done only during daylight hours and, as far as practicable, shall be terminated in time to permit sufficient drying by sunset.

Placing of permanent pavement markings on newly constructed Friction Course shall not be accomplished prior to 30 calendar days after placement of the friction course unless authorized by the Owner. Temporary pavement striping will be required during the interim period if the road is open to traffic.

D. No paint shall be applied when any moisture is present on the surface to be painted or when the air temperature is below 40° F. Painting shall not be done when winds are sufficient to cause spray dust.

E. The surface which is to be painted shall be cleaned by compressed air or other effective means, immediately before the start of painting, and shall be clean and dry when the paint is applied. Any vegetation or loose solid shall be removed from the pavement before edge striping is done.

F. The paint shall be thoroughly mixed before it is poured into the painting machine and no thinning of the paint in the machine will be allowed at any time. Before the start of each day's work the paint container, the connections, and the spray nozzles on machine shall be thoroughly cleaned with paint thinner or other suitable cleaner.

G. The traffic stripe shall be of the specified width, with clean, true edges and without sharp breaks in the alignment. A uniform coating of paint shall be obtained and the finished stripe shall contain no light spots or paint skips. Any stripes which do not have a uniform satisfactory appearance, both day and night, shall be corrected.

H. The minimum rate of application for paint shall be as follows: Six-inch sold traffic stripes: 16.5 gallons per mile, Six-inch skip traffic stripe: 4.12 gallons per gross mile.

I. The minimum wet film thickness for all painted areas shall be 15 mils.

J. Where a stripe deviates from the correct alignment, as indicated by the stringline, by more than one inch in any 50-foot length, it shall by obliterated and the stripe, corrected as specified in 710-3.4.

3.02 PROTECTION

A. All newly painted stripes, including edge stripes, shall be protected until the paint is sufficiently dry to permit vehicles to cross the stripe without damage from the tires. While the center line stripes are being painted all traffic shall be routed to the right side of the painting operations and the newly painted stripe. When necessary, a pilot car shall be used to protect the painting operations from the traffic interference.

B. Warning signs shall be set up before the beginning of each operation and extra signs shall be kept well ahead of the painting equipment. The painting equipment shall be so operated that traffic may pass on the right side safely. Warning signs are to be placed only where operations are in progress and are to be relocated as often as is necessary.

C. The contractor shall erect adequate warning signs, provide sufficient number of flagman, and take all necessary precautions for the protection of the wet paint and the safety of the public. Cones, rubber "Z"guards or similar protective devices shall be placed along or similar protective devices shall be placed along the newly painted stripe to prevent traffic from crossing the wet paint. Any such devices used shall be of a type that will not cause damage to vehicular traffic in the event that these objects are accidentally passed over. All protective devices shall be removed not later than sunset to allow free movement of traffic at night.

   If the Contractor elects to use fast dry traffic paint no protective devices will be required provided that the Contractor utilizes a trailing vehicle (behind striping machine) equipped with warning sign and flashing beacon and that he operates such vehicle in a manner consistent with the paint drying time.

D. Any portion of the stripes damaged by passing traffic or from any other cause shall be repainted at the Contractor's expense.

3.03 CORRECTIVE MEASURE

A. All painted stripes which fail to meet the specifications including the permissible tolerances and the appearance requirements, or are marred or damaged by traffic or from other causes, shall be corrected at the Contractor's expense. All drip and spattered paint shall be removed to the satisfaction of the Engineer. Whenever it is necessary to remove paint it shall be done by means, as approved by the Engineer, which will not damage the underlying surface of the pavement. When necessary to correct a deviation which exceeds the permissible tolerance in alignment, that portion of the stripe affected shall be removed and repainted in accordance with these specifications.

3.04 ACEPTANCE OF THE WORK

A. When the work under this Section has been completed to the satisfaction of the Engineer, including any corrections or repairs ordered by the Engineer, acceptance of the work of painting will be made, independently of the remaining work under the Contract, and the Contractor will be relieved of all maintenance of the painting except for damage due to his operations.

END OF SECTION

SECTION 02609

WATER DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. Provide all labor, materials, necessary equipment and services to complete the Water Systems work, as indicated on the drawings, as specified herein or both.

1.03 RELATED WORK

A. Section 02200 - Earthwork

B. Section 02221 - Excavation and Backfilling Utilities

C. Section 02610 - Piping, General

D. Section 02641 - Valves, General

1.04 EXISTING UTILITIES

A. Furnish temporary support, adequate protection and maintenance of all underground and surface utility structures, drains, sewers, water mains, poles and other obstructions encountered in the progress of the work.

B. Where the grade or alignment of the pipe is obstructed by existing utility structure such as conduits, ducts, pipe branch connections to main sewers, or main drains, the obstruction shall be permanently supported, relocated, removed, or reconstructed by the CONTRACTOR in cooperation with the OWNERs of such utility structures. No deviation shall be made from the required line or grade except as directed by the ENGINEER.

PART 2 - PRODUCTS

2.01 PIPE

A. All metallic pipes shall have bituminous outside coating conforming to:

Viscosity, KU at 25°	56-60
Flashpoint ^{o}F (TCC)	40°F
Dry set to touch	6 minutes

Dry hard 22 minutes

B. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51 with pressure class 350 for 4" to 24" pipe and pressure class 250 for 30" to 60" pipe. Pipe shall be cement-lined and seal-coated in accordance with ANSI/AWWA C104/A21.4.

1. Unless otherwise indicated, all ductile iron pipes shall be factory lined and coated.

a. Lining: All pipes shall be cement mortar lined in accordance with AWWA Standard C104.

b. Coating: Unless specified otherwise, all pipe shall be coal-tar enamel coated outside to a dry film thickness of at least 1 mil with Koppers Bitumastic Tank Solution, or equal.

c. Repair: Anywhere that the coating is removed purposely or accidentally, the area shall be cleaned of any rust, grease and dirt and recoated to a minimum dry film as specified for the individual piece.

C. All PVC pipe shall be Class 150 D.R. 18 ANSI/AWWA C900 suitable for use at maximum hydrostatic working pressure of 250 PSI. All pipes must meet requirements as set forth and bare the National Sanitation Foundation seal for potable water pipe.

D. HDPE pressure pipe and accessories, where shown or as specified on the Drawings, shall meet the requirements of AWWA C906-90 Polyethylene (PE) Pressure Pipe and Fittings, 4 in. through 63 in. for Water Distribution. HDPE pipe shall meet the requirements of DIPS Standard Dimension Ratio (SDR) 11 for water transmission mains, and shall be designed for a working pressure of 200 psi at 73.4˚F. HDPE pipe shall be installed in accordance to the manufacturer's specifications and recommendations. Pipe and accessories shall bear the NSF mark indicating pipe size, double blue stripe indicating service, manufacturer's name, AWWA and/or ASTM specification number, working pressure and production code. Pipe and fittings shall be made from PE4710 high density, high extra molecular weight polyethylene. Pipe shall have a cell classification of PE 445574C/E as specified by ASTM D3350. Dimensions and workmanship shall be as specified by ASTM F714. HDPE pipe shall meet ASTM D1248-Type III, Class C Category 5, Grade P34 requirements. HDPE fittings and transitions shall meet ASTM D3261. HDPE pipe shall have a minimum density of 0.955 grams per cubic centimeter. All HDPE pipe and fittings shall have a Hydrostatic Design Basis (HDB) of 1,600 psi and contain U-V stabilizer (2.5% carbon).

E. Inspection of the pipe may also be made by the ENGINEER or other representatives of the OWNER after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the specified requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job

F. The pipe material manufacturer shall provide an unconditional extended warranty for the pipe covering the cost of materials for repair or replacement plus installation manpower should the pipe fail within the warranty period. The manufacturer's extended warranty shall be for ten years after the final acceptance of the project by the OWNER. The manufacturer shall guarantee that the pipe furnished is suitable for the purpose intended and free from defects of material and workmanship for the duration of the extended warranty. In the event the pipe fails to perform as specified, the pipe manufacturer shall promptly replace defective pipe at no additional cost to the OWNER.

G. For all pipe to be installed, tracer wire shall be placed along the entire pipe length. In all cases, tracing wire shall be installed 12 inches below the finished grade during backfill operations. Tracer wire shall be continuous 10-gauge stranded copper wire.

H. All work in this section shall have a one year warranty from time of final completion.

2.02 FITTINGS

A. The pressure rating shall be 350 PSI for fittings.

B. Fittings shall be ductile iron meeting the ANSI/AWWA standard Specification C153-A21.53.

C. Fitting must be cement lined and seal coated per ANSI/AWWA C104/A21.4.0.

D. Flanged fittings shall conform to ASA Specifications for Class 125.

E. Ductile iron fittings shall conform to ANSI/AWWA standard specification C110-A21.10 latest revision.

F. All molded fittings shall be fully pressure rated to match the pipe SDR pressure rating to which they are made. The pressure rating for fabricated fittings shall be 75 percent of the pressure rating of the HDPE used to fabricate the fitting. All fittings shall be molded or fabricated by the manufacturer. No CONTRACTOR molded or fabricated fittings shall be used.

G. The manufacturer of the HDPE pipe shall supply all HDPE fittings and accessories as well as any adaptors and/or special materials required to perform the work as shown on the Drawings and specified herein.

H. All transition from HDPE pipe to ductile iron or other pipe shall be made per the HDPE pipe manufacturer's recommendations and specifications. A molded flange connector adapter within a ductile iron back-up ring assembly shall be used for pipe type transitions. Ductile iron back up rings shall mate with cast iron flanges per ANSI B16.1.

I. All connections to existing water mains shall be with mechanical joint adaptors instead of sleeves.

2.03 JOINTS

A. BELL AND SPIGOT CONNECTIONS:

1. Joints in bell and spigot pipe shall be push-on, mechanical, or restrained mechanical joints in accordance with ANSI/ANWA Standard C-111/21.11, latest revision.

B. FLANGED CONNECTIONS:

1. All flanged pipe barrels shall comply with the physical and chemical requirements as set forth in the Handbook of Ductile Iron Pipe of the Ductile Iron Pipe Research Association. Flanges shall be in accordance with ANSI Specification B16.1 for Class 125 flanges. Bolts shall comply with ANSI Specification B18.2.

2. Before starting fabrication of the cast iron pipe and fittings, complete detailed working drawings shall be submitted by the CONTRACTOR for approval by the ENGINEER. Such drawings shall show the piping layouts and contain schedules of all pipe, fittings, valves, expansion joints, hangers and supports and other appurtenances. Where special fittings are required, they shall be shown in large detail with all necessary dimensions. The drawings submitted shall show flanged jointed sections placed so as to be removed without disturbance to the main pipe sections.

3. Flanged pipe shall be faced and drilled to the American Standard drilling, unless special drilling is called for or required. Where tap or stud bolts are required, flanges shall be tapped. Flanges shall be accurately faced and drilled smooth and true, at right angles to the pipe axis and shall be covered with zinc dust and tallow or a rust preventive compound immediately after facing and drilling.

4. Flanged pipe with screwed-on flanges shall be furnished with long hubs and the flanges shall be screwed on the threaded end of the pipe in the shop and the face of the flange and end of pipe refaced together. There shall be no leakage through the pipe threads and the flanges shall be designed to prevent corrosion of the threads from outside.

5. Flanged joints shall be made with bolts or stud bolts and nuts. Bolts, stud bolts, and nuts shall conform to American Standard heavy dimensions; semi-finished with square or hexagonal heads and cold punched hexagonal nuts, meeting the requirements of ASTM Designation A-307. Bolt sizes shall be American Standard for the flanges specified, and bolts and nuts shall have good, true threads.

C. HDPE Pipe Joints

1. Lengths of pipe shall be assembled into suitable installation lengths by the butt fusion process. All pipe so joined shall be made from the same class

and type of raw material made by the same raw material supplier. Butt-fusion means the butt-joining of the pipe by softening the aligned faces of the pipe ends in a suitable apparatus and pressing them together under controlled pressure. Certification shall be provided that the persons performing this work are qualified by experience and instruction in the procedure.

2. The polyethylene flange adapters at pipe material transitions shall be backed up by ductile iron flanges conforming to ANSI B16.1 and shaped as necessary to suit the outside dimensions of the pipe. The flange adapter assemblies shall be connected with corrosion resisting bolts and nuts of Type 316 Stainless Steel as specified in ASTM A726 and ASTM A307. All bolts shall be tightened to the manufacturer's specified torques. Bolts shall be tightened alternatively and evenly. After installation apply a bitumastic coating to bolts and nuts.

2.04 HYDRANTS

A. Fire hydrant shall have a 5 ¼ " main valve opening. Pumper nozzle to be 18" from finish grade. All hydrants to be installed with anchoring tee and control valve. Fire hydrant shall comply with ANSI/AWWA C502-85 latest revision.

1. Hydrant manufacturer, or equal:

a. Mueller Super Centurion A-423

b. Clow Medallion F-2545

c. American Darling B-84-B-5.

B. Newly constructed fire hydrants throughout the project shall have a red "out of service" disk (Joseph G. Pollard Co. or equal) attached to 6" pumper nozzle cap. Disk to be removed after water system has been approved for service by the department. Fire hydrants installed that have not been placed into service shall be tagged with a sign approved by OWNER to indicate that they are out of service.

C. Three blue reflective pavement markers shall be installed in the drive lane(s) adjacent to the fire hydrant as specified by the OWNER.

2.05 WATER TAPS

A. Tapping Existing Pipelines.

1. Tapping sleeves shall be Mueller H 615 or approved equal. Tapping valves shall be Mueller T-2362, Clow F-6114, American 2500 TM or approved equal.

2. Cast iron tapping sleeve or tapping cross shall have mechanical joint connections. The flanged end for tapping valve shall include a recess to provide positive alignment of the tapping valve.

3. Tapping valves shall conform to AWWA C509 and C500 standards. An Affidavit of Compliance shall be furnished for the valves.

4. Tapping valves 16" and smaller shall be designed for operation in a vertical position with a vertical operating shaft. Tapping valves over 16" shall be designed for operation in a horizontal position and shall have a vertical operating shaft.

2.06 WATER SERVICES

A. Water services shall be polyethylene tubing with a minimum working pressure of 200 psi.

B. All water service tubing and fittings shall be in conformance with OWNER Standards.

Part 3 - EXECUTION

3.01 INSTALLATION, GENERAL

A. Unloading Material: The CONTRACTOR shall exercise care in unloading and handling pipe, valves, fittings, and all other material. Dropping pipe from trucks and allowing pipe to roll against other pipe will not be permitted.

B. Excavation: Pipeline trenches shall be excavated to required depth as shown on the drawings or as directed by the ENGINEER. In general, water distribution lines shall have a minimum of 30" cover for DIP pipe and 36” for PVC pipe. If rock is encountered, excavation shall be carried a minimum of 6" below bottom of pipe, and trench backfilled with sand or earth and thoroughly tamped. Width of trench shall be sufficient to allow workmen to perform all operations incidental to constructing the pipeline. Hand dug bell holes shall be provided to permit proper joint making. No section of pipe shall bear on rock or on placed blocking. All excavations will be dewatered to permit dry joints.

C. Work shall be properly braced where necessary. Where wood sheeting or certain designs of steel sheeting are used, the sheeting shall be cut off at a level two feet above the top of the installed pipe and that portion below that level shall be left in place. If interlocking steel sheeting of a design approved by the ENGINEER is used, it may be removed providing removal can be accomplished without disturbing the bedding or alignment of the pipe. Any damage to the pipe bedding, pipe or alignment of the constructed main caused by removal of sheeting shall be cause for rejection of the affected portion of the work.

3.02 PIPE

A. Installation of Pipe: All installation shall conform to latest AWWA C-600. Pipe shall not be rolled or pushed into the trench from the bank. Before pipe is lowered into the trench, it shall be thoroughly inspected by the CONTRACTOR, as necessary,

to insure sound conditions and eliminate the possibility of leakage or bursting under test pressure.

B. Water mains shall be laid at least 6 feet horizontally (10 feet preferred) from any existing or proposed sewer mains. A vertical distance of at least 18" should be maintained when a sewer pipe crosses under a water main. If this is not possible, then the sewer pipe must be of water main quality with 20-foot lengths of pipe centering on the point of crossing. If a crossing where the sewer is laid above a water line is unavoidable, then the above-mentioned precautions shall be observed regardless of the distance of vertical separation between water mains and sewer piping.

C. Pipes and valves, fittings, and all other materials showing defects shall not be used for construction. All such defective materials shall be removed from the construction site immediately. Before pipe is lowered into the trench, it shall be swabbed or brushed to insure that no dirt or foreign matter will be in the finished line.

D. Pipe shall be laid on a flat bottom trench and backfill tamped to 6" above the top to the pipe. Pipe installation shall conform to "Type B Method" as adopted by Committee A-21 of the American Standards Association. A firm even bearing shall be provided throughout the length of each section of pipe. Pipe shall not bear on any unyielding structures, nor shall it support any other structures. All dead ends shall be plugged or capped, anchored and held in place with restrained joints as required. Except while work is in progress, all pipe openings shall be suitably plugged to prevent entrance of water or any foreign matter. Material deemed unstable for providing adequate support for pipe shall be removed and replaced by suitable material. Adequate backfill shall be deposited on the pipe to prevent floating. Any pipe, which has floated, shall be removed from the trench and reinstalled as directed by the ENGINEER.

E. Joints: All joints shall be suitable for the type of pipe being jointed and shall be made in accordance with manufacturer's recommendations.

1. Mechanical joints: Mechanical joints shall be of the stuffing box type. The gland, followed by the rubber gasket, shall be placed over the plain end of the pipe, which is inserted into the socket. The gasket is then pushed into position so that it is evenly seated in the socket. The gland shall be moved into position against the face of the socket, bolts inserted and made finger-tight. Bolts shall be tightened by a ratchet wrench suitable for the size of pipe being connected alternately, bottom, then top, etc., until the joint is completed.

2. Compression Pipe joints: Compression joints shall be a rubber seal joint, made pressure tight by a molded rubber gasket and lubricated to facilitate assembly. The joint shall be made tight by inserting the plan end into the bell after lubrication. Joints shall be made up as recommended by the manufacturer.

3. Flanged joints: Flanged joints shall be made with rubber gaskets. Bolts shall have rough square hands and hexagonal nuts and made to American Standard rough dimensions and shall be recommended size trimmed. Bolts shall be recommended size for the diameter of the pipe being jointed and shall be tightened as to distribute evenly the stress in the bolts and bring the pipe into alignment.

4. Threads shall be neatly cut with sharp tools and the jointing procedure shall conform with the best practices. Before jointing, all scale shall be reamed. All pipe shall be screwed with an application of graphite and engine oil or other approved pipe compound applied to the threads. This application shall be thoroughly wiped off the inside of every joint.

3.03 INSTALLATION OF FITTINGS

A. Applicable portions of these specifications shall apply to installation of fittings. Reaction of restrained joints shall be applied at bends and tees and where changes in pipe diameter occur at reducers or in fittings.

B. Care shall be taken in the handling, storage, and installation of pipe and fittings to prevent injury to the pipe or coatings. All pipe and fittings shall be examined before installing, and no pipe shall be installed which is found to be defective. Pipe or fittings shall not be dropped. All damage to the pipe coatings shall be repaired according to the manufacturer's recommendations. All pipe and fittings shall be kept clean and shall be thoroughly cleaned before installation.

C. When installation is not in progress, including lunchtime, or the potential exists for dirt of debris to enter the pipe, the open ends of the pipe shall be closed with watertight plugs or other approved means.

3.04 INSTALLATION OF FIRE HYDRANTS

A. All hydrants shall stand plumb and burial line shall be set at finished grade. The pumper nozzle shall be set at 18" above finished grade.

3.05 INSTALLATION OF VALVES

A. All valves shall stand plumb unless otherwise shown on the plans or directed by the OWNER's Representative. The operation of installing tapping sleeves and valves shall be done by an experienced organization that has been engaged in this type of work not less than one (1) year with a representative list of successful installations. All valves shall be tagged per details.

3.06 PRESSURE TESTS

A. After pipe has been adequately backfilled all laid pipes shall be subjected to hydrostatic pressure of 150 PSI. The duration of the pressure test shall not be less than two (2) hours. Test sections shall be limited to a maximum length of 2000 feet. Care shall be taken to insure that all air has been removed from the pipe previous to pressure tests. The CONTRACTOR shall provide such means of

venting the pipe as are required. The CONTRACTOR shall replace any material or installation proving defective.

3.07 LEAKAGE TEST

A. After the main has been brought up to test pressure, it shall be held at this pressure and make up water shall be carefully measured by use of displacement meter or by pumping water from a vessel of known volume. The pipeline shall be walked and all visible joints inspected for leakage and movement of pipe. All visible leaks shall be repaired. Should any section of pipeline disclose joint leakage greater than that permitted, the CONTRACTOR shall at CONTRACTOR'S own expense, locate and repair the defective joints until leakage is within the permitted allowance.

B. The leakage test shall be conducted in accordance with AWWA Specification C-600, latest revision. Leakage shall be less than the number of gallons per hour as determined by the formula:

$$L = \frac{SD\,P^{1/2}}{148{,}000}$$

in which L equals the allowable leakage in gallons per hour, S is the pipe length in the main 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. Length of test shall not be less than two (2) hours. Average test pressure shall not be less than 150 PSI. The test shall be conducted as directed by the ENGINEER.

3.08 BACKFILL

A. No trenches or excavations shall be backfilled until the trench and installation has been inspected and written approval given by the ENGINEER. All backfill shall be carefully placed to avoid movement of the pipeline. Backfill shall be free from rock, large stones, boulders, brush, or other unsuitable material. It shall be placed in the trench uniformly on both sides of the pipe for full width of the trench and to the horizontal diameter of the full length of the pipe. This backfill shall be thoroughly tamped to provide support free from voids.

B. Additional backfill shall then be placed between joints to an average depth of 12" over the top of the pipe where pipe is of 8" and smaller diameter, and 24" over larger pipe. Pipe joints shall remain exposed until completion of the pressure and leakage tests unless otherwise directed by the ENGINEER.

C. On completion of pressure and leakage tests, the exposed joints shall be backfilled to a depth of 12" above the top of the pipe. Backfill shall be carefully compacted until 12" of cover exists over the pipe. The remainder of the backfill shall then be placed and compacted thoroughly by puddling and tamping as required. Where directed, puddling and tamping may be omitted, and backfill shall be neatly

rounded over the trench to a sufficient height to allow for settlement to grade after consolidation.

3.09 STERILIZATION OF COMPLETE PIPELINE

A. After the water mains have satisfied the leakage requirements, they shall be sterilized in accordance with the applicable sections of AWWA Specification C651, latest edition. Mains shall not be put into domestic service until after the necessary bacteriological samples have been approved by the Palm Beach County Health Department. Before the final acceptance of complete pipeline, all requirements of the Palm Beach County Health Department shall be satisfied. Satisfactory bacteriological test results from the CONTRACTOR shall be forwarded to the ENGINEER.

B. Prior to chlorination of mains, all dirt and foreign matter shall be removed by high velocity flushing through fire hydrants or other approved blow-offs. The main shall then be filled with a chlorine solution of at least 50 parts per million of chlorine and retained in the pipe not less than twenty-four (24) hours. Chlorine residual after retention period shall be not less than 30 parts per million. After chlorination, the mains shall be thoroughly flushed with potable water and required samples taken for bacteriological analysis in accordance with Rules 62-555, F.A.C. and AWWA C651, latest edition. Sampling to be witnessed by the ENGINEER.

3.10 RESTORATION OF SURFACE AND/OR STRUCTURES

A. The CONTRACTOR shall restore and/or replace paving, curbing, sidewalks, fences, sod, survey points and other disturbed surfaces to a condition equal to that before the work was begun and to satisfaction of the ENGINEER, and shall furnish all labor and materials incidental thereto. Relative restoration of surfaces and/or structures, the CONTRACTOR shall comply with all governing agencies requirements including city, town, county and state.

3.11 CONNECTION TO EXISTING SYSTEM

A. The CONTRACTOR shall make proper arrangements for compliance with the regulations for connection to any existing distribution system with the OWNER of that system. Taps-in and connection will be made in strict accordance with the ENGINEER.

3.12 ABANDONMENT OF EXISTING PIPELINE

A. All water mains to be abandoned in place as shown on the drawings shall be cut and plugged after new mains and services are installed and service is properly restored to the homeowner. The pipeline shall be filled with concrete 12 inches from the end of the pipe as specified in Division 3 - Concrete, section 03010. Excavation, backfill and restoration shall be executed in accordance with the requirements of removing existing and installing new pipelines.

3.13 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION

SECTION 02610

PIPING, GENERAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All applicable provisions of the Bidding and Contract Requirements, and Division 1 - General Requirements shall govern the work under this Section.

1.02 WORK INCLUDED

A. The CONTRACTOR shall furnish and install all piping systems shown and specified, in accordance with the requirements of the Contract Documents. Each system shall be complete with all necessary fittings, hangers, supports, anchors, expansion joints, flexible connectors, valves, accessories, heat tracing, insulation, lining and coating, testing, disinfection, excavation, backfill and encasement, to provide a functional installation.

B. The piping shown is intended to define the general layout, configuration, routing, method of support, pipe size, and pipe type. The mechanical drawings are not pipe construction or fabrication drawings. It is the CONTRACTOR's responsibility to develop the details necessary to construct all mechanical piping systems, to accommodate the specific equipment provided, and to provide and install all spools, spacers, adapters, connectors, etc., for a complete and functional system.

1.03 RELATED WORK

A. Division 2 as applicable.

B. Section 02200 - Earthwork.

C. Section 02221 - Excavation and Backfilling Utilities

D. Section 02609 – Water Distribution System

E. Section 02641 – Valves, General

1.04 REFERENCE STANDARDS

A. Codes: All codes, as referenced herein are specified in Section 01090, "Reference Standards".

B. Commercial Standards:

ANSI/ASME B1.20.1 Pipe Threads, General Purpose (inch).

ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and other Special Alloys.
ANSI/AWWA C207	Steel Pipe Flanges for Water Works Service, Sizes 4 in through 144 in.
ANSI/AWWA C606	Grooved and Shouldered Joints.
ANSI/AWS D1.1	Structural Welding Code.
ASTM A 307	Specification for Carbon Steel Bolts and Studs, 6,000 psi Tensile.
ASTM A 325	Specification for High-Strength Bolts for Structural Steel Joints.
ASTM D 792	Test Methods for Specific Gravity and Density of Plastics by Displacement.
ASTM D 2000	Classification System for Rubber Products in Automotive Applications.

1.05 SUBMITTALS

A. The CONTRACTOR shall submit complete shop drawings and certificates, test reports, affidavits of compliance, of all piping systems, in accordance with the requirements in Section 01340, "Submittals and Substitutions", and as specified in the individual sections. The shop drawings shall include all necessary dimensions and details on pipe joints, fittings, fitting specials, valves, appurtenances, design calculations, and material lists. The submittals shall include detailed layout, spool, or fabrication drawings which show all pipe spools, spacers, adapters, connectors, fittings, and pipe supports necessary to accommodate the equipment and valves provided in a complete and functional system.

B. All expenses incurred in making samples for certification of tests shall be borne by the CONTRACTOR.

C. The CONTRACTOR shall submit as part of the shop drawings a certification from the pipe fabricator stating that all pipes will be fabricated subject to a recognized Quality Control Program. An outline of the program shall be submitted to the ENGINEER for review prior to the fabrication of any pipe.

1.06 QUALITY ASSURANCE

A. Inspection: All pipes shall be subject to inspection at the place of manufacture. During the manufacture of the pipe, the ENGINEER shall be given access to all

areas where manufacturing is in progress and shall be permitted to make all inspections necessary to confirm compliance with the Specifications.

B. Tests: Except where otherwise specified, all materials used in the manufacture of the pipe shall be tested in accordance with the applicable Specifications and Standards. Welds shall be tested as specified. The CONTRACTOR shall perform all tests at no additional cost to the OWNER.

C. Welding Requirements: All welding procedures used to fabricate pipe shall be pre-qualified under the provisions of ANSI/AWS D1.1. Welding procedures shall be required for, but not necessarily limited to, longitudinal and girth or spiral welds for pipe cylinders, spigot and bell ring attachments, reinforcing plates and ring flange welds, and plates for lug connections.

D. Welder Qualifications: Skilled welders, welding operators, and tackers who have had adequate experience in the methods and materials to be used shall do all welding. Welders shall be qualified under the provisions of ANSI/AWS D1.1 by an independent local, approved testing agency not more than 6 months prior to commencing work on the pipeline. Machines and electrodes similar to those used in the WORK shall be used in qualification tests. The CONTRACTOR shall furnish all material and bear the expense of qualifying welders.

1.07 MANUFACTURER'S SERVICE REPRESENTATIVE

A. Where the assistance of a manufacturer's service representative is advisable, in order to obtain perfect pipe joints, supports, or special connections, the CONTRACTOR shall furnish such assistance at no additional cost to the OWNER

1.08 MATERIAL DELIVERY, STORAGE, AND HANDLING

A. All piping materials, fittings, valves, and accessories shall be delivered in a clean and undamaged condition and stored off the ground, to provide protection against oxidation caused by ground contact. All defective or damaged materials shall be replaced with new materials.

1.09 CLEANUP

A. After completion of the work, all remaining pipe cuttings, joining and wrapping materials, and other scattered debris, shall be removed from the site. The entire piping system shall be handed over in a clean and functional condition.

PART 2 - PRODUCTS

2.01 GENERAL

A. All water main pipe, including fittings, shall be color coded or marked using blue as a predominant color to differentiate drinking water from reclaimed or other water. Underground plastic pipe shall be solid wall blue pipe, shall have a co-extruded blue external skin, or shall be white or black pipe with blue stripes incorporated into, or applied to, the pipe wall; and underground metal or concrete

pipe shall have blue stripes applied to the pipe wall. Pipe striped during manufacturing of the pipe shall have continuous stripes that run parallel to the axis of the pipe, that are located at no greater than 90-degree intervals around the pipe, and that will remain intact during and after the installation of the pipe. If tape or paint is used to stripe pipe during the installation of the pipe, the tape or paint shall be applied in a continuous line that runs parallel to the axis of the pipe and that is located along the top of the pipe; for pipes with an internal diameter of 24 inches or greater, tape or paint shall be applied in continuous lines along each side of the pipe as well as along the top of the pipe. Aboveground pipe at drinking water treatment plants shall be color coded and labeled in accordance with subsection 62-555.320(10), F.A.C., and all other aboveground pipe shall be painted blue or shall be color coded or marked like underground pipe.

B. All pipes, fittings, and appurtenances shall be furnished in accordance with the requirements of the applicable Sections of Division 2 and as specified herein.

C. Lining: All requirements pertaining to thickness, application, and curing of pipe lining, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified.

D. Coating: All requirements pertaining to thickness, application, and curing of pipe coating, are in accordance with the requirements of the applicable Sections of Division 2, unless otherwise specified. Pipes above ground or in structures shall be field-painted as directed by the ENGINEER.

E. Grooved Piping Systems: Piping systems with grooved joints and fittings may be provided in lieu of screwed, flanged, welded, or mechanical joint systems for ductile iron yard piping. (All piping above and below ground within the property limits of treatment plants, pump stations, and similar installations). All grooved couplings on buried piping must be bonded. To assure uniform and compatible piping components, all grooved fittings, couplings, and valves shall be from the same manufacturer. The CONTRACTOR shall make the coupling manufacturer responsible for the selection of the correct style of coupling and gasket for each individual location.

2.02 PIPE FLANGES

A. Flanges: Where the design pressure is 150 psi or less, flanges shall conform to either ANSI/AWWA C207 Class D or ANSI B16.5 150-lb class. Where the design pressure is greater than 150 psi, up to a maximum of 275 psi, flanges shall conform to ANSI/AWWA C207 Class E, Class F, or ANSI B16.5 150-lb class. However, AWWA flanges shall not be exposed to test pressure greater than 125 percent of rated capacity. For higher test pressures, the next higher rated AWWA flange or an ANSI-rated flange shall be selected. Where the design pressure is greater than 275 psi up to a maximum of 700 psi, flanges shall conform to ANSI B16.5 300-lb class. Flanges shall have flat faces and shall be attached with boltholes straddling the vertical axis of the pipe unless otherwise shown. Attachment of the flanges to the pipe shall conform to the applicable requirements of ANSI/AWWA C207. Flanges for miscellaneous small pipes shall be in accordance with the standards specified for these pipes.

B. Blind Flanges: Blind flanges shall be in accordance with ANSI/AWWA C207, or with the standards for miscellaneous small pipes. All blind flanges for pipe sizes 12 inches and over shall be provided with lifting eyes in form of welded or screwed eyebolts.

C. Flange Coating: All machined faces of metal blind flanges and pipe flanges shall be coated with a temporary rust-inhibitive coating to protect the metal until the installation is completed.

D. Flange Bolts: All bolts and nuts shall conform to pipe manufacturers recommendations. Studs and bolts shall extend through the nuts a minimum of 1/4-inch. All-thread studs shall be used on all valve flange connections, where space restrictions preclude the use of regular bolts.

E. Insulating Flanges: Insulated flanges shall have boltholes 1/4-inch diameter greater than the bolt diameter.

F. Insulating Flange Sets: Insulating flange sets shall be provided where shown. Each insulating flange set shall consist of an insulating gasket, insulating sleeves and washers and a steel washer. Insulating sleeves and washers shall be one piece when flange bolt diameter is 1-1/2-inch or smaller and shall be made of acetal resin. For bolt diameters larger than 1-1/2-inch, insulating sleeves and washers shall be 2-piece and shall be made of polyethylene or phenolic. Steel washers shall be in accordance with ASTM A 325. Insulating gaskets shall befull-face.

G. Insulating Flange Manufacturers, or equal:

1. JM Red Devil, Type E;

2. Maloney Pipeline Products Co., Houston;

3. PSI Products, Inc., Burbank, California.

H. Flange Gaskets: Gaskets for flanged joints shall be full-faced, 1/16-inch thick compressed sheets of aramid fiber base, with nitrile binder and non-stick coating, suitable for temperatures to 700 degrees F, a pH of one to eleven, and pressures to 1000 psig. Blind flanges shall have gaskets covering the entire inside face of the blind flange and shall be cemented to the blind flange. Ring gaskets shall not be permitted.

I. Flange Gasket Manufacturers, or equal:

1. John Crane, style 2160;

2. Garlock, style 3000.

2.03 THREADED INSULATING CONNECTIONS

A. General: Threaded insulating bushings, unions, or couplings, as appropriate, shall be used for joining threaded pipes of dissimilar metals and for piping systems where corrosion control and cathodic protection are involved.

B. Materials: Threaded insulating connections shall be of nylon, Teflon, polycarbonate, polyethylene, or other non-conductive materials, and shall have ratings and properties to suit the service and loading conditions.

2.04 MECHANICAL-TYPE COUPLINGS (GROOVED OR BANDED PIPE)

A. General: Cast mechanical-type couplings shall be provided where shown. The couplings shall conform to the requirements of ANSI/AWWA C606. All gaskets for mechanical-type couplings shall be compatible with the piping service and fluid utilized, in accordance with the coupling manufacturer's recommendations. The wall thickness of all grooved piping shall conform with the coupling manufacturer's recommendations to suit the highest expected pressure. To avoid stress on equipment, all equipment connections shall have rigid-grooved couplings, or harness sets in sizes where rigid couplings are not available, unless thrust restraint is provided by other means. The CONTRACTOR shall have the coupling Manufacturer's service representative verify the correct choice and application of all couplings and gaskets, and the workmanship, to assure a correct installation.

B. Couplings for Steel Pipe, Manufacturers, or equal:

1. Gustin-Bacon (banded or grooved);

2. Victaulic Style 41 or 44 (banded, flexible);

3. Victaulic Style 77 or 07 (grooved).

C. Ductile Iron Pipe Couplings, Manufacturers, or equal:

1. Gustin-Bacon;

2. Victaulic Style 31.

Note: Ductile iron pipe couplings shall be furnished with flush seal gaskets.

2.05 SLEEVE-TYPE COUPLINGS

A. Construction: Sleeve-type couplings shall be provided where shown, in accordance with ANSI/AWWA C219 unless otherwise specified, and shall be of steel with steel bolts, without pipe stop, and shall be of sizes to fit the pipe and fittings shown. The middle ring shall be not less than 1/4-inch in thickness and shall be either 5 or 7 inches long for sizes up to and including 30 inches and 10 inches long for sizes greater than 30 inches, for standard steel couplings, and 16 inches long for long-sleeve couplings. The followers shall be single-piece contoured mill section welded and cold expanded as required for the middle rings. They shall be of sufficient strength to accommodate the number of bolts necessary to obtain adequate gasket pressures without excessive rolling. The shape of the follower

shall be of such design as to provide positive confinement of the gasket. Buried sleeve-type couplings shall be epoxy-coated at the factory as specified.

B. Pipe Preparation: The ends of the pipe, where specified, shall be prepared for flexible steel couplings. Plain ends for use with couplings shall be smooth and round for a distance of 12 inches from the ends of the pipe, with outside diameter not more than 1/64-inch smaller than the nominal outside diameter of the pipe. The middle ring shall be tested by cold-expanding a minimum of one percent beyond the yield point, to proof-test the weld to the strength of the parent metal. The weld of the middle ring shall be subjected to air test for porosity.

C. Gaskets: Gaskets for sleeve-type couplings shall be rubber-compound material that will not deteriorate from age or exposure to air under normal storage or use conditions. Gaskets for wastewater and sewerage applications shall be Buna "N," grade 60, or equivalent suitable elastomer. The rubber in the gasket shall meet the following specifications:

1. Color - Jet Black

2. Surface - Non-blooming

3. Durometer Hardness - 74 ± 5

4. Tensile Strength - 1000 psi Minimum

5. Elongation - 175 percent Minimum

The gaskets shall be immune to attack by impurities normally found in water or wastewater. All gaskets shall meet the requirements of ASTM D 2000, AA709Z, meeting Suffix B13 Grade 3, except as noted above. All gaskets shall be compatible with the piping service and fluid utilized.

D. Insulating Couplings: Where insulating couplings are required, both ends of the coupling shall have a wedge-shaped gasket which assembles over a rubber sleeve of an insulating compound in order to obtain insulation of all coupling metal parts from the pipe.

E. Restrained Joints: All sleeve-type couplings on pressure lines shall be harnessed unless thrust restraint is provided by other means. Harnesses shall be in accordance with the requirements of the appropriate reference standard.

F. Manufacturers or Equal:

1. JCM Industries (212);

2. Smith Blair (441);

3. Hymax (2000-2100 Series).

2.06 FLEXIBLE CONNECTORS

A. Flexible connectors shall be installed in all piping connections to engines, blowers, compressors, and other vibrating equipment, and where shown. Flexible connectors for service temperatures up to 180 degrees F shall be flanged, reinforced Neoprene or Butyl spools, rated for a working pressure of 40 to 150 psi, or reinforced, flanged duck and rubber, as best suited for the application. Flexible connectors for service temperatures above 180 degrees F shall be flanged braided stainless steel spools with inner, annular, corrugated stainless steel hose, rated for minimum 150 psi working pressure, unless otherwise shown. The connectors shall be 9 inches long, face-to-face flanges, unless otherwise shown. The manufacturer shall approve the final material selection. The CONTRACTOR shall submit manufacturer's shop drawings and calculations.

2.07 EXPANSION JOINTS

A. All piping subject to expansion and contraction shall be provided with sufficient means to compensate for such movement, without exertion of undue forces to equipment or structures. This may be accomplished with expansion loops, bellow-type expansion joints, or sliding-type expansion joints. Expansion joints shall be of stainless steel, monel, rubber, or other materials, best suited for each individual service. The CONTRACTOR shall submit detailed calculations and manufacturer's shop drawings, guaranteeing satisfactory performance of all proposed expansion joints, piping layouts showing all anchors and guides, and information on materials, temperature and pressure ratings.

2.08 PIPE THREADS

A. All pipe threads shall be in accordance with ANSI/ASME B1.20.

PART 3 - EXECUTION

3.01 GENERAL

A. All pipes, fittings, and appurtenances shall be installed in accordance with the requirements of the applicable Section of Divisions 2. The lining manufacturer shall take full responsibility for the complete, final product and its application. All pipe ends and joints at screwed flanges shall be epoxy-coated, to assure continuous protection.

B. Where core drilling is required for pipes passing through existing concrete, core drilling locations shall be determined by radiograph of concrete construction to avoid damage to embedded raceways and rebars.

C. All exposed piping shall be painted. All piping to be painted shall be color coded in accordance with OWNER's standard color code. Color samples shall be submitted to ENGINEER for final color selection.

3.02 MEASUREMENT AND PAYMENT

A. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for measurement and payment.

END OF SECTION

SECTION 02641

VALVES, GENERAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Provide all labor, materials, necessary equipment and services to complete the water distribution and wastewater transmission system work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as Not-In-Contract ("NIC ITEMS").

1.02 WORK INCLUDED

A. The CONTRACTOR shall provide all tools, supplies, materials, equipment, and labor necessary for furnishing, epoxy coating, installing, adjusting, and testing of all valves and appurtenant work, complete and operable, in accordance with the requirements of the Contract Documents. Where buried valves are shown, the CONTRACTOR shall furnish and install valve boxes to grade, with covers, extensions, and position indicators.

B. The provisions of this Section shall apply to all valves and valve operators specified in the various Sections and Division 2 of these Specifications except where otherwise specified in the Contract Documents. Valves and operators in particular locations may require a combination of units, sensors, limit switches, and controls specified in other Sections of these Specifications.

1.03 RELATED WORK

A. Section 02221 - Excavation and Backfilling for Utilities

B. Section 02610 - Piping, General

1.04 REFERENCE STANDARDS

A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".

B. Commercial Standards:

ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
ANSI B16.5	Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys.
ANSI/ASME B31.1	Power Piping.

ASTM A 36	Specification for Structural Steel.
ASTM A 48	Specification for Gray Iron Castings.
ASTM A 126	Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
ASTM A 536	Specification for Ductile Iron Castings.
ASTM B 61	Specification for Steam or Valve Bronze Castings.
ASTM B 62	Specification for Composition Bronze or Ounce Metal Castings.
ASTM B 148	Specification for Aluminum-Bronze Castings.
ASTM B 584	Specification for Copper Alloy Sand Castings for General Applications.
ANSI/AWWA C500	Gate Valves for Water and Sewerage Systems.
ANSI/AWWA C502	Dry-Barrel Fire Hydrants.
ANSI/AWWA C503	Wet-Barrel Fire Hydrants.
ANSI/AWWA C504	Rubber-Seated Butterfly Valves.
ANSI/AWWA C507	Ball Valves 6 Inches Through 48 Inches.
AWWA C508	Swing-Check Valves for Waterwork Service, 2 Inches Through 24 Inches NPS.
ANSI/AWWA C509	Resilient-Seated Gate Valves for Water and Sewage Systems.
ANSI/AWWA C511	Reduced-Pressure Principle Backflow-Prevention Assembly.
AWWA C550	Protective Interior Coatings for Valves and Hydrants.
SSPC-SP-2	Hand Tool Cleaning.
SSPC-SP-5	White Metal Blast Cleaning.

1.05 SUBMITTALS

A. Shop Drawings: Shop drawings of all valves and operators including associated wiring diagrams and electrical data, shall be furnished as specified in Section 01340, "Submittals and Substitutions".

B. Valve Labeling: The CONTRACTOR shall submit a schedule of valves to be labeled indicating in each case the valve location and the proposed wording for the label.

1.06 QUALITY ASSURANCE

A. Valve Testing: Unless otherwise specified, each valve body shall be tested under a test pressure equal to twice its design water-working pressure.

B. Bronze Parts: Unless otherwise specified, all interior bronze parts of valves shall conform to the requirements of ASTM B 62, or where not subject to dezincification, to ASTM B 584.

C. Certification**:** Prior to shipment, the CONTRACTOR shall submit for all valves over 12 inches in size, certified, notarized copies of the hydrostatic factory tests, showing compliance with the applicable standards of AWWA, ANSI, ASTM, etc.

PART 2 - PRODUCTS

2.01 VALVES, GENERAL

A. General: The CONTRACTOR shall furnish all valves, gates, valve-operating units, stem extensions, and other accessories as shown or specified. All valves and gates shall be new and of current manufacture. All shut-off valves, 6-inch and larger, shall have operators with position indicators. Where buried, these valves shall be provided with valve boxes and covers containing position indicators, and valve extensions. Shut-off valves mounted higher than 5 feet-6 inches above working level shall be provided with chain operators.

B. Valve Flanges: The flanges of valves shall be in accordance with Section 02610, "Piping, General".

C. Gate Valve Stems: Where subject to dezincification, gate valve stems shall be of bronze conforming to ASTM B 62, containing not more than 5 percent of zinc nor more than 2 percent aluminum. Gate valve stems shall have a minimum tensile strength of 60,000 psi, a minimum yield strength of 40,000 psi, and an elongation of at least 10 percent in 2 inches, as determined by a test coupon poured from the same ladle from which the valve stems to be furnished are poured. Where dezincification is not a problem, bronze conforming to ASTM B 584 may be used.

D. Protective Coating: Except where otherwise specified, ferrous surfaces, exclusive of stainless steel surfaces, in the water passages of all valves 4-inch and larger, as well as the exterior surfaces of all submerged valves, shall be coated with 2 part thermal setting epoxy coatings. Flange faces of valves shall not be epoxy coated. The valve manufacturer shall certify in writing that such coating has been applied

and tested in the manufacturing plant prior to shipment, in accordance with these Specifications.

E. Valve Operators: Where shown, certain valves and gates shall be furnished with electric operators, provided by the valve or gate manufacturer. The same manufacturer shall furnish all operators of a given type. Where different manufacturers supply these operators, the CONTRACTOR shall coordinate their selection to provide uniformity of each type of electric operator. All valve operators, regardless of type, shall be installed, adjusted, and tested by the valve manufacturer at the manufacturing plant.

F. Valve Labeling: Except when such requirement is waived by the ENGINEER in writing, a label shall be provided on all shut-off valves. The label shall be a 3-inch diameter brass disk anchored to concrete collar or asphalt, as shown on the drawings. Valve labels shall be photographed and marked on the As-Built Drawings. In addition, reflective pavement marker shall be installed in the drive lane(s) adjacent to the valve as specified by the OWNER. Blue reflective pavement marker shall be installed for water valves and green reflective pavement marker shall be installed for sewer valves.

G. Nuts and Bolts: All nuts and bolts on valve flanges and supports shall be in accordance with manufacturers recommendations. Where submerged or buried, all nuts and bolts on valve flanges and valve bodies shall be stainless steel.

2.02 GATE VALVES

A. All buried gate valves shall be of the inside screw, non-rising stem type. Valves shall be capable of being repacked under line pressure. Valves 14-inch and larger installed vertical pipes with their stems horizontal shall be fitted with bronze slides, tracks, rollers, and scrapers to assist the travel of the gate assembly. Quick opening valves shall have quick opening levers and cams in lieu of handwheel operators.

B. Knife Gate Valves

1. Knife gate valves shall be provided with raised face and resilient seats for positive seating. Wetted parts shall be constructed of Type 316 stainless steel. Gates shall be finish-ground on both sides to prevent packing or seat damage. Valves 2 to 4 inches in size shall be furnished with cast stainless steel bodies; valves 6 to 24 inches in size shall be furnished with cast semi-steel bodies with stainless steel linings. Valve ends shall be of the flanged or wafer design, as shown. Gate guides and jams shall be steel. Actuator shall be handwheel. Port design shall be full-round.

2. Manufacturers or equal:

   a. Red Valve Company Inc.;
   b. DeZurik Corporation;
   c. Fabri-Valves;
   d. Rovang, Inc.

C. Resilient-Seated Gate Valves

1. Resilient-seated gate valves conforming to ANSI/AWWA C509 shall be provided. Resilient-seated gate valves shall have cast iron bodies with flanged, bell, or mechanical joint ends, rubber-coated cast iron disc, flanged bonnet, bronze stem, O-ring seals, and operators with handwheel or square nut, unless otherwise shown.

2. Manufacturers or equal:

a. American Series 2500
b. Clow Valve Co.; F-6100
c. Kennedy Valve; KS-FW and KS-RW
d. Mueller Company; A-2360, A-2361

2.03 ECCENTRIC PLUG VALVES

A. Equipment Requirements: Plug valves shall be on the non-lubricated, eccentric type with resilient faced plugs, port areas for valves 20 inches and smaller shall be at least 80% of full pipe area. Port area of valves 24 inches and larger shall be at least 70% of full pipe area. The body shall be of semi-steel (ASTM A-126 C1.B) and shall have bolted bonnet, which gives access to the intervals of the valve. Seats shall be welded overlay of high nickel content or a stainless steel plate locked in the body cavity. If a plate is used, it shall be replaceable through the bonnet access. Bearings shall be permanently lubricated of stainless steel, bronze or teflon lined, fiberglass backed duralon. Bearing areas shall be isolated form the flow with grit seals. Valves shall have packing bonnets where the shaft protrudes from the grit seals. Valves shall have packing bonnets where the shaft protruded from the valve and the packing shall be self-adjusting chevron type, which can be replaced without removing the bonnet. All nuts, bolts, springs and washers shall be stainless steel.

B. Valves shall be designed for a working pressure of 150 PSI. The valve and actuator shall be capable of satisfactory operation in either direction of flow against pressure drops up to and including 100 PSI (for plug valves over 12 inches in diameter). Valves shall be bubble tight in both directions at 100-psi differential.

C. Plug valves over 12" in diameter shall have worm gear operators. The operating mechanism shall be for buried service with a 2-inch square-operating nut.

D. Plug valves are to be installed with the sear pointed towards the upstream flow, when specified.

E. Manufacturers or equal:

1. Clow Valve Co.;

2. DeZurik Corporation.

3. U.S. Pipe

2.04 BALL VALVES (4-INCH AND SMALLER)

A. General Requirements: Unless otherwise specified or shown, general purpose ball valves in sizes up to 4-inch shall have manual operators with lever or handwheel. Ferrous surface of 4-inch valves, which will be in contract with water, shall be epoxy-coated. All ball valves shall be of best commercial quality, heavy-duty construction.

B. Body: All ball valves up to 1-1/2 inch (incl.) in size shall have bronze or forged brass 2 or 3 piece bodies with screwed ends for a pressure rating of not less than 300 psi WOG (water-oil-gas). Valves 2-inch to 4-inch in size shall have bronze forged brass or steel 2 or 3 piece bodies with flanged ends for a pressure rating of 125 psi or 150 psi.

C. Balls: The balls shall be solid brass or chrome plated bronze, or stainless steel, with large or full openings.

D. Stems: The valves seats shall be of Teflon or Buna N, for bi-directional service and easy replacement.

E. Manufacturers or equal:

1. Jamesbury Corporation;

2. Jenkins Bros.;

3. Lunkenheimer Flow Control;

4. Wm. Powell Company;

5. Worcester Controls;

6. Valve Primer Corporation.

2.05 SWING CHECK VALVES (3-INCH AND LARGER)

A. General: Swing check valves for water, sewage, sludge, and general service shall be of the outside lever and spring or weight type, in accordance with ANSI/AWWA C 508 - Swing-Check Valves for Waterworks Service, 2 in. through 24 in. NPS, unless otherwise indicated, with full-opening passages, designed for a water-working pressure of 150 psi. They shall have a flanged cover piece to provide access to the disc.

B. Body: The valve body and cover shall be of cast iron conforming to ASTM A 126, with flanged ends conforming to ANSI B 16.1, or mechanical joint ends, as shown.

C. Disc: The valve disc shall be of cast iron, ductile iron, or bronze conforming to ASTM B 62.

D. Seat and Rings: The valve seat and rings shall be of bronze conforming to ASTM B 62 or B 148, or of Buna-N.

E. Hinge Pin: The hinge pin shall be of bronze or stainless steel.

F. Manufacturers or Equal:

1. American-Darling Valve Co.;

2. Kennedy Valve;

3. Mueller Company;

4. Stockham Valves and Fittings.

2.06 AIR-VACUUM AND AIR-RELEASE VALVES

A. Air and Vacuum Valves: Air and vacuum valves shall be capable of venting large quantities of air while pipelines are being filled, and allowing air to re-enter while pipelines are being drained. They shall be of the size shown, with flanged or screwed ends to match piping. Bodies shall be of high-strength cast iron. The float, seat, and all moving parts shall be constructed of Type 316 stainless steel. Seat washers and gaskets shall be of a material insuring water tightness with a minimum of maintenance. Valves shall be designed for minimum 150-psi water-working pressure, unless otherwise shown.

B. Air-Release Valves: Air-release valves shall vent accumulating air while system is in service and under pressure and be of the size shown and shall meet the same general requirements as specified for air and vacuum valves except that the vacuum feature will not be required. They shall be designed for a minimum water-working pressure of 150 psi, unless otherwise shown.

C. Combination Air Valves: Combination air valves shall combine the characteristics of air and vacuum valves and air release valves by exhausting accumulated air in systems under pressure and releasing or re-admitting large quantities of air while a system is being filled or drained, respectively. They shall have the same general requirements as specified for air and vacuum valves.

D. Manufacturers or Equal:

1. APCO (Valve and Primer Corporation);

2. Golden-Anderson Valve Division (GA Industries, Inc);

3. Val-Matic (Valve and Manufacturing Corporation).

2.07 CORPORATION STOPS (Ball Valve Type)

A. Unless otherwise shown, corporation stops shall be made of brass alloy for key operation, with screwed ends with corporation thread or iron pipe thread, as required. AWWA taper thread for inlet thread and compression type fittings for outlet.

B. Manufacturer or Equal:

1. Ford Meter Box Company;

2. James Jones Company;

3. Mueller Company.

PART 3 - EXECUTION

3.01 VALVE INSTALLATION

A. General: All valves, gates, operating units, stem extensions, valve boxes, and accessories shall be installed in accordance with the manufacturer's written instructions and as shown and specified. All gates shall be adequately braced to prevent warpage and bending under the intended use. Valves shall be firmly supported to avoid undue stresses on the pipe.

B. Access: All valves shall be installed to provide easy access for operation, removal, and maintenance and to avoid conflicts between valve operators and structural members or handrails.

C. Valve Accessories: Where combinations of valves, sensors, switches, and controls are specified, it shall be the responsibility of the CONTRACTOR to properly assemble and install these various items so that all systems are compatible and operating properly. The relationship between interrelated items shall be clearly noted on shop drawing submittals.

D. Butterfly Valves: All exposed butterfly valves shall be installed with a means of removing the complete valve assembly without dismantling the valve or operator.

3.02 MEASUREMENT AND PAYMENT

E. Measurement and payment will be based on the actual quantities installed as more specifically discussed and described in SECTION 01025 for MEASUREMENT AND PAYMENT.

END OF SECTION

SECTION 02720

STORM DRAINAGE SYSTEM

PART 1 GENERAL

1.01 WORK INCLUDED

A. The work covered and described in this Section includes the furnishing and construction of culverts, storm sewers, inlets and other drainage structures as shown on the Drawings and specified herein.

1.02 RELATED WORK

A. Section 02221: Trenching Bedding & Backfill for Pipe.

B. Section 05500: Metal Fabrications

C. Section 03480: Precast Concrete Specialties

1.03 SUBMITTALS

A. Shop Drawings: Shop drawings for the following items shall be submitted for Engineer's approval.
1. Grates and Castings
2. Precast structures

B. Pipe certification of quality by producer shall be delivered to Engineer ten days prior to installation.

1.04 JOB CONDITIONS

A. Existing Drainage System: Maintain operational, prevent siltation with the method as approved and as directed by the Engineer.

PART 2 PRODUCTS

2.01 MATERIALS

A. A-2000 PVC Pipe: Polyvinyl Chloride (PVC) storm sewer/drain pipe and fittings shall be manufactured by Contech Construction Products, Inc. or approved equal and tested in accordance with ASTM F949. The structural design of thermoplastic pipes shall be in accordance with AASHTO Section 12 titled: "BURIED Structures and Tunnel Liners." To ensure long-term design strength properties, PVC pipe shall be manufactured from 12454 cell class material per ASTM D1784. Pipe and fittings shall have a minimum pipe stiffness of 46 lbs./in./in. when tested in accordance with ASTM D2412.

B. Concrete Pipe: Concrete pipe shall be reinforced concrete culvert pipe conforming to ASTM Designation C 76, Class V, Wall B, except when otherwise indicated. Pipe joints shall be rubber gasket joints, and the pipe joint shall be manufactured to meet the requirements of the approved type of gasket to be used. Pipe joints and rubber gaskets shall conform to the

requirements of Section 941 and 942 of the FDOT Standard Specifications.

C. Corrugated aluminum pipe (C.A.P.) shall be helical type, conforming to ASTM B209 and AASHTO M196, as manufactured by Kaiser Aluminum, Inc., or approved equal. The corrugation pattern and gauge shall be as follows:

DIA.	CORRUGATION	GAUGE
12" TO 21"	2-2/3" X 1/2"	16
24" TO 27"	2-2/3" X 1/2"	16
30"	2-2/3" X 1-1/2"	14
36" TO 54"	3" X 1"	14
60" TO 78"	3" X 1"	12

Pipe couplings for C.A.P. shall be 12" wide (minimum), 24" for 60" diameter or larger, split bands of the same alloy as the pipe may be one gauge lighter than the pipe. Polyurethane or other manufacturer supplied sealant shall be used with the couplings.

D. French Drain Pipe: Pipe for the French drains shall be one of the following types, unless otherwise specified on the drawings, that conform to the respective specification, except perforations and joints shall be as shown on the Drawings.

1. Concrete Pipe - ASTM Designation C14
2. Perforated Concrete Pipe - AASHTO Designation Ml 75
3. Perforated and Nonperforated Clay Pipe - ASTM Designation C700, Standard Strength
4. Bituminous Coated Corrugated Metal Pipe (Perforated) - AASHTO Designations Type Ill and Ml 90, Type A.
5. Corrugated Aluminum Perforated Pipe - AASHTO Designation Ml 97.
6. HDPE
7. A2000 PVC

E. Brick: Brick for drainage structures shall be dense, hard burned, shale or clay brick conforming to ASTM Designation C32, Grade MM or C 62, Grade MW, except that brick absorption shall be between five and twenty-five grams of water absorbed in one minute by dried brick, set flat face down, in 1/8-inch of water.

F. Cement Mortar: Cement mortar for manhole construction shall be one part cement and two parts clean sharp sand to which may be added lime in the amount of not over twenty-five percent volume of cement. It shall be mixed dry and then wetted to proper consistency for use. No mortars that have stood for more than one hour shall be used.

G. Concrete: Concrete shall conform to the requirements of Section 03300 Cast-in-Place Concrete.

H. Precast Concrete Units: Precast concrete inlets shall conform to applicable requirements of Section 03480.

I. Castings: Castings for inlets and other items shall conform to the ASTM Designation A 48, Class 25. Castings shall be true to pattern in form and dimensions and free of pouring faults and other defects in positions which would impair their strength or otherwise make them unfit for the service intended. No plugging or filling will be allowed. Catch basin gratings

shall be as specified on the drawings.

J. The trench liner shall be Mirafi 700X filter fabric or approved equal.

K. Ballast rock for French drains shall be limerock free from deleterious matter and 3/4-inch to 1 1/2-inches in size with not more than 10% passing the 1/2-inch sieve.

L. Pea rock shall be graded so that 100% passes the 1-inch sieve and not more than 5% passes the 1/4-inch sieve.

M. Roofing felt shall be 30 pound felt.

N. Drainage Well Casing Pipe: Casing pipe shall be plain, standard weight, 3/8-inch minimum thickness, new black steel pipe conforming to ASTM A 53.

PART 3 EXECUTION

3.01 PREPARATION

A. Pipe Trenches:

1. Pipe trenches shall be of necessary widths for the proper laying of the pipe and the banks shall be as nearly vertical as practicable. In paved areas, the trench shall be vertical and sheeted, if required; the clearance between the pipe and trench wall or back of sheeting shall not exceed 18 inches. The bottom of the trenches shall be excavated to a depth of the outside bottom of the pipe barrel. Any over excavation shall be replaced with suitable compacted material. Excavation for inlets and other appurtenances shall be sufficient to provide a clearance between their outer vertical surfaces and the face of the excavation or sheeting, if used, of not less than 12-inches.
2. Soft, spongy, or otherwise unsuitable material encountered below the established grade of the excavation which will not provide a firm foundation for subsequent work shall be removed and replaced as directed. Unless otherwise directed, all such unstable materials shall be removed for the full width of the excavation and replaced with approved fill material.
3. Where sheeting and bracing are necessary to prevent caving of the trench sidewalls or sidewalls of excavation for other structures, and to safeguard the workmen, the trench or excavation for other structures shall be dug to such width that the proper allowance is made for the space occupied by the sheeting and bracing to provide clearance as specified above.

3.02 INSTALLATION

A. Laying Concrete Pipe and A2000 PVC Pipe:

1. All pipe shall be placed on a minimum of 4" stable granular material free of rock formation and other foreign formations, all pipe shall be carefully laid true to the line and grade shown on the Drawings. Any deviation from true alignment or grade which would result in a displacement from the normal position of the gasket of as much as 1/4-inch, or which would produce a gap exceeding 1/2-inch between sections of pipe for more than 1/3 of the circumference of the inside of the pipe, will not be acceptable and where such occurs, the pipe shall be relaid without additional compensation. No mortar, joint compound, or other filler which would tend to restrict the flexibility of the gasket joint shall be applied to the gap. Pipes having defects that have not caused their rejection are to be so laid that these defects will be in the upper half of the sewer.

2. Before installation of the pipe gasket and the surface of the pipe joint, including the gasket recess shall be clean and free from grit, dirt, or other foreign matter at the time the joints are made. In order to facilitate closure of the joint, application of an approved vegetable soap lubricant immediately prior to closing of the joint will be permitted.
3. All pipes shall be laid with bells or grooves uphill. As the pipes are laid throughout the work, they must be thoroughly cleaned and protected from dirt and water. No length of pipe shall be laid until the two preceding lengths have been thoroughly embedded in place so as to prevent any movement or disturbance of the finished joint. No walking on or working over the pipes after they are laid, except as may be necessary in tamping earth and refilling, will be permitted until they are covered to a depth of one-foot. No pipe shall be laid except in the presence of an authorized inspector. Fill placed around the pipe shall be deposited on both sides simultaneously to approximately the same elevation and uniformly compacted. Whenever the pipe laying is discontinued, as at night, the unfinished end is to be securely protected from displacement due to caving of the banks or from other injury and a suitable stopper is to be inserted therein.
4. A2000 Pipe Jointing System: Joints shall be an integral bell-gasketed joint. When the joint is assembled, it shall prevent misalignment of adjacent pipes and form either a soil tight joint (2 psi hydrostatic test per AASHTO Standard Specification for Highway Bridges, Section 26.4.2.4) or a watertight joint (10.8 psi test per ASTM D3212 TITLED: “Standard Specification for Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals”) as required. The PVC Pipe shall provide a Manning’s “n” value of .009. Thermoplastic pipe and fittings shall be installed in strict accordance with ASTM D2321 or AASHTO Section 30.

B. Laying Corrugated Pipe:
1. All corrugated pipe shall be carefully laid, true to the line and grade shown on the Drawings. Where a coupling is required, the pipe gasket and coupling band shall be centered over the joint with the coupling band bolts securely tightened without cutting the gasket.
2. Fill placed around the pipe shall be deposited on both side simultaneously to approximately the same elevation and uniformly compacted. Whenever the pipe laying is discontinued, as at night, the unfinished end is to be securely protected from displacement due to caving of the banks or from other injury and a suitable stopper is to be inserted therein.

C. French Drain Trenches:
1. French drain trenches shall be excavated to the lines and grade shown on the Drawings and backfilled with ballast rock to the bottom of the proposed pipe. The pipe shall be laid with open joints as shown on the Drawings. The remaining ballast rock shall be placed, and the line and grade of the pipe shall be maintained. Pea rock and 30 pound per square felt paper shall be placed over ballast rock as shown on the Drawings. The remaining trench shall be backfilled with suitable material and backfill material 12-inches and above the felt paper shall be compacted to not less than 98 percent of the maximum density as determined by AASHTO Designation T 180.

D. Drainage Structures:
1. Concrete inlets or other structures shall be constructed in conformity with the Plan Details. Forms shall be designed and constructed so that they may be removed

without injury to the concrete and shall be left in place for at least 24 hours after concrete is poured. Concrete shall be thoroughly tamped and shall be cured for at least five days after removal of forms. Honeycomb places shall be thoroughly cleaned, saturated with water and pointed up with mortar.

2. Precast inlets or other structures may be used in lieu of cast-in-place structures. Grates are to be set in place in mortar to the proper line and grade.

E. Backfilling for Pipe Culverts and Drainage Structures:

1. After the pipe has been installed, approved selected material from excavation at a moisture content which will facilitate compaction shall be placed along side the pipe in layers not exceeding 6-inches loose measure in depth. Care shall be taken to insure thorough compaction of the fill under the haunches of the pipe. Each layer shall thoroughly compacted by rolling or tamping with mechanical rammers. This method of filling and compacting shall be continued until the fill is 12-inches above the pipe, then the remainder of the backfill shall be placed in lifts not exceeding 12-inches. The operation of heavy equipment shall be conducted so that no damage to the pipe will result. Backfill material 12-inches and above the top of the pipe shall be compacted to not less than 98 percent of maximum density as determined by AASHTO Designation T 180. Selected material for backfill shall not contain any stones or rock larger than 2 1/2-inches. Tests for density of compaction shall be made at the places designated by the Engineer, and deficiencies shall be corrected by the Contractor without additional cost to the Department.

END OF SECTION

SECTION 02723

SANITARY SEWER PIPE LINER

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Provide all labor, materials, necessary equipment and services to complete the water distribution and wastewater transmission system work, as indicated on the drawings, as specified herein or both, except as for items specifically indicated as Not-In-Contract ("NIC ITEMS").

1.02 WORK INCLUDED

A. Provide for the reconstruction of pipelines and conduits by the installation of a cured-in-place pipe (CIPP) consisting of a thermosetting resin-impregnated flexible felt tube coated on one side with an impermeable plastic which is inverted into the original conduit by the use of a hydrostatic head or pressurized air. Curing is accomplished by circulating hot water or controlled steam throughout the length of the inverted tube to cure the resin into a hard, impermeable pipe with the plastic coating on the internal surface of the CIPP. The final product shall extend the entire length of the original pipe segment providing a continuous, tight-fitting and joint-less CIPP.

1.03 RELATED WORK

A. Section 02221 - Excavation and Backfilling for Utilities

B. Section 02610 - Piping, General

1.04 REFERENCE STANDARDS

A. Codes: All codes, as referenced herein, are specified in Section 01090, "Reference Standards".

B. Technical Special Provision references ASTM F1216 (Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube)

C. ASTM D5813 (Cured-in-Place Thermosetting Resin Sewer Pipe)

D. ASTM D790 (Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics)

1.05 PRODUCT AND CONTRACTOR QUALIFICATION REQUIREMENTS

The provided product shall have a 50 year design life, and in order to minimize the OWNER's risk, only proven products with substantial long term track records will be approved by ENGINEER. All Contractors must submit proof that they meet the below product and installer requirements of this section with their bid.

In order for products and contractors to be deemed commercially acceptable and approved by ENGINEER for this project they must meet the following criteria:

For a Manufacturer's inversion liner Product to be considered commercially proven, a minimum of 1,000,000 linear feet or 4,000 manhole to manhole line sections of successful wastewater collection system installations in the U.S. must be documented to the satisfaction of the OWNER.

A. The Manufacturer of the inversion liner Product must operate under a quality management system that is third party certified to ISO 9001:2000 or other internationally recognized organization standards. Proof of certification shall be required for approval by ENGINEER.

B. Third Party Test Results for the sewer rehabilitation product resin system supporting the long-term performance and structural strength of the product shall be submitted for approval by ENGINEER, and such data shall be satisfactory to the OWNER. No product will be approved by ENGINEER without independent third party testing verification.

C. For a Contractor to be approved by the ENGINEER, the Contractor must satisfy all insurance, financial, and bonding requirements of the OWNER, and must have successfully installed at least 500,000 linear feet of CIPP in wastewater collection systems.

D. For a Contractor to be approved by the ENGINEER, the Contractor must submit with their bid correspondence from the Manufacturer stating that the Contractor is certified to install the Manufacturer's inversion liner Product.

E. Contractor's Qualifying Superintendent(s): the Contractor's Superintendent(s) designated for this project must have had at least 5 (five) years of active experience in the commercial installation of CIPP. This shall be documented to the OWNER's satisfaction in the form of a resume of work experience detailing scope of work (linear footage and CIPP diameters), location of work, and reference contact information for each project listed.

1.04 Submittals

A. The Contractor shall submit to the Engineer documentation which shall include shop drawings, CCTV video of line inspections, design calculations based on ASTM Standards, and manufacturer's data for the following items:

1. Lining materials to be installed.
2. Thermosetting resin to be utilized in producing the CIPP in accordance with these Technical Special Provisions.
3. Bypass plan layout.
4. Safety plan.
5. Design calculations for CIPP thickness of the liner system.
6. Procedures for preparing CIPP samples and testing of physical properties.
7. Pre-installation Inspection Reports.

The submittal items listed above shall be submitted by CONTRACTOR to the ENGINEER after Notice of Award and prior to beginning the work.

PART 2 - PRODUCT

2.01 Liner Tube

A. The tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216, Section 5. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular shaped pipe sections.

B. The wet-out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the calculated minimum design CIPP wall thickness.

C. The tube shall be manufactured to a size that when installed will tightly fit the internal circumference and length of the original pipe. In the event that under-sized pipe is present, the liner tube shall be manufactured so that overlap folds or wrinkles do not occur. Allowances shall be made for circumferential stretching during inversion.

D. The outside layer of the tube (before wet-out) shall be coated with an impermeable polyurethane or polyethylene plastic coating. This coating shall be an impermeable, flexible membrane that will contain the resin and facilitate monitoring of resin saturation during the resin impregnation (wet-out) process. This coating shall form the inner layer of the finished pipe and is required for enhancement of corrosion resistance, flow, and abrasion properties.

E. The tube shall be homogenous across the entire wall thickness containing no intermediate or encapsulated layers of any material. Additionally, no material shall be included in the tube that may cause delamination in the cured liner, and no dry or unsaturated layers shall be evident.

F. The wall color of the interior liner surface after installation shall be a light reflective color so that a clear detailed inspection with closed-circuit television equipment may be conducted.

G. The outside of the tube shall be marked for distance at regular intervals not to exceed 10 feet. Such markings shall include the Manufacturer's name or identifying symbol. The tubes must be manufactured in the USA.

H. The minimum length shall be that deemed necessary by the Contractor to effectively span the distance between manhole sections of the segment to be lined unless otherwise specified. The Contractor is solely responsible for field verification of all pipe diameters and lengths prior to fabrication, wet-out and installation.

2.2 Resin

A. The resin system shall be a corrosion resistant polyester or vinyl ester catalyst system that when properly cured with the tube composite meets the requirements of ASTM F1216, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin shall produce a CIPP which will comply with the structural and chemical resistance requirements of this Technical Special Provision.

B. The resin shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. The resin shall not be sent to any intermediate mixing facility.

C. When requested by the OWNER, the CONTRACTOR shall submit a Certificate of Authenticity from the resin manufacturer for each shipment to the wet-out facility to include the date of manufacture.

2.3 CIPP Product

A. Structural Requirements

1. The CIPP shall be designed as per ASTM F1216, Appendix X1. The CIPP design shall assume no bonding to the original pipe wall.

2. Long-term testing must have been performed for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the long-term, time dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (Tube and Resin) and general workmanship of the installation and curing as defined within the relevant ASTM standard. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the OWNER's satisfaction. The materials utilized for the contracted project shall be of a

quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.

3. The Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7.

4. The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during field sample testing, new samples will be required to be obtained from the installed pipe. Any reoccurrence may cause rejection of the work.

5. The cured pipe material (CIPP) shall conform to the structural properties, as listed below.

MINIMUM CIPP PHYSICAL PROPERTIES

Property	Test Method	*Cured Composite* per ASTM F1216	*Cured Composite* Enhanced Resin
Modulus of Elasticity	ASTM D790	250,000 psi	400,000 psi
Flexural Stress	ASTM D790	4,500 psi	4,500 psi

6. The required structural CIPP wall thickness shall be based as a minimum, on the physical properties in Section 2.3.A above or greater values if substantiated by independent lab testing and in accordance with the design equations in ASTM F1216 Appendix X1. Design Considerations shall incorporate recommendations and methods as defined in ASTM F1216, and the following design parameters shall be defined and provided in the approved submittal calculations for all locations shown on the plans:

- Design Safety Factor (typically use a value of 2.0)
- Retention Factor for Long-Term Flexural Modulus to be used in Design (typically a value between 50% and 75% as determined by long-term tests described in Section 3.1.B and approved by the ENGINEER)
- Ovality* (calculated from (X1.1 of ASTM F1216)
- Enhancement Factor, K (See Section 2.3.A.3)
- Groundwater Depth (above invert of pipe)
- Soil Depth (above crown of pipe)
- Soil Modulus (only required for fully deteriorated design conditions)
- Soil Density (only required for fully deteriorated design conditions)
- Live Load (only required for fully deteriorated design conditions and shall meet H20 Highway loadings)
- Design Condition (partially or fully deteriorated)*

*Based on review of video logs, design conditions of pipeline can be fully or partially deteriorated. (See ASTM F1216 Appendix). The ENGINEER will be sole judge as to pipe conditions and parameters utilized in design.

7. Any layers of the tube that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

B. Testing Requirements

1. Chemical Resistance - The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.

2. Hydraulic Capacity - Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

3. CIPP Field Samples - When requested by the OWNER, the Contractor shall submit test results from field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties specified have been

achieved in previous field applications. Samples for this project shall be made and tested at the OWNER's request.

PART 3 - EXECUTION

3.1 Installation Responsibilities for Incidental Items

A. It shall be the responsibility of the CONTRACTOR to coordinate with OWNER to locate and designate all manhole access points open and accessible for the work, and provide rights-of-access to these locations. If a street must be closed to traffic because of the orientation of the sewer, the Contractor shall institute the actions necessary to provide access during this for the mutually agreed time period. The Contractor shall acquire a fire hydrant meter from the OWNER and shall pay the costs for cleaning, installation and other process related work items requiring water.

B. Cleaning of Sewer Lines - The CONTRACTOR, when required, shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP. The CONTRACTOR shall arrange a dumpsite for all debris removed from the sewers during the cleaning operation. Any hazardous waste material encountered during this project will be considered as a changed condition.

C. Bypassing Sewage - The CONTRACTOR, when required, shall provide for the flow of sewage around the section or sections of pipe designated for repair. Plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system shall make the bypass. The pump(s) and bypass line(s) shall be of adequate capacity to accommodate the sewage flow. The CONTRACTOR shall provide a detail of the bypass plan to be submitted per Specification 02724, Bypass Pumping.

D. Inspection of Pipelines - Inspection of pipelines shall be performed by the CONTRACTOR using experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) inspection techniques. The pipeline interior shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP. These shall be noted and corrected. A DVD and suitable written log for each line section shall be produced by the CONTRACTOR and provided to the OWNER.

E. Line Obstructions - It shall be the responsibility of the CONTRACTOR to clear the line of obstructions such as solids and roots that will prevent the insertion of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process, that was not evident on the pre-bid video and it cannot be removed by conventional sewer cleaning equipment, then the CONTRACTOR shall make a point repair excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the ENGINEER prior to the commencement of the work and shall be considered as a separate pay item.

F. Public Notification - The CONTRACTOR shall make every effort to maintain sewer service usage throughout the duration of the project. In the event that a connection will be out of service, the longest period of no service shall be 8 hours. A public notification program shall be implemented, and shall as a minimum, require the

CONTRACTOR to be responsible for contacting each home or business connected to the sanitary sewer and informing them of the work to be conducted, and when the sewer will be off-line. The CONTRACTOR shall also provide the following:

1. Written notice to be delivered to each home or business the day prior to the beginning of work being conducted on the section, and a local telephone number of the CONTRACTOR they can call to discuss the project or any potential problems.

2. Personal contact with any home or business, which cannot be reconnected within the time stated in the written notice.

G. The CONTRACTOR shall be responsible for confirming the locations of all branch service lateral connections before beginning the installation of the CIPP.

3.2 Installation

A. CIPP installation shall be in accordance with ASTM F1216, Section 7, with the following modifications:

1. Resin Impregnation - The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the potential loss of resin during installation through cracks and irregularities in the original pipe wall, as applicable.

2. Tube insertion - The wet out tube shall be inverted into the pipeline using as defined within relevant ASTM standards previously stipulated. The tube should be inverted through an existing manhole or access point approved by ENGINEER and fully extend to the next designated manhole or termination point.

3. Temperature gauges shall be placed between the tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

4. Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the manufacturer's recommended cure schedule. A cool-down process shall be conducted that complies with the resin manufacturer's specification.

5. CONTRACTOR shall assure that any wrinkles in the liner do not exceed 10% of the pipe diameter. At the end of the pipe line, at the entrance to the MH, any wrinkles shall be small enough such that they do not prevent the use of a standard plug for line isolation. Any wrinkles larger than that described above shall be cut down in a method that will not damage the entire lining.

3.3 Reinstatement of Branch Connections

A. It is the intent of these Technical Special Provisions that branch connections to buildings be re-opened without excavation, utilizing a remotely controlled cutting

device, monitored by a CCTV. The Contractor shall certify a minimum of two complete functional cutters plus key spare components are on the job site before each installation or are in the immediate area of the jobsite and can be quickly obtained. Unless otherwise directed by the OWNER or his authorized representative, all laterals will be reinstated. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

3.4 Inspection

A. CIPP samples shall be prepared for each installation designated by the Engineer or approximately 20% of the project's installations. Pipe physical properties will be tested in accordance with ASTM F1216, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in the table on page 5 of this Technical Special Provision, Table 1 of ASTM F1216 or the values submitted to the Engineer by the contractor for this project's CIPP wall design, whichever is greater.

B. Wall thickness of samples shall be determined in a manner consistent with 8.1.2 of ASTM D5813. The minimum wall thickness at any point shall not be less than 87.5% of the specified design thickness calculated in 3.1.F of this document.

C. CIPP installation may be inspected visually if appropriate, or by closed-circuit television. Variations from true line and grade may be inherent because of the conditions of the original piping. No infiltration of groundwater should be observed. All service entrances should be accounted for and be unobstructed.

3.5 Clean-Up

Upon final acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

3.6 MEASUREMENT AND PAYMENT

A. Measurement and payment for pipe lining will be based upon the actual number of linear feet of pipe that is lined with 6.0 mm thick liner, in accordance with the Contract Documents. Unit costs shall include cleaning and televising pipe lines prior to and after liner installation, bypass pumping, clearing line of any obstructions and verification of all lateral service locations with property owners. Sewer deficiencies identified during the inspections shall be communicated immediately to the OWNER for coordination and no repairs shall be made without the prior approval of the

OWNER. Approved repairs to the sewer will be based on pipe unit costs per linear foot.

END OF SECTION

SECTION 02724

BYPASS PUMPING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Section includes requirements for implementing a temporary pumping system for the purpose of diverting existing sewage flow around work area for duration of the project.

1.02 QUALITY ASSURANCE

A. Follow national standards and as specified herein.

B. Perform leakage and pressure tests on discharge piping using clean water, before operation. Notify Engineer 24 hours prior to testing.

C. Maintain and inspect temporary pumping system every two hours. Responsible operator shall be on site when pumps are operating.

D. Keep and maintain spare parts for pumps and piping on site, as required.

E. Maintain adequate hoisting equipment and accessories on site for each pump.

1.03 SUBMITTALS

A. Submit the following:
   1. Detailed plan and description of proposed pumping system. Indicate number, size, material, location and method of installation of suction and discharge piping, size of pipeline or conveyance system to be bypassed, staging area for pumps, site access point, and expected flow.
      a. Size and location of manhole or access points for suction and discharge hose or piping.
      b. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill, if buried.
      c. Temporary pipe supports and anchoring required.
      d. Thrust and restraint block sizes and locations.
      e. Sewer plugging method and type of plugs.
      f. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
      g. Backup pump, power and piping equipment.
      h. Calculations of static lift, friction losses, and flow velocity. Pump curves showing pump operating range.
      i. Design plans and computation for access to bypass pumping locations indicated on drawings.
      j. Calculations for selection of bypass pumping pipe size.
      k. Method of noise control for each pump and/or generator.

l. Method of protecting discharge manholes or structures from erosion and damage.
m. Schedule for installation and maintenance of bypass pumping lines.
n. Procedures to monitor upstream mains for backup impacts.
o. Procedures for setup and breakdown of pumping operations.
p. Emergency plan detailing procedures to be followed in event of pump failures, sewer overflows, service backups, and sewage spillage.
i. Maintain copy of emergency plan on site for duration of project.

2. Certify bypass system will meet requirements of codes, and regulatory agencies having jurisdiction.

1.04 CONTRACTORS RESPONSIBILITY FOR OVERFLOWS AND SPILLS

A. Schedule and perform work in manner that does not cause or contribute to incidence of overflows, releases or spills of sewage from sanitary sewer system or bypass operation.

1.05 DELIVERY AND STORAGE

A. Transport, deliver, handle, and store pipe, fittings, pumps, ancillary equipment and materials to prevent damage and following manufacturer's recommendations.
1. Inspect all material and equipment for proper operation before initiating work.

B. Material found to be defective or damaged due to manufacturer or shipment:
1. When Engineer deems repairable: Repair as recommended by manufacturer.
2. When Engineer deems not repairable: Replace as directed by Engineer before initiating work.
3. Repair or replacement of defective or damaged material and equipment will be at no cost to the CITY.

PART 2 PRODUCTS

2.01 MATERIALS

A. Discharge and Suction Pipes shall be capable of providing the capacity requirements as according to pump size, flow calculations, and manhole depth following manufacturer's specifications and recommendations as noted in the approved bypass pumping plan (see Section 1.03).

B. Polyethylene Plastic Pipe:
1. High density solid wall and following ASTM F714 Polyethylene (PE) Plastic Pipe (SDR-DR) based on Outside Diameter, ASTM D1248 and ASTM D3550
2. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.

C. High-Density Polyethylene (HDPE).
    1. Homogenous throughout, free of visible cracks, discoloration, pitting, varying wall thickness, holes, foreign material, blisters, or other deleterious faults.
        a. Defective areas of pipe: Cut out and joint fused as stated herein.
    2. Assembled and joined at site using couplings, flanges or butt-fusion method to provide leak proof joint. Follow manufacturer's instructions and ASTM D 2657.
        a. Threaded or solvent joints and connections are not permitted.
    3. Fusing: By personnel certified as fusion technicians by manufacturer of HDPE pipe and/or fusing equipment.
    4. Butt-fused joint: True alignment and uniform roll-back beads resulting from use of proper temperature and pressure.
        a. Allow adequate cooling time before removal of pressure.
        b. Watertight and have tensile strength equal to that of pipe.
        c. Acceptance by Engineer before insertion.
    5. Use in streams, storm water culverts and environmentally sensitive areas.

D. Flexible Hoses and Associated Couplings and Connectors.
    1. Abrasion resistant.
    2. Suitable for intended service.
    3. Rated for external and internal loads anticipated, including test pressure.
        a. External loading design: Incorporate anticipated traffic loadings, including traffic impact loading.
    4. When subject to traffic loading, compose system, such as traffic ramps or covers.
        a. Install system and maintain H-20 loading requirements while in use or as directed by the Engineer.

E. Valves and Fittings: Determined according to flow calculations, pump sizes previously determined, and system operating pressures.

F. Plugs: Selected and installed according to size of line to be plugged, pipe and manhole configurations, and based on specific site.
    1. Additional plugs: Available in the event a plug fails. Plugs will be inspected before use for defects which may lead to failure.

G. Aluminum "irrigation type" piping or glued PVC piping will not be permitted.

H. Discharge hose will only be allowed in short sections when approved by Engineer.

2.02 EQUIPMENT

A. Pumps.
    1. Fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in priming system.
    2. Electric or diesel powered.

3. Constructed to allow dry running for long periods of time to accommodate cyclical nature of effluent flows.

B. Provide.
   1. Necessary stop/start controls for each pump.
   2. One standby pump of each size maintained on site.
      a. On-line, isolated from primary system by a valve.
   3. Quiet flow pumps at request of Engineer.

2.03 DESIGN REQUIREMENTS

A. Bypass pumping systems:

   1. Sufficient capacity to pump peak flow base on information provided by the OWNER and approved by the ENGINEER in the approved by pass pumping plan (see Section 1.03).

   2. The CONTRACTOR shall maintain bypass pumping operations at all times (24 ours a day and 7 days a week) as required to meet the existing level of service of the OWNER's wastewater collection system.

B. Provide pipeline plugs and pumps of adequate size to handle peak flow, and temporary discharge piping to ensure total flow of main can be safely diverted around section to be repaired/rehabilitated.

PART 3 EXECUTION

3.01 PREPARATION

A. Determining location of bypass pipelines.
   1. Minimal disturbance to existing utilities.
      a. Field locate existing utilities in proposed bypass area.
   2. Obtain approvals by ENGINEER for placement within public or private property.
   3. Obtain Engineer's approval of location.
   4. Costs associated with relocation of utilities and obtaining approvals of ENGINEER at no cost to the CITY.

3.02 INSTALLATION AND REMOVAL

A. Provisions and requirements must be reviewed by Engineer before starting construction.

B. Remove manhole sections or make connections to existing sewer and construct temporary bypass pumping structures at access location indicated on Drawings and as required to provide adequate suction conduit.

C. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and final acceptance of work, remove in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

D. Installation of Bypass Pipelines:
   1. Pipeline may be placed along shoulder of roads.
   2. Do not place in streets or sidewalks.
   3. When bypass pipeline crosses local streets and private driveways, place in roadway ramps.
      a. When roadway ramps cannot be used, place bypass in trenches and cover with temporary pavement as approved by Engineer.

E. During bypass pumping operation, protect sewer lines from damage inflicted by equipment.

F. Upon completion of bypass pumping operations, and after the receipt of written permission from Engineer, remove piping, restore property to pre-construction condition and restore pavement.

3.03 MEASUREMENT AND PAYMENT

A. Measurement for payment for bypass pumping during gravity sewer construction shall be included in the unit cost for sewer lining installation as described in Specification 02723 (Sanitary Sewer Pipe Liner) and as more specifically discussed and described in Specification 01025 (Measurement and Payment).

END OF SECTION

SECTION 02727

MANHOLE REHABILITATION AND LINING

PART 1 – GENERAL

1.01 WORK INCLUDED

A. This section includes general repairs and lining of existing and defective sewer manholes and similar structures by a monolithic lining system of a high-build, solvent-free structural polymer coating to eliminate infiltration/exfiltration, repair voids and deterioration, and provide corrosion protection as a total rehabilitative lining system.

B. Procedures for surface preparation, cleaning, application, inspection and testing are described herein. In addition to the lining system, different repair methods and procedures are listed in this section. All structures scheduled for rehabilitation shall be cleaned, prepared, repaired, patched and/or sealed as required prior to the application of the structural polymer lining system.

1.02 WORK INCLUDED

A. The Contactor shall be responsible for furnishing all labor, supervision, materials, and equipment required to complete all rehabilitation work, testing, and surface restoration in accordance with this Specification.

B. All Subsections of this Section are mutually complimentary and the overall intent is that the Contractor shall provide for everything in his portion of the work required to make a complete and operable job in every respect unless specifically noted otherwise.

C. It is the intent of this Section to ensure that the work, as completed shall meet all applicable codes ordinances, rules and regulations of every authority having jurisdiction in the area where the project(s) is located. Failure of the Contractor to point out items that do not meet such requirements does not relieve the Contractor or the Subcontractors of the responsibility of meeting them.

D. All supplies shall be stored and maintained by the Contractor in accordance with manufacturer's recommendations. Materials shall not be exposed to adverse conditions prior to the work. All materials shall be kept in secured area and away from general public access. The Contractor shall review and maintain all Material Safety Data Sheets (MSDS), product labeling, and technical literature at the project site.

1.03 GENERAL REQUIREMENTS

A. Applicator shall initiate and enforce quality control procedures consistent with coating manufacturer's recommendations.

B. The manhole lining shall not be installed until all required main sewer rehabilitation and other manhole surface preparation work are complete

C. Bypassing and/or blocking of flow shall be done only with prior approval of the OWNER. The CONTRACTOR shall submit a detailed bypass pumping plan to the ENGINEER in

conformance with Specification 02724, Bypass Pumping, prior to starting any work. CONTRACTOR shall be responsible for transporting or pumping water to maintain operation of any flow, treatment, and collection or distribution system while repairs and lining to structures are made.

D. Any invert(s), channels, drains, or other openings shall be covered during construction operations to prevent loose materials from collection.

E. It shall be the contactor's responsibility to provide traffic control required by the particular location and/or jurisdiction.

F. The CONTRACTOR shall notify all property owners who discharge sewage directly to the manhole being rehabilitated 72 hours in advance, verifying the date, start time and estimated completions time of the work being conducted and the impacts to the property owner.

G. Care shall be taken in shipping, handling and placing to avoid damaging the lining products. Any lining product damaged in shipment, showing deterioration, or which has been exposed to any other adverse storage condition that may have cause damage, even though no such damage can be seen, shall be marked as rejected and removed at once from the work. While stored, the lining products shall be adequately packaged and protected. The lining products shall be stored in a manner as recommended by the manufacturer.

1.03 REFERENCE STANDARDS

A. Applicable Standards:

ASTM D-695	Standard Test Method for Compressive Properties of Rigid Plastics
ASTM D-790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
ASTM D-638	Standard Test Method for Tensile Properties of Plastics
ASTM C-882 with	Standard Test Method for Bond Strength of Epoxy Systems Used Concrete by Slant Shear
ASTM D-2240	Standard Test Method for Rubber Property – Durometer Hardness
ASTM D-2990	Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
ASTM D-4414 of Organic	Standard Practice for Measurement of Wet Film Thickness Coatings by Notched Gages
SSPC	The published standards of the Society of Protective Coatings, Pittsburgh, PA.

1.04 SUBMITTALS

A. Product Data: The Contractor shall submit to the Engineer documentation after Notice of Award and prior to beginning the work shop drawings, ASTM Standards, manufacturer's data such as technical data sheets and material safety data sheets for each furnished product. The technical data, with quantitative and qualitative values based on ASTM testing results, and/or other 3rd party testing methods shall demonstrate performance conformity with these specifications.

B. Application Data:
   1. Project specific guidelines and recommendations.
   2. Proof of any required federal, state or local permits or licenses necessary for the project.
   3. Design details for any ancillary systems and equipment to be used on site for surface preparation, application and testing.
   4. If personnel entry is necessary for any reason, OSHA standards for confined space entry shall be strictly observed.
   5. Confined space entry, flow diversion and/or bypass plans shall be presented by CONTRACTOR to ENGINEER and approved by the OWNER to perform the specified work.
   6. Applicator: Company specializing in performing work of this section with minimum five (5) years documented experience and approved by coating material manufacturer.
   7. Three (3) recent references of Applicator indicating successful application of coating product(s) of the same or similar material type as specified herein, within municipal sanitary sewer manhole environments.
   8. Written warranty.
      a. Materials and labor shall be warranted with bond by the Contractor of applied material systems for a period of three (3) years from the date of final acceptance of the project, once correctly applied by an approved applicator and inspected.
      b. Failure will be deemed to have occurred if the protective system fails to (a) prevent the internal damage or corrosion of the underlying structure due to bacteriological, chemical, gaseous, erosive and abrasive attack. It does not include excessive atypical non-wastewater induced chemical abuse or atypical acts of God which cause structural damage, (b) seal and protect the substrate and environment from contamination by effluent, (c) seal and protect from influent.
      c. Contractor shall, within a reasonable time after receipt of written notice thereof, repair defects in materials or workmanship which may develop during said warranty period, and any damage to other work caused by such defects or the repairing of same, at his own expense and without cost to the Owner.
   9. Bypass plan layout
   10. Safety plan
   11. Inspection reports prior and after rehabilitation.
   12. Surface preparation inspection prior to coating application.

PART 2 – PRODUCTS

A. All work shall be in strict accordance with the specifications and recommendations including application of all products as required and in accordance with manufacturer's directions.

B. Contractor shall conform to all local, state and federal regulations including those set forth by OSHA, RCRA and the EPA and any other applicable authorities.

C. Products are to be kept dry, in a climate controlled environment, protected from weather and stored under cover. Products are to be stored and handled according to their safety data sheets.

D. Manhole lining system manufacturer, or equal shall be as specified in Section 09900, Protective Coatings.

E. Grouting to address infiltration or cement repair of the manhole shall be as specified in Section 09900, Protective Coatings.

PART 3 – EXECUTION OF MANHOLE REHABILITATION

3.01 GENERAL

A. Existing sewer manhole rehabilitation shall only be completed on structures pre-approved by the OWNER.

B. Use approved equipment designed, recommended and/or manufactured by the material supplier specifically for the application of all materials.

C. Examine surface to receive rehabilitation prior to applying any materials. Notify the OWNER in writing if surfaces are not acceptable for rehabilitation and/or lining.

3.02 CLEANING AND PREPARATION OF SURFACE

A. Surface preparation must be achieved immediately prior to utilizing any repair material and/or coatings, re-inspection and/or subsequent surface preparation may need to be repeated should conditions change after initial preparation.

B. All receiving surfaces shall be thoroughly cleaned and made free of all foreign materials including dirt, grit, roots, grease, sludge and all debris or material that may be attached to the substrate.

C. Surface preparation shall be performed on all specified surfaces to be lined or rehabilitated.

D. The objective of surface preparation is to produce a surface that is suitable for application and adhesion of the specified protective coating system and repair products.
    1. Protrusions such as from burrs, sharp edges, fins, and concrete spatter shall be removed during surface preparation.
    2. Voids and other defects that are at or near the surface shall be exposed during surface preparation.
    3. All concrete that is not sound shall be removed so that only sound concrete remains.

E. Surface preparation must achieve a clean and sound substrate in accordance with SSPC-SP13/NACE No. 6 “Surface Preparation of Concrete.”
    1. High pressure water cleaning or water jetting, and/or pre-approved dry or wet abrasive blasting may be necessary in order to achieve acceptable surface preparation free of all foreign material, laitance, oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, and/or other contaminants.
    2. An ICRI profile of CSP 3 or higher shall be achieved.
    3. For existing structures, surface preparation shall yield a pH of 7 or higher.
    4. Prepared concrete surfaces shall be tested for residual moisture after cleaning and drying, and prior to the application of the coating. Drying may be required with forced air and/or dry heat to achieve moisture levels below 80% prior to coating. If infiltration or leaks are observed within the structure address per section 3.03, Seal Active Leaks. If concrete repairs are observed that include concrete patching within the structure address per section 3.04. Additional drying prior to lining application may be required after leak and concrete repairs are completed.
    5. When grease and oil are present within the structure, an approved detergent or degreaser may be used integrally with the high pressure cleaning water if conditions dictate.

F. All materials resulting from the cleaning shall be caught at the base of each structure and removed prior to applying specified products.

G. All loose or defective concrete, mortar, brick, grout, ledges, steps and protruding ledges shall be removed to provide an accessible and uniformed surface prior to application of materials.

3.03 SEAL ACTIVE LEAKS

A. Stop active leaks with patching material or infiltration control materials applied according to manufacturer’s recommendations.

B. All infiltration control material must be compatible with repair and coating materials.

C. Inflow and infiltration Prevention materials and methods shall be as specified in Section 09900 3.09.

D. Chemical grout material used for grouting active leaks shall be injection hydrophobic polyurethane or equal.

3.04 CONCRETE REPAIR

A. Concrete repair methods include isolated, sectional, and fully restorative methods including brick, concrete, and other masonry filling, patching, termination of materials, seams, anchors, and rebuilding based on various conditions in order to repair imperfections that adversely affects flow, would compromise the structure and/or liner in the future, and to restore the structure to a profile accepting to the lining system.

B. Exposed reinforcing bar

1. Exposed reinforcing bars must be treated with rust inhibiting primer and encapsulated/patched with high density mortar.
2. Materials
    a. Rust inhibiting primer must be epoxy-based, rust inhibiting primer designed for rapid curing, and for steel applications.
    b. High density mortar patching will consist of any of the specified repair mortars within this section.
3. Execution
    a. Prepare and clean via SSPC-SP 2 or 3 exposed reinforcing bars then clean with solvent (SSPC SP-1).
    b. Treat with an epoxy-based, rapid-setting, rust inhibiting primer.
    c. Allow primer to cure.
    d. Patch with concrete patching materials as specified in “Concrete patching and rebuilding” section. Follow product and manufacturer execution specifications accordingly.

C. Concrete patching and rebuilding
1. Concrete patching repair shall be performed for any spot repairs, filling or repairs of deep spalls, voids, gaps, bugholes/holes, and/or crevasses.
2. Rebuild isolated structures, inverts, channels, benches and/or troughs, or other flow structures requiring build-up and/or rebuild in order to provide smooth flow transition waterway with no distortion of flow or connections.
3. Materials: The material is early-high strength, high build, sewer grade silica fume, fiber reinforced, industrial-grade modified mortar exhibiting the following minimum properties.

Flexural Strength, ASTM C-293	
28 days	≥ 950 psi
Initial Cure	< 24 hours
Tensile Strength, ASTM C-496	≥ 300 psi
Bond Strength, ASTM C-882 (mod- 7 days)	≥ 800 psi
Shrinkage, ASTM C-596	< 0.05%
Freeze/Thaw, ASTM C666	100 cycles, no damage

4. Execution
    a. All loose, cracked and corroded materials shall be removed from the area, exposing a sound substrate.
    b. The materials shall be formed, trowel-applied, or shotcrete sprayed utilizing proper equipment on to specified surfaces. Follow instructions as published by the material manufacturer. If spraying, consult manufacturer for proper instruction and material version.
    c. Once cured, and before applying any lining system materials, refer to material specifications for post-cure preparation and readiness instructions.

D. Resurfacing
1. Concrete repair methods may also include resurfacing the substrate to create uniformity of the surface to accept coatings and to restore the substrate’s profile. This will be required for any newly installed concrete structures to reduce the occurrences of outgassing, and for existing structures where degradation to

substrate profile is greater than an ICRI CSP-6, and/or when the substrate requires restoration bringing profile to near-original.

2. Resurfacing thicknesses for existing structures, the thickness shall range between 1/4 inch and 1/2 inch (1/4" – 1/2"). For newly installed concrete structures, thicknesses shall be between 1/16 inch to 1/8 inch (1/16" – 1/8"). Should the substrate and structure require repair beyond half-inch, refer to Section 3.04(B) "Concrete repair" for repairing methods beyond half-inch (1/2") thickness.
3. Manhole lining products and methods shll be as specified in Section 09900, Coatings.

3.05 REPLACE MANHOLE FRAME AND COVER

A. Replacement of manhole frame(s) and/or cover(s) shall only commence on structures pre-approved by the OWNER.

B. Materials
   1. Manhole frames and cover shall be as shown in the drawings or equal. All covers shall become complete with hinge infiltration plug.

C. Execution
   1. Remove and dispose existing frames and covers.
   2. Install castings according to approved shop drawings and applicable directions from manufacturer's printed materials.
   3. Set casting accurately at required locations to proper alignment and elevation
   4. Set in mortar in mouth of pipe bell. Mortar materials shall be approved by manhole frame manufacturer.
   5. Install adjustment rings in exiting frames with clean bearing surface that are free from rocking.
   6. Restore surface to pre-existing condition.

3.06 MANHOLE CHIMNEY SEALS

A. Manhole frame sealing includes the sealing of the frame joint area and the chimney above the cone of the manhole with either an applied internal flexible seal. Manhole chimney seal shall be installed to all manholes being rehabilitated to prevent leakage of water into the manhole through the frame joint area and the area above the manhole cone including all extensions to the chimney area.

B. If sewer manhole lining is required, frame sealing will be executed after the lining section is complete and coating is fully cured.

PART 4 – BASIS OF PAYMENT

A. Measurement and payment for sanitary sewer manhole rehabilitation and lining will be based upon the actual number of sanitary sewer manholes, each, that are rehabilitated and/or lined as more specifically discussed and described in SECTION 01025 of MEASUREMENT AND PAYMENT.

END OF SECTION 02727

SECTION 02931

SODDING

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required to prepare lawn bed and install sodding as shown on contract drawings and as specified herein.

B. Area to receive sodded grass lawns within the landscape limits shown on the Drawings except as noted herein shall be as designated on the Drawings.

1.02 SUBMITTALS

A. Provide technical data as specified in Section 01340 for Shop Drawings on all materials or installation procedures required under this Section.

B. Submit representative topsoil samples for analysis by a private laboratory to determine nutrient deficiencies and outline a proper fertilization program.

C. Submit as provided in Section 01720 certifications required for all sodding supplied.

PART 2 – PRODUCTS

2.01 SOD

A. Sod shall be Bahia, St. Augustine or Bermuda to match that of the adjacent property where Sodding is specified.

B. Sod shall be certified to meet Florida State Plant Board specifications, absolutely true to varietal type, and free from weeds or other objectionable vegetation, fungus, insects and disease of any kind.

C. Before being cut and lifted, the sod shall have been mowed 3 times with the final mowing not more than 1-week before cutting into uniform dimensions.

2.02 SOIL CONDITIONERS

A. Fertilizer:
   1. Fertilizer shall be a complete fertilizer, the elements of which are derived from organic sources. Fertilizer shall be a standard product complying with State and Federal fertilizer laws.
   2. Percentages of nitrogen, phosphorus and potash shall be based on laboratory tests on soils outlined in Paragraph 1.02B and approved by the Engineer. For purpose of bidding, assume 6% nitrogen, 6% phosphorus and 6% potash by weight. At least 50% of the total nitrogen shall contain no less than 3% water-insoluble nitrogen.

3. Fertilizer shall be delivered to the site, mixed as specified, in the original unopened standard size bags showing weight, analysis and name of manufacturer. Containers shall bear the manufacturer's certificate of compliance covering analysis shall be furnished to the Engineer. Store fertilizer in a weather-proof place and in such a manner that it will be kept dry and its effectiveness will not be impaired.

B. Super phosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 20% available phosphoric acid.

PART 3 – EXECUTION

3.01 LAWN BED PREPARATION

A. Areas to be sodded shall be cleared of all rough grass, weeds and debris, and the ground brought to an even grade as approved.

B. The soil shall be then thoroughly tilled to a minimum 8-inch depth.

C. Super phosphate at a rate for bidding purposes of 5-pounds per 1000-square foot and complete fertilizer at a rate for bidding purposes of 16-pounds per 1000-square foot shall be evenly distributed over entire area and cross-disced in to a depth of 4-6-inches.

D. The areas shall be brought to a proper grade, free of sticks, stones, or other foreign matter over 1 inch diameter or dimension. The surface shall conform to finish grade, less the thickness of sod, free of water-retaining depressions, the soil friable and uniformly firm texture.

3.02 SOD HANDLING AND INSTALLATION

A. During delivery, prior to planting, and during the planting of the lawn areas, the sod panels shall at all times be protected from excessive drying and unnecessary exposure of the roots to the sun. All sod shall be stacked during construction and planting so as not to be damaged by sweating or excessive heat and moisture.

B. After completion of soil conditioning as specified above, sod panels shall be laid tightly together so as to make a solid sodded lawn area. On mounds and other slopes, the long dimension of the sod shall be laid perpendicular to the slope. Immediately following sod laying the lawn areas shall be rolled with a lawn roller customarily used for such purposes, and then thoroughly watered.

C. Bring the sod edge in a neat, clean matter to the edge of all paving and shrub areas. Top dressing with approved, clean, weed free, sand may be required at no additional cost to the Owner if deemed necessary by the Engineer.

3.03 MAINTENANCE

A. The Contractor shall produce a dense, well-established lawn. The Contractor shall be responsible for the repair and re-sodding of all eroded or bare spots until project acceptance. Repair sodding shall be accomplished as in the original work.

B. Begin maintenance immediately after planting.

C. Maintain lawns until final acceptance.

D. Maintain sod by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas.

E. Mowing:

1. Whenever grass reaches a height of 3 inches, it shall be cut back to 2" with all clippings removed.

F. Watering:

1. Sufficient watering shall be done by the Contractor to maintain adequate moisture for optimum development of the lawn areas. Sodded areas shall receive no less than 1.5- inches of water per week.

3.04 REPAIRS TO LAWN AREAS DISTRIBUTED BY CONTRACTOR'S OPERATIONS

A. Lawn areas planted under this Contract and lawn areas outside the designated areas damaged by Contractor's operations shall be repaired at once by proper sod bed preparation, fertilizing and re-sodding, in accordance with these specifications.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required to install all steel bars, steel wire, and wire fabric required for the reinforcement of concrete, as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Concrete is included in Section 03300.

B. Water-stops are included in Section 03251.

1.03 SUBMITTALS

A. Submit to the Engineer, as provided in the General Conditions and Section 01340 completely detailed working drawings and schedules of all reinforcement required.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Unless otherwise specified or required, the design, materials, workmanship, and erection shall conform to the requirements of the latest local Building Code and the latest ACI 318 Code. In case of conflict, the latest local Building Code shall govern.

B. Concrete reinforcement in sizes No.3 (3/8-inch) and larger shall be deformed steel bars of the sizes and shapes indicated on the Drawings. The steel shall be newly rolled stock of domestic manufacture, substantially free from mill scale, rust, dirt, grease, or other foreign matter. Bars shall be of intermediate grade, deformed billet steel conforming to ASTM Specification A615, Grade 60.

C. Rail-steel bars will not be allowed in the work.

D. Reinforcement shall be accurately fabricated to the dimensions indicated on the Drawings. Particular care shall be exercised not to have stirrups oversize in order to maintain proper coverage of concrete. Stirrups and tie bars shall be bent around a revolving collar having a diameter not less than 2 times the minimum thickness of the bar. Bends for other bars shall be made around a pi n having a diameter not less than 6 times the minimum thickness of the bar except for bars 1 larger than 1-inch, in which case the bends shall be made around a pin of 8-bar diameters. All bars shall be bent cold. Bars reduced in section or with kinks or bends not shown on the Drawings will not be accepted.

E. Wire fabric shall conform to ASTM Specification A185 for Welded Steel Wire Fabric for Concrete Reinforcement.

F. Steel wire shall conform to ASTM Specification A82 for Cold-Drawn Steel 1 for Concrete Reinforcement. Wire ties shall be zinc coated annealed iron of not less than No. 18 gage.

2.02 HANDLING MATERIALS

A. Reinforcement shall be shipped to the work with bars of the same size and shape fastened in bundles with metal identification tags giving size and mark securely wired on. The identification tags shall be labeled with the same designation as shown on submitted bar schedules and shop drawings.

B. All bars shall be stored off the ground and shall be protected from moisture and be kept free from dirt, oil, or injurious contaminants.

PART 3 - EXECUTION

3.01 INSTALLATION

A. No reinforcing bars shall be welded either during fabrication or erection without prior written approval from the Engineer. All bars that have been welded, including tack welds, without such approval shall be immediately removed from the work.

B. Unless otherwise shown, splices in reinforcement shall be lapped not less than 24 bar diameters. All bar splices shall be staggered wherever possible. When splicing bars of different diameters, the length of lap is based on the larger bar.

C. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt, and other coatings that reduce or destroy bond. Where there is delay in depositing concrete after reinforcement is in place, bars shall be re-inspected and cleaned when necessary.

D. Reinforcement shall be accurately positioned as indicated on the Drawings, and secured against displacement by using wire ties· or suitable clips at intersections.

E. All accessories such as chairs, chair bars, and the like are an integral part of the reinforcement and shall be furnished and installed in sufficient quantity to satisfactorily position all steel and in accordance with the latest (ACI 315) Manual of Standard Practice for Detailing Reinforced Concrete Structures.

F. Except as otherwise indicated on the Drawings, bars in slabs, beams and girders shall be spliced as per requirements in ACI 315. Splices and laps in columns, piers and struts shall be sufficient to transfer full stress by bond. Splices in adjacent bars shall be staggered if required.

G. Except as otherwise indicated on the Drawings, reinforcement shall be installed with clearance for concrete coverage as follows:

Footing bottom	3-inch
Formed surfaces in contact with soil or exposed to the weather	2-inch
Columns, beams and shear-walls	1-1/2-inch
Slabs on grade	1-1/2-inch
Bottom steel of interior slabs	I-inch
Top steel of interior slabs	3/4-inch
Bottom steel in grid slabs	1-1/2-inch
Interior face of walls	I-inch

H. All slab reinforcing shall be supported on concrete cubes or wafers of the correct height. Wafers shall contain soft steel wires embedded therein for fastening to reinforcing. Wafers shall have a minimum compressive strength of 3,500 psi and shall have been cured as specified for concrete. Masonry units will not be permitted for supporting steel in bottom mats or elsewhere. For supporting the top steel in slabs, the Contractor shall furnish extra steel supports such as channel s if required and shall construct blocks of concrete having the same quality as specified for the structure for use in supporting both top and bottom mat steel. Wood blocks, stones, brick chips, etc., cinder blocks; or concrete building blocks will not be all owed. Alternate methods for supporting top steel in slabs, such as vertical reinforcing fastened to bottom and top mats, may be used if approved by the Engineer.

I Alternate methods· of supporting bottom reinforcement for slabs and beams not exposed to the weather (such as plastic' chairs, but not plastic-tipped bolsters) may be used only if specifically approved by the Engineer.

J. Reinforcement for vertical surfaces (beams, columns, walls) shall be properly and firmly positioned from the forms at all points by means of stainless steel (tipped) bolsters or equal, subject to Engineer's approval.

K. Reinforcement which is to be exposed for a considerable length of time after being placed shall be painted with a heavy coat of neat cement slurry.

L. In no case shall any reinforcing steel be covered with concrete until the amount and position of the reinforcements has been checked by the Engineer and his permission given to proceed with the concreting. The Engineer shall be given ample prior notice of the availability of set reinforcement for checking.

END OF SECTION

SECTION 03251

JOINTS

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all materials, labor, equipment and incidentals required to make all joints tight in the concrete as detailed on the Drawings and as specified herein.

1.02 SUBMITTALS

A. Submit to the Engineer, as provided in the General Conditions and Section 01340, shop drawings showing placement of forms, form joints major inserts and blockouts.

PART 2 - PRODUCTS

2.01 EXPANSION JOINTS - FLOOR

A. Floor expansion joints shall be types UX-F100 and UX-JI00, I-inch joint systems as manufactured by MM Systems Corporation, Tucker, Georgia or approved equal.

B. Retainers shall be extruded aluminum alloy 6063-T5. Aluminum retainers shall be chemically treated to prepare surfaces for complete adhesion of the sealant.

C. Sealant shall be an electrometric material capable of allowing multidirectional movement while maintaining cohesion and adhesion capabilities. The sealant shall have a maximum hardness of Shore A25 with tensile strength and elongation to meet ASTM 0412. The sealant shall perform between temperatures of -20°F and 150°F. Moisture vapor transmission shall meet ASTM C355.

D. The joint assembly shall be capable of a minimum of 50-percent movement in any direction from the normal position.

E. All aluminum surfaces in contact with concrete or masonry shall receive one sprayed-on, factory applied coat of baked-on epoxy primer.

F. Sealant color shall be selected by the Engineer.

2.02 EXPANSION JOINTS - OTHER

A. Pre-molded joint filler shall be 3/4-inch thick or as shown on the Drawings and shall be a self-expanding cork, Servicised Products, W.R. Grace and Company, Code No. 4324 equal by W.R. Meadows, Inc., or equal.

B. Joint sealant shall be a two component synthetic rubber compound based on Thiokol liquid polysulphide polymer by W.R. Grace and Company, Toch Bros., Tremco Co., or equal. Sealant shall develop a Shore Hardness of at 1 east 30 after seven days curing. Back-up material where required shall be approved closed cell polyethylene foam rods of diameters to suit joint conditions.

C. Primer shall be as recommended by sealant manufacturer.

2.03 WATERSTOPS

A. Waterstops for construction joints, if so indicated, shall be 8 or 12 inches x 1/2-inch steel and be hot-dipped galvanized unless otherwise shown on the Drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Steel water-stops shall have all joints fully welded and shall be carefully set and held in place so that 4-inches extends straight into concrete placement at each side of joint.

B. Pre-molded joint fillers shall be installed at all locations shown on the Drawings.

C. Joint sealant for all joints indicated on the Drawings shall be placed to the depths shown. Preparation of surfaces, priming, and the handling and preparation of materials shall be in complete compliance with the manufacturer's instructions as approved.

D. Flex-Seal systems shall be installed in accordance with the manufacturer's recommendations.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures and finishes.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Indicate amounts of mix water to be withheld for later addition at Project site.

C. Steel Reinforcement Shop Drawings: Details of fabrication, bending, and placement, prepared according to ACI 315, "Details and Detailing of Concrete Reinforcement." Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork. Design and engineering of formwork are Contractor's responsibility.
   1. Shoring and Re-shoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing re-shoring.

E. Welding Certificates: Copies of certificates for welding procedures and personnel.

F. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

G. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Cementitious materials and aggregates.
   2. Form materials and form-release agents.
   3. Steel reinforcement and reinforcement accessories.
   4. Fiber reinforcement.
   5. Admixtures.
   6. Waterstops.
   7. Curing materials.
   8. Floor and slab treatments.
   9. Bonding agents.
   10. Adhesives.
   11. Vapor retarders.
   12. Epoxy joint filler.
   13. Joint-filler strips.
   14. Repair materials.

H. Minutes of pre-installation conference.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed concrete Work similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for formwork and shoring and re-shoring installations that are similar to those indicated for this Project in material, design, and extent.

C. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
   1. Manufacturer must be certified according to the National Ready Mixed Concrete Association's Certification of Ready Mixed Concrete Production Facilities.

D. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

E. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

F. Welding: Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."

G. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
   1. ACI 301, "Specification for Structural Concrete."
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Plywood, metal, or other approved panel materials.
   2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
      a. High-density overlay, Class 1, or better.
      b. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed.
      c. Structural 1, B-B, or better, mill oiled and edge sealed.
      d. B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed.

2.2 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Wire: ASTM A 82, as drawn.

2.3 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
   1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports.

B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade-60 (Grade-420). Cut bars true to length with ends square and free of burrs.

2.4 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type II.
   1. Fly Ash: ASTM C 618, Class C or F.
   2. Fly Ash: ASTM C 618, Class F.
   3. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.

B. Silica Fume: ASTM C 1240, amorphous silica.

C. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
   1. Class: Moderate weathering region, but not less than 3M.
   2. Nominal Maximum Aggregate Size: 1-inch (25 mm).
   3. Combined Aggregate Gradation: Well graded from coarsest to finest with not more than 18-percent and not less than 8-percent retained on an individual sieve, except that less than 8-percent may be retained on coarsest sieve and on No. 50 (0.3-mm) sieve, and less than 8-percent may be retained on sieves finer than No. 50 (0.3 mm).

D. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1-percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

B. Air-Entraining Admixture: ASTM C 260.

C. Water-Reducing Admixture: ASTM C 494, Type A.

D. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.

F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

G. Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   2. Products: Subject to compliance with requirements, provide one of the following:
      a. Catexol 1000CL; Axim Concrete Technologies.
      b. MCI 2000 or MCI 2005; Cortec Corporation.
      c. DCI or DCI-S; W. R. Grace & Co., Construction Products Div.
      d. Rheocrete 222+; Master Builders, Inc.
      e. FerroGard-901; Sika Corporation

2.6 WATERSTOPS

A. Flexible Rubber Waterstops: CE CRD-C 513, for embedding in concrete to prevent passage of fluids through joints. Factory fabricated corners, intersections, and directional changes.
   1. Profile: Flat, dumbbell with center bulb.
   2. Profile: Flat, dumbbell without center bulb.
   3. Profile: Ribbed with center bulb.
   4. Profile: Ribbed without center bulb.
   5. Profile: As indicated.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Rubber Waterstops:
      a. Greenstreak.
      b. Progress Unlimited Inc.
      c. Westec Barrier Technologies; Div. of Western Textile Products, Inc.
      d. Williams Products, Inc.

D. Self-Expanding Strip Waterstops: Manufactured rectangular or trapezoidal strip, sodium bentonite or other hydrophylic material for adhesive bonding to concrete.
   1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
   2. Products: Subject to compliance with requirements, provide one of the following:
      a. Volclay Waterstop-RX; Colloid Environmental Technologies Co.
      b. Conseal CS-231; Concrete Sealants Inc.
      c. Swellseal Joint; De Neef Construction Chemicals (U.S.) Inc.
      d. Hydrotite; Greenstreak.
      e. Mirastop; Mirafi Moisture Protection, Div. of Royal Ten Cate (USA), Inc.
      f. Adeka Ultra Seal; Mitsubishi International Corporation.
      g. Superstop; Progress Unlimited Inc.

2.7 FLOOR AND SLAB TREATMENTS

A. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50-percent aluminum oxide and not less than 25-percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

B. Non-pigmented Mineral Dry-Shake Floor Hardener: Factory-packaged dry combination of Portland cement, graded quartz aggregate and plasticizing admixture.

C. Pigmented Mineral Dry-Shake Floor Hardener: Factory-packaged dry combination of Portland cement, graded quartz aggregate, coloring pigments, and plasticizing admixture. Use coloring pigments that are finely ground, non-fading mineral oxides interground with cement.
   1. Colors: Match Architect's samples.
   2. Colors: As indicated by referencing manufacturer's designations.
   3. Colors: As selected by Architect from manufacturer's full range for these characteristics.

D. Penetrating Liquid Floor Treatment: Chemically reactive, waterborne solution of inorganic silicate or siliconate materials and proprietary components; odorless; colorless; that penetrates, hardens, and densifies concrete surfaces.

E. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

F. Products: Subject to compliance with requirements, provide one of the following:
   1. Unpigmented Mineral Dry-Shake Floor Hardener:
      a. Non-Metallic Floor Hardener; Burke Group, LLC (The).
      b. Concolor; ChemMasters.
      c. Conshake 500; Conspec Marketing & Manufacturing Co., Inc.
      d. Quartz Tuff; Dayton Superior Corporation.
      e. Surflex; Euclid Chemical Co.
      f. Tycron; Kaufman Products, Inc.
      g. Colorhard; Lambert Corporation.
      h. Quartzplate; L&M Construction Chemicals, Inc.
      i. Maximent; Master Builders, Inc.
      j. Floor Quartz; Metalcrete Industries.
      k. Hard Top; Richmond Screw Anchor Co.
      l. Lithochrome Color Hardener; L. M. Scofield Co.
      m. Harcol; Sonneborn, Div. of ChemRex, Inc.

n. Durag Premium; Sternson Group.
o. Hard Top; Symons Corporation.

2. Pigmented Mineral Dry-Shake Floor Hardener:
   a. Non-Metallic Floor Hardener; Burke Group, LLC (The).
   b. Concolor; ChemMasters.
   c. Conshake 600; Conspec Marketing & Manufacturing Co., Inc.
   d. Quartz Tuff; Dayton Superior Corporation.
   e. Surflex; Euclid Chemical Co.
   f. Tycron; Kaufman Products, Inc.
   g. Colorhard; Lambert Corporation.
   h. Quartzplate; L&M Construction Chemicals, Inc.
   i. Maximent; Master Builders, Inc.
   j. Floor Quartz; Metalcrete Industries.
   k. Lithochrome Color Hardener; L. M. Scofield Co.
   l. Harcol; Sonneborn, Div. of ChemRex, Inc.
   m. Colorplete; Sternson Group.
3. Penetrating Liquid Floor Treatment:
   a. Titan Hard; Burke Group, LLC (The).
   b. Chemisil Plus; ChemMasters.
   c. Intraseal; Conspec Marketing & Manufacturing Co., Inc.
   d. Ashford Formula; Curecrete Chemical Co., Inc.
   e. Day-Chem Sure Hard; Dayton Superior Corporation.
   f. Euco Diamond Hard; Euclid Chemical Co.
   g. Seal Hard; L&M Construction Chemicals, Inc.
   h. Vexcon Starseal PS; Vexcon Chemicals, Inc.

2.8 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

D. Water: Potable.

E. Clear, Solvent-Borne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 22-percent solids.

H. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

I. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

J. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

K. Products: Subject to compliance with requirements, provide one of the following:
   1. Evaporation Retarder:
      a. Cimfilm; Axim Concrete Technologies.
      b. Finishing Aid Concentrate; Burke Group, LLC (The).
      c. Spray-Film; ChemMasters.
      d. Aquafilm; Conspec Marketing & Manufacturing Co., Inc.
      e. Sure Film; Dayton Superior Corporation.
      f. Eucobar; Euclid Chemical Co.
      g. Vapor Aid; Kaufman Products, Inc.
      h. Lambco Skin; Lambert Corporation.
      i. E-Con; L&M Construction Chemicals, Inc.
      j. Confilm; Master Builders, Inc.
      k. Waterhold; Metalcrete Industries.
      l. Rich Film; Richmond Screw Anchor Co.
      m. SikaFilm; Sika Corporation.
      n. Finishing Aid; Symons Corporation.
      o. Certi-Vex EnvioAssist; Vexcon Chemicals, Inc.
   2. Clear, Solvent-Borne, Membrane-Forming Curing Compound:
      a. AH Clear Cure; Anti-Hydro International, Inc.
      b. Spartan-Cote; Burke Group, LLC (The).
      c. Spray-Cure & Seal 15; ChemMasters.
      d. Conspec #1-15-percent solids; Conspec Marketing & Manufacturing Co., Inc.
      e. Day-Chem Cure and Seal; Dayton Superior Corporation.
      f. Diamond Clear; Euclid Chemical Co.
      g. Nitocure S; Fosroc.
      h. Cure & Seal 309; Kaufman Products Inc.
      i. Lambco 120; Lambert Corporation.
      j. L&M Dress & Seal 18; L&M Construction Chemicals, Inc.
      k. CS-309; W. R. Meadows, Inc.
      l. Seal N Kure; Metalcrete Industries.
      m. Rich Seal 14-percent UV; Richmond Screw Anchor Co.
      n. Kure-N-Seal; Sonneborn, Div. of ChemRex, Inc.
      o. Flortec 14; Sternson Group.
      p. Cure & Seal 14-percent; Symons Corporation.
      q. Clear Seal 150; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
      r. Acrylic Cure; Unitex.
      s. Certi-Vex AC 309; Vexcon Chemicals, Inc.
   3. Clear, Waterborne, Membrane-Forming Curing Compound:
      a. AH Clear Cure WB; Anti-Hydro International, Inc.
      b. Klear Kote WB II Regular; Burke Chemicals.
      c. Safe-Cure & Seal 20; ChemMasters.
      d. High Seal; Conspec Marketing & Manufacturing Co., Inc.
      e. Safe Cure and Seal; Dayton Superior Corporation.
      f. Aqua Cure VOX; Euclid Chemical Co.
      g. Cure & Seal 309 Emulsion; Kaufman Products Inc.
      h. Glazecote Sealer-20; Lambert Corporation.
      i. Dress & Seal WB; L&M Construction Chemicals, Inc.
      j. Vocomp-20; W. R. Meadows, Inc.
      k. Metcure; Metalcrete Industries.

l. Cure & Seal 150E; Nox-Crete Products Group, Kinsman Corporation.
m. Rich Seal 14-percent E; Richmond Screw Anchor Co.
n. Kure-N-Seal WB; Sonneborn, Div. of ChemRex, Inc.
o. Florseal W.B.; Sternson Group.
p. Cure & Seal 14-percent E; Symons Corporation.
q. Seal Cure WB 150; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
r. Hydro Seal; Unitex.
s. Starseal 309; Vexcon Chemicals, Inc.

4. Clear, Waterborne, Membrane-Forming Curing Compound, 18 to 22-percent Solids:
a. Klear Kote WB II 20-percent; Burke Chemicals.
b. Safe-Cure & Seal 20; ChemMasters.
c. Conspec 21; Conspec Marketing & Manufacturing Co., Inc.
d. Diamond Clear VOX; Euclid Chemical Co.
e. SureCure Emulsion; Kaufman Products Inc.
f. Glazecote Sealer-20; Lambert Corporation.
g. Dress & Seal WB; L&M Construction Chemicals, Inc.
h. Vocomp-20; W. R. Meadows, Inc.
i. Metcure 0800; Metalcrete Industries.
j. Cure & Seal 200E; Nox-Crete Products Group, Kinsman Corporation.
k. Rich Seal 18-percent E; Richmond Screw Anchor Co.
l. Kure-N-Seal W; Sonneborn, Div. of ChemRex, Inc.
m. Florseal W.B.; Sternson Group.
n. Cure & Seal 18-percent E; Symons Corporation.
o. Seal Cure WB STD; Tamms Industries Co., Div. of LaPorte Construction Chemicals of North America, Inc.
p. Hydro Seal 800; Unitex.
q. Starseal 0800; Vexcon Chemicals, Inc.

5. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound:
a. Spray-Cure & Seal Plus; ChemMasters.
b. UV Super Seal; Lambert Corporation.
c. Lumiseal Plus; L&M Construction Chemicals, Inc.
d. CS-309/30; W. R. Meadows, Inc.
e. Seal N Kure 30; Metalcrete Industries.
f. Rich Seal 31-percent UV; Richmond Screw Anchor Co.
g. Cure & Seal 31-percent UV; Symons Corporation.
h. Certi-Vex AC 1315; Vexcon Chemicals, Inc.

6. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound:
a. Klear-Kote Cure-Sealer-Hardener, 30-percent solids; Burke Group, LLC (The).
b. Polyseal WB; ChemMasters.
c. UV Safe Seal; Lambert Corporation.
d. Lumiseal WB Plus; L&M Construction Chemicals, Inc.
e. Vocomp-30; W. R. Meadows, Inc.
f. Metcure 30; Metalcrete Industries.
g. Vexcon Starseal 1315; Vexcon Chemicals, Inc.

2.9 RELATED MATERIALS

A. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

B. Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork.

C. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

D. Epoxy Joint Filler: Two-component, semi-rigid, 100-percent solids, epoxy resin with a Shore A hardness of 80 per ASTM D 2240.

E. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

F. Epoxy-Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:

1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.
2. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
3. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

G. Reglets: Fabricate reglets of not less than 0.0217-inch- (0.55-mm-) thick galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

H. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336-inch (0.85 mm) thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8-inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8- to 1/4- inch (3 to 6 mm) or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28-days when tested according to ASTM C 109/C 109M.

B. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4- inch (6 mm).
1. Cement Binder: ASTM C 150, Portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8- to 1/4 -inch (3 to 6 mm) or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5700 psi (39 MPa) at 28-days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:

1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Use a qualified independent testing agency for preparing and reporting proposed mix designs for the laboratory trial mix basis.

C. Slab-on-Grade: Proportion normal-weight concrete mix as follows:
1. Compressive Strength (28 Days): 3000 psi (20.7 MPa).
2. Minimum Cementitious Materials Content: 520- lb/cu. yd. (309 kg/cu. m).
3. Maximum Slump: 5-inches (125 mm).

D. Suspended Slabs: Proportion normal-weight concrete mix as follows:
1. Compressive Strength (28-Days): 4000 psi (27.6 MPa).
2. Maximum Slump: 5-inches (125 mm).
3. Inches (125 mm).

E. Building Frame Members: Proportion normal-weight concrete mix as follows:
1. Compressive Strength (28-Days): 4000 psi (27.6 MPa).
2. Maximum Slump: 5-inches (125 mm).
3. Maximum Slump for Concrete Containing High-Range Water-Reducing Admixture: 8-inches (200 mm) after admixture is added to concrete with 2- to 4-inch (50- to 100-mm) slump.

F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
1. Fly Ash: 25-percent.
2. Combined Fly Ash and Pozzolan: 25-percent.
3. Ground Granulated Blast-Furnace Slag: 50-percent.
4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50-percent Portland cement minimum, with fly ash or pozzolan not exceeding 25-percent.
5. Silica Fume: 10-percent.
6. Combined Fly Ash, Pozzolans, and Silica Fume: 35-percent with fly ash or pozzolans not exceeding 25-percent and silica fume not exceeding 10-percent.
7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50-percent Portland cement minimum, with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10-percent.

G. Maximum Water-Cementitious Materials Ratio: 0.40 for corrosion protection of steel reinforcement in concrete exposed to chlorides from deicing chemicals, salt, saltwater, brackish water, seawater, or spray from these sources.

H. Air Content: Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows within a tolerance of plus 1 or minus 1.5-percent, unless otherwise indicated:
1. Air Content: 5.5-percent for 1-1/2-inch- (38-mm-) nominal maximum aggregate size.
2. Air Content: 6-percent for 1-inch- (25-mm-) nominal maximum aggregate size.
3. Air Content: 6-percent for 3/4-inch- (19-mm-) nominal maximum aggregate size.

I. Limit water-soluble, chloride-ion content in hardened concrete to 0.15-percent by weight of cement.

J. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.
2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
4. Use corrosion-inhibiting admixture in concrete mixes where indicated.

2.12 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.13 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.
1. When air temperature is between 85 and 90-deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2-hours to 75-minutes; when air temperature is above 90-deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1- cu. yd. (0.76 cu. m) or smaller, continue mixing at least one and one-half minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1- cu. yd. (0.76 cu. m), increase mixing time by 15 seconds for each additional 1- cu. yd. (0.76 cu. m).
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mix type, mix time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
1. Class A, 1/8-inch (3 mm).

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
   1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Chamfer exterior corners and edges of permanently exposed concrete.

I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor bolts, accurately located, to elevations required.
   2. Install reglets to receive top edge of foundation sheet waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
   3. Install dovetail anchor slots in concrete structures as indicated.

3.3 REMOVING AND REUSING FORMS

A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50-deg F (10 deg C) for 24-hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.

B. Leave formwork, for beam soffits, joists, slabs, and other structural elements, that supports weight of concrete in place until concrete has achieved the following:
   1. 28-day design compressive strength.
   2. At least 70-percent of 28-day design compressive strength.
   3. Determine compressive strength of in-place concrete by testing representative field- or laboratory-cured test specimens according to ACI 301.
   4. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

C. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

D. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORES AND RESHORES

A. Comply with ACI 318 (ACI 318M), ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and re-shoring.

B. Plan sequence of removal of shores and re-shore to avoid damage to concrete. Locate and provide adequate re-shoring to support construction without excessive stress or deflection.

3.5 VAPOR RETARDERS

A. Vapor Retarder: Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions.

B. Fine-Graded Granular Material: Cover vapor retarder with fine-graded granular material, moisten, and compact with mechanical equipment to elevation tolerances of plus 0- inch (0 mm) or minus 3/4- inch (19 mm).

C. Granular Fill: Cover vapor retarder with granular fill, moisten, and compact with mechanical equipment to elevation tolerances of plus 0- inch (0 mm) or minus 3/4-inch (19 mm).

   1. Place and compact a 1/2-inch- (13-mm-) thick layer of fine-graded granular material over granular fill.

3.6 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.

   1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
   1. Shop- or field-weld reinforcement according to AWS D1.4, where indicated.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.7 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form from preformed galvanized steel, plastic keyway-section forms, or bulkhead forms with keys, unless otherwise indicated. Embed keys at least 1-1/2- inches (38 mm) into concrete.
   3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness, as follows:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8- inch (3 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated.
   1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 WATERSTOPS

A. Flexible Waterstops: Install in construction joints as indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of Work. Field-fabricate joints in waterstops according to manufacturer's written instructions.

B. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, bonding or mechanically fastening and firmly pressing into place. Install in longest lengths practicable.

3.9 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved by Architect.

C. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

E. Deposit concrete in forms in horizontal layers no deeper than 24-inches (600 mm) and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints.
   1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
   2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6-inches (150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   2. Maintain reinforcement in position on chairs during concrete placement.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

G. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R and as follows, when hot-weather conditions exist:
   1. Cool ingredients before mixing to maintain concrete temperature below 90-deg F (32-deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
   3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.10 FINISHING FORMED SURFACES

A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8- inch (3 mm) in height.
   1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.
   2. Do not apply rubbed finish to smooth-formed finish.

B. Rubbed Finish: Apply the following to smooth-formed finished concrete:
   1. Smooth-Rubbed Finish: Not later than 1-day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
   2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part Portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36-hours.
   3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part Portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white Portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.11 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, re-straightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes.

1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, Portland cement terrazzo, and other bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Re-straighten, cut down high spots, and fill low spots. Repeat float passes and re-straightening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and re-straighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system
2. Finish surfaces to the following tolerances, measured within 24-hours according to ASTM E 1155/E 1155M for a randomly trafficked floor surface:
    a. Specified overall values of flatness, F(F) 25; and levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and levelness, F(L) 15.
    b. Specified overall values of flatness, F (F) 35; and levelness, F (L) 25; with minimum local values of flatness, F (F) 24; and levelness, F (L) 17; for slabs-on-grade.
    c. Specified overall values of flatness, F (F) 30; and levelness, F (L) 20; with minimum local values of flatness, F (F) 24; and levelness, F (L) 15; for suspended slabs.
    d. Specified overall values of flatness, F (F) 45; and levelness, F (L) 35; with minimum local values of flatness, F (F) 30; and levelness, F (L) 24.
3. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot- (3.05-m-) long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:
    a. 1/4- inch (6.4 mm).
    b. 3/16- inch (4.8 mm).
    c. 1/8- inch (3.2 mm).

E. Trowel and Fine-Broom Finish: Apply a partial trowel finish, stopping after second troweling, to surfaces indicated and to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. Immediately after second troweling, and when concrete is still plastic, slightly scarify surface with a fine broom.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

G. Slip-Resistive Aggregate Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
   1. Uniformly spread 25- lb/100 sq. ft. (12 kg/10 sq. m) of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.
   2. After broadcasting and tamping, apply float finish.
   3. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose slip-resistive aggregate.

H. Mineral Dry-Shake Floor Hardener Finish: After initial floating, apply mineral dry-shake materials to surfaces according to manufacturer's written instructions and as follows:
   1. Uniformly apply mineral dry-shake materials at a rate of 100 lb/100- sq. ft. (49 kg/10 sq. m), unless greater amount is recommended by manufacturer.
   2. Uniformly distribute approximately two-thirds of mineral dry-shake materials over surface by hand or with mechanical spreader, and embed by power floating. Follow power floating with a second mineral dry-shake application, uniformly distributing remainder of material, and embed by power floating.
   3. After final floating, apply a trowel finish. Cure concrete with curing compound recommended by dry-shake material manufacturer and apply immediately after final finishing.

3.12 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates of manufacturer furnishing machines and equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

3.13 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than 7-days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12- inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than 7-days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within 3-hours after initial application. Maintain continuity of coating and repair damage during curing period.
4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within 3-hours after initial application. Repeat process 24-hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.14 LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment according to manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than 7-days old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller according to manufacturer's written instructions.

3.15 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.
   1. Defer joint filling until concrete has aged at least six months. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semi-rigid epoxy joint filler full depth in saw-cut joints and at least 2- inches (50 mm) deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.16 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part Portland cement to two and one-half parts fine aggregate passing a No. 16 (1.2-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2- inch (13 mm) in any dimension in solid concrete but not less than 1- inch (25 mm) in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01- inch (0.25 mm) wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
   2. After concrete has cured at least 14-days, correct high areas by grinding.
   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4- inch (6 mm) to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1- inch (25 mm) or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4- inch (19 mm) clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1- inch (25 mm) or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72- hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.17 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mix exceeding 5- cu. yd. (4 cu. m), but less than 25- cu. yd. (19 cu. m), plus one set for each additional 50 -cu. yd. (38 cu. m) or fraction thereof.
2. Testing Frequency: Obtain at least one composite sample for each 100- cu. yd. (76- cu. m) or fraction thereof of each concrete mix placed each day.
    a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mix, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.

5. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40-deg F (4.4 deg C) and below and when 80-deg F (27 deg C) and above, and one test for each composite sample.
6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
7. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.
    a. Cast and field cure one set of four standard cylinder specimens for each composite sample.
8. Compressive-Strength Tests: ASTM C 39; test two laboratory-cured specimens at 7-days and two at 28-days.
    a. Test two field-cured specimens at 7-days and two at 28-days.
    b. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at age indicated.

C. When strength of field-cured cylinders is less than 85-percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

D. Strength of each concrete mix will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi (3.4 MPa).

E. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48-hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28-days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-and 28-day tests.

F. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

G. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42 or by other methods as directed by Architect.

END OF SECTION 03300

SECTION 03315

GROUT

PART 1 GENERAL

1.01 WORK INCLUDED

A. The Contractor shall furnish all materials for grout in accordance with the provisions of this Section and shall form, mix, place, cure, repair, finish, and do all other work as required to produce finished grout, all in accordance with the requirements of the Contract Documents.

1.02 RELATED WORK

A. Section 01340 – “Submittals and Substitutions”

B. Section 03300 – “Cast-in-Place Concrete”

1.03 REFERENCES

A. Specifications, codes, and standards shall be as specified in Section 03300 “Cast-in-Place Concrete,” and as referred to herein.

B. Additional Commercial Standards: CRD-C 621 Corps of Engineers Specification for Non-Shrink Grout

1.04 SUBMITTALS

A. The Contractor shall submit certified test results verifying the compressive strength, shrinkage, and expansion requirements specified herein; and manufacturer’s literature containing instructions and recommendations on the mixing, handling, placement and appropriate uses for each type of grout used in the work.

PART 2 - PRODUCTS

2.01 NON-SHRINK GROUT

A. Non-shrink grout shall be a pre-packaged, non-organic, non-gas liberating, non-metallic, cement-based grout requiring only the addition of water. Manufacturer’s instructions shall be printed on each bag or other container in which the materials are packaged. The specific formulation for each class of non-shrink grout specified herein shall be that recommended by the manufacturer for each particular application.

B. Non-shrink grouts shall have a minimum 28-day compressive strength of 5000 psi, shall have no shrinkage (0.0-percent) and a maximum 4.0-percent expansion in the plastic state when tested in accordance with ASTM C 827, and shall have no shrinkage (0.0-percent) and a maximum of 0.2 percent expansion in the hardened state when tested in accordance with CRD C 621.

2.02 EPOXY GROUT

A. Epoxy mortar (grout) shall be used to set items specified. Epoxy mortar (grout) shall be a pre-packaged mix containing aggregate and epoxy mortar adhesive; utilize “Permatop” as manufactured by Permagile Corp. of America, or approved equal.

2.03 CURING MATERIALS

A. Curing materials shall be as recommended by the manufacturer.

2.04 CONSISTENCY

A. The consistency of grouts shall be that necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where “dry pack” is called for in the Contract Documents, it shall mean a grout of the above described consistency.

2.05 MEASUREMENT OF INGREDIENTS

A. Pre-packaged grouts shall have ingredients measured by means recommended by the manufacturer.

PART 3 – EXECUTION

3.01 GENERAL

A. All surface preparation, curing, and protection of cement grout shall be as specified in Section 03300 “Cast-in-Place Concrete”. The finish of the grout surface shall match that of the adjacent concrete.

B. All mixing, surface preparation, handling, placing, consolidation, and other means of execution for pre-packaged grouts shall be done according to the instructions and recommendations of the manufacturer.

3.02 CONSOLIDATION

A. Grout shall be placed in such a manner, for the consistency necessary for each application, so as to assure that the space to be grouted is completely filled.

END OF SECTION

SECTION 03350

CONCRETE FINISHING

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Work included: Provide finishes on cast-in-place concrete as called for on the Drawings, specified herein, and needed for a complete and proper installation.

1.02 RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.03 RELATED WORK

A. Related Sections:
1. Section 03300 - “Cast-in-Place Concrete”.
2. Section 03480 – “Precast Concrete Specialties”.

1.04 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Except as may be modified herein or otherwise directed by the Engineer, comply with ACI 301 - "Specifications for Structural Concrete for Buildings."

1.05 SUBMITTALS

A. Comply with pertinent provisions of Section 01340 – “Submittals and Substitutions”.

B. Product Data: Within 35-calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
1. Materials list of items proposed to be provided under this Section.
2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.
3. Manufacturer's recommended installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedures used for this work.

1.06 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent provisions of Section 01640 – “Product Handling”.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:
   1. Carefully study the Drawings and these Specifications, and determine the location, extent, and type of required concrete finishes.
   2. As required for this work, provide the materials specified herein, or equals approved in advance by the Engineer.

B. Concrete Materials: Comply with pertinent provisions of Section 03300 - “Cast-in-Place Concrete”, except as may be modified herein.

C. Liquid Bonding Agent: "Weld-Crete", manufactured by the Larsen Products Corporation.

D. Curing and Protection Paper:
   1. Approved products:
      a. "Sisalkraft, Orange Label", or;
      b. Equal products complying with ASTM C171.
   2. Where concrete will be exposed and will be subjected to abrasion, such as floor slabs, use non-staining paper such as "Sisalkraft, Seekure 896," or equal paper faced with polyethylene film.

E. Liquid Curing Agents:
   1. Where application of specified finish materials will be inhibited by use of curing agents, cure the surface by water only; do not use chemical cure.
   2. For chemical curing, use "Hunt TLF" manufactured by Hunt Process Company, Inc.

F. Floor Sealer: Acceptable products:
   1. "Superkote Special Clear Sealer" manufactured by Ven-Chem Company, Inc., P. O. Box 3186, Santa Barbara, California, 93105, (213)342-1195.
   2. "Supershield" manufactured by James Darcey Company, Inc., 19712 Merridy Street, Chatsworth, California, 91311, (213)349-3705.

G. Slip-Resistant Abrasive Aggregate:
   1. Provide aluminum oxide, 14/36 grading.
   2. Acceptable manufacturers:
      a. Carborundum Company.
      b. Norton Company.
      c. L. M. Scofield Company.

2.02 OTHER MATERIALS

A. Contractor shall provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject for the approval of the Engineer.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINISHING OF FORMED SURFACES

A. General:
   1. After removal of forms, give the concrete surfaces one or more of the finishes specified below where so indicated on the Drawings.
   2. Revise the finishes as needed to secure the approval of the Engineer.

B. As-cast finish:
   1. Rough form finish:
      a. Leave surfaces with the texture imparted by forms, except patch tie holes and defects.
      b. Remove fins exceeding 1/4-inch in height.
   2. Smooth form finish:
      a. Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern.
      b. Patch tie-holes and defects.
      c. Remove fins completely.

C. Rubbed Finished:
   1. Provide these finishes only where specifically called for, and then only on a “smooth form finish" base as described above.
   2. Smooth rubbed finish:
      a. Produce on newly hardened concrete no later than the day following form removal.
      b. Wet the surfaces, and rub with carborundum brick or other abrasive until uniform color and texture are produced.
      c. Do not use a cement grout other than the cement paste drawn from the concrete itself by the rubbing process.
   3. Grout cleaned finish:
      a. Do not start cleaning operations until all contiguous surfaces to be cleaned are completed and accessible.
      b. Do not permit cleaning while the work progresses.
      c. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having the consistency of thick paint.
      d. Substitute white Portland cement for part of the gray Portland cement as required to produce a color matching the color of surrounding concrete, as determined by a trial patch.
      e. Wet the surface of the concrete sufficiently to prevent absorption of water from the grout, and apply the grout uniformly with brushes or spray gun.
      f. Immediately after applying the grout, scrub the surface vigorously with a cork float or stone to coat the surface and fill all air bubbles and holes.
      g. While the grout is still plastic, remove all excess grout by working the surface with a rubber float, sack, or other means.
      h. After the surface whites from drying (about 30-minutes at normal temperatures), rub vigorously with clean burlap.
      i. Keep the surface damp for at least 36-hours after final rubbing.

D. Unspecified Finish: If the finish of formed surfaces is not specifically called out elsewhere in the Contract Documents, provide the following finishes as applicable.
   1. Rough form finish:
      a. For all concrete surfaces not exposed to public view.
   2. Smooth form finish:
      a. For all concrete surfaces exposed to public view.

3.03 FINISHING SLABS

A. Definition of Finishing Tolerances:
   1. "Class A": True plane within 1/8-inch in 10-feet as determined by a 10-foot straightedge placed anywhere on the slab and in any direction.
   2. "Class B": True plane within 1/4-inch in 10-feet as determined by a 10-foot straightedge placed anywhere on the slab and in any direction.
   3. "Class C": True plane within 1/4-inch in two feet as determined by a 2-foot straightedge placed anywhere on the slab and in any direction.

B. Scratched Finish: After the concrete has been placed, consolidated, struck off, and leveled to a Class C tolerance, roughen the surface with stiff brushes or rakes before the final set.

C. Floated Finish:
   1. After the concrete has been placed, consolidated, struck off, and leveled, do not work the concrete further until ready for floating.
   2. Begin floating when the water sheen has disappeared and when the surface has stiffened sufficiently to permit the operation.
   3. During or after the first floating, check the planeness of the surface with a ten foot straightedge applied at not less than two different angles.
   4. Cut down high spots and fill low spots to produce a surface with a Class B tolerance throughout.
   5. Re-float the slab immediately to a uniform sandy texture.

D. Troweled Finish:
   1. Provide a floated finish as described above, followed by a power troweling and then a hand troweling.
      a. Produce an initial surface which is relatively free from defects, but which still may show some trowel marks.
      b. Provide hand troweling when a ringing sound is produced as the trowel is moved over the surface.
      c. Thoroughly consolidate the surface by hand troweling.
   2. Provide a finished surface essentially free from trowel marks, uniform in texture and appearance, and in a plane of Class A tolerance.
      a. For concrete on metal deck, Class B plane tolerance is acceptable.
      b. On surfaces intended to support floor coverings, use grinding or other means as necessary and remove all defects of such magnitude as would show through the floor covering.

E. Broom Finish:
   1. Provide a floated finish as described above.
   2. While the surface is still plastic, provide a textured finish by drawing a fiber bristle broom uniformly over the surface.
   3. Unless otherwise directed by the Engineer, provide the texturing in one direction only.
   4. Provide "light", "medium" of "coarse" texturing as directed by the Engineer or otherwise called for on the Drawings.

F. Unspecified Finish: If the finish of slab surfaces is not specifically called for elsewhere in the Contract Documents, provide the following finishes as applicable:
   1. Scratched finish:
      a. For surfaces scheduled to receive bond-applied cementitious applications.
   2. Floated finish:
      a. For surfaces intended to receive roofing.
   3. Troweled finish:
      a. For floors intended as walking surfaces.

b. Floors scheduled to receive floor coverings or waterproof membrane.

4. Broom finish:
   a. Exterior pedestrian ramps.
5. Non-slip finish:
   a. Platforms, steps, and landings.
   b. Exterior pedestrian ramps.

3.04 CURING AND PROTECTION

A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures, and mechanical injury.

B. Preservation of Moisture:
1. Unless otherwise directed by the Engineer, apply one of the following procedures to concrete not in contact with forms immediately after completion of placement and finishing:
   a. Ponding or continuous sprinkling.
   b. Application of absorptive mats or fabric kept continuously wet.
   c. Application of sand kept continuously wet.
   d. Continuous application of steam (not exceeding 150-degrees Fahrenheit) or mist spray.
   e. Application of waterproof sheet materials specified in Part 2 of this Section.
   f. Application of other moisture-retaining covering as approved by the Engineer.
   g. Application of the curing agent specified in Part 2 of this Section or elsewhere in the Contract Documents.
2. Where forms are exposed to the sun, minimize moisture loss by keeping the forms wet until they can be removed safely.
3. Cure concrete by preserving moisture as specified above for at least seven days.

C. Temperature, Wind, and Humidity:
1. Cold weather:
   a. When the mean daily temperature outdoors is less than 40-degrees Fahrenheit, maintain the temperature of the concrete between 50-degrees Fahrenheit and 70-degrees Fahrenheit for the required curing period.
   b. When necessary, provide proper and adequate heating system capable of maintaining the required heat without injury due to concentration of heat.
   c. Do not use combustion heaters during the first 24-hours unless precautions are taken to prevent exposure of the concrete to exhaust gases which contain carbon dioxide.
2. Hot weather: When necessary, provide wind breaks, fog spraying, shading, sprinkling, ponding, or wet covering with a light colored material, applying as quickly as concrete hardening and finishing operations will allow.
3. Rate of temperature change: Keep the temperature of the air immediately adjacent to the concrete during and immediately following the curing period as uniform as possible and not exceeding a change of 5-degrees Fahrenheit in any one hour period, or 50-degrees Fahrenheit in any 24-hour period.

D. Protection from Mechanical Injury:
1. During the curing period, protect the concrete from damaging mechanical disturbances such as heavy shock, load stresses, and excessive vibration.
2. Protect finished concrete surfaces from damage from construction equipment, materials, and methods, from the application of curing procedures, and from rain and running water.
3. Do not load self-supporting structures in such a way as to overstress the

concrete.

END OF SECTION

SECTION 03480

PRECAST CONCRETE SPECIALTIES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. General: The Contractor shall furnish all materials, labor and equipment to precast manholes, wet-wells, valve pits, meter pits and other utility structures as shown on the Drawings.

1.02 RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
   1. Section 02221 – “Trenching, Bedding, and Backfill for Pipe”
   2. Section 03200 – “Concrete Reinforcement”

1.03 REQUIREMENTS, GENERAL

A. Manholes shall have an invert channel shaped to correspond with the lower half of the pipe. The top of the shelf shall be at the elevation indicated and shall be sloped to drain toward the flowing-through channel. Every effort shall be made by the Contractor to construct watertight structures.

B. The forms, dimensions, concrete, and construction methods shall be approved by the Engineer in advance of construction.

1.04 QUALITY ASSURANCE

A. Quality Assurance: Use a pre-casting plant which has been certified by the precast concrete institute and has been engaged for more than five-years in the manufacturing of precast utility structures.

1.05 SUBMITTALS

A. Comply with pertinent provisions of Section 01340 – “Submittals and Substitutions”.

B. Product Data: Within 21-calendar days after award of the Contract, submit the following:
   1. Materials list of items proposed to be provided under this Section.
   2. Manufacturer's specifications, catalog cuts, and other data needed to prove compliance with the specified requirements.
   3. Manufacturer's recommend installation procedures which, when approved by the Engineer, will become the basis for accepting or rejecting actual installation procedure used on the work.
   4. Shop Drawings showing complete details and reinforcement schedules for fabrication, assembly and installation.

1.06 DELIVERY, STORAGE AND HANDLING

A. Comply with pertinent provisions of Section 01640 – “Product Handling”.

B. The quality of all materials, the process of manufacture, and the finished sections shall be subject to inspection and approval by the Engineer, or other representatives of the Owner. Such inspection may be made at the places, and the sections shall be subject to rejection at any time on account of failure to meet any of the Specification requirements; even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the job shall be marked for identification and shall be removed from the job at once. All sections which have been damaged after delivery will be rejected, and if already installed, shall be acceptably repaired, if permitted, or removed and replaced, entirely at the Contractor's expense.

C. At the time of inspection, the section will be carefully examined for compliance with the ASTM designation specified below and these Specifications, and with the approved manufacturer's drawings. All sections shall be inspected for general appearance, dimensions, "scratch-strength", blisters, cracks, roughness, soundness, etc. The surface shall be dense and close-textured.

D. Imperfections may be repaired, subject to the approval of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final approval. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi at the end of 7-days and 5,000 psi at the end of 28-days, when tested in 3-inch by 6-inch cylinder stored in the standard manner. Epoxy mortar may be utilized for repairs subject to the approval of the Engineer.

E. Each section of the utility structure must be inspected and stamped at the casting yard by an accredited testing laboratory.

PART 2 - PRODUCTS

2.01 PRECAST CONCRETE MANHOLE SECTIONS

A. Precast concrete manhole barrel sections and eccentric top sections shall conform to Specifications for Precast Reinforced Concrete Manhole Sections, ASTM C478, except as otherwise specified below. The method of constructions shall conform to the detailed Drawings appended to these specifications and the following additional requirements:

1. The minimum wall thickness for the various size barrel sections shall be 8-inches, unless otherwise specified herein and approved by the Engineer.
2. Barrel sections shall have tongue and groove joints. Joints shall have round rubber gaskets performed and set in specially provided indentations. The round rubber gasket shall conform to ASTM C443 standard specifications, or Federal Specification SS-S-00210 (GSA-FSS), "Ram-Nek" as manufactured by the K.T. Snyder Co., Houston, Texas, or approved equal.
3. Concrete shall conform to ASTM C94, Type 2 cement, with a minimum compressive strength of 4,000 psi, unless otherwise specified herein. Mortar shall be composed of one part cement to two parts sand.
4. The date of manufacture and the name or trademark of the manufacturer shall be clearly marked on the inside of each precast section. Each precast section

of the structure must be inspected and stamped by an accredited testing laboratory.

5. Sections shall be cured by an approved method for at least 28-days prior to painting, and shall not be shipped until at least 2-days after having been painted.
6. Top sections shall be eccentric cone type unless otherwise specified.
7. Precast concrete slab tops, where required, shall be capable of supporting the overburden plus a live load equivalent to AASHTO H-20 loading.
8. The tops of base sections shall be suitable shaped to mate with the precast barrel sections.
9. Reinforcement bars for wet wells shall be as specified on the Drawings.
10. The exterior of sanitary sewer structures shall be coated with Tnemec heavy duty coal tar epoxy (16 mils thick), containing not less than 72-percent by volume non-volatile solids.

B. Precast electrical hand-holes and covers shall be as specified and as shown on the Drawings.

C. Precast leveling rings for setting cast iron frames over manholes shall be 2-inch thick and have one No. 2 continuous reinforcing steel bar.

D. Where pipes enter or exit sanitary sewer structures, a “Kor-N-Seal" molded neoprene boot with stainless steel internal and external bonds as manufactured by the National pollution Control Systems, Inc., Nashua, New Hampshire, or an approved equal shall be provided, unless otherwise specified.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Manholes and other precast structures shall be constructed to the dimensions as shown on the Drawings and as specified in these Specifications.

B. The base section shall be cast-in-place concrete, as specified in Section 03300 “Cast-in-Place Concrete”, placed on a thoroughly compacted gravel sub-base. The tops of the cast-in-place base section shall be shaped to mate with the precast barrel section, and shall be adjusted in grade so that the top of the section is at the approximately correct elevation. Precast concrete structure sections shall be set so as to be vertical and with section in true alignment, with a maximum allowed tolerance of 1/2-inch, unless otherwise specified. The Contractor shall install the precast sections in a manner that will result in a watertight joint.

C. Precast base sections, conforming to all requirements of ASTM C478 and above listed requirements for precast sections may be used.

D. The outside and inside joint shall be filled with mortar and finished flush with the adjoining surfaces. Allow joints to set for 24-hours before coating. While setting concrete for manholes or while plastering manholes, great care shall be taken not to allow mortar or other materials to get into the sewer lines. The Contractor shall provide two plumbers test plugs of each size sewer pipe on the job to plug the lines during the work of this section.

E. Backfilling shall be performed in a careful manner, bringing the fill up evenly on all sides. If leaks appear in the structures, the inside joints shall be caulked to the

satisfaction of the Engineer.

G. Where holes must be cut in the precast sections to accommodate pipes, cutting shall be done prior to setting them in place to prevent any subsequent jarring which may loosen the mortar joints. All cutting is to be performed only by power driven abrasive wheels or saws.

F. Cast iron frames specified shall be placed over precast concrete leveling rings, shimmed and set in Portland cement mortar to the required grade. No more than 3-courses of leveling rings shall be used.

G. Brick may be used for leveling only upon the approval of the Engineer.

H. New pipe connections to new and existing manholes are to be caulked watertight with non-shrinking grout in accordance with the details shown on the Drawings.

END OF SECTION

SECTION 03610

FLOWABLE FILL

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required to cut, repair, demolish, excavate or otherwise modify parts of existing structures or appurtenances as shown on the Drawings and as specified herein as necessary to complete the work under this Contract.

B. Work under this Section shall include pumping flowable fill to existing structures.

C. Work under this section shall be required as shown on the Drawings.

1. At miscellaneous locations throughout the project site where old asbestos-cement pipelines are to be abandoned.

1.02 RELATED DOCUMENTS

A. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

1.03 RELATED WORK

A. Excavation and backfill are included in Division 2 Site Work.

B. Manhole floors and benches are specified on drawings.

1.04 EXISTING CONDITIONS

A. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until authorization is given by the Engineer.

B. When removing materials or portions of existing structures and when making openings in existing structures, the Contractor shall take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, nor to damage the structures or contents by falling or flying debris. Unless otherwise permitted, line drilling will be required in cutting existing concrete.

1.05 DELIVERY, STORAGE AND HANDLING

A. Use flowable fill manufactured at plants that qualify as approved sources in accordance with the FDOT Standard Operating Procedure for Ready-Mix concrete.

B. Deliver flowable fill using concrete construction equipment. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Meet the following requirements:
Fine Aggregate*
Portland Cement (Types I, II, or III)
Fly Ash, Slag and other Pozzolanic Materials S
Air Entraining Admixtures**
Water (Potable)
*Any clean fine aggregate with 100% passing a 3/8-inch mesh sieve and not more than 15-percent passing a No. 200 sieve may be used.
**High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and may be added at jobsite and mixed in accordance with manufacturer's recommendation.
Mix Design:
Flowable Fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable fill contains a low cementitious content for reduced strength development.
Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable and non-excavatable flowable fill:

	Excavatable	Non-Excavatable
Cement Type I	75-100 lb/yd^3	75-100 lb/yd^3
Fly Ash	None	150-600 lb/yd^3
Water	*	*
Air**	5-35%	5-15%
28-Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi
Unit Weight (Wet)**	90-110 lb/yd^3	100-125 lb/yd^3

*Mix Designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.
**The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements. FIne Aggregate shall be proportioned to yield 1 yd.

PART 3 – EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

B. Protect flowable fill from freezing for a period of 36-hours after placement.

C. Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40°F. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

3.02 ACCEPTANCE

A. Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50°F.

B. Furnish a delivery ticket to the Engineer for each load of flowable fill delivered to the worksite Ensure that each ticket contains the following information:
1. Project designation
2. Date
3. Time
4. Class and quantity of flowable fill.
5. Actual batch proportions.
6. Free moisture content of aggregates.
7. Quantity of water withheld.

C. Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi pentration resistance as measured using a hand held penetrometer in accordance with FM 1-T 197. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

3 03 BASIS OF PAYMENT.

A. When the item of flowable fill is included in the Contract, payment will be made at the Contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

END OF SECTION

SECTION 03700

MODIFICATIONS AND REPAIR TO EXISTING CONCRETE

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required to cut, repair, demolish, excavate or otherwise modify parts of existing structures or appurtenances as shown on the Drawings and as specified herein as necessary to complete the work under this Contract.

B. Work under this Section shall also include connecting new concrete to existing concrete.

1.02 RELATED WORK

A. Excavation and backfill are included in Division 2.

B. Concrete is included in Section 03300.

1.03 GENERAL

A. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until authorization is given by the Engineer.

B. When removing materials or portions of existing structures and when making openings in existing structures, the Contractor shall take all precautions and use all necessary barriers and other protective devices so as not to damage the structures beyond the limits necessary for the new work, nor to damage the structures or contents by falling or flying debris. Unless otherwise permitted, line drilling will be required in cutting existing concrete.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Epoxy Bonding Compound:

1. The epoxy bonding compound shall be furnished in two components for combining immediately prior to use in accordance with the manufacturer's written instructions and as stipulated in these Specifications.
2. The components of the epoxy resin system shall conform to the following requirements.
   a. Component A - Component A shall be a modified epoxy resin of the epichlorohydrin bisphenol A condensation type, containing suitable viscosity control agents and having an epoxide equivalent of 180-200.
   b. Component B - Component B shall be primarily a reaction product of an alkyl glycidyl ether and a poly-functional aliphatic amine containing suitable viscosity agents modified with 2, 4, 6 tri (dimethylamino-methyl) phenol.
   c. The component ratio of B:A shall be 1:1 by volume.
   d. The resultant compound shall be polysulfide free.

3. PROPERTIES OF MIXED COMPONENTS

Solids Content	-100% by weight
Pot Life	- 20-30 min at 73° F
Tack-Free Time (thin film)	- 3-5 hrs at 73° F
Final Cure ASTM D-695 (75% ultimate strength)	- 3 days at 73° F
Initial Viscosity (A+B)	- 2400-3200 cps min at 73° F
Color mixed	- Straw

4. PROPERTIES OF CURED MATERIAL

Neat Material	
Tensile Strength (ASTM D-638)	- 5300 PSI min at 14-days 73° F cure
Tensile Elongation (ASTM 0-638 modified)	- 4.8% at 14-days, 73° F cure
Compressive Strength (ASTM 0-695)	- 7000 PSI in at 28-days 73° F cure
Compressive Modulus (ASTM 0-695)	- 250,000 PSI min at 28-days 73° F cure
Water Pick-Up (ASTM 0570)	- 1.0% max
Bond Strength (Plastic to Hardened)	- 1500 PSI min 14-days, 73° F cure
Deflection Temperature (ASTM - D1525)	- 180° F min

5. Epoxy bonding compound shall be Sikadur Hi—Mod as manufactured by Sika Chemical Corp., Lyndhurst, N.J., or equal as manufactured by W.R. Grace Co., Cambridge, MA, or Adhesive Engineering Co., Lawrence, MA be polysulfide free.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Field measurements shall be taken at the required buildings and at the required yard structures to determine the amount of concrete to be removed and/or repaired and the amount of patching to be done.

3.02 CONSTRUCTION METHODS

A. Where new concrete is to be made integral with existing concrete, either of the following methods as noted, shown or specified in Contract Drawings shall be used by the Contractor:
   1. Bonding to a saturated surface.
   2. Bonding by using bonding agent.
   3. Use of anchor bolts, expansion bolts or dowels in connecting concrete.

3.03 MODIFYING OR REPAIRING EXISTING CONCRETE

A. Remove concrete to the depths shown or required. Roughen contact surfaces by chipping, sandblasting, scarifying or other approved methods. Thoroughly clean the surface removing loose particles and dust.

B. Cut off projecting reinforcement when required to provide at least 1-inch cover. Where shown, reinforcement shall be bent across cut face and covered with new concrete.

C. Thoroughly wash the roughened concrete surfaces and keep the surfaces saturated for at least 6-hours before placing new concrete. All free water shall be removed prior to placing the concrete. An epoxy bonding compound as specified may be used in lieu of saturating surface for 6-hours.

D. Cement mortar, where required, shall be placed to a thickness slightly in excess of the finished surface and shall be steel trowel-finished, flush with the adjacent surface.

E. When the finish surface is not specified to be coated the color of new concrete in the exposed surfaces shall match the color of the existing adjoining concrete as closely as possible.

F. Cement mortar shall consist of 1-part Portland cement and 2-parts of sand by volume. No accelerating ad-mixtures shall be employed in surface treatment. Where shown on the Drawings, a non-shrink grout shall be used for patching and filling.

3.04 CONNECTIONS, NEW CONCRETE TO EXISTING CONCRETE

A. The Contractor shall drill 1-1/2-inch holes for dowels. The drilled hole shall first be filled with epoxy bonding compound, then dowels shall be inserted by tapping. These holes shall be blown clear of loose particles and dust prior to installing epoxy bonding compound. Where shown on the Drawings, expansion bolts shall be installed in place of bonded dowels.

B. Unless otherwise noted on the Drawings, No. 5 dowels set 12-inches into the concrete, and projecting 12-inches, 24-inches on center shall be used.

C. Where it is necessary to expose existing reinforcement, the rein forcing rods shall be cleaned by wire brushing and new reinforcement shall be hooked into existing reinforcement and lapped or welded as directed. Reinforcing rods shall have at least 3/4-inch clearance around each bar.

D. All mixing and application of the epoxy shall be done in strict accordance with the printed instructions of the approved manufacturer. The Contractor shall submit to the Engineer, when re quested, evidence indicating that the proposed applicators are fully qualified to perform the work and any proposed applicator found to be not qualified shall, be removed forthwith by the Contractor.

E. Preparation of Concrete Surfaces:

1. Surfaces must be clean and sound. Surfaces may be dry, damp, or wet, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles, and disintegrated materials by mechanical abrasion methods such as sandblasting.
2. If the concrete surfaces are sound and it is only necessary to remove laitance, grease or dust, the Contractor may, with the prior written approval of the Engineer, forego sandblasting and wash the concrete with a degreasing and etching chemical applied in accordance with the manufacturer's (ProSoCo, Inc. Kansas City, Kansas, Sure-Klean Degreaser & Etch, or approved equal written instructions and as stipulated in these Specifications hereinafter.

3. Degreasing and Etching Chemical;

Color: Water White; Flash Point: Above 150-degree VF; Weight/ gallon: 9.0 lbs; Composition and Materials: A blend of organic and inorganic acids with a special solvent system incorporating wetting agents for emulsification.

4. Application of degrease and etching compound.
Pre-wet concrete surfaces with clean water. Brush concentrated cleaner onto concrete surface. Let stand 3 to 4-minutes and reapply, brushing stained areas vigorously. Rinse off with fresh water applied at a minimum pressure of 800 psi. and a minimum volume of five gallons per minute.

F. Proportioning/Mixing/Applying Epoxy Compound:

1. Volumetric ratio of bonding compound is 1:1 (B: A). To mix, proportion 1 part-B and 1 part-A into clean pail. Mix thoroughly for 3-minutes with a steel mixing paddle on low- speed (400 to 600 rpm) drill until blend is a uniform straw color. Mix only that amount of epoxy that can be used in 30-minutes at 73-degrees F.
2. Application for Bonding:
   a. The area to be overlayed shall be covered with one coat of the epoxy compound applied with long-nap paint rollers, brushes, brooms or by spray. The rate of application shall be 80-sq. ft. /gal. maximum or smooth concrete (20 mils). As the concrete increases in roughness, the rate of coverage decreases proportionately.
   b. While the epoxy compound is still tacky (3-5 hrs. at 73° F) place the concrete. If the bonding compound should harden before the concrete is placed, apply a fresh coat over the hardened coat and proceed.
3. Application for Grouting: To prepare a grout to anchor bolts or level base plates, mix the epoxy compound with granules recommended and supplied by the epoxy manufacturer. The amount of granules used should be the maximum amount possible while still maintaining a pourable consistency. The ratio should be approximately 1:1 -1/2 by loose volume (Granules). See technical data on anchor bolt grouting and grouting base plates published by the manufacturer.
4. Limitations:
   a. Do not thin the epoxy bonding compound. Solvents will prevent proper cure.
   b. Use only oven-dry granules to avoid encapsulation of moisture. Exposure to temperatures (after cure) above 180-degrees F (dry) and 120- degrees F (wet) not recommended.

G. WEATHER LIMITATIONS

1. The epoxy compound shall be placed only when both the concrete surface temperature and the ambient temperature is 40-degrees F and rising.

H. SAFETY

1. The Contractor shall require applicators to wear protective clothing, gloves, goggles and barrier creams.

3.05 OPENINGS IN CONCRETE

A. Where openings are required for pipes, thimbles for gates, gate stems or other installations in existing concrete structures, the Contractor shall cut the existing concrete within the limits required, as shown on Drawings or specified, expose the existing reinforcing steel and perform the work in such a manner as to pre vent damage to the existing adjacent structures or equipment.

B. Unless otherwise permitted, line drilling will be required.

C. Where concrete is cut to provide openings for gate stems, pipe sleeves shall be accurately installed and grouted in place in an approved manner.

1. The exposed reinforcement shall be cleaned by wire brushing, then cut and bent to permit the installation and finally bent around the new pipe or thimble. Additional reinforcement shall be provided as shown on the Contract Drawings for typical rein forcing details of openings in walls and slabs, except as otherwise shown, specified or required.
2. After installation of pipelines and thimbles. etc., the existing concrete shall be prepared as specified above in Paragraph 3.03C and the void between the outside of the pipe or thimble and the existing concrete shall be filled with non-shrink grout.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1- GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment, and incidentals required and install covers, access hatches, grates, frames, manhole castings, catch basin castings and other miscellaneous metal fabrications as shown on the Drawings and specified herein. Metal items include but are not limited to the following:

1. All metal frames, ladders, stair rails, floor opening frames including gratings and supports.
2. Prefabricated access hatches and frames.
3. Anchors or anchor bolts except those specified to be furnished with equipment.
4. Railings, posts and supports both interior and exterior.
5. Cast iron frames, covers, grates, drain leaders and drains.
6. Stair nosings, steel plates, overhead steel door frames, angle frames, plates and channels.

1.02 RELATED WORK

A. Pipe is specified in Division 2.

1.03 COORDINATION

A. The work of this Section shall be completely coordinated with the work of other Sections Verify at the site both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items herein specified.

B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other Sections.

1.04 SHOP DRAWINGS AND SAMPLES

A. Detail drawings, as provided for in the General Conditions and Section 01340, showing sizes of members, method of assembly, anchorage and connection to other members shall be submitted to the Engineer for approval before fabrication.

B. Samples shall be submitted at the request of the Engineer for concurrent review with Shop Drawings.

1.05 FIELD MEASUREMENTS

A. Field Measurements shall be taken at the site to verify or supplement indicated dimensions and to insure proper fitting of all items.

1.06 REFERENCE SPECIFICATIONS

A. Unless otherwise specified, materials shall conform to the following:

Structural Steel	ASTM A36
Welded & Seamless Steel Pipe	ASTM A53
Gray Iron Castings	ASTM A48, Class 30
Galvanizing, general	ASTM A123
Galvanizing, hardware	ASTM A153
Galvanizing, assemblies	ASTM A386
Aluminum (Extended Shapes)	6053 T5 (Alum, Alloy)
Aluminum (Extended Pipe)	6063 T6 (Alum, Alloy)
Aluminum Bars Structural	6061 T6 (Alum Alloy)
Bolts and Nuts	ASTM, A325
Stain, Steel Bolts & Fasteners	AISI, Type 304
Stain, Steel Plate & Sheet, Wire	AISI, Type 316
Welding Rods for Steel	AWS Spec. for Arc Welding

PART 2 – PRODUCTS

2.01 ANCHORS, BOLTS AND FASTENING DEVICES

A. Anchors, bolts, etc. shall be furnished as necessary for installation of the work of this Section.

B. Compound masonry anchors shall be of the type shown or required and shall be equal to Star Slug in compounded masonry anchors manufacture's by Star Expansion Industries, equal by Phillips Drill Co., Rahiplug, or approved equal. Anchors shall be minimum "two unit" type.

C. The bolts used to attach the various members to the anchors shall be the sized shown or required. Stainless steel shall be attached to concrete or masonry by means of stainless steel machine bolts and iron or steel shall be attached with steel machine bolts unless otherwise specifically noted.

D. For structural purposes, unless otherwise noted, expansion bolts shall be Simpson Wedge-All, Redhead Trubolt, or Hilti "Kwik-Bolt" (or equal). When length of bolt is not called for on the Drawings, the length of bolt provided shall be sufficient to place the wedge portion of the bolt a minimum of 3-inch behind the reinforcing steel within the concrete. Material shall be as noted on the Drawings if not listed, hot dipped galvanized steel.

2.02 ALUMINUM

A. Grating:

1. All grating for stairways, platforms, landings, cross-wal, floor plates, etc. shall be constructed of cold-forged plain aluminum bearing bars Type 6053-T6 Alloy or as shown on the plans. Bars shall be welded together to form a diamond shaped pattern between bearing bars spaced per loading requirements. The bearing bars shall be sized and sp aced according to the manufacturer. "Table of Safe Loads" for the anticipated loading conditions. Gratings shall be capable of supporting a minimum live loading of 60 psf over the entire span of the grating.

2. Aluminum grating shall be of the size shown on the drawings. All openings 2-inches and greater in diameter shall be handed with a bar of the same depth and thickness as the main bearing bars of the grating, or furnished with continuous cross bridges. Each cut bar shall be welded to the band if banding is utilized. The ends of all grating sections shall be likewise banded. Clamps and bolts used for attaching grating to supporting member shall be stainless steel. All grating shall be clamped unless noted otherwise. Champs shall be as recommended by the manufacturer.

B. Aluminum ladders shall be fabricated to the dimensions and details and installed as shown on the Drawings. Treads to be of cast aluminum by Dixie Metals, Inc. of Ft. Lauderdale, Florida or approved equal.

C. Aluminum Handrails: see Section 05521

2.03 STEEL ITEMS

A. Sleeves shall be stainless steel and floors with end joints as shown on the Drawings. All pipe sleeves shall have center anchor around circumference as shown.

B. Structural steel angle and channel doorframes shall be provided as shown on the Drawings and shall be galvanized. Frames shall be fabricated with not less than three anchors on each jamb.

C. All miscellaneous lintels and closures not shown on the Drawings shall be galvanized steel and shall be provided as a part of this Section.

D. Miscellaneous steel pipe for sleeves and lifting attachments and other uses as required shall be Schedule 40 pipe fabricated according to the Details as shown on the Drawings.

E. Frames, covers and grates for manholes, catch basins and inlets shall be of a good quality, strong, tough, even grained cast iron except as otherwise specified below. Castings shall be as manufactured by the U.S. Foundry, or equal. Size shall be as shown on the Drawings. Covers have to have letters “WATER”, “SEWER”, or “DRAIN” as applicable, embossed on top. Covers shall have concealed watertight pickholes similar to U.S. Foundry & Manufacturing Corporation Design No. Type “K”. Frames and covers for manholes constructed within the floor area of the buildings shall be of a watertight type construction and shall be US Foundry & Manufacturing Corp. Drawing No. 1110 (28G) watertight or equal with a minimum of 4 (stainless steel) cap screws and 1/8-inch neoprene gasket.

F. Provide solid manhole and handhole covers and frames for electrical and telephone underground systems.

G. Stringers for stairways, platforms, landings, crosswalks, crossovers, etc. shall be structural steel of the shape and size required to support the anticipated loads for the purposes intended.

H. Wheel guards shall be ductile cast iron 30-inches in height. All wheel guards shall be Model R-4982, Type A (for doorways) as manufactured by Neenah Foundry Company or approved equal.

I. Staff (Stream) gauges shall be iron frame coated with baked enamel to resist corrosion and discoloration. Staff gauge shall be Style “A”, 4-inches wide with white background and black gradiations mark at every foot and tenths of a foot as manufactured by the Ben Meadows Company.

J. Miscellaneous steel shall be fabricated and installed in accordance with the Drawings and shall include: beams, angles, support brackets, and door frames. Splice plates anchor bolts (except for equipment furnished in Divisions 11, 13, 14 and 15); lintels and any other miscellaneous steel called for on the Drawings and not otherwise specified.

PART 3 – EXECUTION

3.01 FABRICATION

A. All miscellaneous metal work shall be formed true to detail with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength of durability.

B. Connections and accessories shall be of sufficient strength to safely withstand stresses and strains to which they will be subjected. Steel accessories and connections to steel or cast iron shall be steel, unless otherwise specified. Threaded connections shall be made so that the threads are concealed by fitting.

C. Welded joints shall be rigid continuously welded or spot-welded as specified or shown. The face of welds shall be dressed flush and smooth. Exposed joints shall be close fitting and jointed where least conspicuous.

D. Welding of parts shall be in accordance with the Standard Code for Arc and Gas Welding in Building Construction of the AWS and shall only be performed where shown, specified, or permitted by the Engineer. All welding shall be performed only by welders certified as to their ability to perform welding in accordance with the requirements of the AWS Code. Component parts of built-up members to be welded shall be adequately supported and clamped or held by other adequate means to hold the part in proper relation for welding.

E. Welding of aluminum work shall be on the unexposed side as much as possible in order to present pitting or discoloration.

F. All aluminum finish exposed surfaces, except as specified below, shall have manufacturer’s standard mill finish. Aluminum handrails shall be given an anodic oxide treatment in accordance with the Aluminum Association Specification AA-C22-A41. A coating of methacruclate lacquer shall be applied to all aluminum before shipment from the factory.

G. Castings shall be of good quality, strong, tough, even-grained, smooth, free from scale, lumps, blisters, sand holes, and defects of any kind which render them unfit for the service for which they are intended. Castings shall be thoroughly cleaned and will be subjected to hammer inspections in the field by the Engineer. All furnished surfaces shown on the Drawings and/or specified shall be machined to a true plane surface and shall be true and seat at all points without rocking. Allowances shall be made in the patterns so that the thickness specified or shown shall not be reduced in obtaining finished surfaces. Castings will not be acceptable if the actual weight is less than 95-

percent of the theoretical weight computed from the dimensions shown. The Contractor shall provide facilities for weight in castings in the presence of the Engineer showing true weights, certified by the supplier.

H. All steel finish work shall be thoroughly cleaned by effective means of all loose mill scale, rust, and foreign matter before shipment and shall be given one shop coat of primer compatible with finish coats specified in Painting Section after fabrication, but before shipping. Paint shall be applied to dry surfaces and shall be thoroughly and evenly spaced and well worked into joints and other open spaces. Abrasions in the field shall be touched up with prior immediately after erection. Final painting is specified in Painting Section 09900.

I. Galvanizing, where required, shall be the hot-dip zinc process after fabrication. Following all manufacturing operations, all items to be galvanized shall be thoroughly cleaned, pickles, fluxed, and completely immersed in a bath of molten zinc. The resulting coating shall be adherent and shall be the normal coating to be obtained by immersing the items in a bath of molten zinc and allowing them to remain in the batch until their temperature becomes the same as the bath. Coating shall be not less than 2 oz. per sq. ft. of surface.

3.02 INSTALLATION

A. Install all items furnished except items to be imbedded in concrete or other masonry which shall be installed under Division 3 and Division 4 respectively. Items to be attached to concrete or masonry after such work is completed shall be installed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted. All dimensions shall be verified at the site before fabrication is started.

B. All steel surfaces to come in contact with exposed concrete or masonry shall receive a protective coating of an approved heavy bitumastic trowling mastic applied in accordance with the manufacturer’s instructions prior to installation.

C. Where aluminum contacts a dissimilar metal, apply a heavy brush coat of zinc-cromate primer followed by two coats of aluminum metal and masonry paint to dissimilar metal.

D. Where aluminum contacts masonry or concrete, apply a heavy coat of approved alkali resistant paint to the masonry or concrete.

E. Where aluminum contacts wood, apply two coats of aluminum metal and masonry paint to the wood.

END OF SECTION

SECTION 09900

COATINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. This specification defines the method and material for the rehabilitation of sanitary sewer structures (manholes, wet wells, lift/pump stations, large diameter concrete pipe, etc.) utilizing a spray applied calcium aluminate cementitious structural rehabilitation system. The purpose of this project is to obtain a dense and durable concrete lining that is resistant to biosulfuric acid attack and meets the strength requirements described elsewhere in this specification. The work covered in this specification consists of furnishing all labor, equipment, materials, and supervision necessary to accomplish the rehabilitation as specified. When complete the rehabilitated structure shall:

1. Provide for a uniformly smooth surface of specified thickness.
2. Minimize, if not eliminate sources of inflow/infiltration (I/I).
3. Provide a service life that is supported by documented test analysis

B. Contractors Sequence of Operation

1. The Contractor's sequence of operation relative to structural rehabilitation shall include, but not be limited to the following:
   a. Eliminate all sources of groundwater infiltration and voids in walls.
   b. Rehabilitate all interior surfaces including walls, ceilings and floors in accordance with specification and nature of the sub-surfaces.
   c. Provision to "cure" the installed lining material.
   d. Provision to “test” lining and structural rehabilitation materials.

1.02 REFERENCE STANDARDS

A. ASTM C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars

B. ASTM C321 - Standard Test Method for Bond Strength of Chemical-Resistant Mortars

C. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars

D. ASTM C496 - Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens

E. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear

F. ASTM C157 - Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete

G. ASTM C597B - Standard Test Method for Pulse Velocity Through Concrete ASTM

1.03 SUBMITTALS

A. The CONTRACTOR shall furnish detailed and complete data pertaining to the surfaces of the structure to be rehabilitated, the rehabilitation product, surface preparation and installation to the engineer for approval. The submission of this data shall be made in a timely manner to prevent project delay. At the request of the Engineer, the CONTRACTOR shall test for adverse chemical conditions that may hinder overall product performance.

B. Prior to initiating the work, the CONTRACTOR shall submit specific technical data with complete physical properties of the structure to be rehabilitated and the proposed product for the rehabilitation of the structure, as well as a specific plan for sub-surface preparation.

C. CONTRACTOR shall submit a work plan detailing the activities and sequence of work.

D. CONTRACTOR shall submit a safety plan that complies with OSHA standards and all regulations pertaining to the work including confined space entry.

1.04 MATERIAL DELIVERY, STORAGE, AND HANDLING

A. Materials shall be stored in accordance with Manufacturer's recommendations in enclosed structures and shall be protected from weather and adverse temperature conditions. Flammable materials shall be stored in accordance with state and local codes. Materials exceeding storage life.

B. All painting and coating materials shall be delivered to the job site in unbroken packages bearing the label of the manufacturer. Labels on all material containers must show the following information:

1. Name or Title of Project
2. Federal Specification Number (if applicable)
3. Manufacturer's batch number and date of manufacture
4. Manufacturer's name
5. Generic type of material
6. Application and mixing instructions
7. Hazardous material identification label
8. Shelf life date
9. Storage Requirements

C. Suitable storage space where paint and coating will be safe from damage shall be

provided. Store all materials only in area or areas designated by the Engineer solely for this purpose. Confine mixing, thinning, clean-up and associated operations, and storage of materials-related debris before authorized disposal, to these areas.

D. All paints and coatings shall be stored and mixed in accordance with manufacturer's instructions. Mixing shall be performed in well-ventilated areas. Care shall be taken to prevent separation of coating components following initial mix.

E. The CONTRACTOR shall take all precautions and implement all measures necessary to avert potential hazards associated with the coating system materials as described on the pertinent Material Safety Data Sheets or container labels.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Oil and water separators shall be used in all compressed air lines serving spray painting and sandblasting operations to remove oil or moisture from the air before it is used.

B. CONTRACTOR will provide to the Owner or designee a "Tooke" gauge for non-ferrous and cementitious surface, to be used to inspect coatings by the Owner or Designee.

2.02 MATERIALS

A. All materials specified herein shall be manufactured by one of the Companies specified and listed. These products are specified to establish standards of quality and are approved for use on this Project. Equivalent materials of other manufacturers may be substituted only with Owner written approval prior to the project bid date.

B. Lining material furnished under this specification shall be a prepackaged mortar mix, including all cement, aggregates, and any required additives. It is the intent of this specification that the CONTRACTOR only be required to add the proper amount of potable water so as to produce concrete suitable for spray application. Do not add portland cement, other aggregates, or any unapproved admixtures whatsoever to lining material. Typical package weights shall not be less than 50 lbs and shall be identical for all material furnished on this project.

C. The chemical composition of the cement portion as well as the aggregates of the mortar mix shall be as follows:

Al_2O_3	CaO	$FeO + Fe_2O_3$	SiO_2
39-44%	34-38%	9-15%	6-8%

D. The properties of the mortar mix under standard laboratory conditions are typically as follows:

Compressive Strength (ASTM C109)	> 5,500 psi	24 hours
Flexural Strength (ASTM C348)	> 900 psi	24 hours
Splitting Tensile Strength (ASTM C496)	> 550 psi	24 hours
Slant Shear test (ASTM C882)	> 2,500 psi	28 days
Shrinkage at 28 days (ASTM C157)	< 0.07%	
Freeze/Thaw after 300 Cycles (ASTM C666)	> 102	

E. The mortar mix shall be "SewperCoat PG", as manufactured by Kerneos Inc. – Chesapeake, Virginia, "Strong-Seal" as manufactured by The Strong Company Inc. – Pine Bluff, Arkansas or approved equal.

F. Mortar mix must have at least fifteen (15) years of successful performance in similar applications and manufacturer shall be ISO 9001:2008 certified for quality management. Manufacturer's ISO 9001:2008 certificate shall be submitted to engineer and owner.

G. Mortar mix manufacturer shall offer to the Owner a labor and materials replacement limited warranty for a period of no less than 3 years from the date of Owner acceptance of the installation.

H. In addition, the mortar mix shall be designed to withstand long-term exposure to a bacterially corrosive hydrogen sulfide environment that may be expected to produce a pH of 1 on normal Portland cement based concrete or typical brick and mortar surfaces.

I. Water used in mixing shall be fresh, clean, potable water, free from injurious amounts of oil, acid, alkali, vegetable, sewage and/or organic matter. Water shall be considered as weighing 8.32 pounds per gallon.

J. Mortar mix shall be stored with adequate provisions for the prevention of absorption of moisture. It shall be stored in a manner that will permit easy access for inspection and identification of each shipment.

K. Substitutions which decrease the total film dry thickness, change the generic type of coating, or fail to meet the performance criteria of the specified materials shall not be approved. Prime, intermediate and finish coats of all surfaces shall be furnished by the same manufacturer.

L. Colors, where not specified, shall be as selected by the Owner or the Engineer.

M. All coatings in contact with potable water shall be NSF Certified, tested and listed in accordance with ANSI/NSF 61.

2.03 COATING SYSTEMS

A. The following coating systems shall be applied except where specifically noted otherwise in the Contract Documents. SewperCoat coating system or approved equal. Proposed equal products shall be submitted to the Owner and Engineer at least 14 days prior to the bid opening date for review.

PART 3 - EXECUTION

3.01 NOTIFICATIONS

A. CONTRACTOR is required to notify property owners a minimum of one week prior to work within the area. CONTRACTOR shall provide ENGINEER with draft notice for review and approval prior to distribution to the public.

3.02 SAMPLING AND TESTING

A. A recognized independent testing laboratory shall test mortar materials used on the project. The Manufacturer, instead of an independent laboratory, may test project sample specimens, provided the Owner, Engineer, and Manufacturer are in agreement of this testing method prior to project commencement. Specific materials recommended by the Engineer shall then be tested.

B. The cost of sampling and testing of the mortar mix during placement and the surface to which it is applied shall be born by the CONTRACTOR. Other testing required showing conformance with these specifications shall be the responsibility of the CONTRACTOR. Certified test reports and certificates, when so directed, shall be submitted in duplicate to the Engineer and to such other agencies or persons the Engineer may designate.

C. Any materials failing to meet the requirements of these specifications shall not be incorporated into the work plan.

3.03 QUALIFICATION OF WORK CREW

A. Certified Applicator

B. The lining material Manufacturer shall maintain a listing of competent contractors that have demonstrated requisite skill and training to be qualified applicators of their materials.

C. Prior to project commencement, the CONTRACTOR must satisfy the Engineer that all CONTRACTOR's work crew personnel have performed satisfactory work in similar capacities elsewhere for a period of five years to be fully qualified to properly perform the work in accordance with the requirements of the related specifications.

D. Foreman shall have at least 4 years' experience with similar work and project conditions.

E. Nozzlemen shall be qualified by having had similar work experience.

F. Work Crew responsibilities prior to application of lining material shall include the following:

1. Surface preparation as discussed in section 3.05.

2. Ensure the operating air pressure is uniform and provides adequate nozzle velocity for proper compaction.

3. Continuously regulate the water content so that the applied materials consistently achieve proper compaction with a low percentage of rebound and no visible "sag".

4. Ensure that the installation equipment nozzle is held at the proper distance away from and as nearly perpendicular to the prepared sub-surface as the working conditions will permit to secure maximum material compaction with minimum rebound and no visible “sag”.

5. Follow a sequence routine that will fill corners with adequately compacted material applied at a maximum practicable layer thickness.

6. Determine necessary operating procedures for placement in confined spaces, extended distances or around unusual obstructions where placement velocities and mix consistency may need to be adjusted.

7. Direct the crew as to when to start and stop the flow of materials during installation and to immediately stop all work when material is not arriving uniformly at the nozzle.

8. Ensure that slough pockets are removed and prepared for installation of replacement material.

9. Bring the installed materials to established finished elevations in a neat and timely manner and within established tolerances.

G. Applicator’s job foreman shall operate the mixing/placing equipment and direct the work of mixing crew personnel. Applicator’s work crew shall also maintain proper line pressures throughout the mixing/placing equipment to ensure the necessary consistent nozzle velocity. Applicator’s work crew shall further see that all material fed to the nozzle is uniformly fed through this equipment.

3.04 EQUIPMENT

A. Equipment shall be of spray type and approved by the material manufacturer. Alternate equipment may be utilized provided it meets the performance requirements of the specification. All equipment must be kept in operating condition and good repair.

3.05 SAFETY AND VENTILATION REQUIREMENTS

A. Requirements for safety and ventilation shall be in accordance with SSPC Paint Application Guide No. 3.

3.06 SURFACE PREPARATION

A. Comply fully with the manufacturer’s instructions.

B. All specified surface preparation shall be performed in accordance with the latest version of the SSPC, NACE, ICRI and other standards referenced in this section.

C. The water used for pressure washing shall be clean and free of oil as to not cause contamination of the surface to be resurfaced.

D. Ensure all sub-surfaces are clean and free of laitance, loose material, residue and all existing coating and lining materials. See Section 3.09A for Inflow and Infiltration Prevention. For detailed explanation of the required surface preparation see ACI RAP-3 “Spall Repair by Low Pressure Spraying” page 2. ACI 546R “Concrete Repair

Guide", chapter 2 also provides a good reference for important considerations for repairing concrete surfaces using mortar.

E. Sub-surfaces shall be thoroughly saturated with water prior to the application of the lining materials. In no instance shall shotcrete be applied in an area where running water exists. It is the intent of this specification that the existing surface be saturated and free of any running water just prior to installation – or SSD, "saturated surface dry condition." To achieve this condition it may be necessary to presoak the sub-surface for a at least 24 hours.

F. Previous coatings shall be removed completely to expose bare concrete. Sandblasting or water blasting may be required to remove some existing coatings.

3.07 OPERATIONS

A. The CONTRACTOR shall provide all equipment necessary to individually gauge, control, and monitor the actual amounts of all component materials necessary to complete the lining installation. The type of equipment and methods used to gauge, control, and monitor component materials shall be subject to approval by the Engineer and Manufacturer.

B. All lining materials shall be thoroughly mixed by mechanical means to ensure all agglomerated particles are reduced to original size or removed prior to placement into the application equipment (i.e. the hopper). Each batch of material should be entirely discharged before recharging with fresh material. Mixing equipment shall be cleaned at regular intervals to remove all adherent materials.

C. The addition of water to the mix shall be in strict accordance with the Manufacturer's recommendations.

D. Re-mixing or tempering shall not be permitted. Rebound materials shall not be reused.

3.08 PROTECTION OF ADJACENT SURFACES

A. During progress of the work, adjacent areas or grounds which may be permanently discolored, stained or otherwise damaged by dust and rebound material, shall be adequately protected and, if contacted, shall be cleaned by early scraping, brushing or washing as the surroundings permit.

3.09 INFLOW AND INFILTRATION PREVENTION

A. If inflow or infiltration is observed within the structure after surface preparation is complete, a rapid setting crystalline enhanced hydraulic cement product specifically formulated for infiltration control shall be used to stop minor infiltration flows in accordance with the manufacturer's recommendations. The material shall meet the following strength requirements:

Compressive Strength (ASTM C597B)	600 psi 1,000 psi	(24 hours) (7 days)
Bond Strength (ASTM C321)	30 psi 80 psi	(1 hour) (1 day)

B. The material shall be Preco Plug, Octocrete, Burke Plug or Engineer approved equal. Where infiltration flows are more severe, pressure grouting may be required. The material for pressure grouting shall be Avanti A-220, DeNeef or Engineer approved equal installed in accordance with the manufacturer's written instructions.

C. All materials, labor, equipment, and incidentals required to correct inflow and infiltration conditions will be considered incidental to rehabilitation.

3.10 APPLICATION OF MATERIALS

A. Lining material shall not be applied to a frozen surface or to a surface that may freeze within 24 hours of application. Frozen conditions shall be defined as ambient temperatures of 32 degrees Fahrenheit or below.

B. Sequence of application may be from bottom to top or vice versa if rebound is properly removed.

C. Application shall be from an angle as nearly perpendicular to the surface as practicable, with the nozzle held at least 1 foot from the working sub-surface (except in confined control). If the flow of material at the nozzle is not uniform and slugs, sand spots, or wet sloughs result, the nozzleman shall direct the nozzle away from the work until the faulty conditions are corrected. Such defects shall be replaced as the work progresses.

D. Application shall be suspended if:

1. Air velocity separates the cement from the aggregate at the nozzle.

2. Ambient temperature approaches freezing and the newly placed coating cannot be protected and insulated.

E. The time interval between successive layers of material application must be sufficient to allow “tackiness” to develop but not final set. If final set does occur, this surface shall be prepared in accordance with Sections 4.1.1 of this document.

F. Construction joints within a manhole shall be avoided. In the event a construction joint is necessary and approved by the Engineer, it shall be sloped off to a thin, clean, regular edge, at a 45-degree angle. Prior to placement of the adjoining materials, the sloped portion and adjacent applied material shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.

G. Nozzleman shall bring the material to an even plane and to well-formed corners.

H. After the body coat has been placed, the surface shall be trued with a thin-edge screed to remove high areas and expose low areas. Low areas shall be properly filled with additional material to insure a true, flat surface in accordance with Section 4.5.5 of this document.

I. For manhole applications, the recommended thickness of the coating shall be a ½-inch cover over all surfaces, unless substrate conditions and other factors require additional thickness.

3.11 CURING

A. If the material has been applied and furnished in accordance to the specifications, and it has been determined that the environment is not moist enough for natural curing, the CONTRACTOR will be required to apply a curing compound to all coated surfaces. Curing compound shall meet the requirements of ASTM C309 and have the approval of the lining material Manufacturer and the Engineer prior to use.

B. Moist curing may also be used in lieu of curing compound. If moist curing is selected, it should be implemented just after the notice of uniform heat generation of the installed lining. Moist curing can consist of the use of soaker hoses, water sprinklers, or vapor/misting machines. Regardless of delivery method, moist curing should continue for a minimum of 18 hours.

3.12 INSPECTION

A. Inspection personnel employed by the Owner or Engineer may be a NACE Level III inspector.

B. Check existing paint thickness prior to starting work to determine the baseline thickness for determining the new paint/coating thickness applied.

C. Before application of the prime coat and each succeeding coat, all surfaces to be coated shall be subject to inspection by the Engineer or the Engineer's representative. Any defects or deficiencies shall be corrected by the CONTRACTOR before application of any subsequent coating. After painting, visually inspect concrete and metal surfaces to ensure proper and complete coverage has been attained.

D. Paint thickness applied over ferrous metals shall be measured with a magnetic type dry film thickness gauge to ensure specified mil thickness has been applied.

E. Paint thickness on concrete substrates shall be checked using Tooke gauge or similar method to ensure specified mil thickness has been applied.

F. Schedule inspection with Engineer prior to application of primers and top coats.

G. Provide Engineer a minimum of two days' notice prior to applying paints and coatings.

H. CONTRACTOR shall perform ASTM D-3359 Cross Hatch Adhesion Test on all substrates prior to surface preparation and before all primers are applied in the presence of the Engineer or the Engineer's Representative.

3.13 ACCEPTANCE CRITERIA

A. Acceptance criteria for surface preparation work:

1. All surfaces shall be prepared in accordance with the specification and referenced standards.

B. Acceptance Criteria for Coating System Application Work

1. Acceptable coating work will be based upon the following:
   a. No pock-marks, trowel marks, depressions, drip marks, unconsolidated areas, waviness or ridges, pinholes or holidays in either size or frequency.
   b. Resurfaced areas shall pitch to drains.

c. Proper curing of coatings.

2. The Engineer or Engineer's representative shall, at their discretion, inspect the following:
   a. Profile and degree of cleanliness of substrate.
   b. Thickness of materials/coverage rate confirmation.
   c. Ambient temperature and humidity requirements and substrate temperature.
   d. Curing and recoat times.
   e. Proper curing of the resurfacing materials.
   f. Compliance with manufacturer's recommendations.

3. Rework required on any holidays or any other inadequacies found by the Engineer or the Engineer's representative in the quality of the coating work shall be marked. Such areas shall be recleaned and reworked by the CONTRACTOR according to these specifications and the manufacturer's recommendations at no additional cost to the Owner. The CONTRACTOR shall be responsible for repairing damaged coating resulting from destructive testing conducted by the CONTRACTOR and by the Engineer or Engineer's representative.

4. The CONTRACTOR is responsible for keeping the Engineer informed of all progress so that inspection for quality can be achieved.

5. The CONTRACTOR is ultimately responsible for the quality performance of the applied materials and workmanship. Inspections by the Engineer or the Engineer's representative do not limit this responsibility.

3.14 CLEANUP

A. During progress of work, remove from the site all discarded paint materials, rubbish, cans, and rags at the end of each workday. Upon completion of work, clean window glass to remove paint or other materials. Remove spent sandblast material and debris. Disposal of paints, coating thinners and containers shall be in strict accordance with Local, State, and Federal rules and regulations. Owner may require CONTRACTOR to contain or remove spent abrasives and old paint chips at frequent intervals to maintain a clean, neat site.

B. Remove all temporary protective barriers, wrapping, tape, glue and paper used for protection of other surfaces.

C. CONTRACTOR shall be solely responsible for the disposal of cleaning and coating materials including, but not limited to soaps, detergents, solvents, thinners, paint, and other related type products. CONTRACTOR shall also be solely responsible for the disposal of empty or partially empty containers including but not limited to soaps, detergents, solvents, thinners, paint, and other related typed products. CONTRACTOR shall provide to SUA a manifest of all such containers and chain of custody documents which document proper disposal as required by federal, state and local agencies.

3.15 PROTECTION

A. Contamination: No overspray, dust, debris or other contaminants will be allowed to enter the water or other process streams at the plant. The CONTRACTOR will be responsible to take all steps necessary to completely control contamination of any

process streams.

B. Protect surfaces that might otherwise be damaged by dripping, splashing, or spraying of paint or coating materials. Protect adjacent and nearby items from over spray or blowing paint including but not limited to floors, equipment, piping, vehicles, fixtures, landscaping, etc.

C. Correct any damage by cleaning, repairing or replacing as acceptable to the Owner.

3.16 CLOSEOUT

A. At the end of the project the following items shall be provided:

1. Copies of all MSDS data for the products utilized during the project.

2. Copies of the warranties for the coating products utilized during the project.

3. One standard size package (gallons or pounds depending on the product) of the paints, primers, sealants, and caulks used.

END OF SECTION 09900