

**14107 E PARSLEY DR DRAINAGE  
IMPROVEMENTS  
(CONTRACT #2017-192)**

**CONTRACT DOCUMENTS &  
SPECIFICATIONS**

**Prepared for**



**July 2018**

# City of Madeira Beach, Florida

## 14107 E PARSLEY DR DRAINAGE IMPROVEMENTS (CONTRACT #2017-192)

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# SECTION I

## ADVERTISEMENT OF BIDS & NOTICE TO CONTRACTORS

**14107 E PARSLEY DR DRAINAGE IMPROVEMENTS  
(CONTRACT #2017-192)  
MADEIRA BEACH, FLORIDA**

Copies of the Contract Documents and Plans for this Project are available for inspection and/or purchase by prospective bidders at the City of Madeira Beach's City Hall - website address: [www.maderiabeach.gov](http://www.maderiabeach.gov), ON **July 27, 2018**, until no later than close of business three (3) days preceding the bid opening. **\$40 Price of Contract Documents and Plans reflects reproduction cost only.**

The work for which proposals are invited consists of Roadway Reconstruction of 14107 E Parsley Drive including; **85 SQUARE YARDS OF ASPHALT PAVEMENT, 100 SQUARE YARDS OF BASE RECONSTRUCTION, 75 LINEAR FEET OF VALLEY GUTTER CURB, (3) FDOT TYPE F GRATE INLET, 229 LINEAR FEET OF 15" STORM PIPE WITH NECESSARY APPURTENANCES AND (4) CURED-IN-PLACE PIPE LINING.**

**FOR 37 144th AVE., THE CONTRACT UNIT PRICE FOR THIS ITEM WILL BE LUMP SUM UNIT PRICE. THE PRICE SHALL INCLUDE ALL NECESSARY EQUIPMENT, LABOR AND MATERIALS REQUIRED TO COMPLETE THIS PAY ITEM. PAYMENT OF DEMOLITION OF CURBS AND BRICK DRIVEWAY (+/- 150 SF), REPLACE FDOT Type F CURB & VALLEY GUTTER CURB (+/- 120LF) FOR POSITIVE FLOW IN DRAINAGE AND RESTORE PAVER BRICK DRIVEWAY (REPLACE& REUSE) BUT NOT BE LIMITED TO, THE FOLLOWING: PREPARATION OF BASE, COMPACTION, FORMING, POURING OF CONCRETE AND ALL OTHER INCIDENTAL ITEMS REQUIRED TO SUCCESSFULLY COMPLETE THIS PAY ITEM.**

Sealed proposals will be received by the **City Clerk**, at the **Maderia Beach City Hall**, located at **300 Municipal Drive, Madeira Beach, Florida 33708**, until **10:00 A.M.** on **August 24, 2018**. The bids will be publicly opened and read at that hour and place for **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS (CONTRACT #2017-192).**

A complete bidders package containing plans, specifications, bond forms, contract form, affidavits and proposal form is available to the general public (Contractors, Sub-contractors, Suppliers, Vendors, etc.) for review and purchase. **However, sealed proposals will only be accepted from those Contractors that are currently pre-qualified in the construction category of \$500,000 with a minimum pre-qualification amount of \$1,000,000.**

**Contractors wanting to pre-qualify to bid this project must have applications in by 4:00 PM August 17, 2018.**

A 10% bid bond is required for all City of Madeira Beach projects.

The right is reserved by the City of Madeira Beach, Florida to reject any or all bids.

The City of Madeira Beach, Florida

# SECTION II

## INSTRUCTIONS TO BIDDERS

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## 1 COPIES OF BIDDING DOCUMENTS

- 1.1 Complete sets of the Bidding Documents are available at the City of Madeira Beach City Hall. Price of Contract (**Fee of *Forty Dollars (\$40.00)***) reflects reproduction costs only, which is non-refundable. A complete Bidder's package containing plans, specifications, bond forms, contract form, affidavits, and bid/proposal form is available only to pre-qualified bidders. Contractors, suppliers, or others who are not pre-qualified but who may be a possible subcontractor, supplier, or other interested person may purchase a "Subcontractor" package consisting of plans, specifications, and list of pay items.
- 1.2 Complete sets of Bidding Documents must be used in preparing bids. Neither the City of Madeira Beach nor the Engineer shall be liable for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents, by bidders, sub-bidders or others.
- 1.3 The City of Madeira Beach, in making copies of Bidding Documents available on the above terms, does so only for the purpose of obtaining Bids on the Work and does not confer a license or grant any other permission to use the documents for any other purpose.

## 2 QUALIFICATION OF BIDDERS

- 2.1 Each prospective Bidder must pre-qualify to demonstrate, to the complete satisfaction of the City of Madeira Beach, that the Bidder has the necessary facilities, equipment, ability, financial resources and experience to perform the work in a satisfactory manner before obtaining drawings, specifications and contract documents. An application package for pre-qualification may be obtained by contacting the City of Madeira Beach, Madeira Beach City Hall, 300 Municipal Drive, Madeira Beach, FL 33708 (street address only). Pre-Qualification requirements information is also available on the City of Madeira Beach Website at address: [www.madeirabeachfl.gov](http://www.madeirabeachfl.gov).

Contractors wanting to pre-qualify to bid on a project as a General Contractor must do so two (2) weeks [ten (10) work days] prior to the bid opening date. Bidders currently pre-qualified by the City of Madeira Beach do not have to make reapplication.

## 3 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 3.1 It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Contract Documents thoroughly; (b) visit the site to become familiar with local conditions that may in any manner affect cost, progress, performance or furnishing of the work; (c) consider and abide by all applicable federal, state and local laws, ordinances, rules and regulations; and (d) study and carefully correlate Bidder's observations with the Contract Documents, and notify Engineer of all conflicts, errors or discrepancies in the Contract Documents.
- 3.2 In reference to the Technical Specifications and/or the Scope of the Work for identification of those reports of explorations and tests of subsurface conditions at the site which have been utilized by the Engineer in the preparation of the Contract Documents, bidder may rely upon the accuracy of the technical data contained in such reports but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for the purposes of bidding or construction. In reference to those drawings relating to physical conditions of existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site and which have been utilized by the Engineer in preparation of the Contract Documents, bidder may rely upon the accuracy of the technical

data contained in such drawings but not upon the completeness thereof for the purposes of bidding or construction.

- 3.3 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site are based upon information and data furnished to the City of Madeira Beach and Engineer by owners of such Underground Facilities or others, and the City of Madeira Beach does not assume responsibility for the accuracy or completeness thereof unless expressly provided in the Contract Documents.
- 3.4 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities, other physical conditions, possible conditions, and possible changes in the Contract Documents due to differing conditions appear in the General Conditions.
- 3.5 Before submitting a Bid, each Bidder shall, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing the work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 3.6 On request in advance, the City of Madeira Beach will provide each Bidder access to the site to conduct such explorations and tests at Bidder's own expense as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the site to its former condition upon completion of such explorations and tests.
- 3.7 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by the Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by the Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by the City of Madeira Beach unless otherwise provided in the Contract Documents.
- 3.8 The submission of a Bid will constitute an unequivocal representation by the Bidder that the Bidder has complied with every requirement of these Instructions to Bidders and that, without exception, the Bid is premised upon performing and furnishing the Work required by the Contract Documents by such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the work.

## **4 INTERPRETATIONS AND ADDENDA**

- 4.1 All questions as to the meaning or intent of the Contract Documents are to be directed to the Engineer. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by Addenda, by Deuel & Associates, to all parties recorded by the City of Madeira Beach as Plan-holders having received the Bidding Documents. Questions received after the time frame specified at the pre-bid meeting prior to the date for opening of Bids may not be answered. Only information provided by formal written Addenda will be binding. Oral and other interpretations of clarifications will be without legal effect.

- 4.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by the City of Madeira Beach or Engineer.

## **5 BID SECURITY OR BID BOND**

- 5.1 Each Bid must be accompanied by Bid Security made payable to the City of Madeira Beach in an amount equal to ten percent (10%) of the Bidder's maximum Bid Price and in the form of a certified or cashier's check or a Bid Bond (on form attached) issued by a surety meeting the requirements of the General Conditions. A cash Bid Bond will not be accepted.
- 5.2 The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Payment and Performance Bonds, whereupon the Bid Security will be returned. If the Successful Bidder fails to execute, deliver the Agreement and furnish the required Bonds within ten (10) days after the award of contract by the City of Madeira Beach Council, the City of Madeira Beach may annul the Bid and the Bid Security of the Bidder will be forfeited. The Bid Security of any Bidder whom the City of Madeira Beach believes to have a reasonable chance of receiving the award may be retained by the City of Madeira Beach until the successful execution of the Agreement with the Successful Bidder or for a period up to ninety (90) days following bid opening. Security of other Bidders will be returned approximately fourteen (14) days after the Bid opening.
- 5.3 The Bid Bond shall be issued in the favor of the City of Madeira Beach by a surety company qualified to do business in, and having a registered agent in the State of Florida.

## **6 CONTRACT TIME**

- 6.1 The number of consecutive calendar days within which the work is to be completed is set forth in the Technical Specifications.

## **7 LIQUIDATED DAMAGES**

- 7.1 Provisions for liquidated damages are set forth in the Contract Agreement.

## **8 SUBSTITUTE MATERIAL AND EQUIPMENT**

- 8.1 The contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item may be furnished or used, application for its acceptance will not be considered by the Engineer until after the effective date of the Contract Agreement. The procedure for submittal of any such application is described in the General Conditions and as supplemented in the Technical Specifications.

## **9 SUBCONTRACTORS**

- 9.1 If requested by the City of Madeira Beach or Engineer, the Successful Bidder, and any other Bidder so requested, shall, within seven (7) days after the date of the request, submit to the Engineer an experience statement with pertinent information as to similar projects and other evidence of qualification for each Subcontractor, supplier, person and organization to be used by the Contractor in the completion of the Work. The amount of subcontract work shall not exceed fifty percent (50%) of the Work except as may be specifically approved by the Engineer. If the Engineer, after due investigation, has reasonable objection to any

proposed Subcontractor, supplier, other person or organization, he may, before recommending award of the Contract to the City of Madeira Beach Council, request the Successful Bidder to submit an acceptable substitute without an increase in Contract Price or Contract Time. If the Successful Bidder declines to make any such substitution, the City of Madeira Beach may award the contract to the next lowest and most responsive Bidder that proposes to use acceptable Subcontractors, suppliers, and other persons and organizations. Declining to make requested substitutions will not constitute grounds for sacrificing the Bid Security to the City of Madeira Beach of any Bidder. Any Subcontractor, supplier, other person or organization listed by the Contractor and to whom the Engineer does not make written objection prior to the recommendation of award to the City of Madeira Beach Council will be deemed acceptable to the City of Madeira Beach subject to revocation of such acceptance after the Effective Date of the Contract Agreement as provided in the General Conditions.

- 9.2 No Contractor shall be required to employ any Subcontractor, supplier, person or organization against whom he has reasonable objection.

## **10 BID/PROPOSAL FORM**

- 10.1 The Bid/Proposal Form is included with the Contract Documents and shall be completed in ink or by typewriter. All blanks on the Bid/Proposal Forms must be completed. Unit Prices shall be to no more than two (2) decimal points in dollars and cents. The Bidder must state in the Bid/Proposal Form in words and numerals without delineations, alterations, or erasures, the price for which he will perform the work as required by the Contract Documents. Bidders are required to bid on all Items in the Bid/Proposal Form. The lump sum for each Section or Item shall be for furnishing all equipment, materials, and labor for completing the Section or Item as per the Plans and Contract Specifications. Should it be found that quantities or amounts shown on the plans or in the proposal, for any part of the work, are exceeded or should they be found to be less after the actual construction of the work, the amount bid for each section or item will be increased or decreased in direct proportion to the unit prices bid for the listed individual items.
- 10.2 Bids by corporations shall be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal shall be affixed. The corporate address and state of incorporation shall be shown below the signature. If requested, the person signing a Bid for a corporation or partnership shall produce evidence satisfactory to the City of Madeira Beach of the person's authority to bind the corporation or partnership.
- 10.3 Bids by partnerships shall be executed in the partnership name and signed by a general partner, whose title shall appear under the signature and the official address of the partnership shall be shown below the signature.
- 10.4 All names shall be typed or printed below the signature.

## **11 SUBMISSION OF BIDS**

- 11.1 Sealed Bids shall be submitted at or before the time and at the place indicated in the Advertisement for Bids and shall be submitted in a 8.5"x11" manila envelope with the project name and number on the bottom left hand corner. If forwarded by mail, the Bid shall be enclosed in another envelope with the notation "Bid Enclosed" on the face thereof and addressed to the City of Madeira Beach, attention City Clerk. Bids will be received at



the office indicated in the Advertisement until the time and date specified. Telegraphic or facsimile bids received by the City Clerk will not be accepted.

## **12 MODIFICATION AND WITHDRAWAL OF BIDS**

- 12.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered as described in the Advertisement of Bids. A request for withdrawal or a modification shall be in writing and signed by a person duly authorized to do so. Withdrawal of a Bid will not prejudice the rights of a Bidder to submit a new Bid prior to the Bid Date and Time. After expiration of the period for receiving Bids, no Bid may be withdrawn or modified.
- 12.2 After a Bid is received by the City of Madeira Beach, the Bidder may request to modify the Bid for typographical or scrivener's errors only. The Bidder must state in writing to the City of Madeira Beach that a typographical or scrivener's error has been made by the Bidder, the nature of the error, the requested correction of the error, and what the adjusted bid amount will be if the correction is accepted by the City of Madeira Beach. The City of Madeira Beach reserves the right at its sole discretion to accept, reject, or modify any bid.

## **13 REJECTION OF BIDS**

- 13.1 To the extent permitted by applicable State and Federal laws and regulations, the City of Madeira Beach reserves the right to reject any and all Bids, and to waive any and all informalities. Grounds for the rejection of a bid include but are not limited to a material omission, unauthorized alteration of form, unauthorized alternate bids, incomplete or unbalanced unit prices, or irregularities of any kind. Also, the City of Madeira Beach reserves the right to reject any Bid if the City of Madeira Beach believes that it would not be in the best interest of the public to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the City of Madeira Beach. The City of Madeira Beach reserves the right to decide which bid is deemed to be the lowest and best in the interest of the public.

## **14 DISQUALIFICATION OF BIDDER**

- 14.1 Any or all bids will be rejected if there is any reason for believing that collusion exists among the bidders, the participants in such collusion will not be considered in future proposals for the same work. Each bidder shall execute the Non-Collusion Affidavit contained in the Contract Documents.

## **15 OPENING OF BIDS**

- 15.1 Bids will be opened and read publicly at the location and time stated in the Advertisement for Bids. Bidders are invited to be present at the opening of bids.

## **16 LICENSES, PERMITS, ROYALTY FEES AND TAXES**

- 16.1 The Contractor shall secure all licenses and permits (and shall pay all permit fees) except as specifically stated otherwise in the Technical Specifications. The Contractor shall comply with all Federal and State Laws, County and Municipal Ordinances and regulations, which in any manner effect the prosecution of the work. City of Madeira Beach building permit

fees and impact fees will be waived except as specifically stated otherwise in the Technical Specifications.

- 16.2 The Contractor shall assume all liability for the payment of royalty fees due to the use of any construction or operation process, which is protected by patent rights except as specifically stated otherwise in the Technical Specifications. The amount of royalty fee, if any, shall be stated by the Contractor.
- 16.3 The Contractor shall pay all applicable sales, consumer, use and other taxes required by law. The Contractor is responsible for reviewing the pertinent State Statutes involving the sales tax and sales tax exemptions and complying with all requirements.
- 16.4 The City of Maderia Beach is exempt from state sales tax on materials incorporated into the Work. The City of Maderia Beach reserves the right to implement the Owner Direct Purchase (ODP) Option, if indicated in the Scope of Work Description in Section IV – Technical Specifications, and as defined in Section III – General Conditions.

## **17 IDENTICAL TIE BIDS/VENDOR DRUG FREE WORKPLACE**

- 17.1 In accordance with the requirements of Section 287.087 Florida Statutes regarding a Vendor Drug Free Workplace, in the event of identical tie bids, preference shall be given to bidders with drug-free workplace programs. Whenever two (2) or more bids which are equal with respect to price, quality, and service are received by the City of Madeira Beach 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 or all of the tied bidders have a drug-free workplace program. In order to have a drug-free workplace program, a contractor shall supply the City of Madeira Beach with a certificate containing the following six (6) statements and the accompanying certification statement:
  - (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 as to 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 contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of chapter 893, or of any controlled substance law, of the United States, or of 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.

I certify that this firm does/does not (select only one) fully comply with the above requirements.

## **18 AWARD OF CONTRACT**

- 18.1 Discrepancies between words and figures will be resolved in favor of words. Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 18.2 In evaluating the Bids, the City of Madeira Beach will consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, unit prices, and other data as may be requested in the Bid/Proposal Form. The City of Madeira Beach may consider the qualifications and experience of Subcontractors, suppliers, and other persons and organizations proposed by the Contractor for the Work. The City of Madeira Beach may conduct such investigations as the City of Madeira Beach deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers and other persons, and organizations to perform and furnish the Work in accordance with the Contract Documents to the City of Madeira Beach's satisfaction within the prescribed time.
- 18.3 If the Contract is to be awarded, it will be awarded to the lowest responsible, responsive Bidder whose evaluation by the City of Madeira Beach indicates to the City of Madeira Beach that the award will be in the best interest of the City of Madeira Beach.
- 18.4 Award of Contract will be made for that combination of base bid and alternate bid items in the best interest of the City of Madeira Beach, however, unless otherwise specified all work awarded will be awarded to only one Contractor.
- 18.5 The successful Bidder / Contractor will be required to comply with Section 119.0701, Florida Statutes (2013), specifically to:
  - (a) Keep and maintain public records that ordinarily and necessarily would be required by the City of Madeira Beach in order to perform the service;
  - (b) Provide the public with access to public records on the same terms and conditions that the City of Madeira Beach would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law;
  - (c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and
  - (d) Meet all requirements for retaining public records and transfer, at no cost, to the City of Madeira Beach all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the City of Madeira Beach.

## **19 BID PROTEST**

### **19.1 RIGHT TO PROTEST:**

Any actual bidder who is aggrieved in connection with the solicitation or award of a contract may seek resolution of his/her complaints initially with the City Clerk, and if not satisfied, with the City of Madeira Beach Manager, in accordance with protest procedures set forth in this section.

19.2 PROTEST PROCEDURE:

- A. A protest with respect to the specifications of an invitation for bid or request for proposal shall be submitted in writing a minimum of five (5) work days prior to the opening of the bid or due date of the request for proposals, unless the aggrieved person could not have been reasonably expected to have knowledge of the facts giving rise to such protest prior to the bid opening or the closing date for proposals. Opening dates for bids or due dates for requests for proposal will be printed on the bid/request document itself.
- B. Protests in respect to award of contract shall be submitted in writing a maximum of five (5) work days after notice of intent to award is posted, or is mailed to each bidder, whichever is earlier. Notice of intent to award will be forwarded to bidders upon telephonic or written request. Protests of recommended award should cite specific portions of the City of Madeira Beach Code of Ordinances that have allegedly been violated.
- C. Exceptions to the five (5) day requirements noted in both A and B above may be granted if the aggrieved person could have not been reasonably expected to have knowledge of the facts giving rise to such protest prior to the bid opening, posting of intent to award, or due date for requests for proposals. Request for exceptions should be made in writing, stating reasons for the exception.
- D. The City Clerk shall respond to the formal written protest within five (5) work days of receipt. The City Clerk's response will be fully coordinated with the appropriate Department Director and the City of Madeira Beach Manager.
- E. If the protestor is not satisfied with the response from the City Clerk, he/she may then submit in writing within five (5) work days of receipt of that response his/her reason for dissatisfaction, along with copies of his/her original formal protest letter and the response from the City Clerk, to the City of Madeira Beach Manager.
- F. The City of Madeira Beach Manager as Purchasing Agent for the City of Madeira Beach has the final authority in the matter of protests. The City of Madeira Beach Manager will respond to the protestor within ten (10) work days of receipt of the appeal.

19.3 PROTEST FEE:

When filing a formal protest, the protesting vendor must include a fee in the amount of five percent (5%) of the selected vendor's total bid to offset the City of Madeira Beach's additional expenses related to the protest. This fee shall not exceed \$2,500 nor be less than \$50. If either the City Clerk or the City of Madeira Beach Manager upholds the protest, the City of Madeira Beach will refund one-hundred percent (100%) of the fee paid.

19.4 STAY OF PROCUREMENT DURING PROTEST:

In the event of a timely protest, the City Clerk shall not proceed with the solicitation or award of contract until all administrative remedies have been exhausted or until the City of Madeira Beach Manager makes written determination that the award of contract without delay is necessary to protect the best interest of the City of Madeira Beach.

## **20 TRENCH SAFETY ACT**

- 20.1 The Bidder shall comply with the provisions of the City of Madeira Beach's Ordinance related to trench digging (Ordinance No. 7918-08) along with the Florida Trench Safety Act (Sections 553.60-553.64, Florida Statutes) and the provisions of the Occupational Safety and Health Administration's (OSHA) excavation safety standards, 29 C.F.R.s 1926.650 Subparagraph P, or current revisions of these laws.

## **21 CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL MANAGEMENT MEASURES**

- 21.1 The Bidder shall comply with the provisions of the Environmental Protection Agency (EPA) National Pollution Discharge Elimination System (NPDES) stormwater permit and implement stormwater pollution prevention plans (SWPPP's) or stormwater management programs, both using best management practices (BMPs) that effectively reduce or prevent the discharge of pollutants into receiving waters.
- A. The control of construction-related sediment loadings is critical to maintaining water quality. The implementation of proper erosion and sediment control practices during the construction stage can significantly reduce sediment loadings to surface waters.
- B. Prior to land disturbance, prepare and implement an approved erosion and sediment control plan or similar administrative document that contains erosion and sediment control provisions.

NPDES Management Measures available at the [EPA](#) website to help address construction-related Best Management Practices.

References EPA website

# SECTION III

## GENERAL CONDITIONS

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# 1 DEFINITIONS

## *Addenda*

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

## *Agent*

Architect, engineer, or other outside agency, consultant, or person acting on behalf of the City of Madeira Beach, Florida.

## *Agreement*

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

## *Application for Payment*

The form accepted by Engineer which is to be used by Contractor in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

## *Approve*

The word approve is defined to mean satisfactory review of the material, equipment or methods for general compliance with the design concepts and with the information given in the Contract Documents. It does not imply a responsibility on the part of the Engineer to verify in every detail conformance with the Drawings and Specifications.

## *Bid*

The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the work to be performed.

## *Bidding Documents*

The Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

## *Bonds*

Performance and payment bonds and other instruments of security.

## *Change Order*

A written order to Contractor signed by the Owner and Contractor authorizing an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued on or after the effective date of the Agreement.

## *City*

The City of Madeira Beach, Pinellas County, Florida.

## *Construction Inspector*

A person who is the authorized representative of the Construction Manager and inspects City construction projects in order to insure the Contractor's work complies with the intent of the Contract Documents.

## *Construction Manager*

The person who is typically in responsible charge of City construction projects. The Construction Manager assumes responsibility for the management of construction contracts at the Preconstruction Conference. The Construction Manager chairs the Preconstruction Conference and is the authority on any disputes or decisions regarding

contract administration and performance. The Construction Manager typically acts as the Owner's Representative during construction.

*Contract Documents*

The Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the execution of the Agreement) when attached as an exhibit to the Agreement, the Bonds, Instructions to Bidders, these General Conditions, any Supplementary Conditions, the Specifications and the Drawings, any other exhibits identified in the Agreement, together with all Modifications issued after the execution of the Agreement.

*Contract Price*

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable by the Owner to Contractor for performing the Work.

*Contract Time*

The number of days or the date stated in the Agreement for the completion of the Work.

*Contractor*

The Person with whom the Owner has entered into the Agreement. For the purposes of this Contract, the person, firm or corporation with whom this Contract or Agreement has been made by the City of Madeira Beach or its duly authorized representative.

*Critical Path Method Construction Schedule—CPM*

A graphic format construction schedule that displays construction activities as they relate to one another for the purpose of identifying the most efficient way to perform the work in a timely manner. The critical path identifies which activity is critical to the execution of the schedule.

*Day*

A calendar day of twenty-four (24) hours measured from midnight to the next midnight.

*Defective*

An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty, or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been damaged prior to Engineers recommendation of final payment.

*Drawings*

The drawings, which will be identified in Technical Specifications or the Agreement, which show the character and scope of the Work to be performed and which have been prepared or approved by Engineer and are referred to in the Contract Documents. Shop Drawings are not Drawings as so defined.

*Engineer*

The duly appointed representative of City of Madeira Beach, Florida Manager of the City of Madeira Beach. For the purposes of this Contract, City of Madeira Beach, Florida Engineer of the City of Madeira Beach, Pinellas County, Florida, or his authorized representative. For certain projects, the Engineer may serve as the Owner's Representative during construction.

*Engineer's Consultant*

A Person having a contract with Engineer to furnish services as Engineer's independent professional associate, or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

*F.D.O.T Specifications*

The Standard Specifications for Road and Bridge Construction as issued by the Florida Department of Transportation (latest English edition).

*Furnish*

The words "furnish", "furnish and install", "install", and "provide" or words of similar meaning shall be interpreted, unless otherwise specifically stated, to mean "furnish and install complete in place and ready for service".

*Inspection*

The term "Inspection" and the act of inspecting means examination of construction to ensure that it conforms to the design concept expressed in the Drawings and Specifications. These terms shall not be construed to mean supervision, superintending or overseeing.

*Laws and Regulations*

Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any kind of governmental bodies, agencies, authorities, and courts having jurisdiction.

*Liens*

Liens, charges, security interests, or encumbrances upon real property or personal property.

*Milestone*

A principal event specified in the contract Documents relating to an intermediate completion date or time prior to the final completion date.

*Notice to Proceed (NTP)*

A written notice given by the Owner to the Contractor fixing the date on which the Contract Time will commence to run and on which Contractor shall start to perform his obligations under the Contract Documents.

*Owner*

The City of Madeira Beach, Florida. For the purposes of this Contract, the person who is City of Madeira Beach, Florida's authorized representative from City of Madeira Beach, Florida's department with who will be responsible for the maintenance and operation of the Work once the Work is completed. For certain projects, a designee of the Owner may serve as the Owner's Representative during construction.

*Owner's Representative*

Designee of the Owner with authority to act on behalf of the Owner during construction.

*Person*

A natural person, or a corporation, partnership, firm, organization, or other artificial entity.

*Project*

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

*Partial Utilization*

Use by Owner of a substantially completed part of the Work for the purpose for which is intended (or a related purpose) prior to Final Completion of all the Work.

*Representative of Contractor*

The Contractor shall assign a responsible person or persons, one of whom shall be at the construction site at all times that work is progressing. The names and positions of these persons shall be submitted to City of Madeira Beach, Florida Engineer at the time of the Preconstruction Conference. This person or persons shall not be changed without written approval of City Engineer.

*Request for Information (RFI)*

An official written request for clarification of the intent of the Contract Documents from the Contractor to the Engineer.

*Shop Drawing*

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

*Specifications*

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

*Subcontractor*

A person having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

*Substantial Completion*

The Work (or a specified part thereof) which has progressed to the point where, in the opinion of Engineer, as evidenced by Engineer's definitive Certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such Certificate is issued, when the Work is complete and ready for final payment as evidenced by the Engineer's recommendation of final payment. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

*Supplementary Conditions*

The part of the Contract which amends or supplements these General Conditions.

*Supplier*

A manufacturer, fabricator, supplier, distributor, material man, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by the Contractor.

*Surety*

Any person, firm, or corporation which is bound with Contractor and which engages to be responsible for Contractor and his acceptable performance of the Work by a Bid, Performance or Payment Bond.

### *Underground Facilities*

All pipelines, conduits, ducts, cables, wires manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone, or other communications, cable television, sewage and drainage removal or treatment, traffic, or other control systems or water.

### *Unit Price Work*

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

### *Work*

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

### *Work Change Directive*

A written directive to Contractor, issued on or after the Effective Date of the Agreement and signed by the Engineer, ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed or emergencies. Work Change Directive will not change the Contract Price or Contract Time, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## **2 PRELIMINARY MATTERS**

### **2.1 DELIVERY OF BONDS AND CERTIFICATES OF INSURANCE**

When Contractor delivers the executed Agreements to the Owner, Contractor shall also deliver to the Owner such Bonds and Certificates of Insurance as Contractor may be required to furnish by this Contract.

### **2.2 COPIES OF DOCUMENTS**

Engineer shall furnish to Contractor one (1) copy of Contract Documents for execution. Additional copies will be furnished, upon request, at the cost of reproduction.

### **2.3 COMMENCEMENT OF CONTRACT TIME / NOTICE TO PROCEED; STARTING THE PROJECT**

The Contract Time will commence on the day indicated in the Notice to Proceed. Contractor shall start to perform the Work on the date the Contract Time commences to run. No work shall be done at the site prior to the date that the Contract Time commences to run.

### **2.4 BEFORE STARTING CONSTRUCTION**

Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error,

or discrepancy which Contractor may discover; and shall obtain a written interpretation or clarification from Engineer before proceeding with any work effected thereby; however, Contractor shall not be liable to the Owner for failure to report any conflict, error, or discrepancy in the Drawings or Specifications, unless Contractor had actual knowledge thereof or should reasonably have known thereof.

No verbal agreement or conversation with any Officer, Agent or Employee of the Owner or Engineer's Consultant, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained. Contractor shall not commence any work at any time without approved insurance required by these General Conditions. Failure to obtain this insurance will be the sole responsibility of the Contractor.

## **2.5 PRECONSTRUCTION CONFERENCE**

Within twenty (20) days of Award of Contract and before the start of the Work, the Owner's Representative shall schedule a Preconstruction Conference to be attended by Contractor, Engineer, Owner, and others as appropriate to establish a working understanding among the parties as to the Work and to discuss the schedule of the Work and general Contract procedures.

The Contractor shall deliver to the Owner's Representative at the Preconstruction Conference a color Critical Path Method (CPM) Construction Schedule. This is to be a sequence of events including submittal review and procurement. Notice to Proceed is usually established at this conference and such date can be inserted into the schedule at that time. The Contractor shall also bring a Submittal Schedule for review by the Engineer. This is to make sure that the list is complete and this schedule shall be the basis of a Submittal Log.

The Contractor shall deliver to the Owner's Representative at the Preconstruction Conference a completed Emergency Call List and a completed Authorized Signature List.

The Owner's Representative shall deliver to the Contractor at the Preconstruction Conference a project disk that has all of the necessary data and survey control points for the purpose of construction stakeout and as-built survey.

The Owner's Representative shall deliver to the Contractor at the Preconstruction Conference a Contractor Evaluation Package. This is for the purpose of rating the Contractor's performance for reference when considering future contracts and bid prequalification.

## **2.6 PROGRESS MEETINGS**

The Contractor is required to attend Progress Meetings. These meetings will be scheduled on a weekly, bi-weekly, or monthly basis depending on the needs of the project. The Contractor shall bring to each meeting an updated submittal log, an updated Request for Information (RFI) log, a look-ahead schedule to cover the project activity from the current meeting to the next meeting, and all material test reports generated in the same time period.

# **3 CONTRACT DOCUMENTS, INTENT**

## **3.1 INTENT**

The Contract Documents comprise the entire Agreement between Owner and the Contractor concerning the Work. They may be altered only by written agreement. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be

constructed in accordance with the Contract Documents. Any Work, materials, or equipment which may reasonably be inferred from the Contract Documents, or from prevailing custom, or from trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases, which have a well-known technical or construction industry or trade meaning, are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifications and interpretations of the Contract Documents shall be issued by the Owner's Representative. Reference to standards, specifications, manuals, or codes of any technical society, organization or association, or to the code, Laws or Regulation of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code, or Laws or Regulations in effect at the time of opening of Bids except as may be otherwise specifically stated in the Contract Documents. However, no provision of any referenced standard specification, manual or code, whether or not specially incorporated by reference in the responsibilities of Owner or Contractor as set forth in the Contract Documents, shall change the duties and responsibilities of Owner, Contractor, Engineer or Owner's Representative, or any of their Agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract shall be issued by the Owner's Representative. Each and every provision of law and clause required by law to be inserted in these Contract documents shall be deemed to be inserted herein, and they shall be read and enforced as through it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

### **3.2 REPORTING AND RESOLVING DISCREPANCIES**

If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier, Contractor shall report it to the Owner's Representative in writing at once, and Contractor shall not proceed with the Work affected thereby (except in an emergency) until an amendment or supplement to Contract Documents has been issued by one of the methods provided in these General Specifications, provided however, that Contractor shall not be liable to Owner, or Owner's Representative for failure to report any such conflict, error, ambiguity or discrepancy unless Contractor knew or reasonably should have known thereof.

## **4 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS**

### **4.1 AVAILABILITY OF LANDS**

The Owner shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way, easements for access thereto, and such other lands which are designated for the use of Contractor. The Owner shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which contractor will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the Owner, unless otherwise provided in the Contract Documents.



## 4.2 INVESTIGATIONS AND REPORTS

Reference is made to the Supplementary Conditions and Technical Specifications for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or otherwise affecting cost, progress, or performance of the Work which have been relied upon by Engineer in preparation of the Drawings and Specifications. Such reports are not guaranteed as to accuracy or completeness and are not part of the Contract Documents. Contractor shall promptly notify the Owner's Representative in writing of any subsurface or latent physical conditions at the site, or in an existing structure, differing materially from those indicated or referred to in the Contract Documents. Engineer will promptly review those conditions and advise if further investigation or tests are necessary. Owner or Engineer shall obtain the necessary additional investigations and tests and furnish copies to the Engineer and Contractor. If Engineer finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions, which differ materially from those, indicated in the Contract Documents, and which could not reasonably have been anticipated by Contractor, a work change or Change Order will be issued incorporating the necessary revisions.

## 4.3 PHYSICAL CONDITIONS, UNDERGROUND FACILITIES

The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities or by others. Unless otherwise expressly provided in the Contract Documents, Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and the cost of all the following will be included in the Contract Price and Contractor shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work. The Contractor is required to call the **LOCAL PUBLIC UTILITY NOTIFICATION CENTER** prior to any excavation per State regulations and to notify any utility owners who are not a member of the **LOCAL PUBLIC UTILITY NOTIFICATION CENTER** prior to any excavation. The **LOCAL PUBLIC UTILITY NOTIFICATION CENTER** is an agency for the protection and location of utilities prior to any excavation and contact number is available in local telephone directory.

## 4.4 REFERENCE POINTS

Engineer shall provide engineering surveys to establish reference points for construction, which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points, and shall make no changes or relocations without the prior written approval of the Owner and Engineer. Contractor shall report to Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by a surveyor licensed in the State of Florida. The Contractor is referred to the Technical Specifications for more specific information regarding the provision of construction surveys.

## **5 BONDS AND INSURANCE**

### **5.1 PERFORMANCE AND PAYMENT BOND/CONTRACT BOND**

Contractor shall furnish a Performance and Payment Bond in an amount at least equal to the Contract Price as security for the faithful performance and payment of all Contractor obligations under the Contract Documents. This Bond shall remain in effect at least one (1) year after the date when final payment becomes due, unless a longer period of time is prescribed by laws and regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions. All bonds shall be in the form prescribed by the Contract Documents and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All bonds signed by an agent must be accompanied by a certified copy of such agents' authority to act. All bonds shall be deemed to contain all of the Conditions of Section 255.05, Florida Statutes, even if such language is not directly contained within the Bond and the Surety shall be licensed and qualified to do business in the State of Florida. Owner reserves the right to reject any surety. If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located, or it ceases to meet the requirements of these Contract Documents, the Contractor shall within five (5) days after notice thereof substitute another bond and surety, both of which must be acceptable to Owner.

### **5.2 INSURANCE**

Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, and Subcontractor, or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable for the following: (i) Claims under worker's compensation, disability benefits and other similar employee benefit acts; (ii) Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees; (iii) Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees; (iv) Claims for damages insured by customary personal injury liability coverage which are sustained by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or by any other person for any other reason; (v) Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and (vi) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The Contractor shall deliver to the Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by the Owner or any other additional insured) which Contractor is required to purchase and maintain in accordance with this paragraph. The policies of insurance so required by this paragraph to be purchased and maintained shall: (i) include as additional insured (subject to any customary exclusion in respect of professional liability) the City of Madeira Beach and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insured, and include coverage for the respective officers and employees of all such additional insures; (ii) include

completed operations insurance; (iii) include contractual liability insurance covering Contractor's indemnity obligations in Article for Contractor's Responsibilities; (iv) contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least thirty (30) days prior written notice has been given to the Owner, and Contractor, and to each other additional insured identified in the Supplemental Conditions to whom a Certificate of Insurance has been issued (and the Certificates of Insurance furnished by the Contractor as described in this paragraph); (v) remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Article for Correction of Defective Work; (vi) with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, shall remain in effect for at least two (2) years after final payment. Contractor shall furnish the Owner and each other additional insured identified in the Supplementary Conditions to whom a Certificate of Insurance has been issued evidence satisfactory to the Owner and any such additional insured of continuation of such insurance at final payment and one (1) year thereafter and (vii) Name and telephone number of the authorized insurance agent for the Insurer.

The limits of liability for the insurance required shall provide coverage for not less than the following amounts or greater where required by laws and regulations:

**5.2.1 WORKER'S COMPENSATION INSURANCE**

	Contract Award Amount Under \$1,000,000	Contract Award Amount \$1,000,000 and Over
(1) Workers' Compensation	<b>Statutory</b>	<b>Statutory</b>
(2) Employer's Liability	<b>\$500,000</b>	<b>\$1,000,000</b>

**5.2.2 PUBLIC LIABILITY AND PROPERTY DAMAGE COVERAGE**

Comprehensive General Liability including Premise/Operations; Explosion, Collapse, and Underground Property Damage; Products/Completed Operations, Broad Form Contractual, Independent Contractors; Broad Form Property Damage; and Personal Injury Liabilities:

	Contract Award Amount Under \$1,000,000	Contract Award Amount \$1,000,000 and Over
(1) Bodily Injury:	<b>\$500,000 - Each Occurrence \$1,000,000 - Annual Aggregate</b>	<b>\$1,000,000 - Each Occurrence \$1,000,000 - Annual Aggregate</b>
(2) Property Damage:	<b>\$500,000 - Each Occurrence \$1,000,000 - Annual Aggregate</b>	<b>\$1,000,000 - Each Occurrence \$1,000,000 - Annual Aggregate</b>
(3) Personal Injury, with employment exclusion deleted	<b>\$1,000,000 - Annual Aggregate</b>	<b>\$1,000,000 - Annual Aggregate</b>

### 5.2.3 COMPREHENSIVE AUTOMOBILE LIABILITY

Including all owned (private and others), hired, and non-owned vehicles:

	Contract Award Amount Under \$1,000,000	Contract Award Amount \$1,000,000 and Over
(1) Bodily Injury	<b>\$500,000 - Each Person \$500,000 - Each Accident</b>	<b>\$1,000,000 - Each Person \$1,000,000 - Each Accident</b>
(2) Property Damage	<b>\$500,000 - Each Occurrence</b>	<b>\$1,000,000 - Each Occurrence</b>

Receipt and acceptance by Owner of the Contractor's Certificate of Insurance, or other similar document does not constitute acceptance or approval of amounts or types of coverages, which may be less than required by these Contract Documents. The Owner shall not be responsible for purchasing and maintaining any property insurance to protect the interests of Contractor, Subcontractors, or others in the Work. Owner may at its option require a copy of the Contractor's Insurance Policy(s). All insurance policies required within this Contract Document shall provide full coverage from the first dollar of exposure unless otherwise stipulated. No deductibles will be accepted without prior approval from Owner.

**Longshore and Harbor Worker's Compensation Act:** Section 32 of the Act, 33 U.S.C. 932, requires an employer, with employees in maritime employment, to secure the payment of benefits under the Act either by insuring with an insurance carrier authorized by the U.S. Department of Labor, or to be authorized by the U.S. Department of Labor as a self-insurer.

**For General Contractors:** Section 4(a) of the Act provides that every employer shall be liable for and shall secure the payment to his employees of the compensation payable under Sections 7, 8, and 9 of the Act. In the case of an employer who is a subcontractor, only if such subcontractor fails to secure the payment of compensation shall the contractor be liable for and be required to secure the payment of compensation.

### 5.3 WAIVER OF RIGHTS

The Owner and Contractor intend that all policies purchased in accordance with Article on Insurance will protect the Owner, Contractor, Subcontractors, Engineer, Engineer's Consultants, and all other persons or entities identified in the Supplementary Conditions to be listed as insured or additional insured in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insured or additional insured thereunder, the Owner and Contractor waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the work; and, in addition, waive all such rights against Sub-contractors, Engineer, Engineer's Consultants, and all other persons or entities identified in the Supplementary Conditions to be listed as insured or additional insured under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance otherwise payable under any policy so issued. In addition, the Owner waives all rights against Contractor, Subcontractors, Engineer, Engineer's Consultant, and the officers, directors, employees and

agents of any of them for: (i) loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to the Owner's property or the Work caused by, arising out of, or resulting from fire or other peril, whether or not insured by the Owner and; (ii) loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by the Owner during partial utilization, after substantial completion or after final payment.

## **6 CONTRACTORS RESPONSIBILITIES**

### **6.1 SUPERVISION AND SUPERINTENDENCE**

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

Contractor shall be responsible to see that the completed work complies accurately with the Contract Documents. Contractor shall keep on the work at all times during its progress a competent resident superintendent, who shall not be replaced without notice to the Owner's Representative except under extraordinary circumstances. The superintendent will be Contractor's representative at the site and shall have authority to act on behalf of Contractor. All communications to the superintendent shall be as binding as if given to Contractor. The Contractor's superintendent shall keep a mobile cell phone on his person so he can be contacted whenever necessary.

Contractor shall employ only competent persons to do the work and whenever the Owner's Representative shall notify Contractor, in writing, that any person on the work appears to be incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such person shall be removed from the project and shall not again be employed on it except with the written consent of the Owner's Representative.

Contractor shall reimburse the Owner for additional engineering and inspection costs incurred as a result of overtime work in excess of the regular working hours or on the City's normally approved holidays. At such times when Inspector overtime is required, the Contractor shall sign an overtime slip documenting such hours and the Contractor shall be provided a copy for his records. At the end of the project and prior to payment of withheld retainage funds, the Contractor shall deliver to the Owner a check made out to the City of Madeira Beach for full reimbursement of all Inspector overtime hours. Withheld retainage shall not be released until the Owner has received this check. Minimum number of chargeable hours for inspection costs on weekends or holidays shall be four (4) hours. The cost of overtime inspection per hour shall be sixty (60) dollars per hour.

Contractor shall provide and maintain in a neat and sanitary condition, such sanitary accommodations for the use of Contractor's employees as may be necessary to comply with the requirements of Laws and Regulations and the Engineer.

## **6.2 LABOR, MATERIALS AND EQUIPMENT**

Contractor shall provide competent, suitably qualified personnel to survey, layout, and construct the work as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all work at the site shall be performed during regular working hours and Contractor will not permit overtime work or the performance of work on Saturday, Sunday, or any legal holiday without the Owner consent given after prior notice to Engineer.

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

All materials and equipment installed in the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by Engineer, Contractors shall furnish satisfactory evidence (including reports of required tests) as to the quality of materials and equipment. The Contractor shall provide suitable and secure storage for all materials to be used in the Work so that their quality shall not be impaired or injured. Materials that are improperly stored may be rejected by the Engineer without testing.

All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier, or distributor, except as otherwise provided in the Contract Documents.

The City of Madeira Beach, at its sole discretion, reserves the right to purchase major equipment to be incorporated into the Work under the Owner Direct Purchase (ODP) Option, if indicated in the Contract Documents. In such event, the Contractor shall cooperate and assist the City of Madeira Beach, at no additional cost, to implement the ODP documents and procedures.

## **6.3 SUBSTITUTES AND "OR EQUAL" ITEMS**

Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the specification, or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by Engineer. If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer for approval. If in the Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or equal" item, it may be considered as a proposed substitute item. Contractor shall submit sufficient information as required by the Engineer to allow the Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and is an acceptable substitute therefore. Request for review of proposed substitute and "or equal" will be not be accepted by Engineer from anyone other than Contractor.

Request for substitute and "or equal" items by Contractor must be submitted in writing to the Owner's Representative and will contain all information as Engineer deems necessary to make a

determination. All data provided by Contractor in support of any proposed substitute or "or equal" item will be at Contractor's expense. Engineer will be allowed a reasonable time to evaluate each proposal or submittal made per this paragraph. Engineer will be sole judge of acceptability.

## **6.4 SUBCONTRACTORS, SUPPLIERS, AND OTHERS**

The Contractor shall deliver to the Owner's Representative before or at the Preconstruction Conference a list of all Subcontractors, suppliers and other persons and organizations proposed by the Contractor for Work to be performed on the Project. The Contractor shall include with this list the qualifications and references for each Subcontractor, supplier, or other person and organization for review and approval. Any changes to this list must be submitted to the Owner's Representative for approval prior to the substitution of any Subcontractors, suppliers, or other persons and organizations before performing any Work on the Project for the Contractor.

Contractor shall be fully responsible to the Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other persons performing or furnishing any of the work under a direct or indirect contract with Contractor just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other person any contractual relationship between the Owner or Engineer and any Subcontractor, Supplier, or other person, nor shall it create any obligation on the part of the Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other person. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers and other persons performing or furnishing any of the work under a direct or indirect contract with Contractor. Contractor shall require all Subcontractors, Suppliers, and such other persons performing or furnishing any of the work to communicate with the Engineer through Contractor.

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

All work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of the Owner and Engineer.

Contractor shall not pay or employ any Subcontractor, Supplier or other person or organization whether initially or as a substitute, against whom the Owner or Engineer may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the work against whom Contractor has reasonable objection.

The Owner or Engineer will not undertake to settle any differences between Contractor and his Subcontractors or between Subcontractors.

## **6.5 USE OF PREMISES**

Contractor shall confine construction equipment, the storage of materials and equipment and the operations of works to the site and land areas identified in and permitted by the Contract Documents on other land areas permitted by Laws and Regulations, right-of-way, permits, and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any

such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceed in or at law. Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless the Owner, Engineer, Engineer's Consultant and their officials, directors, employees, and agents from and against all claims, costs, losses, and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against the Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

During the progress of the Work, Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work or at intervals established by the Engineer, Contractor shall remove all waste materials, rubbish, and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials. Contractor shall restore to original condition all property not designated for alteration by the Contract Documents.

### **6.5.1 STAGING AREAS**

The Contractor shall obtain and deliver to City of Madeira Beach, Florida **written permission** for the use of all staging and storage areas outside of the Limits of Construction.

### **6.5.2 RESTORATION TIME LIMITS**

The timely restoration of all impacted areas, especially right-of-ways, is very important to the Citizens of the City of **Madreia Beach**; therefore, these time limits are imposed:

- Debris piles shall be removed within five (5) consecutive calendar days.
- Concrete driveways and sidewalks shall be replaced within ten (10) consecutive calendar days of removal. Resident access shall be maintained at all times.
- All arterial and collector roadways shall be restored ASAP.
- Local streets and asphalt driveways shall be restored as soon as a sufficient quantity is generated, however, this is never to exceed fifteen (15) consecutive calendar days. Local and resident access shall be maintained at all times.
- Sod must be restored within fourteen (14) consecutive calendar days of a successful pipe pressure test, removal of concrete forms, backfill of excavations, replacement of driveways or sidewalks or other project specific milestone. It must be watered for a period of thirty (30) days after it is placed. Erosion control and dust control of denuded areas must be maintained at all times.

If the project or a portion of it does not involve right-of ways, then a different schedule of sod restoration may be considered.

## **6.6 LICENSE AND PATENT FEES, ROYALTIES AND TAXES**

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



its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the Owner or Engineer in the Contract Documents.

To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

Contractor shall pay all sales, consumer, use and other taxes required to be paid by Contractor in accordance with the Laws and Regulations of the State of Florida and other governmental agencies, which are applicable during the performance of the Work.

## **6.7 LAWS AND REGULATIONS**

Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither the Owner nor Owner's Representative shall be responsible for monitoring Contractor's compliance with any Laws or Regulations. If Contractor performs any work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses and damages caused by or arising out of such work; however, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations to the Owner to report and resolve discrepancies as described above.

When City projects include Federal or State funding, the requirements of Executive Order 11-02 shall be adhered to utilizing the Homeland Security E-Verify System to verify employment eligibility.

## **6.8 PERMITS**

Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. The Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids. Contractor shall pay all charges of utility owners for connections to the work, and the Owner shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Unless otherwise stated in the Contract Documents, City of Madeira Beach Building Permit Fees will be waived.

## **6.9 SAFETY AND PROTECTION**

Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to: (i) all persons on the work site or who may be affected by the work, (ii) all the Work and materials

and equipment to be incorporated therein, whether in storage on or off the site; and (iii) other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction. In the event of temporary suspension of the work, or during inclement weather, or whenever Owner's Representative may direct; Contractor shall, and shall cause Subcontractors, to protect carefully the Work and materials against damage or injury from the weather. If, in the opinion of the Owner's Representative, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any Subcontractors to so protect the Work, such Work and materials shall be removed and replaced at the expense of Contractor. The Contractor shall initiate and maintain an accident prevention program which shall include, but shall not be limited to the establishment and supervision of programs for the education and training of employees in the recognition, avoidance and prevention of unsafe conditions and acts. Contractor shall provide first aid services and medical care to his employees. The Contractor shall develop and maintain an effective fire protection and prevention program and good housekeeping practices at the site of contract performance throughout all phases of construction, repair, alteration or demolition. Contractor shall require appropriate personal protective equipment in all operations where there is exposure to hazardous conditions. The Engineer may order that the work stop if a condition of immediate danger to the Owner's employees, equipment or if property damage exists. This provision shall not shift responsibility or risk of loss for injuries of damage sustained from the Contractor to Owner, and the Contractor shall remain solely responsible for compliance with all safety requirements and for the safety of all persons and property at the site of Contract performance. The Contractor shall instruct his employees required to handle or use toxic materials or other harmful substances regarding their safe handling and use. The Contractor shall take the necessary precautions to protect pedestrians and motorists from harm, and to prevent disruptions of such traffic due to construction activity.

Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property and to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or part, by Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the work or anyone for whose acts any of them may be liable, shall be remedied by Contractor. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor that the Work is acceptable.

## **6.10 EMERGENCIES**

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, Contractor, with or without special instruction or authorization from Owner or the Owner's Representative, is obligated to act to prevent damage, injury or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Owner's Representative determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

## **6.11 DRAWINGS**

### **6.11.1 SHOP DRAWINGS, SAMPLES, RFIs, and SUBMITTAL REVIEW**

Contractor shall submit Shop Drawings to Engineer for review and approval as called for in the Technical Specifications or required by the Engineer. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show Engineer the materials and equipment Contractor proposes to provide and to enable Engineer to review the information. Contractor shall also submit Samples to Engineer for review and approval. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified: (i) all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto, (ii) all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and (iii) all information relative to Contractor's sole responsibilities in respect to means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto. Contractor shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples with the requirements of the Work and the Contract Documents. Each submittal will bear a stamp or specific written indication that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal. At the time of submission, Contractor shall give Engineer specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to Engineer for review and approval of each such variation.

The Contractor shall maintain a Submittal Log as mentioned in Article 2.5. The Engineer shall receive updated copies at each progress meeting, and the Engineer shall respond to each submittal within twenty-one (21) consecutive calendar days. The Contractor shall maintain a Request for Information (RFI) Log as mentioned in Article 2.5. The Engineer shall receive updated copies at each progress meeting, and the Engineer shall respond to each RFI within twenty-one (21) consecutive calendar days. The untimely submission of Submittal or RFIs shall not be grounds for a delay claim from the Contractor.

Engineer's review and approval of Shop Drawings and Samples will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated the Contract Documents. Engineer's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. Contractor shall make corrections required by Engineer, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

Engineer's review and approval of Shop Drawings or Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless

Contractor has in writing called Engineer's attention to each such variation at the time of submission and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by the Engineer relieve the Contractor from responsibility for complying with the requirements of paragraph above discussing field measurements by the Contractor.

Contractor shall furnish required submittals with complete information and accuracy in order to achieve required approval of an item within two (2) submittals. Owner's Representative reserves the right to backcharge Contractor, for Engineer's costs for resubmittals that account for a number greater than twenty percent (20%) of the total number of first time submittals. Owner's Representative reserves the right to backcharge Contractor for all third submittals. The number of first time submittals shall be equal to the number of submittals agreed to by Engineer and Contractor. All costs to Engineer involved with subsequent submittal of Shop Drawings, Samples, or other items requiring approval will be backcharged to the Contractor at the rate of three (3.0) times direct technical labor cost by deducting such costs from payments due Contractor for Work completed. In the event that Contractor requests a substitution for a previously approved item, all of Engineer's costs in the reviewing and approval of the substitution will be backcharged to Contractor, unless the need for such substitution is beyond the control of Contractor.

### **6.11.2 AS-BUILT DRAWINGS**

The Contractor shall keep and maintain one set of blueprints, As-Built Drawings, in good order and legible condition to be continuously marked-up at the job site. The Contractor shall mark and annotate neatly and clearly all project conditions, locations, configurations and any other changes or deviations which may vary from the details represented on the original Contract Plans, including revisions made necessary by Addenda, Shop Drawings, and Change Orders during the construction process. The Contractor shall record the horizontal and vertical locations, in the plan and profile, of all buried utilities that differ from the locations indicated or which were not indicated on the Contract Plans and buried (or concealed), construction and utility features which are revealed during the construction period.

The As-Built Drawings shall be available for inspection by the Engineer, Engineer's Consultant, and the Owner's Representative at all times during the progress of the Project.

The As-Built Drawings shall be reviewed by the Owner's Representative, or his designee, for accuracy and compliance with the requirements of "As-Built Drawings" prior to submittal of the monthly pay requests. The pay requests shall be rejected if the marked-up blue line prints do not conform to the "As-Built Drawings" requirements. As-Built Drawings shall be submitted to the City Inspector for approval upon completion of the Project and prior to acceptance of final pay request. Final pay request shall not be processed until As-Built Drawings have been reviewed by the Engineer or the Engineer's Consultant for accuracy and completeness.

Prior to placing new potable water mains in service, the Contractor shall provide the Engineer intersection drawings, as specified for the water mains.

The Owner's acceptance of the "As-Built Drawings" does not relieve the Contractor of the sole responsibility for the accuracy and completeness of the As-Built Drawings.

#### **6.11.2.1 General**

The Contractor shall prepare an "AS-BUILT SURVEY" per chapter 5J-17.052, Florida Administrative Code (see definition below), signed and sealed by a Florida registered land

surveyor. The Contractor will deliver to the Owner two (2) hard copies of signed and sealed As-Built Drawings and an AutoCAD file.

**5J-17.050 Definition:** (10)(a) *As-Built Survey: a survey performed to obtain horizontal and/or vertical dimensional data so that constructed improvements may be located and delineated: also known as Record Survey.*

This survey shall be clearly titled “As-Built Survey” and shall be signed and sealed by a Florida Registered Land Surveyor. The survey must be delivered to the City of Madeira Beach Construction Division upon substantial completion of the project. If this condition is not met, the City of Madeira Beach will procure the services of a Professional Surveyor and Mapper registered in the State of Florida and will back charge the Contractor a fee of one thousand eight hundred dollars (\$1,800) per day, or any portion thereof to provide the City with the required As-Built Survey.

#### **6.11.2.2 Sanitary and Storm Sewer Piping Systems**

1. Manholes and inlets shall be located by survey coordinates (northing, easting and elevation) based on the approved horizontal and vertical datum or utilize the stationing supplied on the Construction Plans. New sanitary service connections and replaced sanitary service connections shall be dimensioned to the nearest downstream manhole. All manholes, cleanouts and catch basin invert and rim elevations, manhole and catch basin dimensions, pipe sizes, and pipe material shall also be noted on the plan view and also on the profile if one exists.
2. Pipe materials and areas of special construction shall be noted.

#### **6.11.2.3 Pressure Pipe construction (Water, Reclaimed Water, Forcemain)**

All pipes shall be located by survey coordinates (northing, easting and elevation) based on the approved horizontal and vertical datum or utilize the stationing supplied on the Construction Plans. Coordinates shall be at all pipe bends, tees, valves, reducers, and deflections. Also all new and replaced service connections for potable and reclaimed water will be located as described above. Additionally there must be survey coordinates no further than one hundred (100) feet apart on linear type construction and shall denote top of pipe elevation at those points.

#### **6.11.2.4 Electrical and Control Wiring**

The As-Built Drawings shall include all changes to the original Contract Plans. The As-Built Drawings shall also include the size, color, and number of wires and conduit. For projects where this information is too voluminous to be contained on the blue line prints, the Contractor shall prepare supplemental drawings, on same size sheets as the blue line prints, showing the additional conduit runs, 1-line diagrams, ladder diagrams, and other information. The wiring schematic diagrams shall show termination location and wiring identification at each point on the ladder diagram.

#### **6.11.2.5 Horizontal and Vertical Control**

The As-Built Survey shall be based on the original datum used for the Construction Design Plans, or if required by the Owner the datum shall be referenced to the North American Datum of 1983/90 (horizontal) and the North American Vertical Datum of 1988. The unit of measurement shall be the United States Foot. Any deviation or use of any other datum, (horizontal and or vertical), must be approved by the City of Madeira Beach Engineering Department.

### 6.11.2.6 Standards

The As-Built Survey shall meet the Minimum Technical Standards per Chapter 5J-17 and the Madeira Beach CAD STANDARDS set forth below. In addition to locating all improvements that pertain to the As-Built Survey it is the requirement of the City to have minimum location points at every change in direction and no more than one hundred (100) feet apart on all pressure pipes.

### 6.11.2.7 Other

The As-Built Drawings shall reflect any differences from the original Contract Plans, in the same level of detail and units of dimensions as the Plans.

## 6.11.3 CAD STANDARDS

### 6.11.3.1 Layer Naming

#### 6.11.3.1.1 Prefixes and Suffixes

Prefix	Description
DI	prefix denotes digitized or scanned entities
EP	prefix denotes existing points - field collected
EX	prefix denotes existing entities - line work and symbols
PR	prefix denotes proposed entities - line work and symbols
FU	prefix denotes future entities (proposed but not part of this contract) - line work and symbols
TX	suffix denotes text – use for all text, no matter the prefix

#### 6.11.3.1.2 Layer Naming Definitions:

Layer	Layer Name Definition
GAS	gas lines and appurtenances
ELEC	power lines and appurtenances
PHONE	telephone lines and appurtenances
CABLE	cable TV lines and appurtenances
BOC	curbs
WALK	sidewalk
WATER	water lines and appurtenances, sprinklers
STORM	storm lines and appurtenances
TREES	trees, bushes, planters
SANITARY	sanitary lines and appurtenances
FENCE	all fences
BLDG	buildings, sheds, finished floor elevation

Layer	Layer Name Definition
DRIVE	driveways
EOP	edge of pavement without curbs
TRAFFIC	signal poles, control boxes
TOPBANK	top of bank
TOESLOPE	toe of slope
TOPBERM	top of berm
TOEBERM	toe of berm
SEAWALL	seawall
CONCSLAB	concrete slabs
WALL	walls, except seawall
SHORE	shoreline, water elevation
CL	centerline of road
CLD	centerline of ditch
CLS	centerline of swale
CORNER	property corners, monumentation
BENCH	benchmark, temporary benchmarks

Other layers may be created as required, using above format.

#### **6.11.3.2 Layer Properties**

All layers will use standard AutoCAD linetypes, bylayer.

All layers will use standard AutoCAD colors, bylayer.

All text will use standard AutoCAD fonts.

#### **6.11.3.3 Text Styles**

Text style for EX layers will use the simplex font, oblique angle of 0°, and a text height of 0.008 times the plot scale.

Text style for PR and FU layers will use the simplex font, oblique angle of 22.5°, and a text height of 0.010 times the plot scale.

#### **6.11.4 Deliverables:**

The As-Built Survey shall be produced on bond material, 24" x 36" at a scale of 1" = 20' unless approved otherwise. The consultant shall deliver all drawing files in digital format. Acceptable file formats include: DWG, of a shape file.

### **6.12 CONTRACTOR'S GENERAL WARRANTY AND GUARANTEE**

Contractor warrants and guarantees to Owner, Engineer and Engineer's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. Contractor's warranty and guarantee hereunder includes defects or damage caused by abuse, vandalism,

modification or operation by persons other than Contractor, Subcontractors or Suppliers. Until the acceptance of the Work by the Owner, the Work shall be under the charge and care of the Contractor, and he shall take every necessary precaution against injury or damage to any part thereof by action of the elements, or from any other cause whatsoever, arising from the execution or non-execution of the Work. The Contractor shall rebuild, repair and make good, at his own expense, all injuries or damages to any portion of the Work occasioned by any cause before its completion and final acceptance by the Owner. In addition, “the Contractor shall remedy any defects in the work at his own expense and pay for any damage to other work resulting therefrom which appear within a period of one year from the date of final acceptance”.

Contractor's warranty and guarantee hereunder excludes improper maintenance and operation by Owner's employees and normal wear and tear under normal usage for any portion of the Work, which has been partially accepted by the Owner for operation prior to final acceptance by the Owner. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents: (i) observations by Owner's Representative, (ii) recommendation of any progress or final payment by Owner's Representative, (iii) the issuance of a certificate of Substantial Completion or any payment by the Owner to contractor under the Contract Documents, (iv) use or occupancy of the Work or any part thereof by Owner, (v) any acceptance by Owner or any failure to do so, (vi) any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of Acceptance by the Engineer.

### **6.13 CONTINUING THE WORK**

Contractor shall carry on the work and adhere to the progress schedule during all disputes or disagreements with the Owner. No work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Owner or Contractor may otherwise agree in writing.

### **6.14 INDEMNIFICATION**

Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any Supplier, any person directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person.

If, through acts of neglect on the part of Contractor, any other Contractor, or any Subcontractor shall suffer loss or damage on the work, Contractor shall settle with such other Contractor or Subcontractor by agreement or arbitration if such other Contractor or Subcontractor will so settle. If such other Contractor or Subcontractor shall assert any claim against the Owner on



such account of any damage alleged to have been sustained, the Owner shall notify Contractor, who shall indemnify and save harmless the Owner against any such claim. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, any person directly or indirectly employed by any of them to perform or furnish any of the work, or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts. The indemnification obligations of Contractor under this paragraph shall not extend to the liability of Engineer and Engineer's Consultants, officers, directors, employees, or agents caused by the professional negligence, errors or omissions of any of them.

## **6.15 CHANGES IN COMPANY CONTACT INFORMATION**

Contractor shall notify Owner by US mail addressed to City of Madeira Beach, Florida Manager's Representative of any changes in company contact information. This includes: contact phone, address, project manager, email addresses, etc.

## **7 OTHER WORK**

### **7.1 RELATED WORK AT SITE**

The City of Madeira Beach reserves the right to have its own forces enter the construction site at any time and perform work as necessary in order to perform infrastructure repair or maintenance, whether related to the project or not. The Contractor will allow complete access to all utility owners for these purposes.

The City of Madeira Beach may have its own forces perform new work related to the project, however, this work will be identified in the Contract Scope of Work and coordination will be such that this activity is denoted in the Contractor's CPM Schedule so as not to cause any delays or interference with the Contractor's work or schedule.

### **7.2 COORDINATION**

If the Owner contracts with others for the performance of other work on the Project at the site, the following will be set forth in the Scope of Work: (i) the person who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified; (ii) the specific matters to be covered by such authority and responsibility will be itemized; and (iii) the extent of such authority and responsibilities will be provided. Unless otherwise provided in the Supplementary Conditions, the Owner shall have sole authority and responsibility in respect of such coordination.

## **8 OWNERS RESPONSIBILITY**

Except as otherwise provided in these General Conditions, the Owner shall issue all communications from the Owner to the Contractor through Owner's Representative.

The Owner shall furnish the data required of the Owner under the Contract Documents promptly and shall make payments to Contractor promptly when they are due as provided in these General Conditions.

The Owner is obligated to execute Change Orders as indicated in the Article on Changes In The Work.

The Owner's responsibility in respect of certain inspections, tests, and approvals is set forth in the Article on Tests and Inspections.

In connection with the Owner's right to stop work or suspend work, see the Article on Engineer may Stop the Work. The Article on Suspension of Work and Termination deals with the Owner's right to terminate services of Contractor under certain circumstances.

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

## **9 OWNER REPRESENTATIVE'S STATUS DURING CONSTRUCTION**

### **9.1 OWNERS REPRESENTATIVE**

Dependent of the project type, the Owner's Representative during the construction period will either be the City Manager's Representative. The duties, responsibilities and the limitations of authority of City Manager's Representative during construction are set forth in the Contract Documents and shall not be extended without written consent of Owner and Engineer.

### **9.2 CLARIFICATIONS AND INTERPRETATIONS**

Engineer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents regarding design issues only, in the form of Submittal responses, RFI responses, Drawings or otherwise, as Engineer may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. All other clarifications and interpretations of the Contract Documents shall be issued from the Owner's Representative. Such written clarifications and interpretations will be binding on the Owner and Contractor. If Contractor believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Time and the parties are unable to agree to the amount or extent thereof, if any, Contractor may make a written claim therefore as provided in the Articles for Change of Work and Change of Contract Time.

### **9.3 REJECTING OF DEFECTIVE WORK**

The Owner's Representative or the Engineer will have authority to disapprove or reject Work which Owner's Representative or the Engineer believes to be defective, or that Owner's Representative or the Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. The Owner's Representative or the Engineer will also have authority to require special inspection or testing of the Work whether or not the Work is fabricated, installed or completed.

## **9.4 SHOP DRAWINGS, CHANGE ORDERS, AND PAYMENTS**

In connection with Engineer's authority as to Shop Drawings and Samples, see articles on Shop Drawings and Samples. In connection with Owner's Representative authority as to Change Orders, see the articles on Changes of Work, Contract Price and Contract Time. In connection with Owner's Representative authority as to Applications for Payment, see the articles on Payments to Contractor and Completion.

## **9.5 DECISIONS ON DISPUTES**

The Owner's Representative will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the work thereunder. Claims, disputes and other matters relating to the acceptability of the work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the work and Claims under the Articles for Changes of Work, Changes of Contract Time, and Changes of Contract Price will be referred initially to Owner's Representative in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant to Owner's Representative and the other party to the Agreement promptly, but in no event later than thirty (30) days, after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to Owner's Representative and the other party within sixty (60) days after the start of such occurrence or event unless Owner's Representative allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to Owner's Representative and the claimant within thirty (30) days after receipt of the claimant's last submittal, unless Owner's Representative allows additional time. Owner's Representative will render a formal decision in writing within thirty (30) days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. Owner Representative's written decision on such claim, dispute or other matter will be final and binding upon the Owner and Contractor unless (i) an appeal from Owner Representative's decision is taken within thirty (30) days of the Owner Representative's decision, or the appeal time which may be stated in a Dispute Resolution Agreement between Owner and Contractor for the settlement of disputes or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from Owner Representative's written decision is delivered by the Owner or Contractor to the other and to Owner's Representative within thirty (30) days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty (60) days of the date of such decision, unless otherwise agreed in writing by the Owner and Contractor.

When functioning as interpreter and judge, Owner's Representative will not show partiality to the Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Owner's Representative with respect to any such claim, dispute or other matter will be a condition precedent to any exercise by the Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant the Article on Dispute Resolution.

## **9.6 LIMITATIONS ON OWNER REPRESENTATIVE'S RESPONSIBILITIES**

Neither Owner Representative's authority or responsibility under this paragraph or under any other provision of the Contract Documents nor any decision made by Owner's Representative in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by Owner's Representative shall create, impose or give rise to any duty owed by Owner's Representative to Contractor, any Subcontractor, any Supplier, any other person or organization or to any surety for or employee or agent of any of them.

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

Owner's Representative will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the work.

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

The limitations upon authority and responsibility set forth in this paragraph shall also apply to Owner Representative's CEI, the Engineer's Consultants, and assistants.

## **10 CHANGES IN THE WORK**

Without invalidating the Agreement and without notice to any surety, the Owner may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions, or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as may otherwise be specifically provided).

If the Owner and Contractor are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Time that should be allowed as a result of a Work Change Directive, a claim may be made therefore as provided in these General Conditions.

Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in these General Conditions except in the case of an emergency as provided or in the case of uncovering work as provided in article for Uncovering Work.

The Owner and Contractor shall execute appropriate Change Orders or Written Amendments recommended by Owner's Representative covering: changes in the work which are (i) ordered

by the Owner (ii) required because of acceptance of defective work under the article for Acceptance of Defective Work or correcting defective Work under the article for Owner May Correct Defective Work or (iii) agreed to by the parties; changes in the Contract Price or Contract Time which are agreed to by the parties; and changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by Owner's Representative pursuant to the article for Decisions on Disputes; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the progress schedule as provided in the article for Continuing the Work.

If notice of any change affecting the general scope of the work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be Contractor's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

## **11 CHANGES IN THE CONTRACT PRICE**

### **11.1 CHANGES IN THE CONTRACT PRICE**

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by Contractor shall be at Contractor's expense without change in the Contract Price. The Contract Price may only be adjusted by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on a written notice of claim stating the general nature of the claim, to be delivered by the party making the claim to the other party and to Owner's Representative or promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty (60) days after the start of such occurrence or event, unless Owner's Representative allows additional time for claimant to submit additional or more accurate data in support of the claim, and shall be accompanied by claimant's written statement that the claimed adjustment covers all known amounts to which the claimant is entitled as a result of said occurrence or event. No claim for an adjustment in the Contract Price will be valid if not submitted in accordance with this paragraph. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows: (i) where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (ii) where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit), (iii) where the Work is not covered by unit prices contained in the Contract Documents and agreement is reached to establish unit prices for the Work.

Where the work involved is not covered by unit prices contained in the Contract Documents and where the Owner's Representative, the Owner, the Engineer, the Engineer's Consultant, and Contractor cannot mutually agree on a lump sum price, **the City of Madeira Beach** shall pay for directed changes in the WORK, on "COST REIMBURSEMENT" basis. The Contractor shall apply for compensation, detailing Contractor's forces, materials, equipment, subcontractors, and other items of direct costs required for the directed work.

The application for Cost Reimbursement shall be limited to the following items:

1. Labor, including foremen, for those hours associated with the direct work (actual payroll cost, including wages, fringe benefits, labor insurance and labor taxes established by law). Expressly excluded from this item are all costs associated with negotiating the subject change.
2. Materials associated with the change, including sales tax. The costs of materials shall be substantiated through vendors' invoices.
3. Rental or equivalent rental costs of equipment, including necessary transportation costs if specifically used for the WORK. The rental rates shall not exceed the current rental rates prevailing in the locality or as defined in the rental Rate Blue Book for Construction Equipment (a.k.a. DataQuest Blue Book). The rental rate is defined as the full-unadjusted base rental rate for the appropriate item of construction equipment and shall cover the costs of all fuel, supplies, repairs, insurance, and other costs associated with supplying the equipment for work ordered. Contractor-owned equipment will be paid for the duration of time required to complete the work. Utilize lowest cost combination of hourly, daily, weekly, or monthly rates. Do not exceed estimated operating costs given in Blue Book. Operating costs will not be allowed for equipment on stand-by.
4. Additional costs for Bonds, Insurance if required by **the City of Madeira Beach**.

The following fixed fees shall be added to the costs of the directed work performed by the Contractor or Subcontractor.

- A. A fixed fee of fifteen percent (15%) shall be added to the costs of Item 1 above. If work is performed by a subcontractor, the Contractor's fee shall not exceed five percent (5%), and the subcontractor's fee shall not exceed ten percent (10%).
- B. A fixed fee of ten percent (10%) shall be added to the costs of Item 2 above.
- C. No markup shall be added to the costs of Items 3 and 4.

The fixed fees shall be considered the full compensation for all cost of general supervision, overhead, profit, and other general expense.

## **11.2 ALLOWANCES AND FINAL CONTRACT PRICE ADJUSTMENT**

It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to Owner and Engineer. Contractor agrees that: (i) the allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and (ii) Contractor's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by Owner's Representative to reflect actual amounts due Contractor on account of Work covered by allowances and all the Work actually performed by the Contractor, and the Contract Price shall be correspondingly adjusted.

### **11.3 UNIT PRICE WORK**

Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of unit price work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Owner's Representative. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item. The Owner or Contractor may make a claim for an adjustment in the Contract Price if: (i) the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Contract Documents; and (ii) there is no corresponding adjustment with respect to any other item of Work; and (iii) if Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or the Owner believes that the Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease. On unit price contracts, Owner endeavors to provide adequate unit quantities to satisfactorily complete the construction of the project. It is expected that in the normal course of project construction and completion that not all unit quantities will be used in their entirety and that a finalizing change order which adjusts contract unit quantities to those unit quantities actually used in the construction of the project will result in a net decrease from the original Contract Price. Such reasonable deduction of final Contract Price should be anticipated by the Contractor in his original bid.

## **12 CHANGES IN THE CONTRACT TIME**

The Contract Time (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Time (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to Owner's Representative promptly, but in no event later than thirty (30) days, after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty (60) days after such occurrence, unless Owner's Representative allows an additional period of time to ascertain more accurate data in support of the claim, and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time (or Milestones) shall be determined by Owner's Representative. No claim for an adjustment in the Contract Time (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph.

All time limits stated in the Contract Documents are of the essence of the Agreement.

Where Contractor is prevented from completing any part of the work within the Contract Time (or Milestones) due to delay beyond the control of Contractor, the Contract Time (or Milestones) may be extended in an amount equal to the time lost due to such delay if a claim is made therefore as provided in the article for Changes in the Work. Delays beyond the control of Contractor shall include, but not be limited to, acts by the Owner, acts of utility owners, or other contractors performing other work as contemplated by the article for Other Work, fires, floods, epidemics, abnormal weather conditions, or acts of God. Delays attributable to and within the

control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both the Owner and Contractor, an extension of the Contract Time (or Milestones) in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for such delay. In no event shall the Owner be liable to Contractor, any Subcontractor, any Supplier, any other person, or to any surety for, or employee, or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of Contractor, or (ii) delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts by utility owners, or other contractors performing other work as contemplated by paragraph for Other Work.

## **13 TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### **13.1 TESTS AND INSPECTION**

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

Contractor shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents. The costs for these inspections, tests, or approvals shall be borne by the Contractor except as otherwise provided in the Contract Documents.

If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body including all Owner Building Departments and Owner Utility Departments, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish Owner's Representative the required certificates of inspection or approval. Unless otherwise stated in the Contract Documents, Owner permit and impact fees will be waived. Contractor shall also be responsible for arranging and obtaining, and shall pay all costs in connection with any inspections, tests or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation of the Work.

If any Work (or the work of others) that is to be inspected tested or approved is covered by Contractor without written concurrence of Owner's Representative, it must, if requested by Owner's Representative, be uncovered for observation. Uncovering Work as provided in this paragraph shall be at Contractor's expense unless Contractor has given Owner's Representative and Engineer timely notice of Contractor's intention to cover the same and Owner's Representative has not acted with reasonable promptness in response to such notice.

### **13.2 UNCOVERING THE WORK**

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



If Owner's Representative considers it necessary or advisable that covered Work be observed by Owner's Representative or inspected or tested by others, Contractor, at Owner Representative's request, shall uncover, expose or otherwise make available for observation, inspection or testing as Engineer or Owner's Representative may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, Contractor shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and the Owner shall be entitled to an appropriate decrease in the Contract Price for the costs of the investigation, and, if the parties are unable to agree as to the amount thereof, may make a claim therefore as provided in the article for Change in Contract Price. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, Contractor may make a claim therefore as provided the article for Change in Contract Price and Change of Contract Time.

### **13.3 OWNER'S REPRESENTATIVE MAY STOP THE WORK**

If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, Engineer or Owner's Representative may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner's Representative to stop the Work shall not give rise to any duty on the part of Owner's Representative or Owner to exercise this right for the benefit of Contractor or any surety or other party. If the Owner's Representative stops Work under this paragraph, Contractor shall be entitled to no extension of Contract Time or increase in Contract Price.

### **13.4 CORRECTION OR REMOVAL OF DEFECTIVE WORK**

If required by Engineer or Owner's Representative, Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by Engineer or Owner's Representative, remove it from the site and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

### **13.5 WARRANTY / CORRECTION PERIOD**

If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, Contractor shall promptly, without cost to the Owner and in accordance with the Owner's written instructions; (i) correct such defective Work, or, if it has been rejected by the Owner, remove it from the site and replace it with Work that is not defective and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the Owner may have the defective Work corrected or the rejected. Work removed and replaced, and

all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

In special circumstances where a particular item of equipment is placed in continuous service before Final Completion of all the Work, the correction period for that item may start to run from an earlier date if specifically and expressly so provided in the Specifications or by Written Amendment.

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

### **13.6 ACCEPTANCE OF DEFECTIVE WORK**

If, instead of requiring correction or removal and replacement of defective Work, the Owner prefers to accept it, the Owner may do so.

Contractor shall pay all claims, costs, losses and damages attributable to the Owner's evaluation of and determination to accept such defective Work such costs to be approved by Owner's Representative as to reasonableness. If any such acceptance occurs prior to Owner Representative's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the Owner may make a claim therefore as provided in article for Change of Contract Price. If the acceptance occurs after the Owner Representative's recommendation for final payment an appropriate amount will be paid by Contractor to the Owner.

### **13.7 OWNER MAY CORRECT DEFECTIVE WORK**

If Contractor fails within a reasonable time after written notice from Owner's Representative to correct defective Work or to remove and replace rejected Work as required by Owner's Representative in accordance with the article for Correction and Removal of Defective Work or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, the Owner may, after seven days' written notice to Contractor, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph the Owner shall proceed expeditiously. In connection with such corrective and remedial action, the Owner may exclude Contractor from all or part of the site, take possession of all or part of the Work, and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the site or for which the Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's Representatives, Agents and employees, the Owner's other contractors, and Owner's Representative, Engineer, and Engineer's Consultants access to the site to enable the Owner to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by the Owner in exercising such rights and remedies will be charged against Contractor and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the Owner shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the Owner may make a claim therefore as provided in the article for Change of

Contract Price. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of Contractor's defective Work. Contractor shall not be allowed an extension of the Contract Time (or Milestones) because of any delay in the performance of the Work attributable to the exercise by the Owner of the Owner's rights and remedies hereunder.

## **14 PAYMENTS TO CONTRACTOR AND COMPLETION**

Requests for payment shall be processed in accordance with F.S. 218.735 and as described herein. Progress payments on account of Unit Price Work will be based on the number of units completed.

### **14.1 APPLICATION FOR PROGRESS PAYMENT**

Contractor shall submit (not more often than once a month) to Owner's Representative for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the 25<sup>th</sup> of each month and accompanied by such supporting documentation as is required by the Owner's Representative and the Contract Documents. Unless otherwise stated in the Contract Documents, payment will not be made for materials and equipment not incorporated in the Work. Payment will only be made for that portion of the Work, which is fully installed including all materials, labor and equipment. A retainage of not less than five percent (5) of the amount of each Application for Payment for the total of all Work, including as-built survey and Inspector overtime reimbursement, completed to date will be held until final completion and acceptance of the Work covered in the Contract Documents. No progress payment shall be construed to be acceptance of any portion of the Work under contract.

The Contractor shall review with the Engineer or the Construction Inspector all quantities and work for which payment is being applied for and reach agreement prior to submittal of an Official Pay Request. The Engineer or the Construction Inspector will verify that the on-site marked up as-built drawings are up to date with the work and are in compliance with the Contract Documents.

In addition to all other payment provisions set out in this contract, the Owner's Representative may require the Contractor to produce for Owner, within fifteen (15) days of the approval of any progress payment, evidence and/or payment affidavit that all subcontractors and suppliers have been paid any sum or sums then due. A failure on the part of the contractor to provide the report as required herein shall result in further progress or partial payments being withheld until the report is provided.

### **14.2 CONTRACTOR'S WARRANTY OF TITLE**

Contractor warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to the Owner no later than the time of payment, free and clear of liens. No materials or supplies for the Work shall be purchased by Contractor or Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. Contractor warrants that he has good title to all materials and supplies used by him in the Work, free from all liens, claims or encumbrances. Contractor shall indemnify and save the Owner harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, materialmen, and furnisher's of machinery and parts thereof, equipment, power tools, and all supplies incurred in the furtherance of the performance of this Contract.

Contractor shall at the Owner's request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If Contractor fails to do so, then the Owner may, after having served written notice on said Contractor either pay unpaid bills, of which the Owner has written notice, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to Contractor shall be resumed in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the Owner to the Contractor or the Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of Contractor and any payment so made by the Owner shall be considered as payment made under the Contract by the Owner to Contractor, and the Owner shall not be liable to Contractor for any such payment made in good faith.

### **14.3 REVIEW OF APPLICATIONS FOR PROGRESS PAYMENTS**

The Owner's Representative will within twenty (20) business days after receipt authorize and process payment by the Owner a properly submitted and documented Application for payment, unless the application requires review by an Agent. If the Application for payment requires review and approval by an Agent, properly submitted and documented Applications for payment will be paid by the Owner within twenty-five (25) business days. If an Application for payment is rejected, notice shall be given within twenty (20) business days of receipt indicating the reasons for refusing payment. The reasons for rejecting an Application will be submitted in writing, specifying deficiencies and identifying actions that would make the Application proper. In the latter case, Contractor may make the necessary corrections and resubmit the Application. The Owner's Representative or Agent may refuse to recommend the whole or any part of any payment to Owner. Owner's Representative or Agent may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or test, nullify any such payment previously recommended, to such extent as may be necessary in Owner Representative's or Agent's opinion to protect the Owner from loss because: (i) the Work is defective, or completed Work has been damaged requiring correction or replacement, (ii) the Contract Price has been reduced by amendment or Change Order, (iii) the Owner has been required to correct defective Work or complete Work, or (iv) Owner's Representative or Agent has actual knowledge of the occurrence of any of the events enumerated in the article on Suspension of Work and Termination.

The Owner may refuse to make payment of the full amount recommended by the Owner's Representative or Agent because: (i) claims have been made against the Owner on account of Contractor's performance or furnishing of the Work, (ii) Liens have been filed in connection with the Work, except where Contractor has delivered a specific Bond satisfactory to the Owner to secure the satisfaction and discharge of such Liens, (iii) there are other items entitling the Owner to a set-off against the amount recommended, or (iv) the Owner has actual knowledge of any of the events described in this paragraph. The Owner shall give Contractor notice of refusal to pay in accordance with the time constraints of this section with a copy to the Owner's Representative or Agent, stating the reasons for such actions, and Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by the Owner and Contractor, when Contractor corrects to the Owner's satisfaction the reasons for such action.

## **14.4 PARTIAL UTILIZATION**

Use by the Owner at the Owner's option of any substantially completed part of the Work which (i) has specifically been identified in the Contract Documents, or (ii) Owner, Engineer, Owner's Representative, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by the Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, may be accomplished prior to Final Completion of all the Work subject to the following:

The Owner at any time may request Contractor in writing to permit the Owner to use any such part of the Work which the Owner believes to be ready for its intended use and substantially complete. If Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner, Owner's Representative, and Engineer that such part of the Work is substantially complete and request Owner's Representative to issue a certificate of Substantial Completion for that part of the Work. Contractor at any time may notify Owner, Owner's Representative, and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Owner's Representative to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, Owner, Contractor, Owner's Representative, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner, Owner's Representative, and Contractor in writing giving the reasons therefore. If Engineer considers that part of the Work to be substantially complete, the provisions of the articles for Substantial Completion and Partial Utilization will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

## **14.5 FINAL INSPECTION**

Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Owner's Representative will make a final inspection with Engineer, Owner and Contractor and will within thirty (30) days notify Contractor in writing of particulars in which this inspection reveals that the Work is incomplete or defective. The Owner's Representative will produce a final punch list, deliver it to the Contractor within five (5) days of completion and assign a date for this work to be completed not less than thirty (30) days from delivery of the list. Failure to include any corrective work or pending items does not alter the responsibility of the contractor to complete all the construction services purchased pursuant to the contract. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

## **14.6 FINAL APPLICATION FOR PAYMENT**

After Contractor has completed all such corrections to the satisfaction of Owner's Representative and has delivered in accordance with the Contract Documents all maintenance and operating instructions, As-built/Record Drawings, schedules, guarantees, Bonds, certificates or other evidence of insurance required by the paragraph for Bonds and Insurance, certificates of inspection, Inspector overtime reimbursement as required in the Contract Documents and other documents, Contractor may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by paragraph for Bonds and Insurance, (ii)

consent of the surety, if any or if necessary, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to the Owner) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by the Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which the Owner or the Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a Bond or other collateral satisfactory to the Owner to indemnify the Owner against any Lien.

Prior to application for final payment, Contractor shall clean and remove from the premises all surplus and discarded materials, rubbish, and temporary structures, and shall restore in an acceptable manner all property, both public and private, which has been damaged during the prosecution of the Work, and shall leave the Work in a neat and presentable condition.

#### **14.7 FINAL PAYMENT AND ACCEPTANCE**

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

If on the basis of Owner Representative's observation of the Work during construction and final inspection, and Owner Representative's review of the final Application for Payment and accompanying documentation, all as required by the Contract Documents, Owner's Representative is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Owner's Representative will indicate in writing his recommendation of payment and present the Application to Owner for payment. Thereupon, Owner's Representative will give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of this article. Otherwise, Owner's Representative will return the Application to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application. If the Application and accompanying documentation are appropriate as to form and substance, the Owner shall, within twenty (20) days after receipt thereof pay contractor the amount recommended by Owner's Representative.

#### **14.8 WAIVER OF CLAIMS**

The making and acceptance of final payment will constitute: a waiver of all claims by the Owner against Contractor, except claims arising from unsettled Liens, from defective Work appearing after final inspection, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the

Contract Documents; and a waiver of all claims by Contractor against the Owner other than those previously made in writing and still unsettled.

## **15 SUSPENSION OF WORK AND TERMINATION**

### **15.1 OWNER MAY SUSPEND THE WORK**

At any time and without cause, Owner's Representative may suspend the Work or any portion thereof for a period of not more than ninety (90) days by notice in writing to Contractor, which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes an approved claim therefore as provided in the articles for Change of Contract Price and Change of Contract Time.

### **15.2 OWNER MAY TERMINATE**

Upon the occurrence of any one or more of the following events; if Contractor persistently fails to perform the work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule as adjusted from time to time);

if Contractor disregards Laws and Regulations of any public body having jurisdiction;

if Contractor disregards the authority of Owner's Representative;

if Contractor otherwise violates in any substantial way any provisions of the Contract Documents; or if the Work to be done under this Contract is abandoned, or if this Contract or any part thereof is sublet, without the previous written consent of the Owner, or if the Contract or any claim thereunder is assigned by Contractor otherwise than as herein specified, or at any time Owner's Representative certifies in writing to the Owner that the rate of progress of the Work or any part thereof is unsatisfactory or that the work or any part thereof is unnecessarily or unreasonably delayed.

The Owner may, after giving Contractor (and the surety, if any), seven days' written notice and, to the extent permitted by Laws and Regulations, terminate the services of Contractor, exclude Contractor from the site and take possession of the Work and of all Contractor's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the Owner has paid Contractor but which are stored elsewhere, and finish the Work as the Owner may deem expedient. In such case Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by the Owner arising out of or resulting from completing the Work such excess will be paid to Contractor.

If such claims, costs, losses and damages exceed such unpaid balance, Contractor shall pay the difference to the Owner. Such claims, costs, losses, and damages incurred by the Owner will be reviewed by Owner's Representative as to their reasonableness and when so approved by Owner's Representative incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph the Owner shall not be required to obtain the lowest price for the Work performed.

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

Upon seven (7) days' written notice to Contractor and Owner's Representative, the Owner may, without cause and without prejudice to any other right or remedy of the Owner, elect to terminate the Agreement. In such case, Contractor shall be paid (without duplication of any items):

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

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

for all claims, costs, losses, and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and for reasonable expenses directly attributable to termination.

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

### **15.3 CONTRACTOR MAY STOP WORK OR TERMINATE**

If, through no act or fault of Contractor, the Work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Owner's Representative fails to act on any Application for Payment within thirty (30) days after it is submitted or the Owner fails for thirty (30) days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven (7) days' written notice to the Owner and Owner's Representative, and provided the Owner or Owner's Representative does not remedy such suspension or failure within that time, terminate the Agreement and recover from the Owner payment on the same terms as provided in the article for the Owner May Terminate. However, if the Work is suspended under an order of court through no fault of Owner, the Contractor shall not be entitled to payment except as the Court may direct. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if Owner's Representative has failed to act on an Application for Payment within thirty (30) days after it is submitted, or the Owner has failed for thirty (30) days to pay Contractor any sum finally determined to be due, Contractor may upon seven (7) day's written notice to the Owner and Owner's Representative stop the Work until payment of all such amounts due Contractor. The provisions of this article are not intended to preclude Contractor from making claim under paragraphs for Change of Contract Price or Change of Contract Time or otherwise for expenses or damage directly attributable to Contractor's stopping Work as permitted by this article.

## **16 DISPUTE RESOLUTION**

If and to the extent that the Owner and Contractor have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure will proceed. If no such agreement on the method and procedure for resolving such disputes has been reached, subject to the provisions of the article for Decisions on



Disputes, the Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute provided, however, that nothing herein shall require a dispute to be submitted to binding arbitration.

## **17 MISCELLANEOUS**

### **17.1 SUBMITTAL AND DOCUMENT FORMS**

The form of all submittals, notices, change orders, pay applications, logs, schedules and other documents permitted or required to be used or transmitted under the Contract Documents shall be determined by the Owner's Representative subject to the approval of Owner.

### **17.2 GIVING NOTICE**

Whenever any provision of the Contract Documents requires the giving of written notice, notice will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### **17.3 NOTICE OF CLAIM**

Should the Owner or Contractor suffer injury or damage to person or property because of any error, omission or any act of the other party or of any of the other party's officers, employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

### **17.4 PROFESSIONAL FEES AND COURT COSTS INCLUDED**

Whenever reference is made to "claims, costs, losses and damages," the phrase shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or other dispute resolution costs.

### **17.5 ASSIGNMENT OF CONTRACT**

The Contractor shall not assign this contract or any part thereof or any rights thereunder without the approval of Owner, nor without the consent of surety unless the surety has waived its rights to notice of assignment.

### **17.6 RENEWAL OPTION**

Annual Contracts issued through the City Manager may be renewed for up to two (2) years, upon mutual consent of both the Owner and the Contractor/Vendor. All terms, conditions and unit prices shall remain constant unless otherwise specified in the contract specifications or in the Invitation to bid. Renewals shall be made at the sole discretion of the Owner, and must be agreed to in writing by both parties. All renewals are contingent upon the availability of funds, **and** the satisfactory performance of the Contractor.

## **18 ORDER AND LOCATION OF THE WORK**

The City of Madeira Beach reserves the right to accept and use any portion of the work whenever it is considered to be in the public interest to do so. The Engineer shall have the power to direct on what line or street the Contractor shall work and order thereof.

## **19 MATERIAL USED**

All material incorporated into the final work shall be new material unless otherwise approved by the Engineer. If requested by the Engineer, the Contractor shall furnish purchase receipts of all materials.

## **20 CONFLICT BETWEEN PLANS AND SPECIFICATIONS**

The various Contract Documents shall be given precedence, in case of conflict, error or discrepancy, as follows: Modifications, Contract Agreement, Addenda, Supplementary General Conditions, General Conditions, Supplementary Technical Specifications, Technical Specifications, Drawings. In a series of Modifications or Addenda the latest will govern.

## **21 OWNER DIRECT PURCHASE (ODP) OPTION**

The Owner reserves the right, when identified during the bidding process as part of the project's documents, to contract with the Contractor to purchase certain portions of materials identified in the project as a sales tax savings option in compliance with Florida Law since the Owner is exempt from payment of sales tax. The Contract price includes Florida sales and other applicable taxes for materials, supplies, and equipment, which will be a part of the Contractor's work. The Owner, being exempt from sales tax, reserves the right to make direct purchases of various construction materials included in the Contractor's contract. The Owner purchasing of construction materials, if selected, will be administered on a deductive Change Order basis. Additionally, Purchase Orders will include Owner's Certificate of Exemption number. See SECTION IV, ARTICLE 1.1 - SCOPE DESCRIPTION for ODP items included in the Contract Documents and the APPENDIX for ODP Documents.

## **22 RESIDENT NOTIFICATION OF START OF CONSTRUCTION**

### **22.1 GENERAL**

The Contractor shall notify all residents along the construction route or within a 500-foot radius, unless stated otherwise in the Contract Documents, with a printed door hanger notice indicating the following information about the proposed construction work and the Contractor performing the work: City seal or logo; the scheduled date for the start of construction; the type of construction; general sequence and scheduling of construction events; possibility of water service disruption and/or colored water due to construction efforts; Contractor's name, the Superintendent's name, Contractor address and telephone number; Contractor's company logo (optional); requirement for residents to remove landscaping and/or other private appurtenances which are in conflict with the proposed construction; and other language as appropriate to the scope of Contract work. Sample door hanger including proposed language shall be approved by City of Madeira Beach, Florida prior to the start of construction. Notification shall be printed on brightly colored and durable card stock and shall be a minimum of 4-¼ by 11 inches in size. Notification (door hanger) shall be posted to residences and businesses directly affected by the Contractor's activities no later than seven (7) days prior to the start of construction activity.

Directly affected by the Contractor’s activities shall mean all Contractor operations including staging areas, equipment and material storage, principal access routes across private property, etc. Contractor cannot start without proper seven (7) day notice period to residents. Contractor is required to maintain sufficient staff to answer citizen inquiries during normal business hours and to maintain appropriate message recording equipment to receive citizen inquires after business hours.

Resident notification by the Contractor is a non-specific pay item to be included in the bid items provided in the contract proposal.

## 22.2 EXAMPLE

<p style="text-align:center">CITY SEAL OF MADEIRA BEACH <b>NOTICE OF CONSTRUCTION</b> TODAY’S DATE: ___/___/___ <b>PLEASE EXCUSE US FOR ANY INCONVENIENCE</b></p> <p>We are the construction contractor performing <i>(state type of contract)</i> for the City of Madeira Beach in your area. The work will be performed in the public right-of-way adjacent to your property. This notice is placed a minimum of seven (7) days in advance of construction to notify property owners of the pending start of construction.</p> <p><i>(Brief description of the construction process to be expected by the property owners)</i></p> <p>The construction process may necessitate the removal of certain items from the right-of-way. Typical items such as sprinklers, grass, and postal approved mailboxes will be replaced by the contractor within a reasonably short period of time. The replacement of driveways and sidewalks will be made using standard asphalt or concrete materials. The property owner is responsible for the expense and coordination to replace driveways and sidewalks which have customized colors, textures and/or materials. Small trees, shrubs, landscaping materials, unauthorized mailboxes or structures within the right-of-way which must be removed due to the construction process will not be replaced. The property owner is responsible to relocate any such items which the property owner wishes to save prior to the start of construction. Vehicles parked on the streets or within the right-of-way may be required to be placed elsewhere.</p> <p>We are available to answer any questions you may have regarding the construction process or any particular item that must be relocated. Please contact our Construction Manager _____ at (727) _____. We will be more than happy to assist you.</p> <p>Construction is anticipated to begin on: _____.</p> <p style="text-align:center"><b>Company Name</b> <b>Company Address</b> <b>Contractor Phone Number</b></p>
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## **23 PROJECT INFORMATION SIGNS**

### **23.1 SCOPE AND PURPOSE**

The Owner desires to inform the general public on the Owner's use and expenditure of public funding for general capital improvement and maintenance projects. To help accomplish this purpose, the Contractor is required to prepare and display public project information signs during the full course of the contract period. These signs will be displayed at all location(s) of active work. Payment to Contractor for the preparation, installation and management of project sign(s) shall be included in the cost of the work. The number of and type of signs will be stated in SECTION IV, ARTICLE 1.1 – SCOPE DESCRIPTION.

### **23.2 TYPE OF PROJECT SIGN, FIXED OR PORTABLE**

Sign type shall be "fixed" on stationary projects and "portable" on projects which have extended locations or various locations. The particular wording to be used on the signs will be determined after contract award has been approved. Contractor will be provided the wording to be used on sign at the preconstruction conference.

## **24 AWARD OF CONTRACT, WORK SCHEDULE AND GUARANTEE**

It will be required that the work will commence not later than five (5) calendar days after the Engineer gives written notice to proceed (NTP), which notice shall be given as outlined in Article 2 of these General Conditions.

It is further required that all work within this Contract be completed within the indicated **number of consecutive calendar days** as determined in SECTION IV, ARTICLE 1.1 - SCOPE DESCRIPTION. Contract date to commence at issuance of Notice to Proceed. If the Contractor fails to complete the work within the stipulated time, City of Madeira Beach, Florida will retain the amount stated in the Contract, per calendar day, for each day that the contract remains incomplete. The work shall be discontinued on Saturdays, Sundays, and approved Holidays. If it becomes necessary for the Contractor to perform work on Saturdays, Sundays, and approved City of Madeira Beach Employee Holidays, that in the opinion of the Engineer, will require the presence of Inspectors, the Contractor shall pay the City of Madeira Beach, the amount of Four Hundred Eighty Dollars (\$480.00) per each eight (8)-hour day for each Inspector given such assignment.

The Contractor shall remedy any defects in the work at his own expense and pay for any damage to other work resulting therefrom which appear within a period of one (1) year from the date of final acceptance.

## **25 SCRUTINIZED COMPANIES AND BUSINESS OPERATIONS WITH CUBA AND SYRIA CERTIFICATION FORM**

Any company, individual, principal, subsidiary, affiliate, or owner on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or is engaged in business operations in Cuba or Syria, is ineligible for, and may not bid on, submit a proposal for, or enter into or renew a contract with the City of Madeira Beach for goods or services for an amount equal to or greater than one million (\$1,000,000.00) dollars. Therefore, if applicable, each entity submitting a bid, proposal, or response to a solicitation must certify to the City of Madeira Beach that it is not on either list or engaged in

business operations in Cuba or Syria at the time of submitting a bid, proposal or response, in accordance with section 287.135, Florida Statutes. Business Operations means, for purposes specifically related to Cuba or Syria, engaging in commerce in any form in Cuba or Syria, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing, or operating equipment, facilities, personnel, products, services, personal property, real property, military equipment, or any other apparatus of business or commerce.

The certification form (the Certification) is attached hereto, and it must be submitted, along with all other relevant contract documents, at the time of submitting a bid, proposal, or response. Failure to provide the Certification may deem the entity's submittal non-responsive. If the City of Madeira Beach determines that an entity has submitted a false certification form, been placed either on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, (for contracts entered into or renewed on or after July 1, 2011 through June 30, 2012), or submitted a false certification form, has been placed either on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List or been engaged in business operations in Cuba or Syria, (for contracts entered into or renewed on or after July 1, 2012) then the contract may be terminated at the option of the City of Madeira Beach. Other than the submission of a false certification, the option to waive the aforementioned deficiencies mentioned in the previous sentence may be asserted on a case-by-case basis, at the sole discretion of the City of Madeira Beach, if to the following conditions are found to exist:

- A. For Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, (all of the following must occur):
  1. The scrutinized business operations were made before July 1, 2011.
  2. The scrutinized business operations have not been expanded or renewed after July 1, 2011.
  3. The City of Madeira Beach determines that it is in the best interest of City of Madeira Beach, Florida to contract with the company or entity.
  4. The company or entity has adopted, has publicized and is implementing a formal plan to cease scrutinized business operations and to refrain from engaging in any new scrutinized business operations.
- B. For Companies Engaged in Business Operations in Cuba or Syria:
  1. The business operations were made before July 1, 2012.
  2. The business operations have not been expanded or renewed after July 1, 2012.
  3. The City of Madeira Beach determines that it is in the best interest of City of Madeira Beach, Florida to contract with the company or entity.
  4. The company or entity has adopted, has publicized, and is implementing a formal plan to cease business operations and to refrain from engaging in any new business operations in Cuba or Syria.

Further, City of Madeira Beach, Florida may allow a company to bid on, submit a proposal for, or enter into or renew a contract with the City of Madeira Beach for goods or services for an amount equal to or greater than one million (\$1,000,000.00) dollars, if City of Madeira Beach, Florida makes a public finding that, absent one of the above exemptions, City of Madeira Beach, Florida would otherwise be unable to obtain goods or services for which the contract is offered.

The City of Madeira Beach retains the right to pursue civil penalties and any other applicable rights and remedies as provided by law for the false submission of the attached certification form.

**SCRUTINIZED COMPANIES AND BUSINESS OPERATIONS WITH CUBA AND SYRIA CERTIFICATION FORM**

***THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID PROPOSAL. FAILURE TO SUBMIT THIS FORM AS REQUIRED, MAY DEEM YOUR SUBMITTAL NONRESPONSIVE.***

The affiant, by virtue of the signature below, certifies that:

1. The vendor, company, individual, principal, subsidiary, affiliate, or owner is aware of the requirements of section 287.135, Florida Statutes, regarding companies on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaging in business operations in Cuba and Syria; and
2. The vendor, company, individual, principal, subsidiary, affiliate, or owner is eligible to participate in this solicitation and is not listed on either the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engaged in business operations in Cuba and Syria; and
3. Business Operations means, for purposes specifically related to Cuba or Syria, engaging in commerce in any form in Cuba or Syria, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing or operating equipment, facilities, personnel, products, services, personal property, real property, military equipment, or any other apparatus of business or commerce; and
4. If awarded the Contract (or Agreement), the vendor, company, individual, principal, subsidiary, affiliate, or owner will immediately notify the City of Madeira Beach in writing, no later than five (5) calendar days after any of its principals are placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engages in business operations in Cuba and Syria.

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

\_\_\_\_\_  
**Printed Name**

\_\_\_\_\_  
**Title**

\_\_\_\_\_  
**Name of Entity / Corporation**

STATE OF \_\_\_\_\_

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

The foregoing instrument was acknowledged before me on this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_, by \_\_\_\_\_ (name of person whose signature is being notarized) as the \_\_\_\_\_ (title) of \_\_\_\_\_ (name of corporation/entity), personally known to me as described herein \_\_\_\_\_, or produced a \_\_\_\_\_ (type of identification) as identification, and who did/did not take an oath.

\_\_\_\_\_  
**Notary Public**

\_\_\_\_\_  
**Printed Name**

**My Commission Expires:**\_\_\_\_\_

***NOTARY SEAL ABOVE***



# SECTION IV

## TECHNICAL SPECIFICATIONS

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# **1 SCOPE OF WORK**

## **1.1 SCOPE DESCRIPTION**

Project Name **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

Project Number: **2017-192**

Scope of Work:

Project consists of roadway reconstruction along: **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**, including;

**80 SQUARE YARDS OF ASPHALT PAVEMENT, 90 SQUARE YARDS OF BASE RECONSTRUCTION, 56 LINEAR FEET OF VALLEY GUTTER CURB, (3) FDOT TYPE F GRATE INLET, 229 LINEAR FEET OF 15” STORM PIPE WITH NECESSARY APPURTENANCES AND (4) CURED-IN-PLACE PIPE LINING.**

**FOR 37 144th AVE., THE CONTRACT UNIT PRICE FOR THIS ITEM WILL BE LUMP SUM UNIT PRICE. THE PRICE SHALL INCLUDE ALL NECESSARY EQUIPMENT, LABOR AND MATERIALS REQUIRED TO COMPLETE THIS PAY ITEM. PAYMENT OF DEMOLITION OF CURBS AND BRICK DRIVEWAY (+/- 150 SF), REPLACE FDOT Type F CURB & VALLEY GUTTER CURB (+/- 120LF) FOR POSITIVE FLOW IN DRAINAGE AND RESTORE PAVER BRICK DRIVEWAY (REPLACE& REUSE) BUT NOT BE LIMITED TO, THE FOLLOWING: PREPARATION OF BASE, COMPACTION, FORMING, POURING OF CONCRETE AND ALL OTHER INCIDENTAL ITEMS REQUIRED TO SUCCESSFULLY COMPLETE THIS PAY ITEM.**

The Contractor shall provide 0 fixed project sign as described in SECTION III, ARTICLE 23 of the Contract Documents. The final number of project signs will be determined at the beginning of the project based on the Contractor’s Schedule of Work submitted for approval. Additional project signs may be required above the indicated amount due to the Contractor’s Schedule of Work, which will be provided at no additional cost to the Owner.

**CONTRACT PERIOD: 45 CONSECUTIVE CALENDAR DAYS**

## 1.2 SCOPE OF WORK CHECKLIST

Project Name: **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

Project Number: **(CONTRACT #2017-192)**

The following Articles of the Technical Specifications will apply to this Contract if marked “X” as shown below:

1	<input checked="" type="checkbox"/>	Scope of Work
2.1	<input checked="" type="checkbox"/>	Line and Grade shall be performed by the Contractor
2.2	<input type="checkbox"/>	Line and Grade Shall be performed by the City
3	<input checked="" type="checkbox"/>	Definition of Terms
4	<input checked="" type="checkbox"/>	Order and Location of the Work
5	<input checked="" type="checkbox"/>	Excavation for Underground Work
6	<input checked="" type="checkbox"/>	Concrete
7	<input checked="" type="checkbox"/>	Excavation and Forms for Concrete Work
8	<input checked="" type="checkbox"/>	Reinforcement
9	<input checked="" type="checkbox"/>	Obstructions
10	<input checked="" type="checkbox"/>	Restoration or Replacement of Driveways, Curbs, Sidewalks, and Street
11	<input checked="" type="checkbox"/>	Work in Easements or Parkways
12	<input checked="" type="checkbox"/>	Dewatering
13	<input type="checkbox"/>	Sanitary Manholes
14	<input checked="" type="checkbox"/>	Backfill
15	<input type="checkbox"/>	Street Crossings, etc.
16	<input checked="" type="checkbox"/>	Raising or Lowering of Sanitary Sewer, Storm Drainage Structures
17	<input checked="" type="checkbox"/>	Unsuitable Material Removal
18	<input type="checkbox"/>	Underdrains
19	<input checked="" type="checkbox"/>	Storm Sewers
20	<input checked="" type="checkbox"/>	Sanitary Sewers and Force Mains
21	<input checked="" type="checkbox"/>	Drainage
22	<input checked="" type="checkbox"/>	Roadway Base and Subgrade
23	<input checked="" type="checkbox"/>	Asphaltic Concrete Materials
24	<input type="checkbox"/>	Adjustment to the Unit Bid Price for Asphalt
25	<input type="checkbox"/>	General Planting Specifications
26	<input type="checkbox"/>	HDPE Deformed - Reformed Pipe Lining
27	<input type="checkbox"/>	Plant Mix Driveways
28	<input type="checkbox"/>	Reporting of Tonnage of Recycled Materials
29	<input checked="" type="checkbox"/>	Concrete Curbs
30	<input type="checkbox"/>	Concrete Sidewalks and Driveways
31	<input checked="" type="checkbox"/>	Sodding
32	<input type="checkbox"/>	Seeding
33	<input checked="" type="checkbox"/>	Storm Manholes, Inlets, Catch Basins, or Other Storm Structures
34	<input checked="" type="checkbox"/>	Material Used
35	<input checked="" type="checkbox"/>	Conflict between Plans and Specifications

36	<input checked="" type="checkbox"/>	Street Signs
37	<input checked="" type="checkbox"/>	Audio / Video Recording of Work Areas
38	<input checked="" type="checkbox"/>	Erosion and Siltation Control
39	<input checked="" type="checkbox"/>	Utility Tie-In Location Marking
40	<input checked="" type="checkbox"/>	Award of Contract, Work Schedule and Guarantee
41	<input checked="" type="checkbox"/>	Potable Water Mains, Reclaimed Water Mains and Appurtenances
42	<input type="checkbox"/>	Gas System Specifications
43	<input type="checkbox"/>	Tennis Courts
44	<input checked="" type="checkbox"/>	Work Zone Traffic Control
45	<input checked="" type="checkbox"/>	Cured-In-Place Pipe Lining
46	<input type="checkbox"/>	Specifications for Polyethylene Sliplining
47	<input type="checkbox"/>	Specifications for Polyvinyl Chloride Ribbed Pipe
48	<input type="checkbox"/>	Gunite Specifications
49	<input type="checkbox"/>	Sanitary and Storm Manhole Liner Restoration
50	<input type="checkbox"/>	Project Information Signs
51	<input type="checkbox"/>	In-Line Skating Surfacing System
52	<input checked="" type="checkbox"/>	Resident Notification of Start of Construction
53	<input type="checkbox"/>	Gabions and Mattresses
54	<input type="checkbox"/>	Lawn Maintenance Specifications
55	<input type="checkbox"/>	Milling Operations
56	<input checked="" type="checkbox"/>	Clearing and Grubbing
57	<input type="checkbox"/>	Riprap
58	<input type="checkbox"/>	Treatment Plant Safety
59	<input type="checkbox"/>	Traffic Signal Equipment and Materials
60	<input type="checkbox"/>	Signing and Marking
61	<input type="checkbox"/>	Roadway Lighting
62	<input checked="" type="checkbox"/>	Tree Protection
63	<input type="checkbox"/>	Project Web Pages
64	<input checked="" type="checkbox"/>	Overhead Electric Line Clearance

## **2 FIELD ENGINEERING**

### **2.1 LINE AND GRADE SHALL BE PERFORMED BY THE CONTRACTOR**

The Contractor shall provide and pay for field engineering service required for the project. Such work shall include survey work to establish lines and levels and to locate and lay out site improvements, structures, and controlling lines and levels required for the construction of the work. Also included are such Engineering services as are specified or required to execute the Contractor's construction methods. Engineers and Surveyors shall be licensed professionals under the laws of the state of Florida. The Contractor shall provide three (3) complete sets of As-built Survey to the Engineer prior to final payment being made as outlined in Section III (General Conditions), Article 6.11.2 of these Contract Documents.

### **2.1.1 GRADES, LINES AND LEVELS**

Existing basic horizontal and vertical control points for the project are those designated on the Drawings or provided by the City. Control points (for alignment only) shall be established by the Engineer. The Contractor shall locate and protect control points prior to starting site work and shall preserve all permanent reference points during construction. In working near any permanent property corners or reference markers, the Contractor shall use care not to remove or disturb any such markers. In the event that markers must be removed or are disturbed due to the proximity of construction work, the Contractor shall have them referenced and reset by a Land Surveyor qualified under the laws of the state of Florida.

### **2.1.2 LAYOUT DATA**

The Contractor shall layout the work at the location and to the lines and grades shown on the Drawings. Survey notes indicating the information and measurements used in establishing locations and grades shall be kept in notebooks and furnished to the Engineer with the Record Drawings for the project.

## **2.2 LINE AND GRADE SHALL BE PERFORMED BY THE CITY**

At the completion of all work the Contractor shall be responsible to have furnished to the project inspector a replacement of the wooden lath and stakes used in the construction of this project. Excessive stake replacement caused by negligence of Contractor's forces, after initial line and grade have been set, as determined by the City Manager's Representative, will be charged to the Contractor at the rate of \$100.00 per hour. Time shall be computed for actual time on the project. All time shall be computed in one (1)-hour increments. Minimum charge is \$100.00. The City of Madeira Beach will generate the project Record Construction Drawings.

## **3 DEFINITION OF TERMS**

For the purpose of these Technical Specifications, the definition of terms from SECTION III, ARTICLE 1 - DEFINITIONS of these Contract Documents shall apply.

For the purpose of the Estimated Quantities, the Contractor's attention is called to the fact that the estimate of quantities as shown on the Proposal Sheet is approximate and is given only as a basis of calculation upon which the award of the contract is to be made. the City does not assume any responsibility that the final quantities will remain in strict accordance with estimated quantities nor shall the contractor plead misunderstandings or deception because of such estimate of quantities or of the character or location of the work or of other conditions or situations pertaining thereto.

### **3.1 REFERENCE STANDARDS**

Reference to the standards of any technical society, organization, or associate, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative standard adopted and published at the date of receipt of bids, unless specifically stated otherwise.

### **3.2 ABBREVIATIONS AND SYMBOLS**

Abbreviations used in the Contract Documents are defined as follows:

AA	Aluminum Association, Inc.
AAMA	Architectural Aluminum Manufacturers' Association

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISI	American Iron and Steel Institute
AMA	Acoustical Materials Association
AMCA	Air Moving and Conditioning Association, Inc.
ANSI	American National Standards Institute
APA	American Plywood Association
ASAE	American Society of Agricultural Engineers
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating Refrigerating and Air Conditioning
ASME	American Society of Mechanical Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWG	American Wire Gauge
AWMA	Aluminum Window Manufacturer’s Association
AWS	American Welding Society
AWWA	American Water Works Association
CFR	Code of Federal Regulations
CISPI	Cast Iron Soil Pipe Institute
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards and National Bureau of Standards
DEP	Department of Environmental Protection (Florida)
DOT	Department of Transportation (Florida)
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FBC	Florida Building Code
FFPC	Florida Fire Prevention Code
FGC	Florida Gas Code
FMC	Florida Mechanical Code
FPC	Florida Plumbing Code
FedSpec	Federal Specifications
HI	Standards of Hydraulic Institute
IBBM	Iron Body, Bronzed Mounted
IEEE	Institute of Electrical and Electronics Engineers
IPS	Iron Pipe Size
MIL	Military Specification
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NPT	National Pipe Thread
NWMA	National Woodwork Manufacturers’ Association
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
SBC	Standard Building Code (SBCCI)

SBCCI	Southern Building Code Congress International, Inc.
SDI	Steel Door Institute
SFPC	Standard Fire Prevention Code (SBCCI)
SGC	Standard Gas Code (SBCCI)
SJI	Steel Joist Institute
SMACCNA	Sheet Metal and Air Conditioning Contractors' National Association
SMC	Standard Mechanical Code (SBCCI)
SPC	Standard Plumbing Code (SBCCI)
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
TCA	Title Council of America
UL	Underwriters' Laboratories

#### **4 ORDER AND LOCATION OF THE WORK**

This article deleted. See SECTION III, ARTICLE 18 – ORDER AND LOCATION OF THE WORK.

#### **5 EXCAVATION FOR UNDERGROUND WORK**

The Contractor is responsible to take all necessary steps to conduct all excavation in a manner which provides for the successful completion of the proposed work while at all times maintaining the safety of the workmen, the general public and both public and private property. The Contractor's methods of work will be consistent with the standard practices and requirements of all appropriate Safety Regulatory Agencies, particularly the Occupational Safety and Health Administration (OSHA) requirements for excavation. Unless otherwise specifically stated in these plans and specifications, the methods of safety control and compliance with regulatory agency safety requirements are the full and complete responsibility of the Contractor.

For the purposes of the Contractor's safety planning in the bidding process, the Contractor is to consider all excavation to be done in the performance of this contract to be in soil classified as OSHA "Type C". The Contractor's attention is called to specific requirements of OSHA for excavation shoring, employee entry, location of excavated material adjacent to excavation, the removal of water from the excavation, surface encumbrances and in particular the requirement of a "Competent Person" to control safety operations. The Contractor will identify his Competent Person to City staff at the start of construction.

City staff are required from time to time to perform inspections, tests, survey location work, or other similar activity in an excavation prepared by the Contractor. City staff, in conformance with the OSHA Excavation Safety Requirements, are to only enter an excavation in compliance with these OSHA standards. the City's staff reserve the option to refuse entry into the Contractor's excavation if, in the opinion of the City's staff, the entry into the Contractor's excavation is unsafe or does not conform OSHA requirements. If this circumstance occurs, the Contractor must either provide the necessary safety requirements or provide alternate means for the accomplishment of the City's work at the Contractor's expense.

The restoration quantities, if any, contained in the bid proposal for this contract to not contain sufficient quantities to allow the contractor to perform excavation work using strictly the "open



cut" method whereby no shoring systems are used and trench side slopes are cut to conform to OSHA safety requirements without a shoring system. In addition to safety reasons, the Contractor is required to use excavation and trench-shoring methods in compliance with all safety requirements which allow the Contractor to control the amount of restoration work necessary to complete the project.

Not more than one hundred (100) feet of trench shall be opened at one time in advance of the completed work unless written permission is received from the Engineer for the distance specified. For pipe installation projects, the trench shall be six (6) inches wider on each side than the greatest external horizontal width of the pipe or conduit, including hubs, intended to be laid in them. The bottom of the trench under each pipe joint shall be slightly hollowed, to allow the body of the pipe to rest throughout its length. In case a trench is excavated at any place, excepting at joints, below the grade of its bottom as given, or directed by the Engineer, the filling and compaction to grade shall be done in such manner as the Engineer shall direct, without compensation.

## **6 CONCRETE**

Unless otherwise directed, all concrete work shall be performed in accordance with the latest editions of the Design and Control of Concrete Mixtures by the Portland Cement Association, the American Concrete Institute, and FDOT's Standard Specifications. All appropriate testing shall be performed according to the American Society of Testing Materials.

Unless otherwise specified, all concrete shall have fiber mesh reinforcing and have a minimum compressive strength of 3000 p.s.i. at twenty-eight (28) days. The cement type shall be Type I and shall conform to AASHTO M-85. The aggregate shall conform to ASTM C-33. All ready mix concrete shall conform to ASTM C-94. The slump for all concrete shall be in the range of three (3)-inch to five (5)-inch, except when admixtures or special placement considerations are required.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of all concrete placements.

All concrete shall be tested in the following manner:

Placement of less than five (5) cubic yards (cy) shall be tested at the Engineer's discretion. Otherwise, for each class, for each day, for every fifty (50) cy or part thereof exceeding five (5) cy, one (1) set of three (3) compressive strength cylinders will be required [one (1) at seven (7) days and two (2) at twenty-eight (28) days]. At the discretion of the Engineer, unacceptable test results may require the Contractor to provide further tests, as determined by the Engineer, to determine product acceptability, or need for removal, and compensation or denial thereof.

### **6.1 FLOWABLE FILL**

Furnish and place flowable fill as an alternative to compacted soil as approved by the Engineer. Applications for conventional flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for trenches, embankments and walls. Applications for cellular concrete flowable fill include beddings; encasements; closures for tanks and pipes; and general backfill for embankments and walls.

#### **Materials.**

Meet the following requirements:

Fine Aggregate*	.....Section 902
Portland Cement (Types I, II, or III)	.....Section 921
Water	.....Section 923
Admixtures**	.....Section 924
Fly Ash, Slag and other Pozzolanic Materials	....Section 929
Preformed Foam	..... ASTM C 869

\*Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% 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 shall be added at jobsite and mixed in accordance with the manufacturer’s recommendation.

**Mix Design.**

Conventional flowable fill is a mixture of portland cement, fly ash, fine aggregate, admixture and water. Flowable fill contains a low cementitious content for reduced strength development. Cellular concrete flowable fill is a low density concrete made with cement, water and preformed foam to form a hardened closed cell foam material. Cellular concrete flowable fill may also contain fine aggregate, fly ash, slag and admixtures. Submit mix designs to the Engineer for approval. **See FDOT section 121 for mix criteria.**

**FLOWABLE FILL MIXTURE:**

- A. Flowable fill shall have a minimum strength of 2.1 MPa (300 psi) according to ASTM C 39 at 28 days after placement.
- B. Flowable fill shall have minimal subsidence and bleed water shrinkage. Evaporation of bleed water shall not result in shrinkage of more than 10.4 mm per m (1/8 inch per ft.) of flowable fill depth (for mixes containing high fly ash content). Measurement of a Final Bleeding shall be as measured in Section 10 of ASTM C 940 “Standard Test Method for Expansion and Bleeding of Freshly Mixed Grouts for Preplaced-Aggregate Concrete in the Laboratory.

**Basis of Payment.**

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. 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. Payment will be made in per cubic yard.

**7 EXCAVATION AND FORMS FOR CONCRETE WORK**

**7.1 EXCAVATION**

Excavating for concrete work shall be made to the required depth of the subgrade or base upon which the concrete is to be placed. The base or subgrade shall be thoroughly compacted to a point six (6) inches outside said concrete work before the forms are placed. Concrete shall be poured "in the dry".

## **7.2 FORMS**

Forms for concrete work shall be either wood or metal (except curbs, metal only, unless by written permission from Engineer). They shall be free from warps or bends, shall have a depth equal to the dimensions required for the depth of the concrete deposited against them and shall be of sufficient strength when staked to resist the pressure of concrete without moving or springing.

## **8 REINFORCEMENT**

When required, reinforcement shall be placed in the concrete work. Bar reinforcement shall be deformed: ASTM-A 615, steel shall be billet Intermediate or Hard Grade: Rail Steel A.A.S.H.T.O. M42. Twisted Bars shall not be used, Fabric Reinforcement shall conform to the requirements of AASHTO M55 (ASTM A185). Welded deformed steel wire fabric for Concrete reinforcement shall meet the requirements of AASHTO M 221 (ASTM A497). Epoxy coated reinforcing Steel Bars shall meet ASTM 775/A77 M-86 requirements.

### **8.1 BASIS OF PAYMENT**

Reinforcement shall not be paid for separately. The cost of such work shall be included in the contract unit price for the item of work specified.

## **9 OBSTRUCTIONS**

Any pipes, conduits, wires, mains, footings, driveways, or other structures encountered shall be carefully protected from injury or displacement. Any damage thereto shall be fully, promptly, and properly repaired by the Contractor to the satisfaction of the Engineer and the owner thereof. Should it become necessary to change the position of water or gas or other pipes, sewer drains, or poles, the Engineer shall be at once notified of the locality and circumstances, and no claims for damages arising from the delay in adjusting the pipe, sewer drains or poles shall be made. Failure of the plans to show the location, nature or extent of any existing structures or obstructions shall not be the basis of a claim for extra work. Any survey monument or benchmark which must be disturbed shall be carefully referenced before removal, and unless otherwise provided for, shall be replaced upon completion of the work by a registered land surveyor. Any concrete removed due to construction requirements shall be removed to the nearest expansion joint or by saw cut. Contractor shall consult Inspector for the approved means.

## **10 RESTORATION OR REPLACEMENT OF DRIVEWAYS, CURBS, SIDEWALKS AND STREET PAVEMENT**

Driveways, sidewalks, and curbs destroyed or damaged during construction shall be replaced and shall be the same type of material as destroyed or damaged, or to existing City Standards, whichever provides the stronger repair. All street pavement destroyed or damaged shall be replaced with the same type of material, to existing City Standards, unless the existing base is unsuitable as determined by the Engineer, then the base shall be replaced with City approved material. All replaced base shall be a minimum 8" compacted thickness, or same thickness as base destroyed plus 2", if over 6", and compacted to 98% of maximum density per AASHTO T-180.

Unless called for in the proposal as separate bid items, cost of the above work including labor, materials and equipment required shall be included in the bid price per lineal foot of main or square yard of base.

The bid price for street pavement, restoration or replacement when called for in the proposals, shall include all materials, labor and equipment required to complete the work, and shall be paid for on a square yard basis. When replacement is over a trench for utilities, the area of replacement shall be limited to twice the depth of the cut plus twice the inside diameter of the pipe. All over this will be at the Contractor's expense.

The bid price for restoration or placement of driveways, curbs and sidewalks, when called for in the proposals, shall include all materials, labor and equipment required to complete the work and shall be paid for on the basis of the following units: Driveways, plant mix - per square yard; concrete - per square foot; curbs - per lineal foot; sidewalk 4" or 6" thick - per square foot. Concrete walks at drives shall be a minimum of 6" thick and be reinforced with 6/6 x 10/10 welded wire mesh (also see Articles 8 and 30).

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of all driveway, curb, sidewalk and street restoration and replacement work.

## **11 WORK IN EASEMENTS OR PARKWAYS**

Restoration is an important phase of construction, particularly to residents affected by the construction progress.

The Contractor will be expected to complete restoration activities within a reasonable time following primary construction activity. Failure by the Contractor to accomplish restoration within a reasonable time shall be justification for a temporary stop on primary construction activity or a delay in approval of partial payment requests.

Reasonable care shall be taken for existing shrubbery. Contractor shall replace all shrubbery removed or disturbed during construction. No separate payment shall be made for this work.

The Contractor shall make provision and be responsible for the supply of all water, if needed, on any and all phases of the contract work. The Contractor shall not obtain water from local residents or businesses except as the Contractor shall obtain written permission.

Reuse water is available for the Contractor's use without charge from the City's wastewater treatment plants, provided the water is used on City of Madeira Beach contractual work. Details for Contractor to obtain and reuse water from the treatment plants will be coordinated at the pre-Construction Conference. The Contractor's use of reuse water must conform to all regulatory requirements.

## **12 DEWATERING**

### **12.1 GENERAL**

Unless specifically authorized by the Engineer, all pipe, except subdrains, shall be laid "in the dry". The Contractor shall dewater trench excavation as required for the proper execution of the work, using one or more of the following approved methods: well point system, trenched gravity underdrain system, or sumps with pumps.

Well point systems must be efficient enough to lower the water level in advance of the excavation and maintain it continuously in order that the trench bottom and sides shall remain firm and reasonably dry. The well points shall be designed especially for this type of service, and the pumping unit used shall be capable of maintaining a high vacuum, and at the same time, of handling large volumes of air as well as of water.

The Contractor shall be responsible for disposing of all water resulting from trench dewatering operations, and shall dispose of the water without damage or undue inconvenience to the work, the surrounding area, or the general public. He shall not dam, divert, or cause water to flow in excess in existing gutters, pavements or other structures: and to do this he may be required to conduct the water to a suitable place of discharge may be determined by the Engineer.

The cost of dewatering shall be included in the unit price bid per lineal foot of pipe, or, in the case of other underground structures, in the cost of such structures.

## **12.2 PERMIT REQUIREMENTS**

### **12.2.1 DEWATERING CONTROL**

The City of Madeira Beach will hold the Contractor responsible for obtaining a Generic Permit for the Discharge of Produced Groundwater from Any Non-Contaminated Site Activity prior to dewatering or discharging into the City's streets, storm sewers or waterways.

Prior to discharging produced groundwater from any construction site, the Contractor must collect samples and analyze the groundwater, which must meet acceptable discharge limits. The following document has been incorporated into this section for reference...

### **12.2.2 GENERIC PERMIT FOR THE DISCHARGE OF PRODUCED GROUND WATER FROM ANY NON-CONTAMINATED SITE ACTIVITY**

City Notification Procedure - Contractor must provide the City of Madeira Beach Manager's Representative with the following information prior to beginning dewatering activities:

- 1) A copy of all groundwater laboratory results
- 2) A copy of the FDEP Notification

It is recommended that the Contractor call or meet with the City Environmental Staff if you have any questions. You may contact the City at 562-4750 for direction or further assistance.

## **STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION GENERIC PERMITOR THE DISCHARGE OF PRODUCED GROUND WATER FROM ANY NON-CONTAMINATED SITE ACTIVITY**

The facility is authorized to discharge produced ground water from any non-contaminated site activity which discharges by a point source to surface waters of the State, as defined in Chapter 62-620, F.A.C., only if the reported values for the parameters listed in Table 1 do not exceed any of the listed screening values. Before discharge of produced ground water can occur from such sites, analytical tests on samples of the proposed untreated discharge water shall be performed to determine if contamination exists.

Minimum reporting requirements for all produced ground water dischargers. The effluent shall be sampled before the commencement of discharge, again within thirty (30) days after commencement of discharge, and then once every six (6) months for the life of the project to maintain continued coverage under this generic permit. Samples taken in compliance with the provisions of this permit shall be taken prior to actual discharge or mixing with the receiving waters. The effluent shall be sampled for the parameters listed in Table 1.

**TABLE 1**

Parameter	Screening Values for Discharges into:	
	Fresh Waters	Coastal Waters
Total Organic Carbon (TOC)	10.0 mg/l	10.0 mg/l
PH, standard units	6.0-8.5	6.5-8.5
Total Recoverable Mercury – by Method 1631E	0.012 µg/l	0.025 µg/l
Total Recoverable Cadmium	9.3 µg/l	9.3 µg/l
Total Recoverable Copper	2.9 µg/l	2.9 µg/l
Total Recoverable Lead	0.03 mg/l	5.6 µg/l
Total Recoverable Zinc	86.0 µg/l	86.0 µg/l
Total Recoverable Chromium (Hex.)	11.0 µg/l	50.0 µg/l
Benzene	1.0 µg/l	1.0 µg/l
Naphthalene	100.0 µg/l	100.0 µg/l

If any of the analytical test results **exceed** the screening values listed in Table 1, except TOC, the discharge is not authorized by this permit *or by* the City of Madeira Beach.

- (a) For initial TOC values that exceed the screening values listed in Table 1, which may be caused by naturally occurring, high molecular weight organic compounds, the permittee may request to be exempted from the TOC requirement. To request this exemption, the permittee shall submit additional information with a Notice of Intent (NOI), described below, which describes the method used to determine that these compounds are naturally occurring. The Department shall grant the exemption if the permittee affirmatively demonstrates that the TOC values are caused by naturally occurring, high molecular weight organic compounds.
- (b) The NOI shall be submitted to the appropriate Department District Office thirty (30) days prior to discharge, and contain the following information:
  1. the name and address of the person that the permit coverage will be issued to;
  2. the name and address of the facility, including county location;
  3. any applicable individual wastewater permit number(s);
  4. a map showing the facility and discharge location (including latitude and longitude);
  5. the name of the receiving water; and
  6. the additional information required by paragraph (3)(a) of this permit.
- (c) Discharge shall not commence until notification of coverage is received from the Department.

For fresh waters and coastal waters, the pH of the effluent shall not be lowered to less than 6.0 units for fresh waters, or less than 6.5 units for coastal waters, or raised above 8.5 units, unless the permittee submits natural background data confirming a natural background pH outside of this range. If natural background of the receiving water is determined to be less than 6.0 units for fresh waters, or less than 6.5 units in coastal waters, the pH shall not vary below natural background or vary more than one (1) unit above natural background for fresh and coastal waters. If natural background of the receiving water is determined to be higher than 8.5 units, the pH shall not vary above natural background or vary more than one (1) unit below natural background of fresh and coastal waters. The permittee shall include the natural background pH of the receiving waters with the results of the analyses required under paragraph (2) of this permit. For purposes of this section only, fresh waters are those having a chloride concentration of less than 1500 mg/l, and coastal waters are those having a chloride concentration equal to or greater than 1500 mg/l.

In accordance with Rule 62-302.500(1)(a-c), F.A.C., the discharge shall at all times be free from floating solids, visible foam, turbidity, or visible oil in such amounts as to form nuisances on surface waters.

If contamination exists, as indicated by the results of the analytical tests required by paragraph (2), the discharge cannot be covered by this Generic Permit. The facility shall apply for an Individual Wastewater Permit at least ninety (90) days prior to the date discharge to surface waters of the State is expected, or, if applicable, the facility may seek coverage under any other applicable Department Generic Permit. No discharge is permissible without an effective permit.

If the analytical tests required by paragraph (2) reveal that no contamination exists from any source, the facility can begin discharge immediately and is covered by this permit without having to submit an NOI request for coverage to the Department. A short summary of the proposed activity and copy of the analytical tests shall be sent to the applicable Department District Office within one (1) week after discharge begins. These analytical tests shall be kept on site during discharge and made available to the Department if requested. Additionally, no Discharge Monitoring Report forms are required to be submitted to the Department.

All of the General Conditions listed in Rule 62-621.250, F.A.C., are applicable to this Generic Permit. There are no annual fees associated with the use of this Generic Permit.

## **13 SANITARY MANHOLES**

### **13.1 BUILT UP TYPE**

Manholes shall be constructed of brick with cast iron frames and covers as shown on the drawings. Invert channels shall be constructed smooth and semicircular in shape conforming to inside of adjacent sewer section. Changes in direction of flow shall be made in a smooth curve of as large a radius as possible. Changes in size and grade of channels shall be made gradually and evenly. Invert channels shall be formed by one of the following methods: form directly into concrete manhole base, build up with brick and mortar, lay half tile in concrete, or lay full section of sewer pipe through manhole and break out top half of pipe.

The manhole floor outside of channels shall be made smooth and sloped toward channels.

Free drop in manholes from inlet pipe invert to top of floor outside the channels shall not exceed twenty four inches.

Standard Drop Manholes shall be constructed wherever free drop exceeds twenty four inches.

Manhole steps shall not be provided. Joints shall be completely filled and the mortar shall be smoothed from inside of manholes.

The entire exterior of brick manholes shall be plastered with one half inch of mortar.

Brick used may be solid only. Brick shall be laid radially with every sixth course being a stretcher course.

## **13.2 PRECAST TYPE**

Precast Sanitary Manholes shall conform to this specification unless otherwise approved by the City Engineer.

AASHTO M 85 Type II Cement shall be used throughout with a minimum wall thickness of five (5) inches. The precast sections shall conform to ASTM C 478 latest revision. Section joints shall be a tongue and groove with "ram neck" gasket or "O" ring to provide a watertight joint. Minimum concrete strength shall be 4000 psi at 28 days.

Three (3) sets of shop drawings and location inventory shall be submitted to the City Engineer for approval. Approval of shop drawings does not relieve contractor of responsibility for compliance to these specifications unless letter from Contractor requesting specific variance is approved by the City Engineer.

Location inventory submitted with shop drawing shall detail parts of manhole per manhole as numbered on the construction plans. All manhole parts shall be numbered or lettered before being sent to the job site to permit proper construction placement. A plan or list of the numbering system shall be present on the job site when manhole components are delivered.

Precast manhole dimensions, drop entry, grout flow of channel, etc., shall be as shown on City of Madeira Beach Engineering Index #302 Sheets 1 and 2 of 2.

Manhole sections shall be rejected if abused during shipping or placement and if pipe openings are not properly aligned. The "break in" to precast manholes for pipe entry will not be allowed.

The manhole base shall be set on a pad of A 1 or A 2 Classification soil approximately five (5) inches thick to secure proper seating and bearing.

### **13.2.1 MANHOLE ADJUSTMENT RINGS (GRADE RINGS)**

Between the top of the manhole cone and the manhole cover frame, a manhole adjustment ring shall be installed. The intent of the manhole adjustment ring is to accommodate future grade changes without disturbing the manhole. See Section IV, Article 23.7 – Asphaltic Concrete – Adjustment of Manholes.

## **13.3 DROP MANHOLES**

Standard drop inlets to manholes shall be constructed of commercial pipe, fittings and specials as detailed on the drawings.

## **13.4 FRAMES AND COVERS**

Manhole frames and covers shall be set in a full bed of mortar with the top of the cover flush with or higher than finished grade as directed. Refer to Detail 301.



### **13.5 MANHOLE COATINGS**

The exterior and interior of all built up manholes shall be coated with two (2) coats of Type II Asphalt emulsion, moisture and damp proof (Specification ASTM D 1227 Type II Class I) as manufactured by W.R. Meadows Sealtite or approved equal. Interior of built up manholes which have sewers entering with a free drop or which receive discharge from a force main shall have the inside plastered with 1/2-inch of grout and coated as precast manholes below.

The exterior of all precast manholes shall have a 15 mil dry thickness of PROCOC EP214-351 Sewer Coating or approved equal. The interior shall be AGRU SUREGRIP HDPE or PP-R Liner with a minimum thickness of two (2) mm.

### **13.6 CONNECTIONS TO MANHOLES**

Connections to existing sanitary manholes using approved PVC sewer main shall be made with a manhole adapter coupling by Flo Control, Inc., or approved water stop coupling.

## **14 BACKFILL**

Material for backfill shall be carefully selected from the excavated material or from other sources as may be required by the Engineer. Such material shall be granular, free from organic matter or debris, contain no rocks or other hard fragments greater than three (3)-inches in the largest dimension and all fill shall be similar material.

Backfill placed around pipes shall be carefully placed around the sides and top of pipe by hand shovels and thoroughly compacted to twelve (12)-inches above the pipe by tamping or other suitable means.

Backfill under all types of paving shall be compacted in layers not to exceed twelve (12)-inches in thickness unless alternate method is approved by the Engineer. Backfill shall be a minimum of 98% compaction as determined by the modified Proctor Density Test to the bottom of pavement.

Backfill outside of pavement areas shall be compacted the full depth to the ground surface to a minimum of 95% compaction of AASHTO T 180 Standard Density Test.

The cost of backfill shall be included in the unit price bid per lineal foot of the pipe, or, in the case of other underground structures, in the cost of such structure.

## **15 STREET CROSSINGS, ETC.**

At such crossings, and other points as may be directed by the Engineer, the trenches shall be bridged in an open and secure manner, so as to prevent any serious interruption of travel upon the roadway or sidewalk, and also to afford necessary access to public or private premises. The material used, and the mode of constructing said bridges, and the approaches, thereto, must be satisfactory to the Engineer.

The cost of all such work must be included in the cost of the trench excavation.

## **16 RAISING OR LOWERING OF SANITARY SEWER, STORM DRAINAGE STRUCTURES**

Sanitary Sewer or Storm Drainage Structures shall be raised or lowered as indicated on the Plans or as indicated by the Engineer.

## **16.1 BASIS OF PAYMENT**

Payment, unless covered by a bid item, shall be included in the cost of the work.

## **17 UNSUITABLE MATERIAL REMOVAL**

All unsuitable material, such as muck, clay, rock, etc., shall be excavated and removed from the site. All material removed is property of the Contractor, who shall dispose of said material off-site at his expense. The limits of the excavation shall be determined in the field by the Engineer.

### **17.1 BASIS OF MEASUREMENT**

The basis of measurement shall be the amount of cubic yards of unsuitable material excavated and replaced with suitable material as determined by either cross sections of the excavation, truck measure, or lump sum as specified in the Scope of Work and Contract Proposal.

### **17.2 BASIS OF PAYMENT**

The unit price for the removal of unsuitable material shall include: all materials, equipment, tools, labor, disposal, hauling, excavating, dredging, placing, compaction, dressing surface and incidentals necessary to complete the work. If no pay item is given, the removal of unsuitable material shall be included in the most appropriate bid item.

## **18 UNDERDRAINS**

The Contractor shall construct sub-surface drainage pipe as directed in the Contract Scope of Work and detail drawings contained in the Project Construction Plans. In general, underdrain pipe shall be embedded in a bed of #6 FDOT crushed aggregate, located behind the back of curb and aggregate surface covered with a non-degradable fibrous type filter material. A #57 aggregate may be used in lieu of #6 if it is washed and screened to remove fines. The aggregate may be stone, slag or crushed gravel. Unless otherwise noted on the plans, underdrain pipe shall be eight (8)-inch diameter, polyvinyl chloride pipe, in conformance with ASTM F-758 “Standard Specification for Smooth Wall PVC Underdrain Systems for Highways” latest revision, minimum stiffness of 46 in conformance with ASTM D2412, perforations in conformance with AASHTO M-189 described in FDOT Section 948-4.5 or latest revision and in conformance with ASTM D3034 - SDR 35.

Alternate acceptable underdrain pipe material is Contech A-2000 which is a rigid PVC pipe exceeds ASTM Specifications D1784, minimum cell classification of 12454B or 12454C, manufactured per ASTM F949-93a, minimum pipe stiffness of fifty (50) psi, with no evidence of splitting, cracking or breaking when pipe is tested in accordance with ASTM D2412 at 60% flattening and with a double gasket joint.

Underdrain pipe placed beneath existing driveways and roadways shall be non-perforated pipe with compacted backfill. All poly-chloride pipe which has become deteriorated due to exposure to ultra violet radiation shall be rejected. Where ductile iron pipe is specified, pipe material shall be the same as specified for potable water pipe in these technical specifications. All underdrain aggregate shall be fully encased in a polyester filter fabric “sock” (Mirafi 140-N or approved equal) per the construction detail drawings.

### **18.1 BASIS OF MEASUREMENT**

Measurement shall be the number of lineal feet of eight (8)-inch Sub-drain in place and accepted.

## **18.2 BASIS OF PAYMENT**

Payment shall be based upon the unit price per lineal foot for underdrain as measured above, which shall be full compensation for all work described in this section of the specifications and shall include all materials, equipment, and labor necessary to construct the underdrain (specifically underdrain pipe, aggregate and filter fabric). Underdrain clean-outs, sod, driveway, road and sidewalk restoration shall be paid by a separate bid item.

## **19 STORM SEWERS**

All storm drain pipe installed within the City of Madeira Beach shall be reinforced concrete unless otherwise specified or approved by the City Engineer. Said pipe shall comply with Section 941 of the current FDOT Specifications.

All reinforced concrete pipe joints shall be wrapped with Mirafi 140N filter fabric or equivalent (as approved by the City Manager's Representative). The cost for all pipe joint wraps shall be included in the unit price for the pipe.

All pipe, just before being lowered into a trench, is to be inspected and cleaned. If any difficulty is found in the fitting the pieces together, this fitting is to be done on the surface of the street before laying the pipe, and the tops plainly marked in the order in which they are to be laid. No pipe is to be trimmed or chipped to fit. Each piece of pipe is to be solidly and evenly bedded, and not simply wedged up. Before finishing each joint, some suitable device is to be used to find that the inverts coincide and pipe is clear throughout.

### **19.1 AS BUILT INFORMATION**

The Contractor shall submit to the Engineer the stations and left or right offsets of all manholes, inlet structures and terminal ends of subdrains, as measured from the nearest downstream manhole along the centerline of the sewer along with the elevations of the north edge of manhole cover, inverts of all pipe in structures, and the flow line of inlets. (Gutter)

### **19.2 TESTING**

The Contractor shall take all precautions to secure a perfectly watertight sewer under all conditions. At the discretion of the City Manager's Representative, the water-tightness of a sewer which has a crown lying below groundwater level may be tested by measuring the infiltration. The water-tightness of sewers having crowns lying above groundwater level may be tested by filling the pipe with water so as to produce a hydrostatic head of two (2) feet or more above the crown of the sewer at the upper end of the test section of the water table outside of the sewer, whichever is higher, and then measuring the exfiltration. In no case shall the infiltration or exfiltration exceed 150 gallon per inch of diameter per mile per day. The Contractor shall furnish all labor, materials and equipment to test the amount of infiltration or exfiltration under the Engineer's direction. Where the infiltration or exfiltration is excessive the Contractor at his own expense shall take the necessary steps to remedy such conditions by uncovering the sewer, remaking the joints or by replacing the entire length of sewer as required by the Engineer. No trench made joints may be backfilled until after they have been tested and found to be acceptable. Care shall be taken to avoid flotation.

The above tests shall be performed at the discretion of the Engineer on any or all sections of the line.

## **19.3 BASIS OF PAYMENT**

Payment shall be the unit price per lineal foot for storm sewer pipe in place and accepted, measured along the centerline of the storm sewer pipe to the inside face of exterior walls of storm manholes or drainage structures and to the outside face of endwalls. Said unit price includes all work required to install the pipe (i.e. all materials, equipment, filter fabric wrap, labor and incidentals, etc.).

## **20 SANITARY SEWERS AND FORCE MAINS**

### **20.1 MATERIALS**

#### **20.1.1 GRAVITY SEWER PIPE**

**GRAVITY SEWER PIPE SHALL BE POLYVINYL CHLORIDE OR DUCTILE IRON.** Polyvinyl chloride pipe and fittings shall conform with ASTM specification D 3034 for S.D.R. 35. Sewer pipe with more than ten (10) feet of cover shall be SDR 26. The pipe shall be plainly marked with the above ASTM designation. The bell end of joints and fittings shall have a rubber sealing ring to provide a tight flexible seal in conformance with ASTM D 3212 76. The laying length of pipe joints shall be a maximum of twenty (20)-feet.

Unless otherwise noted in these specifications or construction plans, Ductile Iron Pipe and fittings for gravity sewer shall conform to Section 41 of these Technical Specifications for DIP water main except pipe shall be interior "polylined" in accordance with manufacturer's recommendations. Where sanitary sewer main is to be placed between building lots in a sideline easement, the sewer main shall, insofar as possible, be constructed without manholes or lateral connections within the side easement. The pipe material in the side easement between streets shall be C 900, SDR 18 polyvinyl chloride water main pipe as described in Technical Section 41. A two-way cleanout shall be installed on each lateral at the property line.

#### **20.1.2 FORCE MAIN PIPE**

**FORCE MAIN PIPE SHALL BE POLYVINYL CHLORIDE OR DUCTILE IRON.** Unless otherwise noted in the specifications or construction plans, both polyvinyl chloride and ductile iron force main pipe and fittings shall conform to Section 41 of these Technical Specifications for water main pipe except that DIP shall be "polylined" in accordance with manufactures recommendations.

All polyvinyl chloride pipe which has become deteriorated due to exposure to ultra violet radiation shall be rejected.

### **20.2 INSTALLATION**

#### **20.2.1 GRAVITY SEWER PIPE**

Installation of gravity sewer pipe shall be in conformance with recommended practices contained in ASTM D 2321 and Unibell UNI B 5.

The bottom trench width in an unsupported trench shall be limited to the minimum practicable width (typically pipe OD plus 8 to 12-inch on each side) allowing working space to place and compact the haunching material. The use of trench boxes and movable sheeting shall be performed

in such a manner that removal, backfill and compaction will not disturb compacted haunching material or pipe alignment.

Dewatering of the trench bottom shall be accomplished using adequate means to allow preparation of bedding, placement of the haunching material and pipe in the trench without standing water. Dewatering shall continue until sufficient backfill is placed above the pipe to prevent flotation or misalignment.

Where pipe bedding is insufficient to adequately support pipe, the Contractor will be required to remove unsuitable material and bed pipe in Class I material (1/2" Dia. aggregate) to provide firm support of pipe.

Connections to manholes with sanitary pipe shall use a joint two (2) feet in length and shall use an approved water stop around pipe joint entry.

The laterals shown on the plans do not necessarily reflect exact locations. The Contractor is required to locate all existing laterals for reconnection and to coordinate with the construction inspector the location of all new laterals.

## **20.2.2 FORCE MAIN PIPE**

Installation of force main pipe shall be in conformance with Section 41 of these Technical Specifications for water main pipe.

## **20.3 AS BUILT DRAWINGS**

The Contractor shall submit to the Engineer a marked set of "As-Built" Construction Drawings describing both the stations and left or right offset of all lateral terminal ends as measured from the nearest downstream manhole along the center line of the sewer main. The As-Built Drawings will also describe elevations of the north edge of the manhole cover rings and inverts of all main pipes in manholes.

## **20.4 TESTING**

### **20.4.1 TESTING OF GRAVITY SEWERS**

The Contractor shall take all precautions to secure a perfectly water tight sewer under all conditions. The water-tightness of a sewer which has a crown lying below groundwater level may be tested by measuring infiltration. The water-tightness of sewers having crowns lying above groundwater level may be tested by filling the pipe with water so as to produce a hydrostatic head of two (2) feet or more above the crown of the sewer at the upper end of the test section or the water table outside of the sewer, whichever is higher, and then measuring the exfiltration. In no case shall the infiltration or exfiltration exceed fifty (50) gallon per inch of diameter per mile per day. The Contractor shall furnish all labor, materials and equipment to test the amount of infiltration or exfiltration under the Engineer's direction. Where the infiltration or exfiltration is excessive, the Contractor at his own expense shall take the necessary steps to remedy such conditions by uncovering the sewer, remaking the joints or by replacing the entire length of sewer as required by the Engineer. No such repaired joints may be backfilled until after they have been tested and found to be acceptable. Care shall be taken to avoid flotation. The Contractor shall TV inspect all mains to verify the true and uniform grade and the absence of bellies or dropped joints prior to acceptance. Any infiltration, dips, or sags of more than 1/4-inches shall be cause for rejection.

The above tests shall be performed at the discretion of the Engineer on any or all sections of the line.

#### **20.4.2 TESTING OF FORCE MAINS**

Force mains shall be tested under a hydrostatic pressure of 150 P.S.I. for two (2) hours, as described in Section 41.04 of these Technical Specifications for the testing of water mains.

### **20.5 BASIS OF PAYMENT**

#### **20.5.1 GRAVITY SEWER PIPE**

Payment for in place sanitary sewer gravity main pipe shall be the unit price per lineal foot per appropriate range of depth of cut as contained in the contract proposal. Measurement for payment shall be along the centerline of the sewer main from center to center of manholes.

Payment for laterals shall be the unit price per lineal foot of pipe as measured from the centerline of the sewer main pipe to the terminal end of the lateral pipe including a two-way cleanout at the property line.

Payment for sewer pipe shall include all labor, equipment and materials necessary to complete the installation. This shall include clearing and grubbing, excavation, shoring and dewatering, backfill and grading.

#### **20.5.2 FORCE MAIN PIPE**

Payment and measurement of force main pipe shall be the same as described in Section 41 of these Technical Specifications for water main pipe.

## **21 DRAINAGE**

The Contractor shall provide proper outlet for all water courses and drains interrupted during the progress of the work and replace them in as good condition as he found them.

## **22 ROADWAY BASE AND SUBGRADE**

### **22.1 BASE**

This specification describes the construction of roadway base and subgrade. The Contractor shall refer to Section IV, Article 1 "Scope of Work" of the City's Contract Specifications for additional roadway base and subgrade items.

Roadway base shall be eight (8)-inch compacted minimum thickness unless otherwise noted on the plans or directed by the Engineer. The subgrade shall be twelve (12)-inch compacted minimum thickness with a minimum Limerock Bearing Ratio (LBR) of 40 unless otherwise noted on the plans or directed by the Engineer. The Contractor shall obtain from an independent testing laboratory a Proctor and an LBR for each type material. The Contractor shall also have an independent testing laboratory perform all required density testing. Where unsuitable material is found within the limits of the base, Section IV, Article 17 (Unsuitable Material Removal) of the city's Contract Specifications will apply.

Once the roadway base is completed, it shall be primed that same day (unless otherwise directed by the Engineer) per Section 300 of FDOT's Standard Specifications (latest edition). Repairs

required to the base that result from a failure to place the prime in a timely manner shall be done to the City's satisfaction, and at the Contractor's expense. No paving of the exposed base can commence until the City approves the repaired base. The cost for placement of prime material shall be included in the bid item for base.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of all base and subgrade placement or reworking.

The following base materials are acceptable:

1. **SHELL BASE:** Shell base shall be constructed in accordance with Sections 200 and 913 of FDOT's Standard Specifications (latest edition), and shall have a minimum compacted thickness as shown on the Plans. The shell shall be FDOT approved. The cost of the prime coat shall be included in the bid item price for base.
2. **LIMEROCK BASE:** Limerock base shall be constructed in accordance with Sections 200 and 911 of FDOT's Standard Specifications (latest edition), and shall have a minimum compacted thickness as shown on the Plans. The limerock shall be from a FDOT approved certified pit. The cost of the prime coat shall be included in the bid item price for base.
3. **CRUSHED CONCRETE BASE:** Crushed concrete base shall be constructed in accordance with Sections 204 and 901 of FDOT's Standard Specifications (latest edition), and shall have a minimum compacted thickness as shown on the plans. The crushed concrete material shall be FDOT approved. The Contractor shall provide certified laboratory tests on gradation to confirm that the crushed concrete base material conforms to the above specifications. The LBR shall be a minimum of 185. LBR and gradation tests shall be provided to the City by the Contractor once a week for continuous operations, or every 1,000 tons of material, unless requested more frequently by the City Engineer or designee. The cost of the prime coat shall be included in the bid item price for base.
4. **SOIL CEMENT BASE:** Unless otherwise noted, soil cement base shall be constructed in accordance with Section 270 of FDOT's 2000 Standard Specifications, and shall have a minimum compacted thickness as shown on the plans. An Asphalt Rubber Membrane Interlayer (ARMI) shall be included in the pavement design per Section 341 of FDOT's Standard Specifications (latest edition) to minimize reflective cracking unless otherwise noted in the Project Plans and Specifications. The ARMI layer shall be overlaid with asphalt on the same day it is placed for the Contractor to receive full compensation for the work.

The soil cement base design shall be by a certified lot under the direction of a Registered Florida Professional Engineer, and must be approved by the City Engineer. Said design shall provide for a minimum of 300 P.S.I. in seven (7) days. All plant mixed soil cement shall be certified by a registered laboratory that has been approved by the Engineer.

The only approved method for spreading the cement is the use of a spreader box. The use of a spreader bar for spreading cement will not be allowed. The applying of the cement shall not be allowed when the wind velocity is sufficient to jeopardize material interests (i.e. vehicles, etc.) from airborne cement particles. The density testing frequency shall be at the discretion of the registered Florida Professional Engineer responsible for the soil cement design.

5. **ASPHALT BASE:** Full depth asphalt base shall be constructed in accordance with Section 280 of FDOT's 2000 Standard Specifications, and shall have a minimum compacted thickness as shown on the plans. The cost for preparation, placement and compaction shall

be included in the per ton unit cost for asphalt unless otherwise noted in the Project Scope and Plans. The cost of the tack coat shall be included in the bid item price for asphalt or base.

6. **REWORKED BASE:** When the plans call for the working of the existing base, the finished reworked base shall have a minimum compacted thickness of eight (8)-inches unless otherwise shown on the plans or directed by the Engineer, and be constructed in accordance with the applicable FDOT requirements for the type of material used. The density requirements (except for asphalt and soil cement base) shall be per Section 200-7 of FDOT's Standard Specifications (latest edition). For asphalt, the density requirements are per Section 330-11 and for soil cement per Section 270-5 of FDOT's 2000 Standard Specifications.

### **22.1.1 BASIS OF MEASUREMENT FOR BASE AND REWORKED BASE**

The basis of measurement shall be the number of square yards of base in place and accepted as called for on the plans. The maximum allowable deficiency shall be a half-inch (1/2"). Areas deficient in thickness shall either be fixed by the Contractor to within acceptable tolerance, or if so approved in writing by the City Engineer, may be left in place. No payment, however, will be made for such deficient areas that are left in place.

### **22.1.2 BASIS OF PAYMENT FOR BASE AND REWORKED BASE**

The unit price for base shall include: all materials, roadbed preparation, placement, spreading, compaction, finishing, prime, base, subgrade (unless the plans specify a separate pay item), stabilization, mixing, testing, equipment, tools, hauling, labor, and all incidentals necessary to complete the work. Payment for asphalt base shall be included in the per ton unit cost for asphalt unless otherwise noted in the project scope and plans.

## **22.2 SUBGRADE**

All subgrade shall be stabilized and constructed in accordance with Sections 160 and 914 of FDOT's Standard Specifications (latest edition) unless otherwise noted herein. All subgrade shall have a minimum compacted thickness of twelve (12)-inches unless otherwise shown on the plans or directed by the Engineer. If limerock is used, it shall also meet the requirements of Section 911 of FDOT's Standard Specifications (latest edition). Where unsuitable material is found within the limits of the subgrade, Section IV, Article 17 (Unsuitable Material Removal) of the City's Contract Specifications will apply. The extent of said removal shall be determined by the Engineer in accordance with accepted construction practices. The Contractor is responsible for clearing, grading, filling, and removing any trees or vegetation in the roadbed below the subgrade to prepare it per the Plans. The cost of this work shall be included in the unit price for base or subgrade. The Contractor shall obtain from an independent testing laboratory the bearing value after the mixing of materials for the stabilized subgrade.

### **22.2.1 BASIS OF MEASUREMENT**

The basis of measurement shall be the number of square yards of stabilized subgrade in place and accepted as called for on the plans. The maximum allowable deficiency for mixing depth shall be per Section 161-6.4 of FDOT's 2000 Standard Specifications. Acceptable bearing values shall be per Section 160-7.2 of FDOT's 2000 Standard Specifications. Areas deficient in thickness or bearing values shall either be corrected by the Contractor to within acceptable tolerance, or if so



approved in writing by the City Engineer, may be left in place. No payment, however, will be made for such deficient areas that are left in place (latest edition).

### **22.2.2 BASIS OF PAYMENT**

The unit price for subgrade shall include: roadbed preparation, placement, spreading, compaction, finishing, testing, stabilizing, mixing, materials, hauling, labor, equipment and all incidentals necessary to complete the work. If no pay item is given, subgrade shall be included in the bid item for base.

## **23 ASPHALTIC CONCRETE MATERIALS**

This specification is for the preparation and application of all S-Type Marshall Mix Design asphaltic concrete materials on roadway surfaces unless otherwise noted.

### **23.1 ASPHALTIC CONCRETE**

#### **23.1.1 AGGREGATE**

All aggregates shall be obtained from an approved FDOT source and shall conform to Sections 901 through 915 of FDOT's 2000 Standard Specifications.

#### **23.1.2 BITUMINOUS MATERIALS**

All bituminous materials shall conform to Section 916 of FDOT's 2000 Standard Specifications.

### **23.2 HOT BITUMINOUS MIXTURES – PLANT, METHODS, EQUIPMENT & QUALITY ASSURANCE**

The plant and methods of operation used to prepare all asphaltic concrete and bituminous materials shall conform to the requirements of Section 320 of FDOT's Standard Specifications (latest edition). Unless otherwise noted, all acceptance procedures and quality control/assurance procedures shall conform to the requirements of Section 330 of FDOT's 2000 Standard Specifications.

The Contractor shall note that the City shall have the right to have an independent testing laboratory select, test, and analyze, at the expense of the City, test specimens of any or all materials to be used. Tests to be performed by the independent testing laboratory every 1,000 tons include, but are not limited to, Marshall stability and flow, extraction/gradation and cores to determine density and thickness. The results of such tests and analyses shall be considered, along with the tests or analyses made by the Contractor, to determine compliance with the applicable specifications for the materials so tested or analyzed. The Contractor hereby understands and accepts that wherever any portion of the work is discovered, as a result of such independent testing or investigation by the City, which fails to meet the requirements of the Contract documents, all costs of such independent inspection and investigation as well as all costs of removal, correction, reconstruction, or repair of any such work shall be borne solely by the Contractor.

Payment reductions for asphalt related items shall be determined by the following:

1. Density per Section 330-11 of FDOT's 2000 Standard Specifications.
2. Final surface or friction course tolerances per Section 330-13 of FDOT's 2000 Standard Specifications.

- Thickness will be determined from core borings. Deficiencies of one-quarter (1/4)-inch or greater shall be corrected by the Contractor, without compensation, by either replacing the full thickness for a length extending at least twenty-five (25)-feet from each end of the deficient area, or when the Engineer allows for an overlay per Section 330-15.2.3 of FDOT's Standard Specifications 2000 edition. In addition, for excesses of one-quarter (1/4)-inch or greater, the Engineer will determine if the excess area shall be removed and replaced at no compensation, or if the pavement in question can remain with payment to be made based on the thickness specified in the contract.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of the placement of all asphalt.

### 23.3 ASPHALT MIX DESIGNS AND TYPES

All asphalt mix designs shall conform to the requirements of Sections 331 and 337 of FDOT's 2000 Standard Specifications. All asphalt mix designs shall be approved by the Engineer PRIOR to the commencement of the paving operation. Reclaimed asphalt pavement (RAP) material may be substituted for aggregate in the asphaltic concrete mixes up to 25% by weight.

### 23.4 ASPHALT PAVEMENT DESIGNS AND LAYER THICKNESS

All asphalt pavement designs shall conform to the following requirements:

**Table 1: Layer Thickness for Asphalt (Layers Are Listed in Sequence of Construction)**

COURSE THICKNESS (Inches)	LAYER THICKNESS (Inches)											
	Type S-I		Type S-I with Type S-III Top Layer		Type S-III		FC-3		Type S-III with FC-3 Top Layer		Type S-I with FC-3 Top Layer	
	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>
<b>1</b>					<b>1</b>		<b>1</b>					
<b>1½</b>	<b>1½</b>											
<b>2</b>			<b>1¼</b>	<b>¾</b>	*				<b>1</b>	<b>1</b>		
<b>2½</b>	<b>1¼</b>	<b>1¼</b>	<b>1½</b>	<b>1</b>							<b>1½</b>	<b>1</b>
<b>3</b>	<b>1½</b>	<b>1½</b>	<b>2</b>	<b>1</b>							<b>2</b>	<b>1</b>

\* At the Engineer's discretion, 2" of S-III is acceptable for use on residential streets

#### Additional Notes:

- Type S-III shall be limited to the final (top) structural layer (one layer only).
- All asphalt pavement designs shall conform to the requirements of Sections 331 and 337 of FDOT's 2000 Standard Specifications.
- All pavement designs shall include a minimum of two (2)-inches of asphalt.

4. The Contractor shall be responsible to review the project plans for complete pavement design detail.
5. Unless otherwise specified on the plans, Type S–III per Section 331 of FDOT’s 2000 Standard Specifications shall be used as final riding surface on streets with the speed limit of less than 35 mph, streets with an average daily traffic (ADT) of less than 3000, and all residential streets.
6. An FC–3 friction course per Section 337 of FDOT’s 2000 Standard Specifications shall be used on streets with a speed limit of 35 mph or greater, and streets with an ADT of 3000 or greater.

## **23.5 GENERAL CONSTRUCTION REQUIREMENTS**

The general construction requirements for all hot bituminous pavements (including limitations of operations, preparation of mixture, preparation of surface, placement and compaction of mixture, surface requirements, correction of unacceptable pavement, etc.) shall be in accordance with Section 330 of FDOT’s 2000 Standard Specifications.

## **23.6 CRACKS AND POTHOLE PREPARATION**

### **23.6.1 CRACKS**

Cracks in roadway pavement shall be repaired prior to the application of asphaltic concrete by the following steps:

1. All debris to be removed from cracks by compressed air or other suitable method.
2. Apply a multiple layered application of bituminous binder and fine aggregate, as appropriate to the depth of the crack until the void of the crack is completely filled to the level of the surrounding roadway surface.
3. If application of asphaltic concrete is not to begin immediately after crack repair, cracks are to be sanded to prevent vehicular tracking.
4. Payment for crack filling shall be included in the unit price for asphaltic concrete.

### **23.6.2 POTHOLES**

Potholes shall be repaired prior to the application of asphaltic concrete by the following steps:

1. All debris is to be removed from potholes by hand, sweeping, or other suitable method.
2. A tack coat is to be applied to the interior surface of the pothole.
3. The pothole is to be completely filled with asphaltic concrete, and thoroughly compacted.
4. Payment for pothole preparation shall be included in the unit price for asphaltic concrete.

## **23.7 ADJUSTMENT OF MANHOLES**

The necessary adjustments of sanitary sewer and storm drain manholes and appurtenances shall be accomplished by the Contractor. The Contractor shall be paid on a per unit basis for each item.

The use of manhole adjustment risers is acceptable under the following conditions:

- The riser shall meet or exceed all FDOT material, weld, and construction requirements.
- The riser shall consist of an A-36 hot rolled steel meeting or exceeding the minimum

requirements of A.S.T.M. A-36. The riser shall be a single piece with a stainless steel adjustment stud and shall have a rust resistant finish. The use of cast iron, plastic, or fiberglass risers is not permitted. In addition, the installation of each riser shall be per manufacturer's specifications. Each manhole shall be individually measured, and each riser shall be physically marked to ensure that the proper riser is used. Also, the ring section shall be cleaned, and a bead of chemically resistant epoxy applied to the original casting, prior to installation of the riser. It is the Contractors responsibility to ensure that the manholes are measured, the risers are physically marked, the ring sections are thoroughly cleaned, and that the epoxy is properly applied prior to installation of each riser.

If risers are not used, the adjustment of manholes shall be accomplished by the removal of pavement around manhole, grade adjustment of ring and cover, and acceptable replacement and compaction of roadway materials prior to paving. A full depth backfill using asphalt is acceptable. The use of Portland cement for backfill is not acceptable.

All manhole and valve adjustments shall be accomplished prior to the application of final asphaltic concrete surface. Unless otherwise noted in the specs or on the plans, the paving operation shall occur within seven (7) calendar days from the completion of the adjustment. On arterial roadways, the manholes are to be ramped with asphalt during the time period between initial adjustment and final resurfacing. Water and gas valves, sewer cleanouts, valve boxes, tree aeration vents, etc. will be adjusted by the Contractor with the cost for this work to be included in the unit cost of the asphalt. Care must be taken around said appurtenances to ensure that they are not paved over. It is the Contractor's responsibility to inform the owners of all utilities of impending work and coordinate their adjustments so they are completed prior to the scheduled paving.

## **23.8 ADDITIONAL ASPHALT REQUIREMENTS**

1. All impacted radius returns within project limits shall be paved unless otherwise directed by the Construction Inspector or Engineer, with payment to be included in the per ton bid item for asphalt.
2. All pavement markings impacted by placement of asphalt shall be replaced prior to the road being open to traffic unless otherwise noted in the contract scope and plans.
3. All project related debris shall be hauled off the job site by the Contractor in a timely manner and at their own expense in conformance with all regulatory requirements.
4. The Contractor shall pay particular attention to sweeping when paving. Prior to paving, all construction areas shall be swept with a Municipal type sweeper (either vacuum or mechanical type) that picks up and hauls off, dust and dirt. The sweeper must be equipped with its own water supply for pre-wetting to minimize dust. Moreover, the Contractor shall sweep debris off of sidewalks, driveways, curbs and roadways each day before leaving the job site.
5. The application of tack and prime coats (either required or placed at the Engineer's discretion) shall be placed per Section 300 of FDOT's Standard Specifications (latest edition). Tack shall also be applied to the face of all curbs and driveways. The cost (including heating, hauling and applying) shall be included in the per ton bid item for asphalt, unless otherwise noted in the project scope and plans.
6. Leveling course and spot patching shall be applied to sections of the road as noted on the plans, or as directed by the Engineer, per Section 330 of FDOT's 2000 Standard

Specifications. The cost shall be included in the per ton unit cost for asphalt, unless otherwise noted in the project scope and plans.

7. If an asphalt rubber binder is required, it shall conform to the requirements of Section 336 of FDOT's 2000 Standard Specifications.
8. On all streets with curb and gutter, the final compacted asphalt shall be ¼" above the lip or face of said curb per City Index 101.

### **23.9 SUPERPAVE ASPHALTIC CONCRETE**

1. Unless otherwise noted in this section, all of the asphaltic concrete specifications in Sections 23.1 through 23.8 above shall apply to superpave asphaltic concrete. All asphaltic concrete pavement shall be designed and placed in accordance with the FDOT Standard Specifications for Road and Bridge Construction (latest edition).
2. All aggregate shall be obtained from an approved FDOT source and shall conform to Sections 901 and 902 of FDOT's Standard Specifications (latest edition).
3. All bituminous materials shall conform to Section 916 of FDOT's Standard Specifications (latest edition). Asphaltic binder shall be Grade PG 67-22 unless otherwise specified in the Scope of Work.
4. All superpave mix designs shall conform to Sections 320 and 334 of FDOT's Standard Specifications (latest edition).
5. All general construction requirements shall conform to Section 330 of FDOT's Standard Specifications (latest edition).

### **23.10 BASIS OF MEASUREMENT**

Basis of measurement will be the number of tons of asphaltic concrete completed, in place and accepted. Truck scale weights will be required for all asphaltic concrete used.

### **23.11 BASIS OF PAYMENT**

Payment shall be made at the contract unit price for asphaltic concrete surface as specified and measured above. This price shall include all materials, preparation, hauling, placement, tack and/or prime coat either required or placed at Engineer's discretion, leveling, spot patching, filling of cracks, pothole repair, sweeping, debris removal, labor, equipment, tools, and incidentals necessary to complete the asphalt work in accordance with the plans and specifications.

## **24 ADJUSTMENT TO THE UNIT BID PRICE FOR ASPHALT**

When this Article applies to the contract, the unit bid price for asphalt will be adjusted in accordance with the following provisions:

1. Price adjustment for asphalt shall only be made when the current FDOT Asphalt Price Index varies more than 10% from the bid price at the time of the bid opening.
2. The Bituminous Material Payment Adjustment Index published monthly by the FDOT shall be used for the adjustment of unit prices. This report is available on FDOT's internet site. The address is: <http://www11.myflorida.com>. It is under the section "Doing Business with FDOT" in the "Contracts Administration" section under "Asphalt Index". For additional information, call FDOT @ 850-414-4000.

3. The FDOT Payment Adjustment Index in effect at the time of the bid opening will be used for the initial determination of the asphalt price.
4. The FDOT Payment Adjustment Index in effect at the time of placement of the asphalt will be used for payment calculation.
5. The monthly billing period for contract payment will be the same as the monthly period for the FDOT Payment Adjustment Index.
6. No adjustment in bid prices will be made for either tack coat or prime coat.
7. No price adjustment reflecting any further increases in the cost of asphalt will be made for any month after the expiration of the allowable contract time.
8. the City reserves the right to make adjustments for decreases in the cost of asphalt.

## **25 GENERAL PLANTING SPECIFICATIONS**

### **25.1 IRRIGATION**

#### **25.1.1 DESCRIPTION**

- A. The work specified in this Section consists of the installation of an automatic underground irrigation system as shown or noted in the plans. Provide all labor, materials, equipment, services and facilities required to perform all work in connection with the underground sprinkler irrigation system, complete, as indicated on the drawings and/or specified. Work noted as “NIC”, “existing”, or “by others” is not included in this pay item.
- B. The irrigation plans are schematic in nature. Valves and pipes shall be located in the turf/landscape areas except at road/paving crossings. All piping under paving shall be sleeved. Changes in the irrigation system layout shall be modified with the approval of the Engineer.

#### **25.1.1.1 QUALITY ASSURANCE**

- A. The irrigation work shall be installed by qualified personnel or a qualified irrigation subcontracting company that has experience in irrigation systems of similar size, scope, mainline, system pressure, controls, etc.
- B. All applicable ANSI, ASTM, FED.SPEC. Standards and Specifications, and all applicable building codes and other public agencies having jurisdiction upon the work shall apply.
- C. Workmanship: All work shall be installed in a neat, orderly and responsible manner with the recognized standards of workmanship. The Engineer reserves the right to reject material or work which does not conform to the contract documents. Rejected work shall be removed or corrected at the earliest possible time at the contractor’s expense.
- D. Operation and Maintenance Manuals: The contractor shall prepare and deliver to the Engineer within ten (10) calendar days prior to completion of construction a minimum of three (3) hard cover binders with three rings containing the following information:
  1. Index sheet stating the contractor’s address and business telephone number, 24 hour emergency phone number, person to contact, list of equipment with name(s) and address(es) of local manufacturer’s representative(s) and local supplier where replacement equipment can be purchased.

2. Catalog and part sheet on every material and equipment installed under this contract.
3. Complete operating and maintenance instructions on all major equipment.
4. Provide the Engineer and the City of Madeira Beach maintenance staff with written and “hands on” instructions for major equipment and show evidence in writing to the Engineer at the conclusion of the project that this service has been rendered.
  - a. Four-hour instruction (minimum) for the Drip Emitter equipment operation and maintenance.
  - b. Two-hour instruction (minimum) for automatic control valve operation and maintenance.

#### **25.1.1.2 PROJECT CONDITIONS**

- A. The Irrigation Contractor shall coordinate the work with all other trades, all underground improvements, the location and planting of trees and all other planting. Verify planting requiring excavation 24 in. diameter and larger with the Engineer prior to installation of main lines.
- B. Provide temporary irrigation at all times to maintain plant materials.
- C. The Irrigation Contractor is responsible to maintain the work area and equipment until final acceptance by the Engineer. Repairs and replacement of equipment broken, stolen, or missing as well as regular maintenance operations shall be the obligation of the contractor.
- D. The Irrigation Contractor shall submit a traffic control plan (per FDOT specifications) to the Engineer prior to initiating construction on the site. The Contractor shall be responsible for the maintenance of traffic signs, barriers, and any additional equipment to comply with the FDOT standards and to ensure the safety of its employees and the public.

#### **25.1.1.3 WARRANTY**

- A. The Manufacturer(s) shall warrant the irrigation system components to give satisfactory service for one (1) year period from the date of acceptance by the Engineer and the City of Madeira Beach. Should any problems develop within the warranty period due to inferior or faulty materials, they shall be corrected at no expense to the City of Madeira Beach or FDOT.

### **25.1.2 PRODUCTS**

#### **25.1.2.1 GENERAL**

- A. All materials throughout the system shall be new and in perfect condition. No deviations from the specifications shall be allowed except as noted.

#### **25.1.2.2 PIPING**

- A. The irrigation system pipe shall be as stated herein and shall be furnished, installed and tested in accordance with these specifications.
- B. All pipe is herein specified to be Polyvinyl Chloride (PVC) Pipe, 1120, Schedule 40, conforming to ASTM D2665 and D1785.

- C. All nipples, pipe connections, bushings, swing joints, connecting equipment to the mainline is required to be threaded Polyvinyl Chloride (PVC) Pipe, Schedule 80.

#### **25.1.2.3 PIPE FITTINGS**

- A. All pipe fittings for Schedule 40 PVC pipe shall be as follows: Fittings shall conform to the requirements of ASTM D2466, Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 80. All fittings shall bear the manufacturer's name or trademark, material designation, size, applicable IPS schedule and NSF seal of approval. The connection of mainline pipe to the automatic control valve shall be assembled with threaded Schedule 80 fittings and threaded Schedule 80 nipples.

#### **25.1.2.4 PVC PIPE CEMENT AND PRIMER**

- A. Provide solvent cement and primer for PVC solvent weld pipe and fittings as recommended by the manufacturer. Pipe joints for solvent weld pipe to be belled end.
- B. Purple primer shall be applied after the pipe and fittings has been cut and cleaned. The Primer shall be of contrasting color and be easily recognizable against PVC pipe.

#### **25.1.2.5 THREADED CONNECTIONS**

- A. Threaded PVC connections shall be made using Teflon tape or Teflon pipe sealant.

#### **25.1.2.6 GATE VALVES**

##### **25.1.2.6.1 MANUAL GATE VALVES 2 IN. AND SMALLER**

- A. Provide the following, unless otherwise noted on Drawings:
  1. 200-250 psi Ball Valve
  2. PVC body - with Teflon Ball Seals
  3. Threaded-Dual end Union Connectors
  4. Non-Shock Safe-T-Shear Stem
  5. Safe-T-Shear True Union Ball Valve as manufactured by Spears Manufacturing Company , Sylmer, California, or approved equal.

##### **25.1.2.6.2 GATE VALVES 2½" IN. AND LARGER**

- A. Provide the following, unless otherwise noted on Drawings:
  1. AWWA-C-509
  2. 200 lb. O.W.G.
  3. Cast Iron body - ASTM A 126 Class B
  4. Deep socket joints
  5. Rising stem
  6. Bolted bonnet
  7. Double disc
  8. Equipped with 2" square operating key with tee handle



- B. Provide two (2) operating keys for gate valve 3" and larger. The "street key" shall be 5' long with a 2" square operating nut.

#### **25.1.2.7 SLEEVES**

- A. Sleeves: (Existing by City of Madeira Beach)

#### **25.1.2.8 REMOTE CONTROL VALVES**

- A. The remote control valve shall be a solenoid actuated, balance-pressure across-the diaphragm type capable of having a flow rate of 25-30 gallons per minute (GPM) with a pressure loss not to exceed 6.1 pounds per square inch (PSI). The valve pressure rating shall not be less than 150 psi.
- B. The valve body and bonnet shall be constructed of high impact weather resistant plastic, stainless steel and other chemical/UV resistant materials. The valve's one-piece diaphragm shall be of durable santoprene material with a clog resistant metering orifice.
- C. The valve body shall have a 1" inch (FNPT) inlet and outlet or a one inch slip by slip inlet and outlet for solvent weld pipe connections.
- D. The valve construction shall be as such to provide for all internal parts to be removable from the top of the valve without disturbing the valve installation.
- E. The valve shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California, or approved equal.
- F. Identify all control valves using metal I.D. tags numbered to match drawings.

#### **25.1.2.9 VALVE BOXES**

- A. For remote control drip valve assembly and UNIK control timer use a Brooks #36 concrete value box with #36-T cast iron traffic bearing cover, or approved equal.
- B. For flush valve assembly use an Ametek #181014 (10") circular valve box with #181015 cover comparable to Brooks, or approved equal.
- C. For air relief assembly use an Ametek #182001 (6") economy turf box with #182002 cover comparable to Brooks, or approved equal.

#### **25.1.2.10 DRIP IRRIGATION**

##### **25.1.2.10.1 CONSTRUCTION**

- A. Techline shall consist of nominal sized one-half inch (1/2") low-density linear polyethylene tubing with internal pressure compensating, continuously self-cleaning, integral drippers at a specified spacing, (12", 18", or 24" centers). The tubing shall be brown in color and conform to an outside diameter (O.D.) of 0.67 inches and an inside diameter (I.D.) of 0.57 inches. Individual pressure compensating drippers shall be welded to the inside wall of the tubing as an integral part of the tubing assembly. These drippers shall be constructed of plastic with a hard plastic diaphragm retainer and a self-flushing/cleaning elastomer diaphragm extending the full length of the dripper.

### **25.1.2.10.2 OPERATION**

- A. The drippers shall have the ability to independently regulate discharge rates, with an inlet pressure of seven to seventy (7-70) pounds per square inch (PSI), at a constant flow and with a manufacturer's coefficient of variability (Cv) of 0.03. Recommended operating pressure shall be between 15-45 PSI. The dripper discharge rate shall be 0.4, 0.6, or 0.9 gallons per hour (GPH) utilizing a combination turbulent flow/reduced pressure compensation cell mechanism and a diaphragm to maintain uniform discharge rates. The drippers shall continuously clean themselves while in operation. The dripperline shall be available in 12", 18" and 24" spacing between drippers unless otherwise specified. Techline pipe depth shall be under mulch unless otherwise specified on Plans. Maximum system pressure shall be 45 PSC. Filtration shall be 120 mesh or finer. Bending radius shall be 7".
- B. For on-surface or under mulch installations, 6" metal wire staples (TLS6) shall be installed 3'-5' on center, and two staples installed at every change of direction.

### **25.1.2.10.3 LINE FLUSHING VALVES**

- A. The sub-surface system shall utilize Automatic Line Flush Valves at the end of each independent zone area. This valve shall be capable of flushing one gallon at the beginning of each irrigation cycle. The valves shall match the dripline manufacturer and connect directly to the dripline.

### **25.1.2.10.4 AIR/VACUUM RELIEF VALVE**

- A. Each independent irrigation zone shall utilize an Air/Vacuum Relief Valve at its high point(s). The air and vacuum relief valve shall seal effectively from 2 to 110 psi.

### **25.1.2.10.5 PRESSURE REGULATORS**

- A. The pressure regulator shall be designed to handle steady inlet pressures over 150 pounds per square inch (psi) and maintain a constant outlet pressures of 25 psi. Regulating accuracy shall be within  $\pm 6\%$ . The pressure regulator shall be manufactured from high-impact engineering grade thermoplastics. Regulation shall be accomplished by a fixed stainless steel compression spring which shall be enclosed in a chamber separate from the water passage.

### **25.1.2.10.6 FILTERS**

- A. The filter shall be a multiple disc type filter with notation indicating the minimum partial size to travel through or the mesh size of the element being used. The discs shall be constructed of chemical resistant thermoplastic for corrosion resistance.

### **25.1.2.10.7 FITTINGS**

- A. All connections shall be made with barb or compression type fitting connections. Fittings and dripline shall be as manufactured by the manufacturer of the dripline to ensure the integrity of the subsurface irrigation system.

### **25.1.2.11 AUTOMATIC CONTROL TIMER**

- A. The irrigation controller (control module) shall be programmable by a separate transmitter device only. The program shall be communicated to the Control Module from the Field Transmitter via an infrared connection. The controller shall be of a module type which may

be installed in a valve box underground. The controller shall function normally if submerged in water and the communication from the transmitter shall function if submerged in water.

- B. The control module shall be housed in an ABS plastic cabinet and shall be potted to insure waterproof operation. The control module shall have two mounting slots for screws allowing the module to be securely mounted inside a valve box.
- C. The controller shall operate on one nine volt alkaline battery for one full year regardless of the number of stations utilized. The controller shall operate 1, 2, or 4 stations either sequentially or independently.
- D. The controller shall have three independent programs with eight start times each, station run time capability from one minute to twelve hours in one minute increments, and a seven day calendar. The controller shall turn on stations via latching solenoids installed on the valves. Manual operations shall be initiated by attaching the Field Transmitter to the Control Module and programming a manual start. The controller shall be capable of manual single station or manual program operation.
- E. The controller shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

#### **25.1.2.12 FIELD TRANSMITTER**

- A. The irrigation controller shall be programmable by a separate transmitter device (Field Transmitter) only. The Field Transmitter shall communicate to the Control Module via an infrared connection. The Field Transmitter shall be water resistant and housed in ABS plastic and have a removable, reversible protective sheath. The Field Transmitter shall operate on one 9V alkaline battery.
- B. The Field Transmitter shall have a large LCD screen and a seven-key programming pad. A beep sound shall confirm every key stroke. The screen shall automatically turn off after one minute when not in use.
- C. The Field Transmitter shall be capable of programming an unlimited number of UNIK Control Modules.
- D. The Field Transmitter shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

#### **25.1.2.13 LATCHING SOLENOID**

- A. The Latching Solenoid shall be supplied with an installed, filtered adapter allowing installation of the solenoid onto any Rain Bird DV, PGA, PEB, PES-B, GB, of EFB series valve.
- B. The Latching Solenoid shall be as manufactured by Rain Bird Sprinkler Mfg. Corp., Glendora, California USA.

### **25.1.3 EXECUTION**

#### **25.1.3.1 GENERAL INSTALLATION REQUIREMENTS**

- A. Before work is commenced, hold a conference with the Engineer to discuss general details of the work.

- B. Verify dimensions and grades at job site before work is commenced.
- C. During the progress of the work, a competent superintendent and any assistants necessary shall be on site, all satisfactory to the Engineer. This superintendent shall not be changed, except with the consent of the Engineer. The superintendent shall represent the Contractor in his absence and all directions given to the superintendent shall be as binding as if given to the Contractor.
- D. Obtain and pay for all irrigation and plumbing permits and all inspections required by outside authorities.
- E. All work indicated or notes on the Drawings shall be provided whether or not specifically mentioned in these Technical Special Provisions.
- F. If there are ambiguities between the Drawings and Specifications, and specific interpretation or clarification is not issued prior to bidding, the interpretation or clarification will be made only by the Engineer, and the Contractor shall comply with the decisions. In event the installation contradicts the directions given, the installation shall be corrected by the Contractor at no additional cost.
- G. Layout of sprinkler lines shown on the Drawing is diagrammatic only. Location of sprinkler equipment is contingent upon and subject to integration with all other underground utilities. Contractor shall employ all data contained in the contract Documents and shall verify this information at the construction site to confirm the manner by which it relates to the installation.
- H. Do not proceed with the installation of the sprinkler system when it is apparent that obstructions or grade differences exist or if conflicts in construction details, legend, or specific notes are discovered. All such obstructions, conflicts, or discrepancies shall be brought to the attention of the Engineer.
- I. The disturbance of existing paving will not be permitted. Install all required sleeving prior to roadway base.

### **25.1.3.2 EXCAVATING AND BACKFILLING**

#### **25.1.3.2.1 TRENCHING - GENERAL**

- A. Dig sides of trenches straight. Provide continuous support for pipe on bottom of trenches. Lay pipe to uniform grade. Trenching excavation shall follow layout indicated on Drawings.
- B. Maintain 6 in. horizontal and minimum clearance between sprinkler lines and between all lines of other trades.
- C. Do not install sprinkler lines directly above another line of any kind.
- D. Maintain 6 in. vertical minimum between sprinkler lines which cross at angles of 45 degrees to 90 degrees.
- E. Exercise care when excavating, trenching and working near existing utilities.

#### **25.1.3.2.2 BACKFILLING**

- A. All pressure supply lines (mainline) shall have 18" of fill placed over the pipe.

- B. Initial backfill on all lines shall be of a fine granular material with no foreign matter larger than ½ in.
- C. Compact backfill according to Section 125 of FDOT Specification Book, 1996 Edition.
- D. Do not, under any circumstances, use equipment or vehicle wheels for compacting soil.
- E. Restore grades and repair damages where settling occurs.
- F. Compact each layer of fill with approved equipment to achieve a maximum density per AASHTO T 180 - latest edition. Under landscaped area, compaction shall not exceed 95% of maximum density.
- G. Compaction 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 six (6") inches thick. The hand tampers 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 damage to the irrigation system piping and adjacent utilities.

#### **25.1.3.2.3 ROUTING OF PIPING:**

- A. Routing of pressure and non-pressure piping lines are indicated diagrammatically on Drawings.
- B. Coordinate specimen trees and shrubs with routing of lines.
  - 1. Planting locations shall take precedence over sprinkler and piping locations.
  - 2. Report to Owner any major deviation from routing indicated.
- C. Conform to Drawings layout without offsetting the various assemblies from the pressure supply line.
- D. Layout drip tube and make any minor adjustments required due to differences between site and Drawings. Any such deviations in layout shall be within the intent of the original Drawings, and without additional cost.
- E. Layout all systems using an approved staking method, and maintain the staking of approved layout.

#### **25.1.3.3 INSTALLATION**

##### **25.1.3.3.1 WATER SUPPLY**

- A. Connections to the water sources shall be at the approximate locations indicated on the Drawings. Make minor changes caused by actual site conditions without additional cost to the Owner.

##### **25.1.3.3.2 ASSEMBLIES**

- A. Routing or pressure supply lines as indicated on Drawings is diagrammatic only. Install lines and required assemblies in accordance with details on Drawings.
- B. Do not install multiple assemblies on plastic lines. Provide each assembly with its own outlet. When used, the pressure relief valve shall be the last assembly.
- C. Install all assemblies in accord with the respective detail Drawings and these Technical Special Provisions.

- D. Plastic pipe and threaded fittings shall be assembled using Teflon tape, applied to the male threads only.

#### **25.1.3.3.3 SLEEVES: (Existing by City of Madeira Beach)**

- A. The contractor shall verify the location of all existing sleeves as shown on the roadway, utility and/or irrigation plans and notify the Engineer of any discrepancies.

#### **25.1.3.3.4 PLASTIC PIPE**

- A. Install plastic pipe in accord with manufacturer's recommendations.
- B. Prepare all welded joints with manufacturer's cleaner prior to applying solvent.
  - 1. Allow welded joints as least 15 minutes setup/curing time before moving or handling.
  - 2. Partially center load pipe in trenches to prevent arching and shifting when water pressure is on.
  - 3. Do not permit water in pipe until a period of at least four hours has elapsed for solvent weld setting and curing, unless recommended otherwise by solvent manufacturer.
- C. Curing
  - 1. When the temperature is above 80 degrees F., allow soluble weld joints at least 24 hours curing time before water is introduced under pressure.
- D. Flushing the system:
  - 1. After all sprinkler pipe lines and risers are in place and connected, open the control valves and flush out the system with a full head of water.
- E. Installing piping under existing pavement:
  - 1. Piping under existing pavement may be installed by jacking & boring.
  - 2. Secure permission from the Engineer before cutting or breaking any existing pavement. All repairs and replacements shall be approved by Engineer and shall be accomplished at no additional cost.

#### **25.1.3.3.5 CONTROLLERS**

- A. Install all automatic controllers as shown in the plans.
  - 1. The location of all controllers shall be approved by the Engineers representative prior to installation.

#### **25.1.3.3.6 REMOTE CONTROL VALVES**

- A. Install at sufficient depth to provide not more than 6 in., nor less than 4 in. cover from the top of the valve to finish grade.
- B. Install valves in a plumb position with 24 in. minimum maintenance clearance from other equipment, 3 feet minimum from edges of sidewalks, buildings, and walls, and no closer than 7 feet from the back of curb or edge of pavement along roadways.
- C. Contractor shall adjust the valve to provide the proper flow rate or operating pressure for each sprinkler zone.

### **25.1.3.3.7 GATE VALVES**

- A. Install where indicated and with sufficient clearance from other materials for proper maintenance.
- B. Check and tighten valve bonnet packing before backfill.

## **25.2 LANDSCAPE**

### **25.2.1 GENERAL**

#### **25.2.1.1 RELATED DOCUMENTS**

- A. The Contract Documents shall include the Plans, Details, Specifications, Bid Proposal, Contract Agreement, including Installation Schedule, all Addenda, and Contractual and Special Conditions when required.

#### **25.2.1.2 REQUIREMENTS OF REGULATORY AGENCIES**

- A. Comply with Federal, State, Local, and other duly constituted authorities and regulatory agencies, without additional cost to the Owner in matters pertaining to codes, safety, and environmental matters.
- B. Any permits for the installation or construction of any of the work included under the contract, which are required by any of the legally constituted authorities having jurisdiction, shall be arranged for by the Contractor and paid for directly by the Contractor, unless otherwise agreed upon in writing.

#### **25.2.1.3 SCOPE OF WORK**

- A. All provisions of Contract, including General and Special Provisions and Plans, apply to the work specified in this Section. The Scope of Work includes everything for and incidental to executing and completing all landscape work shown on the Plans, Schedules, Notes and as specified herein.
- B. Furnish and provide all labor, plants and materials tools and equipment necessary to prepare the soil for plantings, to install and care for all plant materials (including finish grading if necessary); to remove and/or transplant existing plants if indicated; to furnish, plant, fertilize, guy and brace, water, mulch and prune all new plant materials; and to execute all other Work as described herein or indicated on the Plans.
- C. Work under this Section shall include labor and materials for final grading and raking to prepare the site for sodding, sprigging, or seeding, so finished lawn or playing field will appear even and uniform, will drain adequately, and will comply with the intent of the landscape drawings.
- D. Initial maintenance of landscape materials as specified in this document.

#### **25.2.1.4 QUALITY ASSURANCE**

- A. Landscape work shall be contracted to a single firm specializing in landscape work, who shall in turn subcontract no more than 40% of the work specified. All subcontractors under the control of the Contractor involved in the completion of the landscape work, shall be made known to the Owner and the Landscape Architect prior to their commencement of work on the project.

- B. All work of this Section shall conform to the highest standard of landscape practices.
- C. The Plant Material Schedule included with these Plans is provided only for the Contractor's convenience; it shall not be construed as to conflict or predominate over the Plans. If conflict between the Plans and Specifications exists, the Plan shall predominate and be considered the controlling document.
- D. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by The Occupational Safety and Health Act of 1970 (and all subsequent amendments). Owner and Landscape Architect shall be held harmless from any accident, injury or any other incident resulting from compliance or non-compliance with these standards.
- E. The Contractor shall cooperate with and coordinate with all other trades whose work is built into or affects the work in this Section.
- F. All appropriate utility companies and agencies shall be contacted 72 hours prior to excavation. Call "One Call" at 1-800-432-4770.
- G. The Contractor shall carefully examine the site and all existing conditions affecting the work, such as: soil, obstructions, existing trees, utilities, etc. Report any conditions in conflict with the work to the Landscape Architect.

#### **25.2.1.5 SUBMITTALS**

- A. The Contractor is required to submit prior to the expiration of the required maintenance period, two copies of typewritten instructions recommending procedures to be established by the Owner for maintenance of landscape work for a period of one year.
- B. Furnish unit prices for all plant materials and inert materials, including labor for all specified work.

#### **25.2.1.6 ALTERNATES, ADDITIONS, DELETIONS, SUBSTITUTIONS**

- A. If there are additions/alternates included in these Plans and Specifications, the Contractor must propose prices to accomplish the work stated as additions/alternates at the time of bidding.
- B. The Owner, through his Project Representative, reserves the right to add or deduct any of the work stated herein without rendering the Contract void.
- C. The Contractor must have written approval by the Project Representative for any substitutions not previously agreed to in the purchase agreement: installation without approval is entirely at the Contractor's risk.
- D. All material acquired through additions or substitutions shall be subject to all conditions and warranties stated herein.

#### **25.2.1.7 ABBREVIATIONS/DEFINITIONS**

*O.A. or HT.:*

The over-all height of the plant measured from the ground to the natural, untied state of the majority of the foliage, not including extreme leaves, branches or fronds.

*C.T.:*

Clear trunk is measured from the ground to the bottom of the first leaf or frond stem with



no foliage from ground to specified height. For example, on Canary Island Date Palms or similar, the clear trunk measurement includes the “nut” at the base of the fronds.

*C.W.:*

Clear wood is measured from the ground to the bottom of the base of the lowest leaf sheath or boot, trimmed in a natural manner. For example, on Canary Island Date Palms or similar, the clear wood measurement does not include the “nut” at the base of the fronds.

*SPR.:*

Spread, branches measured in natural untied position to the average crown diameter, not including extreme leaves, branches or fronds.

*ST.TR.:*

Straight trunk.

*MIN.:*

Minimum.

*GAL.:*

Gallon container size, i.e., 1 gallon, 3 gallon, 7 gallon, etc.

*O.C.:*

On center, distance between plant centers.

*DIA.:*

Diameter.

*LVS.:*

Leaves.

*D.B.H.:*

Diameter or caliper of main trunk of tree as measured at breast height at 4-1/2 feet above grade.

*CAL.:*

Caliper, the outside diameter of up to a four inch tree is measured six inches above grade, larger trees are measured at 12 inches above grade.

*B&B:*

Balled and burlapped in accordance with horticultural standards of the American Association of Nurserymen.

*PPP:*

Plants per pot.

*FG:*

Field grown.

*STD.:*

Standard, single, straight trunk.

*Owner:*

To be known as that entity which holds title or control to the premises on which the work is performed.

*Owner's Representative:*

Owner's on-site representative shall be responsible for approval of quantity and quality of materials specified and execution of installation.

*Contractor:*

Shall refer to that person or enterprise commonly known as the Landscape Contractor.

*Landscape Architect:*

This person or firm is the responsible representative of the Owner who produces the landscape Plans and Specifications.

## **25.2.1.8 PRODUCT DELIVERY, STORAGE, AND HANDLING**

### **25.2.1.8.1 PLANT MATERIALS**

- A. Provide container grown or, if appropriate, freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend or bind trees or shrubs in such a manner as to damage bark, break branches or destroy natural shape. Provide protective covering during delivery. If plant delivery is made in open vehicles, the entire load shall be suitably covered.
- B. All plants are to be handled at all times so that roots or root balls are adequately protected from sun, cold, or drying winds. No root balls for trees and container plants that have been cracked or broken shall be planted except upon special approval. Plants shall not be pulled by the tops or stems, nor handled in a rough or careless manner at any time.
- C. Balled and burlapped plants shall be moved with firm, natural, balls of soil, not less than 1 foot diameter of ball to every 1 inch caliper of trunk; root ball depth shall not be less than 2/3 of root ball diameter. B & B plants which cannot be planted upon delivery shall have their root balls covered with moist soil or mulch.
- D. Trees shall be dug with adequate balls, burlapped, and wire bound if needed. Root pruning to be done a minimum of 4 weeks before removal from the field and planting at the site. Root balls may not be encased in "grow bags" or other synthetic material, except plastic shrink wrap for transport only.
- E. Remove all fronds from sabal palms prior to planting, but leave a minimum of 12 inches of new frond growth above the bud. Do not damage bud. On all other palms, only a minimum of palm fronds shall be removed from crown to facilitate moving and handling. Clear trunk shall be determined after minimum fronds have been removed. Boots shall be removed from trunk unless otherwise specified. Palms shall be planted within 24 hours of delivery.
- F. Deliver trees and shrubs after preparations for planting have been completed and plant immediately. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and cover to keep the roots moist.
- G. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible designation of botanical and common name.
- H. Sod: Time delivery so that sod will be placed within twenty-four (24) hours after stripping. Protect sod against drying and breaking by covering pallettes of sod or placing in a shaded area.

### **25.2.1.9 JOB CONDITIONS**

#### **25.2.1.9.1 ACCEPTANCE OF JOB CONDITIONS.**

- A. The Contractor shall examine the sub-grade, verify elevations, observe the conditions under which work is to be performed and notify the Landscape Architect or Project Representative in writing of unsatisfactory conditions prior to beginning work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Landscape Architect. Start of work shall indicate acceptance of conditions and full responsibility for the completed work.
- B. Proceed with and complete the landscape work as rapidly as portions of the site become available, working within the seasonal limitations for each kind of landscape work and following the approved schedule. If seasonal limitations apply, notify the Landscape Architect for adjustments to the Schedule.
- C. Determine locations of all underground utilities and review for conflicts with planting procedures.
- D. When adverse conditions to plant growth are encountered, such as rubble fill, drainage conditions or obstruction, the Contractor shall notify the Landscape Architect in writing prior to planting.
- E. Plant trees and shrubs after final grades are established and prior to the planting of lawns, protecting lawn trees and promptly repairing damages from planting operations.

#### **25.2.1.9.2 SCHEDULING OF WORK**

- A. The work shall be carried out to completion with the utmost speed. Immediately upon award of contract, the Contractor shall prepare a construction schedule and furnish a copy to the Owner's Representative and/or the Landscape Architect for approval. The Contractor shall carry out the work in accordance with the approved schedule.
- B. If the Contractor incurs unforeseen costs, such as overtime hours, holidays, etc. in order to complete the work within the time stated in the Contract, and/or to maintain the progress schedule, all said costs shall be borne by the Contractor at no additional cost to the Owner.
- C. The Owner's Representative's may request in writing work stoppage. Upon written request from the Owner's Representative, the Landscape Contractor shall suspend delivery of material and stop all work for such a period as deemed necessary by the Owner, the Owner's Representative, or the General Contractor with respect to any additional costs which may result from work stoppage.

#### **25.2.1.9.3 UTILITIES**

- A. The Contractor shall perform work in a manner which will avoid conflicts with utilities. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes set by others until removal is mutually agreed upon by all parties concerned.

## **25.2.2 PRODUCTS**

### **25.2.2.1 MATERIALS**

#### **25.2.2.1.1 PLANT MATERIALS: NOMENCLATURE**

- A. Plant species, sizes, etc. shall be per Plans and Specifications on Plant Material Scheduled. Nomenclature is per Manual of Cultivated Plant, Standard Encyclopedia of Horticulture, L.H. Bailey, or Standardized Plant Names Dictionary, American Joint Committee on Horticultural Nomenclature (latest editions), or conforms with names accepted in the nursery trade.

#### **25.2.2.1.2 PLANT MATERIALS: QUALITY ASSURANCE**

- A. Provide healthy, vigorous stock grown under climatic conditions similar to conditions in the locality of the project. Plants shall have a habit of growth that is normal for the species and be sound, healthy, vigorous and free from insect pests or their eggs, plant diseases, defects and injuries. Plants shall be well branched and densely foliated when in leaf and shall have healthy, well-developed root systems.
- B. Trees shall be heavily branched or, in the case of palms, be heavily leafed. Some plant materials may be collected stock with the approval of the Landscape Architect. Provided tree species that have a single main trunk (central leader), unless otherwise stated. Trees that have the main trunk forming a “Y” shape or parallel branching are not acceptable.
- C. Plant materials shall be specified and shall be Florida #1 or better as to shape and quality for the species as outlined in Grades and Standards for Nursery Plants Part I and II, Florida Department of Agriculture and Consumer Services (latest edition).
- D. The Owner or Landscape Architect reserves the right to inspect plant materials either at the place of growth or at the project site prior to planting for compliance with requirements for name variety, size quality, or designated area.
- E. Landscape materials shall be shipped with certificates of inspection as required by governmental authorities. The Contractor shall comply with all governing regulations that are applicable to landscape materials.
- F. Do not make substitutions. If specified landscape material is not available, submit Landscape Architect proof of it being non-available. In such event, if the Landscape Architect designates an available source, such shall be acquired from designated source. When authorized, a written change order for substitute material will be made by adjustment to Contract amount.
- G. Height and/or width of trees shall be measured from ground up; width measurement shall be normal crown spread of branches with plants in the normal position. This measurement shall not include immediate terminal growth. All measurements shall be taken after pruning for specified sizes. All trees and shrubs shall conform to measurements specified in the plant material schedule, except that plant material larger than specified may be used with the approval of the Owner or Landscape Architect; with no increase to the Contract price. Plant materials shall not be pruned prior to delivery.
- H. Plant Material shall be symmetrical, typical for variety and species. Plants used where symmetry is required shall be matched as nearly as possible.

- I. Balled and burlapped plants shall have firm, natural balls of earth of sufficient diameter and depth to encompass the feeding root system necessary for full development of the plant and to conform with the standards of the American Association of Nurserymen. Root balls and tree trunks shall not be damaged by improper binding and B & B procedures.
- J. Container-grown plants may be substituted for balled and burlapped plants or vice-versa provided the quality is equal or better than specified and the Landscape Architect approves the substitution.
- K. Container grown stock shall have been grown in containers for at least four months, but not over two years. If requested, samples must be shown to prove no root bound condition exists.

#### **25.2.2.1.3 GRASSES: SOD OR SEED**

- A. Sod or seed (as/if specified) shall be a species as stated on the Plan. Solid sod shall be of even thickness and with a good root structure, 95% free of noxious weed, freshly mowed before cutting, and in healthy condition when laid. It must not be stacked more than 24 hours before laying and it must be grown in soil compatible to that in which it will be installed. Sod must be kept moist prior to and after installation.
- B. Seed shall be delivered to the site in unopened bags with certification tags in place. Purity, germination and weed content shall be as certification requirements.

#### **25.2.2.1.4 MULCH**

- A. Mulch shall be 100% Grade “B” shredded cypress bark mulch, thoroughly mixed with a pre-emergence weed killer according to the label directions as specified on the plan.
- B. Install mulch to an even depth of 3” before compaction.

#### **25.2.2.1.5 FERTILIZER**

- A. Granular fertilizer shall be uniform in composition; free flowing and suitable for application with approved equipment; received at the site in full, labeled, unopened bags bearing the name, trade name or trademark and warranty of the producer; fully conforming to State of Florida fertilizer laws.
- B. All fertilizer shall bear the manufacturer’s statement of analysis and shall contain the appropriate minimum amounts of elements for the type of use specified herein.
- C. Agriform 20-10-5 fertilizer tablets or approved equal, shall be placed in planting pit for all plant materials at time of installation and prior to completion of pit backfilling.
- D. Ground cover and annual areas shall receive fertilization with Osmocote Time Release Fertilizer according to product instructions and rate.
- E. For sod and seeded areas, fertilize with a complete granular fertilizer on Bahia and St. Augustine grass at the rate of one (1) pound of nitrogen per one thousand (1,000) square feet. Fertilizer shall be commercial grade, mixed granules, with 30% - 50% of the nitrogen being in slow or controlled release form. The ratio of nitrogen to potash will be 1:1 or 2:1 for complete fertilizer formulations. Phosphorus shall be no more than ¼ the nitrogen level. They shall also contain magnesium and micronutrients (i.e. manganese, iron, zinc, copper, etc.).

#### **25.2.2.1.6 STAKES AND GUYS**

- A. For trees, approved plastic or rubber guys shall be used between the stakes and the tree trunk. Galvanized steel guy wire shall not be used.
- B. Stakes shall be cut from 2" x 4" pressure treated (p.t.) stock for trees over 2" caliper. Stakes shall be 2" x 2" pressure treated (p.t.) stock for trees 2" caliper and under. A minimum of 2 stakes per tree or an optional 3 stakes per tree shall be used.
- C. For single trunk palms, stakes shall be cut from 2" x 4" pressure treated (p.t.) stock, with a minimum of 3 stakes per palm. Batten consisting of 5 layers of burlap and 5 - 2" x 4" by 16" wood connected with two - 3/4" steel bands shall be used around the palm trunk.
- D. Other tree staking systems may be acceptable if approved.

#### **25.2.2.1.7 PLANTING SOIL**

- A. Unless stated on the plans or in the specifications, install plant material in tilled and loosened native soil backfill. It is the responsibility of the Landscape Contractor to test, prior to planting and at no additional cost to the Contract, any soils which may be unsuitable for the vigorous growth of plants. Unsuitable conditions shall be reported to the Landscape Architect immediately in writing.
- B. When required, planting soil media shall be provided by the Contractor and shall consist of 1/3 peat and 2/3 sandy loam, with no lumps over 1".
- C. Backfill and clean fill dirt provided by the Contractor shall be in a loose, friable soil. There must be slight acid reaction to the soil (about 6.0 – 6.5 pH) with no excess of calcium or carbonate, and it shall be free from excess weeds, clay lumps, stones, stumps, roots and toxic substances or any other materials that might be harmful to plant growth or a hindrance to grading, planting, and maintenance procedures and operations. No heavily organic soil, such as muck or peat shall be used as fill dirt.
- D. Bed preparation for annual beds under 1 gallon container size shall consist of 3" of Florida peat or other approved organic soil amendment spread over full length and width of planting area. Rototill organic layer 6 inches to 8 inches into native soil.

#### **25.2.2.1.8 SOIL AMENDMENTS**

- A. Terra-Sorb AG or approved equal, soil amendment shall be mixed with native or planting soil for all trees, shrubs, ground cover, and annuals according to manufacturer's recommended application rates and methods, if specified on the Plans.

#### **25.2.2.1.9 TREE PROTECTION**

- A. Wood fencing shall be 2" x 4" pressure treated (p.t.) stock with flagging on horizontal members. Space vertical members 6 feet to 8 feet on center. The barricade shall be placed so as to protect the critical protection zone area, which is the area surrounding a tree within a circle described by a radius of one foot for each inch of the tree's diameter at breast height DBH at 4 - 1/2 feet above grade.

#### **25.2.2.1.10 ROOT BARRIER SYSTEM**

- A. Root barrier fabric shall be installed when specified in the plans and/or specifications for protection of adjacent paved surfaces according to specific product name or equal. Install as directed by the manufacturer.

#### **25.2.2.1.11 PACKAGED MATERIALS**

- A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at the site.

#### **25.2.2.1.12 PESTICIDES**

- A. Pesticides shall be only approved, safe brands applied according to manufacturer's directions.

### **25.2.3 EXECUTION**

#### **25.2.3.1 PREPARATION**

##### **25.2.3.1.1 OBSTRUCTIONS BELOW GROUND**

- A. It shall be the responsibility of the Contractor to locate and mark all underground utilities, irrigation lines and wiring prior to commencement of the work.
- B. If underground construction, utilities or other obstructions are encountered in excavation of planting areas or pits, the Landscape Architect shall be immediately notified to select a relocated position for any materials necessary.

##### **25.2.3.1.2 GRADING AND PREPARATION FOR PLANT MATERIALS**

- A. All proposed landscape areas containing existing turf grass or weeds shall be treated with Monsanto's "Round-Up" per manufacturer's specifications. All proposed landscape areas adjacent to water bodies shall be treated with "Rodeo" per the manufacturer's specifications.
- B. New plant materials will not be installed until a 98% weed/turf eradication has been achieved. More than one application may be required to produce an acceptable planting bed.
- C. Pre-emergent herbicides are not a substitute for spray treatment of "Round-Up" or "Rodeo", and may be used only with the written approval of the Landscape Architect.
- D. Should any plant material in the same, or adjacent beds be damaged by these chemicals, the same size, quantity and quality of plants shall be immediately replaced by the Contractor at no cost to the Owner.
- E. Any necessary corrections or repairs to the finish grades shall be accomplished by the Contractor. All planting areas shall be carefully graded and raked to smooth, even finish grade, free from depressions, lumps, stones, sticks or other debris and such that they will conform to the required finish grades and provide uniform and satisfactory surface drainage without puddling.

- F. The Contractor shall remove debris (sticks, stones, rubbish) over 1 - ½ inches in any dimension from individual tree, shrub and hedge pits and dispose of the excavated material off the site.

#### **25.2.3.1.3 PREPARATION FOR ANNUAL BED PLANTING**

- A. Prepare native subgrade by rototilling or loosening by hand methods. Spread 3 inches of Florida peat (1/3), sandy loam (1/3), or other approved organic soil amendment over the full length and width of planting area for annuals. Rototill organic layer 6 inches to 8 inches into the native soil. Grade the planting bed by “crowning” to insure that surface drainage, percolation, and aeration occur at rapid rates. Add Osmocote time release fertilizer according to product instructions and rate.

#### **25.2.3.1.4 PREPARATION FOR SEEDING AND SOD AREAS**

- A. All proposed sod areas containing existing turf grass or weeds shall be treated with Monsanto’s “Round-Up” per manufacturer’s specifications. All proposed sod areas adjacent to water bodies shall be treated with “Rodeo” per the Manufacturer’s Specifications.
- B. Limit preparation to areas which will be planted promptly after preparation. Loosen subgrade of seed and sod areas to a minimum depth of 4 inches.
- C. Immediately prior to any turf work, the Contractor shall finish grade the soil to a smooth, even surface assuring positive drainage away from buildings and the subsequent turf flush to the tops of adjacent curbs and sidewalks. The surface shall be sloped to existing yard drains.
- D. A complete fertilizer shall be applied to St. Augustine or Bahia grass at a rate of one (1) pound of nitrogen per 1000 square feet. Fertilizer shall be commercial grade, mixed granules, with 30% - 50% of the nitrogen being in slow or controlled release form. Thoroughly work fertilizer into the top 4 inches of soil.
- E. Moisten prepared seed and sod areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.

#### **25.2.3.2 INSTALLATION**

##### **25.2.3.2.1 BERM CONSTRUCTION (IF SPECIFIED)**

- A. Install berms at location and design shown on Plans and at the height and slope indicated. Height stated is for finished berm with soil at natural compaction.
- B. Exact location and configuration of berms may require modification to allow proper drainage; such changes will be coordinated with the Landscape Architect.
- C. If shown on the Plan, construct berms using clean sandy loam fill dirt which is well-drained, free of rocks, roots, or other debris, with a soil pH of an acid Nature (about 6.0 - 6.5). No heavily organic soil, such as muck or peat shall be used in berm construction.

##### **25.2.3.2.2 LAYOUT OF PLANT MATERIALS**

- A. Unless otherwise stipulated, plant materials shall be approximately located per the plans by scale measurements using established building, columns, curbs, screen walls, etc. as the



measuring reference point. Slight shifting may be required to clear wires, prevent blockage of signage, etc.

- B. Shrubs and ground covers shall be located and spaced as noted on the plant material schedule (if provided), otherwise plants will be placed in the planting beds at the normally accepted spacing for each species.
- C. Leave an 18 inch (450 millimeters) border of mulched space between outer leaves of installed plant material and the bed line, curb, or building foundation wall for all plant sizes.
- D. Any necessary “minor” adjustments in the layout of planting shall be made by the Contractor with the approval of the Landscape Architect in order to conform as nearly as possible to the intent of the plans.

**25.2.3.2.3 PLANTING PROCEDURES**

- A. All shrubs, trees and ground covers or vines shall be planted in pits having vertical sides and being circular in outline. Planting pit shall be 3 to 5 times the width of the root ball.
- B. Plants shall be set straight or plumb, in the locations shown, at such level that after settlement normal or natural relationship of the top of the root ball with the ground surface will be established. With regards to proper nursery practices, plants under certain conditions (i.e. low and wet areas) will benefit from being planted “high” with the root ball about 1 inch higher than the surrounding grade.
- C. All plant materials shall be fertilized with Agriform 20-10-5 planting tablets, or approved equal, at time of installation and prior to completion of pit backfilling. Agriform planting tablets shall be placed uniformly around the root mass at a depth that is between the middle and the bottom of the root mass.

Application rate:

1 gallon	1 - 21 gram tablet
3 gallon	2 - 21 gram tablet
5 gallon	3 - 21 gram tablet
7 gallon	4 - 21 gram tablet
Trees	3 tablets each ½” (12 millimeters) caliper
Palms	7- 21 gram tablets

- D. Native soil shall be used in back-filling plant pits or as specified. The Contractor shall be responsible for providing additional soil for building tree saucers.
- E. When balled and burlapped plants are set, undisturbed native soil shall be left under the base of the root ball to prevent voids. Backfill tilled and loosened native soil around the sides of the root ball. Remove the top 4 inches (100 millimeters) of burlap wire, and all tie-down material from the root ball. Do not remove these materials from the bottom of the root ball. Thoroughly water-in before bringing the back-fill up to the proper grade. Roots of bare plants shall be properly spread out, and planting soil carefully worked in among them. Failure to comply is cause for rejection.
- F. Containerized plants shall be installed with undisturbed native soil left under the base of the root ball to prevent voids. Planting pit shall be 3 to 5 times the width of the root ball. Backfill tilled and loosened native soil around the sides of the root ball. Thoroughly water-in before bringing the backfill up to the proper grade.

- G. Plant spacing shall be “on center” and varies with the different plant species. Space each variety of plant equally in the planting areas. Shrubs and ground covers adjacent to straight or curved edges shall be triangular - spaced in rows parallel to those edges. Plant a minimum of 18 inches from the back of the curb to the outside edge of the plant.
- H. All azaleas shall be placed into a prepared bed of amended soil containing 50% weed-free Florida peat or approved equivalent. Root balls shall be scarified vertically at 120 degree angles in a triangular pattern.
- I. Sabal palms may be planted deeper than normal if conditions warrant and if approved.

#### **25.2.3.2.4 SODDING**

- A. During periods of drought, sod shall be watered sufficiently at its origin to moisten the soil adequately to the depth to which it is to be cut.
- B. An application of 6-6-6, 40% organic, slow or controlled release fertilizer shall be made to all lawn areas just prior to the laying of the sod at a rate of one (1) pound of nitrogen per 1,000 square feet. The ground shall be wet down before the sod is laid in place.
- C. Solid sod shall be laid tightly with closely abutting staggered joints with an even surface edge and sod edge, in a neat and clean manner to the edge of all the paving and shrub areas. Cut down soil level to 1 inch to 1-1/2 inches below top of walks prior to laying sod.
- D. Within 2 hours after installing sod and prior to rolling, irrigate the sod. Sufficient water shall be applied to wet the sod thoroughly and to wet the sod to a depth of 2 inches (50 millimeters). Watering shall be done in a manner that will avoid erosion due to the application of excessive quantities, and the watering equipment shall be a type that will prevent damage to the finished sod surface. Watering shall be repeated as necessary to keep sod moist until rooted to subgrade.
- E. The sod shall be pressed firmly into contact with the sod bed using a turf roller or other approved equipment so as to eliminate air pockets, provide a true and even surface and insure knitting without any displacement of the sod or deformation of the surfaces of sodded areas. After the sodding operation has been completed, the edges of the area shall be smooth and shall conform to the grades indicated.
- F. If, in the opinion of the Landscape Architect, top dressing is necessary after rolling, clean silica sand shall be used to fill voids. Evenly apply sand over the entire surface to be leveled, filling-in dips and voids and thoroughly washing into the sod areas.
- G. On slopes steeper than 2:1 and as required, the sod shall be fastened in place with suitable wooden pins or by other approved method.

#### **25.2.3.2.5 SEEDING**

- A. Seed shall be installed per the specifications of the State of Florida Department of Transportation. See plan for type of seed.

#### **25.2.3.2.6 TREE GUYING, BRACING AND STAKING**

- A. Tree guying, staking and bracing shall be the responsibility of the Contractor per sound nursery practices, and shall be done per details shown on the Plans. For trees, a minimum of 2 stakes per tree or an optional 3 stakes per tree at 120 degree spacing shall be used. Stakes shall be driven in at an angle, then tightened to vertical supported by approved

plastic or rubber guys. Trees shall be staked with a minimum of 4 feet height of stake above grade and a minimum of 30 inches of stake below grade.

- B. For single trunk palms, a minimum of 3 stakes per palm at 120 degree spacing shall be used. Toenail the stakes to batten consisting of 5 layers of burlap and 5- 2 inch x 4 inch x 16 inch wood connected with two ¾ inch steel bands. Palms shall be staked with a minimum of 5 feet of stake above grade.
- C. Contractor shall remove all tree guying, staking, and bracing from trees six (6) months after the date of final acceptance of the landscape work.
- D. Stake only trees that require support to maintain a plumb position or are in potentially hazardous areas.

#### **25.2.3.2.7 MULCHING**

- A. All planting beds shall be weed-free prior to mulching.
- B. All curb, roadway, and bed line edges will be “trenched” to help contain the applied mulch.
- C. All plant beds and tree rings shall be mulched evenly with a 3 inch layer (before compaction) of 100% Grade B recycled cypress bark mulch, or other mulch as specified on the Plans or General Notes.
- D. Mulch shall not be placed against the trunks of plant materials or foundations of buildings. Maintain a minimum 3 inch clearance for trees and shrub trunks and a minimum 6 inch clearance for the walls of buildings.
- E. For beds of annual flowers, a 12 inch wide x 3 inch deep band of mulch shall be installed in front of the first row of annuals. Maintain a minimum 6 inches of non-mulched clearance from the outside edge of annuals.

#### **25.2.3.2.8 PRUNING**

- A. Pruning shall be done by an experienced certified Arborist to maintain the natural shape and form of the plant.
- B. Upon acceptance by the Owner, prune any broken branches, remove crossed branches, and branches hanging below the clear trunk of the tree.

#### **25.2.3.2.9 CLEAN-UP**

- A. During landscape work, store materials and equipment where directed by the Owner.
- B. The Contractor shall promptly remove any materials and equipment used on the job, keeping the area neat at all times. Upon completion of all planting, dispose of all excess soil and debris leaving pavements and work areas in safe and orderly condition.
- C. The clean-up of the site shall include the removal and proper disposal of the tree guying, staking, and bracing materials as described in specifications.

#### **25.2.3.2.10 PROTECTION**

- A. The Contractor shall provide safeguards for the protection of workmen and others on, about, or adjacent to the work, as required under the parameters of the Occupational Safety and Health Administration (O.S.H.A.) standards.

- B. The Contractor shall protect the Owner's and adjacent property from damage.
- C. the Contractor shall protect the landscape work and materials from damage due to landscape operations. Maintain protection during installation and maintenance periods.
- D. The Contractor shall provide protection (tree barricades) for all existing trees and palms as specified.

#### **25.2.3.2.11 REPAIR OF DAMAGES**

- E. The Contractor shall repair all damage caused by his operations to other materials, property, or trades to a level equal in quality to the existing condition prior to damage.
- F. The Contractor shall be held responsible for all damage done by his work or employees to other materials or trades' work. Patching and replacement of damaged work may be done by others, at the Owner's direction, but the cost of same shall be paid by the Contractor who is responsible for the damage.

#### **25.2.3.3 MAINTENANCE**

- A. The Contractor shall maintain all plant materials in a first class condition from the beginning of landscape construction until Final Acceptance.
- B. Operations:
  - 1. Maintenance shall include, but not be limited to, watering of turf and planting beds, mowing, fertilizing, cultivation, weeding, pruning, disease and pest control, replacement of dead materials, straightening, turf or planter settlement corrections, replacement of rejected materials, staking and guying repair and tightening, wash-out repairs and regrading, and any other procedures consistent with the good horticultural practice necessary to insure normal, vigorous and healthy growth of all work under the Contract. Mowing shall be consistent with the recommended height per the University of Florida Cooperative Extension Service.
  - 2. Within the warranty period, the Contractor shall notify the Owner of any maintenance practices being followed or omitted which would be detrimental to the healthy, vigorous growth of the landscape.
  - 3. The Contractor shall be responsible for the final watering of not less than one inch of water for all planted materials before leaving the site.

#### **25.2.3.4 INSPECTION, REJECTION, AND ACCEPTANCE**

##### **25.2.3.4.1 INSPECTION**

- A. Upon completion of the installation, the Contractor will notify the Owner or the Owner's Representative that the job is ready for inspection. Within 15 days of notifications, the installation will be inspected by the Landscape Architect. A written and/or graphic inspection report will be sent to the Owner and/or Landscape Contractor.

##### **25.2.3.4.2 REJECTION AND REPLACEMENT**

- A. The Landscape Architect shall be final judge as to the suitability and acceptability of any part of the work. Plant material will be rejected if it does not meet the requirements set forth in Plans and Specifications.

- B. Replace any rejected materials immediately or within 15 days and notify the Landscape Architect that the correction has been made.

#### **25.2.3.4.3 ACCEPTANCE**

- A. After replacement of rejected plant material (if any) have been made, and completion of all other correction items, the Owner or Project Representative will accept the project in writing.
- B. Upon Final Acceptance, the Owner assumes responsibility for maintenance within the terms of the Contract. Acceptance will in no way invalidate the Contractor's warranty period.
- C. The Contractor's warranty period will begin after final acceptance of the project by the Owner.
  - 1. If evidence exists of any lien or claim arising out of or in connection with default in performance of this Contract, the Owner shall have the right to retain any payment sufficient to discharge such claim and all costs in connection with discharging such claim.
  - 2. Where the Specifications call for any stipulated item or an "approved equivalent", or in words to that effect, the Contractor shall indicate the price of the type and species specified in the proposal, giving the price to be added or deducted from his Contract price. The final selection rests with the Owner or his representative.
  - 3. Where plants installed do not meet specifications, the Owner reserves the right to request plant replacement or an appropriate deduction from the Contract amount to compensate for the value not received from the under-specified plant materials. No additional compensation will be made to the Contractor for plants installed that exceed specifications.

#### **25.2.3.5 WARRANTY**

- A. The Contractor shall warranty all palms and trees furnished under this contract for a period of one (1) year and all shrubs for a period of six (6) months. Material which is either dead or in poor health during this period or at completion will be replaced at no charge to the Owner. Should any of the plant materials show 50% or more defoliation during the warranty period, due to the Contractor's use of poor quality or improper materials or workmanship, the Contractor upon notice, shall replace without delay same with no additional cost to the Owner. Should any plant require replacing, the new plant shall be given the equal amount of warranty.

## **26 HDPE DEFORMED - REFORMED PIPE LINING**

### **26.1 INTENT**

It is the intention of this specification to provide for the trenchless restoration of 8" to 12" sanitary sewers by the installation of a high density polyethylene, jointless, continuous, fold and form pipe liner which is watertight and chemically resistant to withstand exposure to domestic sewage including all labor, materials and equipment to provide for a complete, fully restored and functioning installation.

## 26.2 PRODUCT AND CONTRACTOR/INSTALLER ACCEPTABILITY

the City requires that all contractors be prequalified. See General Conditions regarding contractor prequalification. In addition, the City requires a proven extensive tract record for the fold and form liner system to be used in this project. All contractors submitting for prequalification approval for this project must exhibit extensive satisfactory experience in the installation of the proposed liner system and satisfactory evidence that the proposed liner system has been extensively and successfully installed in the United States and the State of Florida. The installer must be certified by the liner system manufacturer for installation of the liner system. the City reserves full and complete authority to approve the satisfactory nature of the both the liner system and the installer.

## 26.3 MATERIALS

Pipe shall be made from P. E. 3408 polyethylene resins complying with ASTM D 3350, cell classification: P.E. 345434 D for High Density. It shall be Type 3, Grade 4, Class D, according to ASTM D 1248. The Contractor shall provide certified test results for review by the Engineer, from the manufacturer, that the material conforms with the applicable requirements. Material shall have a minimum thickness of SDR 32.5. Pipe specimens shall comply with the minimum property values shown below with the applicable ASTM requirements:

<u>Material</u>	<u>Property</u>	<u>ASTM Method</u>	<u>Value</u>
HDPE	Tensile Strength	D 638	3,300 psi
HDPE	Elasticity Modulus		E=113,000 psi
	Impact Strength	D 256 A	3.0 ft-lb/in
	Flexure Modulus		E=136,000 psi
	Expansion Coeff.		c=0.009 in/in/deg F

At the time of manufacture, each lot of liner shall be reviewed for defects and tested in accordance with ASTM D 2837 and D 1693. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults. The Contractor shall provide, as requested, certified test results for review by the Engineer, from the manufacturer, that the material conforms with the applicable requirements. The Engineer may at any time request the Contractor provide test results from field samples to the above requirements.

Liner shall be marked at 5-foot intervals or less with a coded number, which identifies the manufacturer, SDR, size, material, date, and shift on which the liner was extruded.

Lining manufacturer shall submit to the Engineer for approval as requested, complete design calculations for the liner thickness. The criteria for liner design shall be HS-20 traffic loading, water table to the ground surface, minimum expected lifetime of 50 years, and no structural strength retained from the existing pipe. Liner materials shall meet manufactures specifications of Pipe Liners, Inc. 3421 N. Causeway, Suite 321, New Orleans, LA 70002, 1-800-344-3744 or approved equal. Any approved equal liner system must be approved by the Engineer as an equal system prior to receiving bids. Request for contractor prequalification and/or equal liner system

approval must be received by the Engineer no later than 14 days prior to the date for receiving bids.

## **26.4 CLEANING/SURFACE PREPARATION**

It shall be the responsibility of the Contractor to clean and prepare the existing pipes for rehabilitation. The Contractor will thoroughly clean the interior of the sewers to produce a clean interior surface free of all coatings, sand, rock, roots, sludge, or other deleterious materials prior to liner insertion. Bypass pumping will be provided by the Contractor as part of the unit cost of restoration. Bypass operations are to be so arranged as to cause minimum disruptions to local traffic, residents and particularly to commercial facilities. During the cleaning and preparation operations all necessary precautions shall be taken to protect the public, all property and the sewer from damage.

All material removed from the sewers shall be the Contractor's responsibility for prompt disposal in accordance with all regulatory agency requirements. The Contractor may be required to control the rate of sewer cleaning in the sanitary system to avoid heavy pollution loads at the City's treatment plants.

## **26.5 TELEVISION INSPECTION**

After cleaning, and again after the rehabilitation work on each section of the project is completed, all pipe sections shall be visually inspected by means of closed-circuit color television, and recorded on VHS format tapes provided to the project engineer. The television system used shall be designed for the purpose and suitably lighted to provide a clear picture of the entire periphery of the pipe.

## **26.6 LINER INSTALLATION**

Liner shall be sized to field measurements obtained by the Contractor to provide a tight fit to the full interior circumference of the existing sanitary sewer and shall be a continuous, jointless liner product from inside of manhole to inside of manhole. Contractor shall use installation methods approved by the liner manufacturer including liner placement, reforming to fit existing pipe, pressure and heat requirements and reconnection of laterals. The Contractor shall immediately notify the Engineer of any construction delays taking place during the insertion operation. Contractor shall maintain a reasonable backup system for bypass pumping should delays or problems with pumping systems develop. Liner entries at manholes shall be smooth, free of irregularities, and watertight. No pinholes, tears, cracks, thin spots, or other defects in the liner shall be permitted. Such defects shall be removed and replaced by the Contractor at his expense. OSHA requirements for installation procedures, in particular, confined spaces are to be met.

## **26.7 LATERAL RECONNECTION**

Sanitary laterals shall be reconnected as soon as possible to renew service. Laterals are to be reconnected by means of robotics, by internally cutting out the liner to 100% of the area of the original opening. All lateral reconnections are to be grouted to prevent leakage. Grouting method and material is to be approved by the Engineer.

Any reconnections to laterals and connections to manholes which are observed to leak shall be resealed by the Contractor. All laterals discovered during the lining process are to be reconnected unless specifically directed otherwise by the City. The Contractor will be requested to reconnect any laterals discovered to not be reconnected at a later date. Contractor shall notify all local system

users when the sanitary system will not be available for normal usage by the delivery of door hangers with appropriate information regarding the construction project.

## **26.8 TIME OF CONSTRUCTION**

Construction schedules will be submitted by the Contractor and approved by the Engineer. At no time will any sanitary sewer service connection remain inoperative for more than a eight hour period without a service bypass being operated by the Contractor. In the event that sewage backup occurs and enters buildings, the Contractor shall be responsible for cleanup, repair and property damage costs and claims.

## **26.9 PAYMENT**

Payment for sanitary sewer restoration shall be made per lineal foot including all preparation, bypass pumping, equipment, labor, materials, operations, restoration, etc, to provide a fully completed and operational sewer. Payment shall be measured from center of manhole to center of manhole for the sanitary systems and from end of pipe to end of pipe for storm systems.

## **27 PLANT MIX DRIVEWAYS**

New driveways or existing black top driveways that must be broken back in widening the pavement (remove only enough to allow adequate grade for access to the street) shall be constructed or replaced in accordance with the specifications for paving the street with the exception that the base shall be six (6) inches. Use Section 23 G Asphaltic Concrete as specified for the street paving.

When finished surface of existing drive is gravel, replacement shall be of like material. Payment shall be the same as Plant Mix Driveways.

### **27.1 BASIS OF MEASUREMENT**

Measurement shall be the number of square yard of Plant Mix Driveways in place and accepted.

### **27.2 BASIS OF PAYMENT**

Payment shall be the unit price per square yard for Plant Mix Driveways as measured above, which price shall be full compensation for all work described in this section of the specifications and shall include all materials, equipment, tools, labor and incidentals necessary to complete the work.

## **28 REPORTING OF TONNAGE OF RECYCLED MATERIALS**

This Article deleted.

## **29 CONCRETE CURBS**

Concrete Curbs shall be constructed to the line, grade and dimensions as shown on the plans. Unless otherwise noted, all concrete curbs shall have fiber mesh reinforcement and have a minimum strength of 3000 p.s.i. at 28 days. Expansion joints shall be placed at intervals not to exceed 100 feet, and scored joints shall be placed at intervals not to exceed 10 feet. In addition, all the requirements of City Articles 6, 7, and 8 shall also apply. The Contractor shall notify the Project Inspector a minimum of 24 hours in advance of the placement of all concrete curbs.



## **29.1 BASIS OF MEASUREMENT**

The basis of measurement shall be lineal feet of curb in place and accepted.

## **29.2 BASIS OF PAYMENT**

Payment shall be the unit price per lineal foot of curb, which price shall be full compensation for all work described in this and other applicable parts of the specifications and shall include all materials, equipment, tools, labor and incidentals necessary to complete the work.

# **30 CONCRETE SIDEWALKS AND DRIVEWAYS**

## **30.1 CONCRETE SIDEWALKS**

Concrete sidewalks shall be constructed to the line, grade and dimensions as shown on the plans or herein specified. Unless otherwise noted, all concrete sidewalks shall have fiber mesh reinforcement and have a minimum strength of 3000 p.s.i. at twenty-eight (28) days. Unless otherwise specified, all concrete sidewalks shall have a minimum width of four feet (4'). Concrete sidewalks shall have a minimum thickness of four inches (4"), except at driveway crossings where a minimum thickness of six inches (6") is required. Also, 6/6 X 10/10 welded wire mesh reinforcement is required for all sidewalk that crosses driveways. The welded wire mesh shall be positioned in the middle to upper third of the placement. No compensation shall be given if the welded wire mesh is not properly placed. Expansion joints shall be placed at intervals of not more than one-hundred (100) hundred feet, and scoring marks shall be made every five feet (5'). Concrete shall be poured only on compacted subgrade. In addition, all the requirements of City Articles 6, 7, and 8 shall also apply.

## **30.2 CONCRETE DRIVEWAYS**

Concrete driveways, whether new construction or replacement, shall be a minimum of six (6) inches in thickness with 6/6 x 10/10 welded wire mesh reinforcement and a minimum horizontal distance between expansion joints of no less than four feet (4') measured in any direction. The welded wire mesh shall be positioned in the middle to upper third of the placement. No compensation shall be given if the welded wire mesh is not properly placed. Concrete shall be poured only on compacted subgrade. In addition, all the requirements of City Articles 6, 7, and 8 shall also apply.

The Contractor shall notify the Project Inspector a minimum of twenty-four (24) hours in advance of the placement of all concrete sidewalks and driveways.

## **30.3 BASIS OF MEASUREMENT**

The basis of measurement shall be the number of square feet of four inch (4") concrete sidewalk, six inch (6") concrete sidewalk, and six inch (6") concrete driveways in place and accepted.

## **30.4 BASIS OF PAYMENT**

Payment shall be the unit price per square foot for each item as measured above, which price shall be full compensation for all work described in this section and other applicable parts of the specifications and shall include all materials, equipment, tools, welded wire mesh where required, labor and incidentals necessary to complete the work.

### **31 SODDING**

Unless otherwise noted herein, the contractor shall place all sod, either shown on the plans or at the direction of the Engineer, in conformance with Sections 575, 981, 982 and 983 of FDOT's Standard Specifications (latest edition). The area for sod application shall be loosened and excavated to a suitable depth and finished to a grade compatible with existing grass and structures. Sod shall be placed with edges in close contact and shall be compacted to uniform finished grade with a sod roller immediately after placement. In sloped areas, the sod shall be graded and placed so as to prohibit erosion and undermining of the adjacent sidewalk. No sod that has been cut for more than 72 hours can be used unless authorized by the Engineer in advance. The sod shall be thoroughly watered immediately after placement. The Contractor shall continue to water sod as needed and/or directed by the Engineer as indicated by sun exposure, soil, heat and rain conditions, to establish and assure growth, until termination of the contract. Dead sod, or sod not acceptable to the Engineer, shall be removed and replaced by the Contractor at no additional compensation. Any questions concerning the type of existing sod shall be determined by the Engineer.

Unless otherwise noted on the plans, payment for sod (including labor, equipment, materials, placement, rolling, watering, etc.) shall be included in other bid items. Payment for these associated bid items may be withheld until the Contractor provides the City a healthy, properly placed stand of grass. When this work is given as a separate bid item, it shall cover all labor, equipment and materials, (including water) required for this work and shall be paid for on the basis of each square foot in place and accepted. No payment for sod shall be made until the Contractor provides the City a healthy, properly placed stand of grass.

### **32 SEEDING**

Seed, or seed and mulch, shall only be used when specified for certain demolition projects. The seed and/or mulch shall be placed as called for on the plans in the following manner. The area to be seeded shall be brought to the required line and grade, fertilized and seeded in basic conformance with the latest edition of FDOT's Standard Specifications Sections 570, 981, 982 and 983. However, no wildflower seed shall be used, and Argentine Bahia Seed shall be used instead of Pensacola Bahia. No sprigging will be required. Also, the addition of 20 lb. of Rye Seed (to total 60 lb. of seed per acre) will be required during the stated periods. It is also required that the Contractor maintain said seed until growth is assured.

When this work is given as a bid item, the item shall cover all labor, material, equipment (including water), required for this work, and shall be paid for on the basis of each square yard in place and accepted. If called for on the plans, but not shown as a bid item, then the cost of such work as stated above shall be included in the cost of other work.

### **33 STORM MANHOLES, INLETS, CATCH BASINS OR OTHER STORM STRUCTURES**

For details on specific design of a type of storm structure refer to Part B Index Numbers 200 to 235.

When required, inlets, catch basins or other structures shall be constructed according to the plans and applicable parts of the specifications, Section Numbers 7, 8, & 9, and as approved by the Engineer. Said structures shall be protected and saved from damage by the elements or other causes until acceptance of the work.

### **33.1 BUILT-UP TYPE STRUCTURES**

Manholes shall be constructed of brick with cast iron frames and covers as shown on the Index Numbers 201 and 202. Invert channels shall be constructed smooth and semi-circular in shape conforming to inside of adjacent sewer section. Changes in direction of flow shall be made in a smooth curve of as large a radius as possible. Changes in size and grade of channels shall be made gradually and evenly. Invert channels shall be built up with brick and mortar on top of concrete base.

The storm structure floor outside of channels shall be made smooth and sloped toward channels.

Manhole steps shall not be provided. Joints shall be completely filled and the mortar shall be smoothed from inside of the manholes.

The entire exterior of brick manholes shall be plastered with one half (1/2)-inch of mortar.

Brick shall be laid radially with every sixth course being a stretcher course.

In cases where a storm pipe extends inside a structure, the excess pipe will be cut off with a concrete saw and shall not be removed with a sledge hammer.

### **33.2 PRECAST TYPE**

The manhole base shall be set on a pad of dry native sand approximately five (5) inches thick to secure proper seating and bearing.

Precast Manholes and Junction Boxes: The Contractor may substitute precast manholes and junction boxes in lieu of cast in place units unless otherwise shown on the plans. Precast Inlets will not be acceptable. When precast units are substituted, the construction of such units must be in accordance with ASTM C 478, or the standard specifications at the manufacturer's option.

Precast structures must also meet the requirement that on the lateral faces, either inside or outside, the distance between precast openings for pipe or precast opening and top edge of precast structure be no less than wall thickness. A minimum of four (4) courses of brick will be provided under manhole ring so that future adjustment of manhole lid can be accommodated. Manhole steps shall not be provided. Manhole using O-ring between precast sections will not be acceptable for storm structures.

### **33.3 BASIS OF PAYMENT**

Payment for Junction Boxes, Manholes or other structures shall be on a unit basis.

## **34 MATERIAL USED**

This article deleted. See SECTION III, ARTICLE 19 – MATERIAL USED.

## **35 CONFLICT BETWEEN PLANS AND SPECIFICATIONS**

This article deleted. See SECTION III, ARTICLE 20 – CONFLICT BETWEEN PLANS AND SPECIFICATIONS.

## **36 STREET SIGNS**

The removal, covering or relocation of street signs by the Contractor is **PROHIBITED**.

All street signs shall be removed, covered or relocated by the City's Traffic Engineering Division in accordance with Sections 700, 994, 995, and 996 of FDOT's Standard Specifications (latest edition).

The Contractor shall notify the City's Traffic Engineering Division a minimum of twenty-four (24) hours in advance of the proposed sign relocation, covering or removal.

## **37 AUDIO / VIDEO RECORDING OF WORK AREAS**

### **37.1 CONTRACTOR TO PREPARE AUDIO / VIDEO RECORDING**

Prior to commencing work, the Contractor shall have a continuous color audio / video recording taken along the entire length of the Project including all affected project areas. Streets, easements, rights-of-way, lots, or construction sites within the Project must be recorded to serve as a record of pre-construction conditions.

### **37.2 SCHEDULING OF AUDIO / VIDEO RECORDING**

The video recordings shall not be made more than twenty-one (21) days prior to construction in any area.

### **37.3 PROFESSIONAL VIDEOGRAPHERS**

The Contractor shall engage the services of a professional videographer. The color audio videotapes shall be prepared by a responsible commercial firm known to be skilled and regularly engaged in the business of pre-construction color audio-video recording documentation.

### **37.4 EQUIPMENT**

All equipment, accessories, materials and labor to perform this service shall be furnished by the Contractor. The total audio video system shall reproduce bright, sharp, clear pictures with accurate colors and shall be free from distortion, tearing, rolls or any other form of imperfection. The audio portion of the recording shall reproduce the commentary of the camera operator with proper volume, clarity and be free from distortion and interruptions. In some instances, audio video coverage may be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking.

### **37.5 RECORDED INFORMATION, AUDIO**

Each recording shall begin with the current date, project name and be followed by the general location, i.e., viewing side and direction of progress. Accompanying the video recording of each video shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator or aide, shall assist in viewer orientation and in any needed identification, differentiation, clarification, or objective description of the features being shown in the video portion of the recording. The audio recording shall also be free from any conversations.

### **37.6 RECORDED INFORMATION VIDEO**

All video recordings must continuously display transparent digital information to include the date and time of recording. The date information shall contain the month, day and year. The time information shall contain the hour, minutes and seconds. Additional information shall be displayed

periodically. Such information shall include, but not be limited to, project name, contract number, direction of travel and the viewing side. This transparent information shall appear on the extreme upper left hand third of the screen. Camera pan, tilt, zoom-in and zoom out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during videotape playback. In addition, all other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chrome, white balance, and electrical focus shall be properly controlled or adjusted to maximize picture quality. The construction documentation shall be recorded in SP mode.

### **37.7 VIEWER ORIENTATION**

The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views of all visible house and business addresses shall be utilized. In areas where the proposed construction location will not be readily apparent to the videotape viewer, highly visible yellow flags shall be placed, by the Contractor, in such a fashion as to clearly indicate the proposed centerline of construction. When conventional wheeled vehicles are used as conveyances for the recording system, the vertical distance between the camera lens and the ground shall not exceed ten (10) feet. The camera shall be firmly mounted such that transport of the camera during the recording process will not cause an unsteady picture.

### **37.8 LIGHTING**

All recording shall be done during time of good visibility. No taping shall be done during precipitation, mist or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.

### **37.9 SPEED OF TRAVEL**

The average rate of travel during a particular segment of coverage shall be directly proportional to the number, size and value of the surface features within that construction areas zone of influence. The rate of speed in the general direction of travel of the vehicle used during taping shall not exceed forty-four (44) feet per minute.

### **37.10 VIDEO LOG / INDEX**

All videotapes shall be permanently labeled and shall be properly identified by videotape number and project title. Each videotape shall have a log of that videotape's contents. The log shall describe the various segments of coverage contained on the video tape in terms of the names of the streets or location of easements, coverage beginning and end, directions of coverage, video unit counter numbers, engineering survey or coordinate values (if reasonably available) and the date.

### **37.11 AREA OF COVERAGE**

Tape coverage shall include all surface features located within the zone of influence of construction supported by appropriate audio coverage. Such coverage shall include, but not be limited to, existing driveways, sidewalks, curbs, pavements, drainage system features, mailboxes, landscaping, culverts, fences, signs, Contractor staging areas, adjacent structures, etc. within the area covered by the project. Of particular concern shall be the existence of any faults, fractures, or defects. Taped coverage shall be limited to one side of the Site, street, easement or right of way at any one time.

## **37.12 COSTS OF VIDEO SERVICES**

The cost to complete the requirements under this section shall be included in the Contract Items provided in the Proposal Sheet. There is no separate pay item for this work.

## **38 EROSION AND SILTATION CONTROL**

### **38.1 STABILIZATION OF DENUDED AREAS**

No disturbed area may be denuded for more than thirty (30) calendar days unless otherwise authorized by the City Engineer. During construction, denuded areas shall be covered by mulches such as straw, hay, filter fabric, seed and mulch, sod, or some other permanent vegetation. Within sixty (60) calendar days after final grade is established on any portion of a project site, that portion of the site shall be provided with established permanent soil stabilization measures per the original site plan, whether by impervious surface or landscaping.

### **38.2 PROTECTION AND STABILIZATION OF SOIL STOCKPILES**

Fill material stockpiles shall be protected at all times by on-site drainage controls which prevent erosion of the stockpiled material. Control of dust from such stockpiles may be required, depending upon their location and the expected length of time the stockpiles will be present. In no case shall an unstable stockpile remain after thirty (30) calendar days.

### **38.3 PROTECTION OF EXISTING STORM SEWER SYSTEMS**

During construction, all storm sewer inlets in the vicinity of the project shall be protected by sediment traps such as secured hay bales, sod, stone, etc., which shall be maintained and modified as required by construction progress, and which must be approved by the City Engineer before installation.

### **38.4 SEDIMENT TRAPPING MEASURES**

Sediment basins and traps, perimeter berms, filter fences, berms, sediment barriers, vegetative buffers and other measures intended to trap sediment and/or prevent the transport of sediment onto adjacent properties, or into existing water bodies; must be installed, constructed, or, in the case of vegetative buffers, protected from disturbance, as a first step in the land alteration process. Such systems shall be fully operative and inspected by the City before any other disturbance of the site begins. Earthen structures including but not limited to berms, earth filters, dams or dikes shall be stabilized and protected from drainage damage or erosion within one (1) week of installation.

### **38.5 SEDIMENTATION BASINS**

Areas of three (3) acres or more shall be required to have temporary sedimentation basins as a positive remedy against downstream siltation and will be shown and detailed on construction plans. During development, permanent detention areas may be used in place of silt basins provided they are maintained to the satisfaction of the City.

The Contractor will be required to prohibit discharge of silt through the outfall structure during construction of any detention area and will be required to clean out the detention area before installing any permanent sub-drain pipe. In addition, permanent detention areas must be totally cleaned out and operating properly at final inspection and at the end of the one (1) year warranty period. When temporary sedimentation basins are used, they shall be capable at all times of

containing at least one (1) cubic foot of sediment for each one hundred (100) square feet of area tributary to the basin. Such capacity shall be maintained throughout the project by regular removal of sediment from the basin.

### **38.6 WORKING IN OR CROSSING WATERWAYS OR WATERBODIES**

Land alteration and construction shall be minimized in both permanent and intermittent waterways and the immediately adjacent buffer of twenty-five (25) feet from top of bank of the waterways and the buffer area whenever possible, and barriers shall be used to prevent access. Where in channel work cannot be avoided, precautions must be taken to stabilize the work area during land alteration, development and/or construction to minimize erosion. If the channel and buffer area are disturbed during land alteration, they must be stabilized within three (3) calendar days after the in channel work is completed.

Silt curtains or other filter/siltation reduction devices must be installed on the downstream side of the in channel alteration activity to eliminate impacts due to increased turbidity. Wherever stream crossings are required, properly sized temporary culverts shall be provided by the contractor and removed when construction is completed. The area of the crossing shall be restored to a condition as nearly as possible equal to that which existed prior to any construction activity.

### **38.7 SWALES, DITCHES AND CHANNELS**

All swales, ditches and channels leading from the site shall be sodded within three (3) days of excavation. All other interior swales, etc., including detention areas will be sodded prior to issuance of a Certificate of Occupancy.

### **38.8 UNDERGROUND UTILITY CONSTRUCTION**

The construction of underground utility lines and other structures shall be done in accordance with the following standards:

- a. No more than four hundred (400) lineal feet of trench shall be open at any one time;
- b. Wherever consistent with safety and space consideration, excavated material shall be cast to the uphill side of trenches. Trench material shall not be cast into or onto the slope of any stream, channel, road ditch or waterway.

### **38.9 MAINTENANCE**

All erosion and siltation control devices shall be checked regularly, especially after each rainfall and will be cleaned out and/or repaired as required.

### **38.10 COMPLIANCE**

Failure to comply with the aforementioned requirements may result in a fine and/or more stringent enforcement procedures such as (but not limited to) issuance of a "Stop Work Order".

City of Madeira Beach Standard Detail Drawings No. 601 and 607 are examples of accepted methods that may be used or required to control erosion and siltation.

## City of Madeira Beach - Erosion Control

This notice is to inform the prime contractor that the City of Madeira Beach holds them responsible for soil erosion control on their site.

The City of Madeira Beach Engineering Representative has the responsibility to minimize the amount of soil erosion into the City's streets, storm sewers and waterways.

The construction of a new residence or commercial site and major remodeling of an existing site creates a potential for soil erosion. These instances are usually the result of contractors and subcontractors accessing the property with equipment or construction materials. Then rain storms redistribute the eroded soil into the adjacent streets, storm systems and waterways.

When erosion takes place, a City Inspector will place a correction notice at the site. The procedure will be as follows:

- |                            |   |                        |
|----------------------------|---|------------------------|
| 1 <sup>st</sup> Occurrence | - | Warning                |
| 2 <sup>nd</sup> Occurrence | - | \$32 Re-inspection Fee |
| 3 <sup>rd</sup> Occurrence | - | \$80 Re-inspection Fee |
| 4 <sup>th</sup> Occurrence | - | Stop Work Order        |

Dependent on the severity of the erosion, the City's Engineering Department may elect to rectify the erosion problem and charge the contractor accordingly.

The attached drawings and details are recommendations for the contractor to use as means to support the site from eroding. The Contractor may elect to shovel and sweep the street daily or on an as needed basis. However, erosion must be held in check.

Erosion Control Required - City of Madeira Beach's Code of Ordinances requires erosion control on all land development projects.

Erosion control must be in place and maintained throughout the job. Failure to do so may result in additional costs and time delays to the permit holder.



### **39 UTILITY TIE IN LOCATION MARKING**

The tie in locations for utility laterals of water, sanitary sewer, and gas shall be plainly marked on the back of the curb. Marking placed on the curb shall be perpendicular with respect to the curb of the tie in location on the utility lateral. Marks shall not be placed on the curb where laterals cross diagonally under the curb. The tie in location shall be the end of the utility lateral prior to service connection.

Markings shall be uniform in size and shape and colors in conformance with the code adopted by the American Public Works Association as follows:

SAFETY RED	Electric Power, Distribution & Transmission Municipal Electric Systems
HIGH VISIBILITY SAFETY YELLOW	Gas Distribution and Transmission Oil Distribution and Transmission Dangerous Materials, Produce Lines, Steam Lines
SAFETY ALERT ORANGE	Telephone and Telegraph Systems Police and Fire Communications Cable Television
SAFETY PRECAUTION BLUE	Water Systems Slurry Pipe Lines
SAFETY GREEN	Sewer Systems
LAVENDER	Reclaimed Water
WHITE	Proposed Excavation

Marks placed on curbs shall be rectangular in shape and placed with the long dimension perpendicular to the flow line of the curb. Marks placed on valley gutter and modified curb shall be 6-inch x 3-inch and placed at the back of the curb. Marks placed on State Road and vertical curb shall be 4-inch x 2-inch and be placed on the curb face.

### **40 AWARD OF CONTRACT, WORK SCHEDULE AND GUARANTEE**

This article not used. See SECTION III, ARTICLE 24 – AWARD OF CONTRACT, WORK SCHEDULE AND GUARANTEE.

### **41 POTABLE WATERMANS, RECLAIMED WATERMANS AND APPURTENANCES**

#### **41.1 SCOPE**

The Contractor shall furnish all plant, labor, materials and equipment to perform all operations in connection with the construction of potable water mains, reclaimed water mains and appurtenances including clearing, excavation, trenching, backfilling and clean up.

## 41.2 MATERIALS

### 41.2.1 GENERAL

Materials, equipment and supplies furnished and permanently incorporated into the project shall be of first quality in every respect and shall be constructed and finished to high standards of workmanship. Materials shall be suitable for service intended, shall reflect modern design and engineering and shall be fabricated in a first class workmanlike manner. All materials, equipment and supplies shall be new and shall have not been in service at any time previous to installation, except as required in tests or incident to installation. Machined metal surfaces, exposed bearings and glands shall be protected against grit, dirt, chemical corrosion and other damaging effects during shipment and construction.

### 41.2.2 PIPE MATERIALS AND FITTINGS

#### 41.2.2.1 DUCTILE IRON PIPE

Ductile Iron Pipe shall be in accordance with ANSI/AWWA C151/A21.51 81 or latest revision. Pipe thickness class, wall thickness and working pressure shall conform to the following table:

Size	Class	Thickness (In.)	Rated Water Working Pressure (PSI)
4"	51	0.26	350
6"	50	0.25	350
8"	50	0.27	350
12"	50	0.31	350

The trench laying condition shall be Type 2, Flat bottom trench backfill lightly consolidated to centerline of pipe.

Pipe shall be manufactured in accordance with ANSI/AWWA C151/A21.51 81 or latest revision.

Pipe shall be asphalt coated on the outside and standard cement lined and sealed coated with approved bituminous seal coat in accordance with ANSI/AWWA C104/A21.4 80 or latest revision.

#### 41.2.2.2 POLYVINYL CHLORIDE (PVC) PIPE

Polyvinyl Chloride (PVC) Pipe 4-inch through 8-inch shall be in accordance with ANSI/AWWA C900 or latest revision and the American Society for Testing Materials (ASTM) Standard D 2241 and PVC Resin Compound conforming to ASTM Specification D 1784.

Polyvinyl Chloride Pipe shall have the same O.D. as Cast and Ductile Iron Pipe and be compatible for use without special adapters with Cast Iron Fittings.

Pipe dimension ratio, working pressure and laying length shall conform to the following table:

Size	Dimension Ratio (OD/Thick.)	Rated Water Working Pressure (PSI)	Laying Length (Ft)
4	18	150	20
6	18	150	20
8	18	150	20

Pipe larger than 8-inch shall be ductile iron. the City Engineer reserves the right to require the use of ductile iron in sizes 4-inch through 8-inch when needed due to laying conditions or usage.

The bell of 4-inch and larger PVC pipe shall consist of an integral wall section with a solid cross section elastomeric ring which meets the requirements of ASTM D 1869.

Each length of pipe shall bear identification that will remain legible during normal handling, storage and installation and so designate the testing agency that verified the suitability of the pipe material for potable water service.

All polyvinyl chloride pipe shall be laid with two (2) strands of insulated 12 gauge A.W.G. solid strand copper wire taped to the top of each joint of pipe with about 18-inches between each piece of tape. It is to be installed at every valve box through a 2-inch PVC pipe to 12-inches minimum above the top of the concrete slab. The 2-inch PVC pipe shall be the same length as the adjustable valve box, and the 2-inch PVC pipe shall be plugged with a 2-inch removable brass plug with recessed nut. This wire is to be continuous with splices made only by direct bury 3M brand splice kit approved by the Engineer. This wire is to be secured to all valves, tees and elbows.

#### **41.2.2.3 FITTINGS AND JOINTS**

Fitting from 4-inch through 16-inch in size will be compact ductile iron cast in accordance with ANSI/AWWA C153/A 21.53 with mechanical joint bells. Bolts, nuts and gaskets shall be in accordance with requirements of ANSI/AWWA C153/A 21.53. The working pressure rating shall be 350 P.S.I. Ductile iron fittings shall be coated and lined in accordance with require requirements of ANSI/AWWA C104/A21.4. Mechanical joint glands shall be ductile iron in accordance with ANSI/AWWA C111/A 21.11. When reference is made to ANSI/AWWA Standards, the latest revisions apply. Only those fittings and accessories that are of domestic (USA) manufacture will be acceptable.

#### **41.2.2.4 RESTRAINT**

Restraint of plugs, caps, tees, bends, etc., shall be accomplished by the use of approved mechanical restraining rings or glands installed per manufacturer's recommendations. Hydrants shall be restrained by the use of swivel connecting joints. Restraining mechanical joint glands on hydrants shall be used only where hydrant runout length precludes the use of swivel joint connectors.

#### **41.2.2.5 PIPE WITHIN CASING**

All pipe placed within casings shall be slip joint ductile iron restrained by the use of restraining gaskets designed for use with the particular joint being installed and have properly sized casing spacers (Cascade Series) installed on the pipe so that the pipe will be centered within the casing. Each end of the casing shall be properly sealed to prevent the intrusion of soil, water, or debris

within the casing itself. It shall be sealed by brick and mortar, cement or any approved method by the Engineer.

### **41.2.3 GATE VALVES**

Discs of valves shall be operated by methods which will allow operation in any position with respect to the vertical. Gate valves for interior piping or exposed above grade outside structures, shall be handwheel operated with rising stems. Valves 4-inches and larger, buried in earth shall be equipped with 2-inch square operating nuts, valve boxes and covers. Valves shall be fitted with joints suitable for the pipe with which they are to be used. The direction of opening for all valves shall be to the left (counter clockwise).

Pressure Rating: Unless otherwise shown or specified, valves for high pressure service shall be rated at not less than 150 psi cold water, nonshock.

The manufacturer's name and pressure rating shall be cast in raised letters on the valve body.

Installation: Installation shall be in accordance with good standard practice. Exposed pipelines shall be so supported that their weight is not carried through valves.

Two Inch Diameter and smaller: Not allowed. These should be approved ball valves.

Three Inch Diameter: Not allowed.

Four Inch to Sixteen Inch Diameter: Gate Valves, 4 to 16-inch diameter, inclusive, shall be resilient seated gate valves encapsulated with EPDM Rubber in conformance with ANSI/A.W.W.A. Standard Specification C509-515 latest revision. These valves shall include the following features consistent with C509-515, full opening unobstructed waterway, zero leakage at 200 p.s.i. differential pressure, all internal parts removable from bonnet without removing body from pressure main, corrosion resistant bronze or stainless steel nonrising stem with O ring bonnet seal with epoxy coated inside and outside cast iron or ductile iron valve body..

Larger than Sixteen Inch Diameter: Gate valves larger than 16-inch shall be suitable for the service intended and shall be resilient seated gate valves encapsulated with EPDM rubber in conformance with ANSI/AWWA. These valves shall include the following features consistent with C509-80, full opening unobstructed waterway, zero leakage at 200 psi differential pressure. All valves shall be equipped with steel cut bevel gears, extended type gear case and rollers, bronze or babbitt tracks and scrapers and valved by-pass.

### **41.2.4 VALVE BOXES**

Valve boxes shall be of standard extension design and manufacture and shall be made of cast iron. No PVC Risers or Derisers are allowed as part of a valve box assembly. They are to be 3-piece valve box assemblies. The lower part of the assembly can be ordered in various heights to accommodate different depths. Suitable sizes of valve boxes and extension pieces shall be provided where shown. The valve box cover shall be of cast iron. Valve boxes and their installation shall be included in the bid price for valves. Refer to City Index No. 402; Sheet 1 of 5 & Sheet 2 of 5 for potable water valve pad detail, and City Index No. 502; Sheet 1 of 2 & Sheet 2 of 2 for reclaimed water valve boxes and pad detail.

### **41.2.5 HYDRANTS**

No other hydrants, other than those listed below, may be used in extension to or replacement of the City of Madeira Beach potable water system:

- Kennedy Guardian #K 81D Fire Hydrant,
- Mueller Super Centurion 25 Fire Hydrant
- AVK Nostalgic 2780.
- American Darling B-84-B.

No substitutions shall be allowed without the approval of the City of Madeira Beach.

Above hydrants shall be in accordance with the latest revision of the AWWA Specification C 502 and include the following modifications:

1. All shipments to be palletized and tailgate delivery.
2. Hydrants shall conform to A.W.W.A. Standard C-502 latest revision and must be UL/FM listed.
3. Hydrants shall be of the compression type, closing with line pressure.
4. The operating threads will be contained in an operating chamber sealed at the top and bottom with an O-ring seal. The chamber will contain a lubricating grease or oil.
5. Hydrants shall be of the traffic model breakaway type, with the barrel made in two sections with the break flange located approximately 2-inch above the ground line. Breakaway bolts not allowed.
6. Operating nut shall be of one-piece bronze or ductile iron construction.
7. A dirt shield shall be provided to protect the operating mechanism from grit buildup and corrosion due to moisture.
8. A thrust washer shall be supplied between the operating nut and stem lock nut to facilitate operation.
9. Operating nut shall be a #7 (1-1/2-inch) pentagon nut.
10. Nozzles shall be of the tamper resistant, 1/4 turn type with O-ring seals or threaded into upper barrel. Nozzles shall be retained with a stainless steel locking device.
11. The main valve shall be of EPDM solid rubber.
12. The seat shall be of a bronze ring threaded to a bronze insert in the hydrant shoe, with O-rings to seal the barrel from leakage of water in the shoe.
13. The main valve stem will be 304 or higher grade stainless steel and made in two sections with a breakable coupling.
14. Hydrant shall have a 6-inch Mechanical Joint epoxy lined elbow, less accessories.
15. Hydrant shall have a 5-1/4-inch valve opening, and shall be a left hand operation to open.
16. Hydrant shall be without drains.
17. Hydrant shall have two (2) 2-1/2-inch hose nozzles and one (1) 4-1/2-inch pumper nozzle. Threads shall be in accordance with the National Standard Hose Coupling Thread Specifications.
18. Hydrant body shall have a factory finish of yellow paint. All paints shall comply with AWWA standard C-502-85 or latest revision.

All hydrants will be shop tested in accordance with the latest AWWA Specification C 502.

Constrained joint assemblies shall be used which have bolted mechanical and swivel joints from the hydrant tee through to the hydrant. Constrained joints shall absorb all thrust and prevent movement of the hydrant.

All hydrants shall be provided with an auxiliary gate valve so that the water to the hydrant may be shut off without the necessity of closing any other valve in the distribution system.

No hydrants shall be installed on the reclaimed water system unless approved by the City of Madeira Beach's Engineering Department.

#### **41.2.6 SERVICE SADDLES**

Service saddles shall be used on all service taps to 4-inch P.V.C. water main. The largest service connection allowable on 4-inch main shall be 1-1/2-inch. Service saddles shall be used on all 2-inch service connections to 6-inch and larger mains. Service saddles (JCM 406 series or Ford FC 202 series) shall be wide bodied ductile iron with epoxy or nylon coating and shall have stainless steel straps.

#### **41.2.7 TESTS, INSPECTION AND REPAIRS**

1. All materials shall be tested in accordance with the applicable Federal, ASTM or AWWA Specification and basis of rejection shall be as specified therein. Certified copies of the tests shall be submitted with each shipment of materials.
2. All materials will be subject to inspection and approved by the Engineer after delivery; and no broken, cracked, misshapen, imperfectly coated or otherwise damaged or unsatisfactory material shall be used.
3. All material found during the progress of the work to have cracks, flaws, or other defects shall be rejected and promptly removed from the site.
4. If damage occurs to any pipe, fittings, valves, hydrants or water main accessories in handling, the damage shall be immediately brought to the Engineer's attention. The Engineer shall prescribe corrective repairs or rejection of the damaged items.

#### **41.2.8 BACKFLOW PREVENTERS**

**The City of Madeira Beach owns and maintains all backflow prevention devices that are installed within their system. Therefore, any and all devices must be purchased from the City and installed by City work forces.**

Backflow prevention devices installed on customer's service lines at the point of delivery (service connection) shall be of a type in accordance with AWWA specification C506 or latest revision.

Two (2) different types of backflow prevention devices are allowed. Type of device, when required, is determined by the degree of hazard presented to the municipal water system from possible backflow of water within the customer's private system. The types of devices allowed are:

1. Double Check Valve Assembly a device composed of two single, independently acting, approved check valves, including tightly closing shutoff valves located at each end of the assembly and suitable connections for testing the watertightness of each check valve.
2. Reduced pressure principle backflow prevention device a device containing a minimum of two independently acting, approved check valves, together with an automatically operated pressure differential relief valve located between the two check valves. The unit must

include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks.

#### **41.2.9 TAPPING SLEEVES**

Steel body tapping sleeves shall be JCM Industries Inc., JCM 412 or Smith-Blair 622. All steel body tapping sleeves shall have heavy welded ASTM A 285, Grade C steel body, stainless steel bolts, manufacturer's epoxy coated body, and 3/4-inch bronze test plug.

#### **41.2.10 BLOW OFF HYDRANTS**

Blow offs are not allowed.

### **41.3 CONSTRUCTION**

#### **41.3.1 MATERIAL HANDLING**

1. Pipe, fittings, valves, hydrants and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded rolled against pipe already on the ground.
2. Pipe shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor at his expense in a manner satisfactory to the Engineer.
3. In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

#### **41.3.2 PIPE LAYING**

##### **41.3.2.1 ALIGNMENT AND GRADE**

The pipe shall be laid and maintained to the required lines and grades with fittings, valves and hydrants at the required locations, spigots centered in bells; and all valves and hydrant stems plumb. All pipe installed shall be pigged and properly blown off before any pressure testing and sterilization of the pipe can be completed.

The depth of cover over the water main shall be a minimum of 30-inches and a maximum of 42-inches below finished grade, except where approved by the Engineer to avoid conflicts and obstructions. Whenever obstructions not shown on the plans are encountered during the progress of the work and interfere to such an extent that an alteration of the plans is required, the Engineer shall have the authority to change the plans and order a deviation from the line and grade or arrange with the Owners of the structures for the removal, relocation, or reconstruction of the obstructions.

##### **41.3.2.2 INSTALLATION**

Proper implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient performance of the work. All pipe, fittings, valves and hydrants shall be carefully lowered into the trench piece by piece by means of a derrick, ropes, or other suitable tools or equipment in such a manner as to prevent damage to materials and protective coatings and linings. Under no circumstances shall materials be dropped or dumped in the trench.

If damage occurs to any pipe, fittings, valves, hydrants or accessories in handling, the damage shall be immediately brought to the Engineer's attention. The Engineer shall prescribe corrective repairs or rejection of the damaged items.

All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation in final position. Spigot ends shall be examined with particular care as this area is the most vulnerable to damage from handling. Defective pipe or fittings shall be laid aside for inspection by the Engineer who will prescribe corrective repairs or rejection.

All lumps, blisters, and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell shall be wire brushed and wiped clean and dry and free from oil and grease before the pipe is laid. Pipe joints shall be made up in accordance with the manufacturer's recommendations.

Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. If the pipe laying crew cannot put the pipe into the trench and in place without getting earth into it, the Engineer may require that, before lowering the pipe into the trench, a heavy, woven canvas bag of suitable size shall be placed over each end and left there until the connection is to be made to the adjacent pipe. During laying operation, no debris, tools, clothing or other materials shall be placed in the pipe.

As each length of pipe is placed in the trench, the spigot end shall be centered in the bell and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it except at the bells. Precautions shall be taken to prevent dirt from entering the joint space.

At times when pipe laying is not in progress, the open ends of pipe shall be closed by a watertight plug or other means approved by the Engineer.

The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or cement lining and so as to leave a smooth end at right angles to the axis of the pipe.

Pipe shall be laid with bell ends facing in the direction of laying unless directed otherwise by the Engineer. Where pipe is laid on the grade of 10 per cent or greater, the laying shall start at bottom and shall proceed upward with the bell ends of the pipe up grade.

Wherever it is necessary to deflect pipe from a straight line, either in the vertical or horizontal plane to avoid obstructions or to plumb stems; or where long radius curves are permitted, the amount of deflection allowed shall not exceed that allowed under the latest edition of ANSI/AWWA C600-82 and C900 81 or latest revisions.

No pipe shall be laid when, in the opinion of the Engineer, trench conditions are unsuitable.

### **41.3.3 SETTING OF VALVES, HYDRANTS AND FITTINGS**

#### **41.3.3.1 GENERAL**

Valves, hydrants, fittings, plugs and caps shall be set and joined to pipe in the manner specified above for installation of pipe.



#### **41.3.3.2 VALVES**

Valves in water mains shall, where possible, be located on the street property lines extended unless shown otherwise on the plans. All valves shall be installed at the tee in all cases, not to exceed 18-inches from the main line.

The valve box shall not transmit any shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed. Refer to City Index No. 402; Sheet 1 of 5 & Sheet 2 of 5 for potable water valve pad detail, and City Index No. 502; Sheet 1 of 2 & Sheet 2 of 2 for reclaimed water valve box and pad detail.

#### **41.3.3.3 HYDRANTS**

Hydrants shall be located as shown or as directed so as to provide complete accessibility and minimize the possibility of damage from vehicles or injury to pedestrians. All hydrants located 10-feet or more from the main shall have a gate valve at the main and another gate valve at the hydrant location. No valve can be located anywhere in the hydrant run to circumvent the use of two valves. Refer to City Index No. 402; Sheet 5 of 5 for potable water hydrants. No hydrants shall be installed on the reclaimed water system unless approved by the City of Madeira Beach's Engineering Department.

All hydrants shall stand plumb and shall have their nozzles parallel with, or at right angles to, the curb, with the pumper nozzle facing the curb. Hydrants shall be set to the established grade, with nozzles as shown or as directed by the Engineer.

Each hydrant shall be connected to the main with a 6-inch ductile iron branch controlled by an independent 6 inch gate valve.

#### **41.3.3.4 ANCHORAGE**

Movement of all plugs, caps, tees, bends, etc., unless otherwise specified shall be prevented by attaching approved mechanical restraining rings or glands and installed per manufacturers recommendations. Hydrants shall be held in place with restrained swivel joints. Restraining mechanical joint glands on hydrants may be used where hydrant runout length precludes the use of hydrant connecting swivel joints.

Where special anchorage is required, such anchorage shall be in accordance with details shown on the plans.

#### **41.3.4 CONNECTIONS TO EXISTING LINES**

Where shown on the plans or directed by the Engineer, the water lines constructed under this contract shall be connected to the existing lines now in place. No such connection shall be made until all requirements of the specifications as to tests, flushing, and sterilization have been met and the plan of the cut in to the existing line has been approved by the Engineer.

Where connections are made between new work and existing work, the connections shall be made in a thorough and workmanlike manner using proper materials and fittings to suit the actual conditions. All fittings shall be properly sterilized and pipe will be properly swabbed before connections to existing facilities. All connections to existing facilities will be completed under the supervision of the City of Madeira Beach Water Division.

## **41.4 TESTS**

### **41.4.1 HYDROSTATIC TESTS**

After installation of water mains, complete with all associated appurtenances including service taps, all sections of newly laid main shall be subject to a hydrostatic pressure test of 150 pounds per square inch for a period of two (2) hours and shall conform to AWWA C600 latest revision. All mains shall be pigged and flushed to remove all sand and other foreign matter before any hydrostatic test can or will be performed. The pressure test shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection and all necessary apparatus, together with operating personnel, shall be furnished by the Contractor at his expense.

The Contractor shall make all necessary taps into the pipe line. The Owner will furnish the water for the test. Before applying the test pressure, all air shall be expelled from the pipe line.

### **41.4.2 NOTICE OF TEST**

The Contractor shall give the City of Madeira Beach's Owner Representative 48-hours advance notice of the time when the installation is ready for hydrostatic testing.

## **41.5 STERILIZATION**

Before the system is put into operation, all water mains and appurtenances and any item of new construction with which the water comes in contact, shall be thoroughly sterilized in accordance with AWWA C651.

### **41.5.1 STERILIZING AGENT**

The sterilizing agent shall be liquid chlorine, sodium hypochlorite solution conforming to Federal Specification 0 S 602B, Grade D, or dry hypochlorite, commonly known as "HTH" or "Perchloron".

### **41.5.2 FLUSHING SYSTEM**

Prior to the application of the sterilization agent, all mains shall be thoroughly flushed. Flushing shall continue until a clean, clear stream of water flows from the hydrants. Where hydrants are not available for flushing, such flushing shall be accomplished at the installed blow off devices generally at the ends of the lines.

### **41.5.3 STERILIZATION PROCEDURE**

All piping, valves, fittings and all other appurtenances shall be sterilized with water containing a minimum chlorine concentration of 75 ppm at any point in the system. This solution shall then remain in the distribution system for a minimum contact period of eight (8) hours and never more than 24 hours before it is flushed out. All valves in the lines being sterilized shall be opened and closed several times during the contact period.

### **41.5.4 RESIDUAL CHLORINE TESTS**

After the sterilization outlined above has been accomplished, flushing shall continue until free residual chlorine tests not less than 0.2 ppm nor more than 3.0 ppm. Residual chlorine test shall be in accordance with standard methods using a standard DPD test set.

## **41.5.5 BACTERIAL TESTS**

After the water system has been sterilized and thoroughly flushed as specified herein, City of Madeira Beach Water Division or the Owner's Representative personnel shall take samples of water from remote points of the distribution system in suitable sterilized containers. The City shall forward the samples to a laboratory certified by the Florida State Board of Health for bacterial examination in accordance with AWWA C651. If tests of such samples indicate the presence of coliform organisms, the sterilization as outlined above shall be repeated until tests indicate the absence of such pollution. The bacterial tests shall be satisfactorily completed before the system is placed in operation and it shall be the Contractor's responsibility to perform the sterilization as outlined above.

If methods of sterilization differ materially from those outlined above, such methods shall be in accordance with directives of the Florida State Board of Health and all methods employed shall have the approval of that agency. Definite instructions as to the collection and shipment of samples shall be secured from the laboratory prior to sterilization and shall be followed in all respects. The City of Madeira Beach shall secure clearance of the water main from the Florida Department of Environmental Protection before the water distribution system is put into operation.

## **41.6 MEASUREMENT AND PAYMENT**

### **41.6.1 GENERAL**

Bids must include all sections and items as specified herein and as listed on the Bid Form. Payment for the work of constructing the project will be made at the unit price or lump sum payment for the items of work as set forth in the Bid, which payment will constitute full compensation for all labor, equipment, and materials required to complete the work. No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work:

- Clearing and grubbing
- Excavation, including necessary pavement removal
- Shoring and/or dewatering
- Structural fill
- Backfill
- Grading
- Tracer wire
- Refill materials
- Joints materials
- Tests and sterilization
- Appurtenant work as required for a complete and operable system.

### **41.6.2 FURNISH AND INSTALL WATER MAINS**

#### **41.6.2.1 MEASUREMENT**

The quantity for payment shall be the actual number of feet of pipe of each size and type satisfactorily furnished and laid, as measured along the centerline of the completed pipe line, including the length of valves and fittings.

#### **41.6.2.2 PAYMENT**

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, materials and equipment, and constructing the water mains complete and ready for operation.

#### **41.6.3 FURNISH AND INSTALL FITTINGS**

##### **41.6.3.1 MEASUREMENT**

The quantity for payment will be the number of tons, or decimal part thereof, of ductile iron fittings satisfactorily furnished and installed. Fitting weights shall be based on weights stamped on the body of the fitting, provided such weights do not exceed the theoretical weights by more than the tolerances permitted in ANSI/AWWA C110/A 21.10 82, latest revision, in which case, the weight will be based upon the theoretical weight plus the maximum tolerance.

##### **41.6.3.2 PAYMENT**

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, materials, and equipment required to furnish and install ductile iron fittings.

#### **41.6.4 FURNISH AND INSTALL GATE VALVES COMPLETE WITH BOXES AND COVERS**

##### **41.6.4.1 MEASUREMENT**

The quantity for payment shall be the number of gate valves of each size satisfactorily furnished and installed.

##### **41.6.4.2 PAYMENT**

Payment of the applicable unit price for each size shall be full compensation for furnishing all plant, labor, material and equipment and installing the valve complete with box and cover.

#### **41.6.5 FURNISH AND INSTALL FIRE HYDRANTS**

##### **41.6.5.1 MEASUREMENT**

The quantity for payment shall be the number of fire hydrants satisfactorily furnished and installed. The only hydrants allowed to be installed in the City of Madeira Beach utilities system are listed in Section 41.2.5. No exceptions.

##### **41.6.5.2 PAYMENT**

Payment of the applicable unit price shall be full compensation for furnishing all plant, labor, material and equipment and installing the fire hydrant complete including necessary thrust anchorage, 6-inch pipe between the main and the hydrant and gate valve and valve box on the hydrant lead.

## **42 GAS SYSTEM SPECIFICATIONS**

This article not applicable.

## **43 TENNIS COURTS**

### **43.1 PAVED TENNIS COURTS**

#### **43.1.1 SOIL TREATMENTS**

All soil under courts shall be treated with DSMA 184 at the rate of 2 pounds active ingredient per 1,000 square foot.

Materials shall be brought to the job site in tagged containers. Tags shall be retained and turned into the Engineer's Office.

#### **43.1.2 BASE COURSE**

Base Course shall be Limerock 6" thick after compaction. Specifications for the base shall be the same as those for Limerock in Section IV - Article 22 of the City of Madeira Beach Technical Specifications. Subgrade stabilizing will not be required.

Surface shall be cut to within 1/2" of true grade in preparation of 1" leveling course. Prior to applying prime coat, surface shall be approved by the Engineer.

#### **43.1.3 PRIME COAT**

The material used for prime coat shall be cut-back Asphalt Grade RC-70 or RC-250 and shall conform to Section 300 of the Florida State Department of Transportation's "Standard Specifications for Road and Bridge Construction".

#### **43.1.4 LEVELING COURSE**

A.Leveling Course shall be a minimum of 1" of Type S-III Asphaltic Concrete as specified in Section 331 of FDOT's Standard Specification (latest edition). The Leveling Course shall be constructed running East and West.

Finish surface of leveling course shall not vary more than 1/4" when checked with a 10 foot straight edge. If a deficiency of more than 1/4" exists, the Engineer will determine if the surface should be leveled or removed and replaced. Such remedial work shall be without compensation.

#### **43.1.5 SURFACE COURSE**

Surface course shall be a minimum of 1" of Type S-III Asphaltic Concrete as specified in Section 331 of FDOT's Standard Specification (latest edition). The Surface Course shall be constructed running North and South.

Finish surfaces shall not vary more than 1/4" in 10 feet. Prior to application of color coat, surface shall be checked for low areas by flooding the surface with water. Low areas shall be patched as approved by the Engineer prior to application of the color coat. No areas which retain water will be approved. If a deficiency of more than 1/4" exists, the Engineer will determine if the surface should be leveled or removed and replaced. Such remedial work shall be without compensation.

## **43.1.6 COLOR COAT**

### **43.1.6.1 MATERIALS**

Materials used in the patching and color coating of Tennis Courts shall be manufactured specifically for Tennis Court Application.

All materials must be approved by the Engineer prior to the start of construction. Request for approval of coating materials may be submitted prior to the opening of bids. In requests for approval, the Contractor shall present manufacturer's literature along with the name, address, and date of three previous Tennis Court applications of the proposed material.

### **43.1.6.2 CONSTRUCTION**

#### **43.1.6.2.1 SURFACE PREPARATION**

The surface to be coated must be sound, smooth, and free from loose dirt or oily materials.

Prior to the application of surfacing materials, the entire surface should be checked for minor depressions or irregularities. If it is determined that minor corrections are necessary, the Contractor shall make repairs using approved tack coat and/or patching mix in accordance with manufacturer's recommendations for use.

After patching the surface shall not vary more than 1/8" in ten feet in any direction. If a deficiency of more than 1/8" exists, the Engineer will determine if the surface should be leveled or removed and replaced. Such remedial work shall be without compensation.

In order to provide a smooth, dense underlayment of the finish course, one or more applications of resurfacer or patch mix shall be applied to the underlying surface as deemed necessary by the Engineer. Asphaltic concrete Surface Course with a smooth tight mix and no ponding, will not require the resurfacing or patching mix. Asphaltic Concrete Surface Course which is course and rough or is ponding water will require the use of the resurfacer or patch mix.

No applications shall be covered by a succeeding application until thoroughly cured.

#### **43.1.6.2.2 FINISH COLOR COURSE**

The finish course shall be applied to a clean, dry surface in accordance with the manufacturer's directions. A minimum of two applications of color coat will be required.

Texture of cured color coat is to be regulated in accordance with manufacturer's recommendations to provide a medium speed surface for tennis play.

The color of application shall be dark green for the regulation double's playing area and red for all other others.

The finished surface shall have a uniform appearance and be free from ridges and tool marks.

### **43.1.6.3 PLAYING LINES**

Forty-eight (48) hours minimum after completion of the resurfacing, 2 inch wide playing lines shall be accurately located, marked and painted with approved marking paint.

#### **43.1.6.4 WEATHER LIMITATIONS**

No parts of the construction involving Tennis Court surfacing or patching products shall be conducted during rainfall, or when rainfall is imminent or unless the air temperature is at least 50 degrees, Fahrenheit and rising.

NOTE: The Contractor shall notify the Project Inspector a minimum of 24 hours in advance of all base and asphalt related work.

### **43.2 CLAY TENNIS COURTS**

#### **43.2.1 GENERAL**

##### **43.2.1.1 SCOPE**

The Contractor shall furnish all labor, materials and equipment necessary for the installation of clay tennis court(s) as set forth in these specifications and /or the construction drawings. The scope of work is indicated on drawings and specified herein. Basis of design for clay courts with sub-surface irrigation system is Hydrogrid Tennis, Inc. or prior approved equal.

##### **43.2.1.2 CONTRACTOR QUALIFICATIONS**

The Owner may make such investigation as he deems necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigations of such Bidders fail to satisfy the owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated herein within the time limit agreed upon. Factors to be considered in awarding the Bid shall include the successful completion of similar sub-surface irrigation clay tennis court installations of like value, scope, size and quality as this project, within the last five (5) years. The Owner desires to award this contract to firms that have been in business for a minimum of five (5) years. The qualifications and experience of the personnel assigned to the project will be a determining factor in the award of the Bid.

##### **43.2.1.3 STANDARDS**

The Contractor shall perform all work in a thorough, workmanlike manner and conform to standards for tennis court construction as prescribed or approved by the United States (Lawn) Tennis Association and the United States Tennis Court and Tract Builders Association. The Contractor shall construct the tennis courts with laser guided equipment.

##### **43.2.1.4 BUILDING PERMITS AND TAXES**

The Contractor shall secure all construction permits required by law, the City of Madeira Beach will waive all permit fees.

##### **43.2.1.5 COURT LAYOUT**

The Owner shall establish two horizontal control points and a construction bench mark. The Contractor shall locate the four corners of each battery and shall layout the courts in conformance with the specifications and drawings.

#### **43.2.1.6 BUILDING REQUIREMENTS**

The Owner shall provide and maintain reasonable access to the construction site, as well as an area adjacent to the site for storage and preparation of materials. Adequate water outlets within fifty (50) feet of the site shall be provided.

#### **43.2.1.7 SCHEDULE**

The Owner desires to award the contract to firms who will complete this project in a reasonable time schedule. Consideration in awarding this bid will be given to firms who may commence and complete the project within a reasonable period of time after award of the bid. The Owner, in its sole discretion, will determine the reasonable schedule standard as it relates to the “Notice to Proceed.”

### **43.2.2 SITE PREPARATION**

#### **43.2.2.1 SUITABILITY**

The Contractor shall examine the site to determine its suitability for installation of the courts.

#### **43.2.2.2 DEMOLITION**

The contractor shall demo the existing tennis courts, remove the existing ten (10) foot high fence surrounding the tennis courts and all underground utilities within the limits of the construction area. Utilities extending outside the construction limits shall be capped and terminated. The existing tennis courts shall be ground into millings suitable to be mixed into the sub-grade at the proposed location of the new clay tennis courts. Any sub-grade material beneath the existing tennis courts not suitable for planting beds shall be removed and also utilized as sub-grade material beneath the new courts. All demolition materials not utilized in construction of the new courts shall be removed and disposed from the project site. The Contractor shall provide documentation of any recycled materials.

#### **43.2.2.3 SUB-GRADE**

The sub-grade shall be graded to a tolerance of plus or minus one (1) inch of the final sub-grade elevation. The sub-grade shall be graded level. A compaction to a density not less than 95% of the maximum standard density as determined by AASHTO T-180 is required. The Contractor shall provide documentation of testing to the Owner.

#### **43.2.2.4 FINAL GRADE**

The final grades outside the tennis court areas and within the construction limits shall be graded to a tolerance of plus or minus one (1) inch of the final grade elevations with positive drainage away from tennis courts and towards drainage swales or outfall structures. A compaction to a density not less than 95% of the maximum standard density as determined by AASHTO T-180 is required. The contractor shall provide documentation of testing to the Owner.

### **43.2.3 SLOPE**

#### **43.2.3.1 SLOPE REQUIREMENTS**

Rate and direction of slope of the finished surfaces shall be one (1) inch in forty (40) feet, all in one plane, as indicated on the drawings.



## **43.2.4 BASE CONSTRUCTION**

### **43.2.4.1 LINER**

Two layers of 6 mil construction plastic shall be installed over the sub-grade surface with a minimum overlap of five (5) feet where pieces are joined. Use only materials that are resistant to deterioration when tested in accordance with ASTM E 154, as follows:

- a. Polyethylene sheet, Construction Grade.

### **43.2.4.2 BASE COURSE**

The base course shall consist of six (6) inches of porous base material as supplied by Quality Aggregate of Sarasota Florida. The surface of the base course shall be smooth and even, and it shall be within one-quarter (1/4) inch of the established grade.

### **43.2.4.3 IRRIGATION SYSTEM**

Perforated pipe shall be installed in trenches in the base course. These trenches shall be in on four (4) foot centers and shall be run perpendicular to the slope of the court. The pipe shall be two and one-quarter (2-1/4) inch diameter with a nylon needle punched sock surrounding the pipe. Six (6) water control canisters shall be installed per court with each canister controlling five (5) grid pipe trenches. Provide all required controls systems time clocks; float switches, control wiring and solenoids, etc. for a complete sub-surface irrigation system.

## **43.2.5 PERIMETER CURBING**

### **43.2.5.1 CURB**

Brick curb shall be installed around the entire perimeter of the court area with an elevation of one-quarter (1/4) to one-half (1/2) inch above the finished screening course elevation.

## **43.2.6 SURFACE COURSE**

### **43.2.6.1 COURT SURFACE**

A surface course of ISP Type II Aquablend or Lee Hyroblend tennis court material shall be installed over the screening course to a compacted depth of one (1) inch. The Aqua/Hydroblend material shall be watered to its full depth immediately after leveling and then compacted by rolling with a tandem roller weighing 600 to 1000 pounds. The finished surface shall not vary from specified grade by more than one-eighth (1/8) inch.

## **43.2.7 ROOT BARRIER**

Root barrier (geo-tech fabric) eighteen (18) inches height shall be placed in a trench on the outside edge of the perimeter curbing eighteen (18) inches in depth with herbicide coating buttons to prevent plant root systems in entering the sub-surface base course of the clay tennis courts.

## **43.2.8 FENCING**

### **43.2.8.1 DESIGN**

The contractor shall provide a total color coated fencing system as indicated on drawings and described herein. All components: frames, fabric and fittings shall be black. Basis of Design

Ameristar HT-25 or prior approved equal subject to strict compliance with Ameristar published specification.

#### **43.2.8.2 POSTS**

All posts shall be a minimum 2-1/2” Ameristar HT-25 pipe; top rails 1-5/8” Ameristar HT-25 pipe with manufacturer’s standard “Permacoat” color system.

#### **43.2.8.3 FENCE FABRIC**

Fence Fabric shall be 1-3/4” #6 gauge mesh throughout, manufactures standard galvanized wire with PVC coating. All fabric to be knuckled on both selvages.

#### **43.2.8.4 GATES**

Provide gates at locations indicated. At service gates, provide a keeper that automatically engages gate life and holds it in the open position until manually released. Provide gate stops for double gates consisting of a mushroom-type flush plate with anchors, set in concrete, and designed to engage a center drop rod or plunger-bar. Include a locking device and padlock eyes as an integral part of the latch, permitting both gate leaves to be locked with a single padlock. Provide latch, fork type or plunger-bar type to permit operation from either side of gate, with padlock eye as an integral part of the latch. Gate Hinges – Size and material to suit gate size, non-lift-off type, and offset to permit 180-degree gate opening. Provide one and one-half (1-1/2) pair of hinges for each leaf over six (6) foot nominal height.

#### **43.2.9 WINDSCREENS**

The contractor shall provide nine (9) foot high windscreens at all ten (10) foot high fencing. Basis of design is Durashade plus by Ball Products, Inc. or equal by Putterman. Black high-density polyethylene, eight (8) oz. per square yard edges hemmed with grommets at twelve (12) inch on center. Attach to chain link fencing at the top and bottom with 50 LBS plastic ties.

#### **43.2.10 COURT EQUIPMENT**

##### **43.2.10.1 POST FOUNDATIONS**

Post foundations shall be not less than thirty-six (36) inches in length, eighteen (18) inches in width and thirty (30) inches in depth. Foundations shall be placed to provide an exact distance between posts of forty-two (42) feet on a doubles court and thirty-three (33) feet on a singles court.

##### **43.2.10.2 NET POSTS & SLEEVES**

Net posts shall be galvanized steel having an outside diameter of not less than two and seven-eighths (2 7/8) inches with electrostatically applied enamel finish and shall be equipped with a reel type net tightening device. Post sleeves and posts shall be set plumb and true so as to support the net a height of forty-two (42) inches above the court surface at the posts. Post sleeves shall be Schedule 40 PVC to be set in concrete per net post manufactures recommendation.

##### **43.2.10.3 CENTER STRAP ANCHOR**

A center strap anchor shall be firmly set in accordance with the rules of the USTA.

#### **43.2.10.4 NET**

A tennis net conforming to the USTA regulations shall be installed on each court. The net shall have black synthetic netting, a headband of white synthetic material in double thickness with the exterior treated for resistance to mildew and sunlight, and bottom and end tapes of black synthetic material treated to prevent deterioration from the sunlight. A vinyl coated, impregnated steel cable, having a diameter of one quarter (1/4) inch and a length five (5) feet greater than length between the net post shall hold the net in suspension. The net shall have tie strings of a synthetic material at each corner. Basis of Design – Duranet DTS by Ball Products, Inc.

#### **43.2.10.5 CENTER STRAP**

Provide a center strap of white heavy duty polyester webbing with black oxide coated brass slide buckles and nickel plated double end snap. Center strap shall be placed on the net and attached to the center strap anchor.

#### **43.2.10.6 LINE TAPES**

Line tapes shall be 100% nylon and shall be two (2) inches in width. The tapes shall be firmly secured by aluminum nails with aluminum length of two and one-half (2 – 1/2) inches. Positioning shall be in accordance with regulations of the USTA.

#### **43.2.10.7 MISCELLANEOUS EQUIPMENT**

Deliver the following equipment to the owner:

1. Ride-on Tandem Roller - Brutus AR-I Roller, automatic forward-neutral-reverse transmission; 24 inch wide drum; 3-horse power Briggs and Stratton engine.
2. Hand drag brooms (4 each) - 7' wide aluminum frame with 4-1/2" synthetic bristles; Proline.
3. Tow drag brooms (1 each) - 7' wide aluminum frame 4-1/2" synthetic bristles; Proline.
4. Deluxe Proline Line Sweeper (4 each) - friction-driven rubber sleeves; synthetic bristle brush; with fence hook cast aluminum.
5. Scarifier/Lutes (2 each) - 30" wide all aluminum; Proline.
6. Tennis Shoe Cleaners (2 each) - steel frame construction "Scrusher" exact installation location by Owner.
7. Tennis Two Step (2 each) - polyethylene construction with two rubber panels.
8. Court Rake (1 each) – six-foot length aluminum.

#### **43.2.11 SHADE STRUCTURE**

Provide shade structures as indicated on drawings. Basis of design: Suntrends, Inc. "Cabana Bench 8" – 8' long x 6' wide gable design with standard canvas canopy, direct burial installation. Provide concrete footing, size and reinforcement as required by shade structure manufacture.

#### **43.2.12 WATER SOURCE (Potable)**

The owner shall supply water line to within fifty (50) feet of the courts with 50 pounds per square inch running pressure at its terminus. This line shall have the capacity to supply 30 gallons of water per minute for each court.

### **43.2.13 CONCRETE**

Provide concrete consisting of portland cement per ASTM C 150, aggregates per ASTM C 33, and potable water. Mix materials to obtain concrete with a minimum 28-day compressive strength of 3,500 psi. Use at least four sacks of cement per cu. yd., 1-inch maximum size aggregate, 3-inch maximum slump.

### **43.2.14 EXISTING SPORT TENNIS COURT LIGHTING**

#### **43.2.14.1 SHOP DRAWINGS**

The Contractor shall provide signed and sealed electrical shop drawings by a professional electrical engineer for approval of the relocation and re-aiming of the existing tennis court sport lighting fixtures and electrical service to water coolers. The shop drawings shall include all necessary information according to local electrical codes in providing a complete operating system from the existing electrical panel. The shop drawings shall provide data showing the maximum foot candles the existing fixtures will provide at its new locations for tournament play. Shop drawings shall be submitted to the Parks and Recreation Department for approval.

#### **43.2.14.2 RE-LAMP**

The Contractor shall re-lamp and clean lens of all existing lighting fixtures after relocating the light pole and fixtures to its new location. the City will provide the new lamps.

#### **43.2.14.3 ELECTRICAL PERMIT**

The Contractor shall submit electrical drawings to City of Madeira Beach Planning and Development Services to obtain permits for installation of the electrical works.

#### **43.2.14.4 POLES & FIXTURES**

The Contractor shall install three (3) new sixty foot (60') poles and fourteen (14) new fixtures. the City will purchase and provide the new poles and fixtures for the Contractor to install, any other miscellaneous items required to provide a complete operable system shall be provided by the Contractor.

Attached with this specification are the photometric lumination charts for the eight-(8) tennis courts. This information is provided by Musco Sport Lighting, 1838 East Chester Drive, Suite #104, High Point, NC 27265, phone: (336) 887-0770 fax: (336) 887-0771. Contact Douglas A. Stewart.

Contractor shall install the poles and fixtures based on the following information:

- Pole T1 existing 5 fixture pole, remove one fixture and place on pole T5
- Pole T2 existing 12 fixture pole, remove six fixtures and place on pole T5
- Pole T3 existing 5 fixture pole, remove one fixture and place on pole T5
- Pole T4 new pole with new seven fixtures and two circuits
- Pole T5 new pole w/existing sixteen fixtures (8 on one side and 8 on the other) and 2 circuits
- Pole T6 new pole with new seven fixtures and two circuits
- Pole T7 existing 5 fixture pole, remove two fixtures and place on pole T5
- Pole T8 existing 12 fixture pole, remove four fixtures and place on pole T5
- Pole T9 existing 5 fixture pole, remove two fixtures and place on pole T5

Light levels ended up at 58+ footcandles.

Existing poles have concrete footing approximately one foot wide on all sides Contractor shall plan relocation light poles accordingly.

#### **43.2.14.5 ELECTRICAL CONDUITS**

Existing electrical conduits are installed individually to the existing light pole, it is suggested the Contractor place electrical junction boxes at existing pole locations and utilize existing conduits. New conduits will be required for the three (3) new light poles and the Contractor shall include the cost for these electrical conduits in the relocating of the new light poles.

#### **43.2.15 WATER COOLER**

##### **43.2.15.1 SHOP DRAWINGS**

The Contractor shall provide shop drawings for the installation of water cooler in the cabana area of the tennis courts, electrical, water and drainage submitted to the Parks and Recreation Department for approval.

##### **43.2.15.2 WATER FOUNTAIN**

Basis for design: Halsey Taylor HOF Series – water cooler with sealed back panels, or equal.

#### **43.2.16 DEMONSTRATION**

Instruct the Owner's personnel on proper operation and maintenance of court and equipment.

#### **43.2.17 WARRANTY**

##### **43.2.17.1 EQUIPMENT**

The Contractor shall supply warranty cards and operation and maintenance manuals for all equipment to the Owner upon completion of construction of the project.

##### **43.2.17.2 WARRANTY**

The Contractor shall warranty the courts, fencing, sidewalks and court accessories against defective materials and /or workmanship for a period of one (1) year from the date of completion.

##### **43.2.17.3 WARRANTY SUB-SURFACE IRRIGATION SYSTEM**

The Contractor shall warranty the sub-surface irrigation of the clay tennis courts for a period of two years from the day of completion.

## **44 WORK ZONE TRAFFIC CONTROL**

### **44.1 CONTRACTOR RESPONSIBLE FOR WORK ZONE TRAFFIC CONTROL**

The Contractor shall be responsible to furnish, operate, maintain and remove all work zone traffic control associated with the Project, including detours, advance warnings, channelization, hazard warnings and any other necessary features, both at the immediate work site and as may be necessary at outlying points.

## **44.2 WORK ZONE TRAFFIC CONTROL PLAN**

The Contractor shall prepare a detailed traffic control plan designed to accomplish the level of performance outlined in the Scope of the Work and/or as may be required by construction permits issued by Pinellas County and/or the Florida Department of Transportation for the Project, incorporating the methods and criteria contained in Part VI, Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility and Incident Management Operations in the Manual on Uniform Traffic Control Devices published by the U.S. Department of Transportation and adopted as amended by the Florida Department of Transportation, or most recent addition.

### **44.2.1 WORK ZONE SAFETY**

The general objectives of a program of work zone safety is to protect workers, pedestrians, bicyclists and motorists during construction and maintenance operations. This general objective may be achieved by meeting the following specific objectives:

- Provide adequate advance warning and information regarding upcoming work zones.
- Provide the driver clear directions to understanding the situation he will be facing as he proceeds through or around the work zone.
- Reduce the consequences of an out of control vehicle.
- Provide safe access and storage for equipment and material.
- Promote speedy completion of projects (including thorough cleanup of the site).
- Promote use of the appropriate traffic control and protection devices.
- Provide safe passageways for pedestrians through, in, and/or around construction or maintenance work zones.

#### **The 2004 Design Standards (DS), Index 600**

“When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided. Only approved temporary traffic control devices may be used to delineate a temporary traffic control zone pedestrian walkway. Advanced notification of sidewalk closures and detours marked shall be provided by appropriate signs”.

#### **2004 Standard Specifications for Road and Bridge Construction**

**102-5 Traffic Control: 102-5.1 Standards:** FDOT Design Standards (DS) are the minimum standards for the use in the development of all traffic control plans

## **44.3 ROADWAY CLOSURE GUIDELINES**

Roadway types: Major Arterials, Minor Arterials, Local Collectors, and Local

Following are typical requirements to be accomplished prior to closure. The number of requirements increase with traffic volume and the importance of access. Road closures affecting business or sole access routes will increase in process requirements as appropriate. For all but local streets, no road or lane closures are allowed during the Christmas holiday season and the designated “Spring Break” season with prior approval by the City Engineer.

### **44.3.1 ALL ROADWAYS**

Obtain permits for Pinellas County and Florida Department of Transportation roadways.

Traffic control devices conform to national and state standards.

#### **44.3.1.1 PUBLIC NOTIFICATION**

Standard property owner notification prior to start of construction for properties directly affected by the construction process.

#### **44.3.2 MAJOR ARTERIALS, MINOR ARTERIALS, LOCAL COLLECTORS**

Consult with City Traffic staff for preliminary traffic control options.

Develop Formal Traffic Control Plan for Permit Submittal to Regulatory Agency as necessary.

#### **44.3.2.1 PUBLIC NOTIFICATION**

Message Board Display, Minimum of 7-day notice period prior to road closure and maybe longer for larger highway. The message board is to be provided by the Contractor.

#### **44.3.3 MAJOR ARTERIALS, MINOR ARTERIALS**

##### **44.3.3.1 PUBLIC NOTIFICATION**

C-View Release

#### **44.3.4 MAJOR ARTERIALS**

##### **44.3.4.1 PUBLIC NOTIFICATION**

News Release

The Message Board may need to be displayed for a period longer than 7 days.

### **44.4 APPROVAL OF WORK ZONE TRAFFIC CONTROL PLAN**

The Contractor is invited and encouraged to confer in advance of bidding, and is required, as a specification of the work, to confer in advance of beginning any work on the Project, with the Traffic Operations Division, Municipal Services Building, 100 South Myrtle Avenue, telephone 562-4750, for the purpose of approval of the Contractor's proposed detailed traffic control plan. All maintenance of traffic (MOT) plans shall be signed and sealed by a Professional Engineer or an individual who is certified in the preparation of MOT plans in the State of Florida.

### **44.5 INSPECTION OF WORK ZONE TRAFFIC CONTROL OPERATION**

The Traffic Operations Division may inspect and monitor the traffic control plan and traffic control devices of the Contractor. the City's Construction Inspector assigned to the project, may make known requirements for any alterations or adjustments to the traffic control devices. The Contractor shall take direction from the Project Engineer or Project Inspector.

### **44.6 PAYMENT FOR WORK ZONE TRAFFIC CONTROL**

Payment for work zone traffic control is a non-specific pay item to be included in the construction costs associated with other specific pay items unless specifically stated otherwise in the Scope of Work in these Technical Specifications and a bid item(s) is included for Work Zone Traffic Control in the proposal form.

## **44.7 CERTIFICATION OF WORK ZONE TRAFFIC CONTROL SUPERVISOR**

the City may require that the Supervisor or Foreman controlling the work for the Contractor on the Project have a current International Municipal Signal Association, Work Zone Traffic Control Safety Certification or Worksite Traffic Supervisor Certification from the American Traffic Safety Association with additional current Certification from the Florida Department of Transportation. This requirement for Certification will be noted in the Scope of Work and/or sections of these Technical Specifications. When the certified supervisor is required for the Project, the supervisor will be on the Project site at all times while work is being conducted.

The Worksite Traffic Supervisor shall be available on a 24-hour per day basis and shall review the project on a day-to-day basis as well as being involved in all changes to traffic control. The Worksite Traffic Supervisor shall have access to all equipment and materials needed to maintain traffic control and handle traffic related situations. The Worksite Traffic Supervisor shall ensure that routine deficiencies are corrected within a 24-hour period.

The Worksite Traffic Supervisor shall be available on the site within 45 minutes after notification of an emergency situation, prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

Failure of the Worksite Traffic Supervisor to comply with the provisions of this Subarticle may be grounds for decertification or removal from the project or both. Failure to maintain a designated Worksite Traffic Supervisor or failure to comply with these provisions will result in temporary suspension of all activities except traffic and erosion control and such other activities deemed to be necessary for project maintenance and safety.

## **45 CURED-IN-PLACE PIPE LINING**

### **45.1 INTENT**

It is the intention of this specification to provide for the trenchless restoration of sanitary sewer and storm pipes by the installation of a cured in place jointless, continuous, thermosetting resin impregnated polyester flexible felt liner which is watertight and chemically resistant to withstand exposure to domestic sewage including all labor, materials and equipment to provide for a complete, fully restored and functioning installation.

### **45.2 PRODUCT AND CONTRACTOR/INSTALLER ACCEPTABILITY**

the City requires that all contractors be prequalified. See General Conditions regarding contractor prequalification. In addition, the City requires a proven extensive track record for the liner system to be used in this project. All contractors submitting for prequalification approval for this project must exhibit extensive satisfactory experience in the installation of the proposed liner system(s) and satisfactory evidence that the proposed liner system has been extensively and successfully installed in the United States and the State of Florida. The installer must be certified by the liner system manufacturer for installation of the liner system. the City reserves full and complete authority to approve the satisfactory nature of the both the liner system and the installer.



### 45.3 MATERIALS

The liner shall be polyester fiber felt tubing saturated with a resin prior to insertion. Resin type and qualities shall be as specified by the manufacturer to obtain a cured liner with the following properties:

Tensile Strength	ASTM D638	3,000 psi
Flexural Strength	ASTM D790	4,500 psi
Flexural Modulus of Elasticity	ASTM D790	300,000 psi
Long Term Modulus of Elasticity (50 Years)	ASTM D2290	150,000 psi

Liner shall meet strengths as shown in ASTM F1216 unless otherwise submitted and approved by the Engineer. Lining manufacturer shall submit to the Engineer for approval as requested, complete design calculations for the liner thickness. The criteria for liner design shall be HS-20 traffic loading, water table to the ground surface, minimum expected lifetime of 50 years, and no structural strength retained from the existing pipe. Liner materials shall meet manufactures specifications of Insituform of North America, Inc., 3315 Democrat Road, Post Office Box 181071, Memphis, Tennessee 38118; or InLiner USA 1900 N.W. 44th St., Pompano Beach Florida 33064, 305-979-0802, or an approved equal. Any approved equal liner system must be approved by the Engineer as an equal system prior to receiving bids. Request for contractor prequalification and/or equal liner system approval must be received by the Engineer no later than 14 days prior to the date for receiving bids.

### 45.4 CLEANING / SURFACE PREPARATION

It shall be the responsibility of the Contractor to clean and prepare the existing pipes for rehabilitation. The Contractor will thoroughly clean the interior of the sewers to produce a clean interior surface free of all coatings, sand, rock, roots, sludge, or other deleterious materials prior to liner insertion. Bypass pumping will be provided by the Contractor as part of the unit cost of restoration. Bypass operations are to be so arranged as to cause minimum disruptions to local traffic, residents and particularly to commercial facilities. During the cleaning and preparation operations all necessary precautions shall be taken to protect the public, all property and the sewer from damage. All material removed from the sewers shall be the Contractor's responsibility for prompt disposal in accordance with all regulatory agency requirements. The Contractor may be required to control the rate of sewer cleaning in the sanitary system to avoid heavy pollution loads at the City's treatment plants.

### 45.5 TELEVISION INSPECTION

After cleaning, and again after the rehabilitation work on each section of the project is completed, all pipe sections shall be visually inspected by means of closed-circuit color television, and recorded on DVD, CD VHS format tapes provided to the project engineer. The television system used shall be designed for the purpose and suitably lighted to provide a clear picture of the entire periphery of the pipe.

### 45.6 LINER INSTALLATION

Liner shall be sized to field measurements obtained by the Contractor to provide for a tight fit on the interior of the existing pipe to be lined. Contractor shall use installation methods approved by the liner manufacturer including operations for inversion, heat curing and reconnection of laterals.

The Contractor shall immediately notify the Engineer of any construction delays taking place during the insertion operation. Contractor shall maintain a reasonable backup system for bypass pumping should delays or problems with pumping systems develop. Liner entries at manholes shall be smooth, free of irregularities, and watertight. No pinholes, tears, cracks, thin spots, excessive wrinkling or other defects in the liner shall be permitted. Such defects shall be removed and replaced by the Contractor at his expense.

## **45.7 LATERAL RECONNECTION**

Sanitary laterals shall be reconnected as soon as possible to renew service. Laterals are to be reconnected by means of robotics, by internally cutting out the liner to 95% of the area of the original opening. All lateral reconnections are to be grouted to prevent leakage. Grouting method and material is to be approved by the Engineer. Any reconnections to laterals and connections to manholes which are observed to leak shall be resealed by the Contractor. All laterals discovered during the lining process are to be reconnected unless specifically directed otherwise by the City. The Contractor will be requested to reconnect any laterals discovered to not be reconnected at a later date. Contractor shall notify all local system users when the sanitary system will not be available for normal usage by the delivery of door hangers with appropriate information regarding the construction project.

## **45.8 TIME OF CONSTRUCTION**

Construction schedules will be submitted by the Contractor and approved by the Engineer. At no time will any sanitary sewer service connection remain inoperative for more than an eight-hour period without a service bypass being operated by the Contractor. In the event that sewage backup occurs and enters buildings, the Contractor shall be responsible for cleanup, repair and property damage costs and claims.

## **45.9 PAYMENT**

Payment for sanitary sewer restoration shall be made per lineal foot including all preparation, bypass pumping, equipment, labor, materials, operations, restoration, lateral reconnection, etc, to provide a fully completed and operational sewer. Payment shall be measured from center of manhole to center of manhole for the sanitary systems and from end of pipe to end of pipe for storm systems.

# **46 SPECIFICATIONS FOR POLYETHYLENE SLIPLINING**

## **46.1 MATERIALS**

### **46.1.1 PIPE AND FITTINGS**

The pipe supplied under this specification shall be high performance, high molecular weight, high density polyethylene pipe (Driscopipe 1000) as manufactured by Phillips Driscopipe, Inc., Dallas, Texas and shall conform to ASTM D 1248 (Type III, Class C, Category 5, Grade P34) or approved equal. Minimum cell classification values shall be 345434C as referenced in ASTM D 3350 latest edition. If fittings are required, they will be supplied under this specification and shall be molded or manufactured from a polyethylene compound having a cell classification equal to or exceeding the compound used in the pipe.

To insure compatibility of polyethylene resins, all fittings supplied under this specification shall be of the same manufacture as the pipe being supplied.

#### **46.1.2 QUALITY CONTROL**

The resin used for manufacturer of the pipe shall be manufactured by the pipe manufacturer, thus maintaining complete control of the pipe quality. The pipe shall contain no recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, or other deleterious defects, and shall be identical in color, density, melt index, and other physical properties.

The polyethylene resin used shall have all ingredients pre compound prior to extrusion of pipe, in plant blending is not acceptable.

The Engineer may request, as part of the quality control records submittal, certification that the pipe produced is represented by the quality assurance testing. Additionally, test results from manufacturer's testing or random sampling by the Engineer that do not meet appropriate ASTM standards or manufacturer's representation, may be cause for rejection of pipe represented by the testing. These tests may include density and flow rate measurements from samples taken at selected locations within the pipe wall and thermal stability determinations according to ASTM D 3350, 10.1.9.

#### **46.1.3 SAMPLES**

The owner or the specifying engineer may request certified lab data to verify the physical properties of the materials supplied under this specification or may take random samples and have them tested by an independent laboratory.

#### **46.1.4 REJECTION**

Polyethylene pipe and fittings may be rejected for failure to meet any of the requirements of this specification.

### **46.2 PIPE DIMENSIONS**

Pipe supplied under this specification shall have a nominal IPS (Iron Pipe Size) O.D. unless otherwise specified. The SDR (Standard Dimension Ratio) of the pipe supplied shall be as specified by the Engineer, on the construction plans and/or the scope of work.

### **46.3 CONSTRUCTION PRACTICES**

#### **46.3.1 HANDLING OF PIPE**

Pipe shall be stored on clean, level ground to prevent undue scratching or gouging of the pipe. If the pipe must be stacked for storage, such stacking should be done in accordance with the pipe manufacturer's recommendations. The handling of the pipe should be done in such a manner that it is not damaged by dragging over sharp objects or cut by chokers or lifting equipment.

### **46.3.2 REPAIR OF DAMAGED SECTIONS**

Segments of pipe having cuts or gouges in excess of 10% of the wall thickness of the pipe should be cut out and removed. The undamaged portions of the pipe shall be rejoined using the butt fusion joining method.

### **46.3.3 PIPE JOINING**

Sections of polyethylene pipe should be joined into continuous lengths on the job site above ground. The joining method shall be the butt fusion method and shall be performed by the manufacturer's representative and in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements, alignment, and fusion pressures.

### **46.3.4 HANDLING OF FUSED PIPE**

Fused segments of pipe shall be handled so to avoid damage to the pipe. When lifting fused sections of pipe, chains or cable type chokers should be avoided. Nylon slings are preferred. Spreader bars should be used when lifting long fused sections. Care should be exercised to avoid cutting or gouging the pipe.

## **46.4 SLIPLINING PROCEDURE**

### **46.4.1 PIPE REQUIREMENTS AND DIMENSIONS**

The liner(s) to be slip lined into the existing storm sewer shall have the following sizes:

- 12-inch diameter liner (SDR 26) into 15-inch existing sewer.
- 16-inch diameter liner (SDR 26) into 18-inch existing sewer.
- 18-inch diameter liner (SDR 26) into 21-inch existing sewer.
- 21½-inch diameter liner (SDR 32.5) into 24-inch existing sewer.
- 28-inch diameter liner (SDR 32.5) into 30-inch existing sewer.
- 34-inch diameter liner (SDR 32.5) into 36-inch existing sewer.
- 42-inch diameter liner (SDR 32.5) into 48-inch existing sewer.

### **46.4.2 CLEANING AND INSPECTION**

The existing line shall be cleaned of debris and other obstructions prior to TV inspections or insertion of the polyethylene liner. Cleaning can be accomplished with a high velocity cleaner, a bucket and scrapper, root saws, corkscrews, and rodding or balling units. The method used will be determined by the condition of the existing line. Final cleaning may be required prior to inserting the liner.

### **46.4.3 INSERTION SHAFT AND EXCAVATIONS**

All excavations shall conform to OSHA requirements and any additional requirements as set by the specifying engineer or his representative.

Insertion shaft excavations shall coincide with points requiring removal of obstructions or shall be determined by the engineer.

An entry slope grade of 2 1/2:1 maximum shall be used to provide a safe bending radius for the polyethylene. The bottom of the entry pit should provide a straight section for ease of entry of the

liner into the existing pipe. The length of the level excavation should be at least twelve times the diameter of the liner being inserted. The width of the shaft should be as narrow as possible. The required width will depend on the location, type of soil, depth of the existing sewer line and the water table.

#### **46.4.4 INSERTION OF THE LINER**

After completion of the access shaft, the top half of the existing sewer shall be broken or cut and removed for the full length of the access shaft.

A fabricated pulling head shall be connected to the leading end of the liner pipe. A cable shall be connected to the pulling head so that the liner pipe can be pulled into the existing sewer.

Power winches used for pulling in long lengths of polyethylene liner pipe shall be rated equal to the project requirements.

Once started, the pulling operation should continue to completion.

Insertion is normally done at about a slow walking speed. After insertion, a minimum of 12 hours shall be allowed for the liner pipe to reach equilibrium with the sewer temperature and to allow the liner pipe to stress relieve itself.

The polyethylene liner pipe should protrude at least 6 inches into the manhole where it terminates.

After the 12-hour equilibrium period, the annular space between the original pipe and the liner shall be pressure grouted. Said grouting must be from the bottom up to prevent air pockets from forming. Also the grout must be recommended for underwater application and have elastomeric properties. Products used shall be approved by the engineer.

The liner shall not be displaced when the annular space is being filled. Spacers, inflatable plugs or other methods approved by the Engineer must be used to prevent displacement.

The length of fused pipe that can be pulled will vary depending on field conditions, the ease of access to the area, and the working space available.

#### **46.4.5 CONFIRMATION OF PIPE SIZES**

The Contractor shall be solely responsible to confirm all pipe sizes prior to ordering, fusing and installation of the liner.

#### **46.4.6 UNDERDRAIN CONNECTIONS IF REQUIRED**

After the liner has been pulled into place, allowed to recover and sealed at the manholes, pipe connections okayed by the engineer shall be reconnected to the liner pipe.

Pipe connections shall be connected by the use of a pre-fabricated polyethylene saddle. A neoprene gasket shall be installed between the saddle and the liner pipe so that a complete water seal is accomplished when the saddle is placed on the liner pipe and secured with stainless steel bands.

#### **46.4.7 BACKFILLING**

All excavations shall be backfilled using on site materials or as specified by the engineer. Cost for backfilling of access shafts and underdrain connections shall be including in the unit price bid for sliplining and reconnection of service laterals. Before any excavation is done for any purpose, it will be the responsibility of the contractor to contact the various utility companies and to determine the locations of their facilities. It will be the responsibility of the contractor to provide adequate

protection for utility facilities. Any temporary construction right of way and/or storage areas will be arranged for by the contractor.

#### **46.4.8 POINT REPAIR**

The engineer or his representative will determine if a point repair is necessary only after it has been demonstrated that a liner pipe cannot be pulled through the existing pipe. Payment will be made for each repair.

The contractor will be expected to remove the obstruction and clear the pipe. If removing the top of the existing pipe will accomplish the removal of the obstruction, the bottom of the existing pipe should remain in place to form a cradle for the liner.

#### **46.4.9 CLEAN UP OPERATIONS**

All materials not used in the backfilling operation shall be disposed of off site by the contractor. Finish grading shall be required. In locations other than street right-of-ways, the surface shall be graded smooth and sodded with the same kind of grass as the existing lawn. Excavation points in street right-of-ways shall be repaired as specified by the engineer.

### **47 SPECIFICATIONS FOR POLYVINYL CHLORIDE RIBBED PIPE**

#### **47.1 SCOPE**

This specification designates general requirements for unplasticized polyvinyl chloride (PVC) plastic (spiral wound) pipe with integral wall bell and spigot joints for the conveyance of storm water.

#### **47.2 MATERIALS**

All pipe and fittings shall be manufactured and tested in accordance with specification for "Poly (Vinyl Chloride) (PVC) Large Diameter Ribbed Gravity Storm Sewer Pipe and Fittings Based on Controlled Inside Diameter".

The pipe and fittings shall be made of PVC plastic.

#### **47.3 PIPE**

The bell shall consist of an integral wall section. The solid cross section fiber ring shall be factory assembled on the spigot. Sizes and dimensions shall be as shown in this specification. Standard laying lengths shall be 13 ft. + 1 inch. At manufacturer's option, random lengths of not more than 15% of total footage may be shipped in lieu of standard lengths.

#### **47.4 JOINING SYSTEM**

Joints shall be either an integral bell gasketed joint. When the joint is assembled according to manufactures recommendation it will prevent misalignment of adjacent pipes and form a silt tight joint.

#### **47.5 FITTINGS**

All fittings and accessories shall be as manufactured and furnished by the pipe supplier or approved equal and have bell and/or spigot configurations compatible with that of the pipe.

## **48 GUNITE SPECIFICATIONS**

### **48.1 PRESSURE INJECTED GROUT**

Pressure injected grout shall be of cement and water and shall be proportioned generally in the ratio of 1.5 (one and one half) cubic foot (one and one half bags) of cement to 1 (one) cubic foot (7.50 gal.) of water. This mix shall be varied as the grouting proceeds as is necessary to provide penetration in the operator's judgment.

Cement shall be Portland Cement conforming to all of the requirements of the American Society for Testing Materials Standard Specifications, latest edition serial designation C150 for Portland Cement, Type I. Portland Cement shall weigh not less than 94 pounds per cubic foot.

Water used in the grout shall be fresh, clean and free from injurious amounts of oil, alkali, vegetable, sewage and/or organic matter. Water shall be considered as weighing 8.33 pounds per gallon.

Grout pump shall be of the positive displacement type and shall be capable of producing adequate pressure to penetrate the area.

All pressure grouting will be at the direction of the Engineer.

### **48.2 REHABILITATION OF CORRUGATED METAL PIPE WITH GUNITE**

Guniting shall conform to all requirements of "Specifications for Materials, Proportioning, and Application of Shotcrete (ACI 506.2 77)" published by the American Concrete Institute, Detroit, Michigan, except as modified by those specifications.

Steel reinforcement shall be incorporated in the Guniting as required and shall be furnished, bent, set and placed in accordance with the provisions of these specifications.

The purpose of this specification is to obtain a dense and durable concrete having the specified strength.

### **48.3 COMPOSITION**

Guniting shall be composed of Portland Cement, aggregate and water so proportioned as to produce a concrete suitable for pneumatic application.

### **48.4 STRENGTH REQUIREMENTS**

Concrete ingredients shall be selected, proportioned in such a manner as will produce concrete which will be extremely strong, dense and resistant to weathering, and abrasion. Concrete shall have a minimum 28-day strength of 4,000 psi.

### **48.5 MATERIALS**

Portland Cement: Cement shall be Portland cement conforming to all of the requirements of the American Society for Testing Materials Standard Specifications, Latest Serial Designation C150 for Portland Cement, Type I. A bag of cement shall be deemed to weigh not less than 94 pounds per cubic foot.

Fine Aggregate: Fine aggregate shall be natural siliceous sand consisting of hard, clean, strong, durable and uncoated particles, conforming to the requirements of American Society for Testing Materials Standard Specifications, Latest Serial Designation C33 for Concrete Aggregates.

Fine aggregate shall not contain less than 3% nor more than 6% of moisture.

Fine aggregate shall be evenly graded from fine to coarse and shall be within the following limits:

Passing No. 3/8 Sieve	100%
Passing No. 4 Sieve	95% to 100%
Passing No. 8 Sieve	80% to 100%
Passing No. 16 Sieve	50% to 85%
Passing No. 30 Sieve	25% to 60%
Passing No. 50 Sieve	10% to 30%
Passing No. 100 Sieve	2% to 10%

## 48.6 WATER

Water used in mixing, at the nozzle shall be fresh, clean, and free from injurious amounts of oil, acid, alkali, vegetable, sewage, and/or organic matter. Water shall be considered as weighing 8.33 pounds per gallon.

## 48.7 REINFORCEMENT

Steel mesh reinforcement shall be electrically welded, cold drawn, mild steel fabric conforming to the latest requirements of ASTM Standard Specifications, Serial Designation A 185 for Welded Steel Wire Fabric for Concrete Reinforcement. Mesh can be fabricated from cold drawn steel wire conforming to the requirements of the latest ASTM Standard Specifications, Serial Designation A 82 and sized as shown on Plans Page 7 of 7.

## 48.8 STORAGE OF MATERIALS

Cement 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.

Aggregate shall be stockpiled at points selected to provide maximum drainage and to prevent the inclusion of any foreign material during rehandling.

## 48.9 SURFACE PREPARATION

Unsound materials of construction and all coated, scaly, or unsound concrete in manholes and inlets shall be removed by chipping with pneumatic hammers and chisels to sound surface, all cracks and cavities shall be chipped to such formation that their sides form approximately a 45 degree angle to the exposed surface for at least one (1) inch in depth. All areas to receive pneumatic concrete shall be cleaned by flushing or scouring with water and compressed air jets to assure removal of all loose particles. All areas of existing surfaces that do not require chipping shall be given a wet sandblasting with the gunite equipment and the air pressure at the cement gun shall not be less than 50 psi.

Surface preparation of existing metal surface of a corrugated pipe shall be lightly sandblasted to remove loose material. All sandblasted areas shall then be cleaned by an air/water blast to remove all particles from the cleaning operation.



To insure perfect bond, the newly sandblasted surface shall be thoroughly moistened with water prior to application of gunite. In no instance shall gunite be applied in an area where free running water exists.

#### **48.10 PROPORTIONING**

Prior to start of guniting the Contractor shall submit to the Owner the recommended mix as a ratio of cement to aggregate. Recommended mix shall be on the basis of test data from prior experience. Provided data submitted is adequate no further testing of recommended mix will be required.

If required, the Contractor shall provide all equipment necessary to control the actual amounts of all materials entering into the concrete. The types of equipment and methods used for measuring materials shall be subject to approval.

#### **48.11 MIXING**

Gunite shall be thoroughly mixed by machine and then passed through a sieve to remove all large particles before placing in hopper of the cement gun. The mixture shall not be permitted to become damp. Each batch should be entirely discharged before recharging is begun. The mixer should be cleaned thoroughly enough to remove all adherent materials from the mixing vanes and from the drum at regular intervals.

Water in any amount shall not be added to the mix before it enters the cement gun. Quantities of water shall be controlled by a valve at the nozzle of the gun. Water content shall be adjusted as required for proper placement, but shall in no case exceed four gallons of water per sack of cement, including the water contained in the aggregate.

Remixing or tempering shall not be permitted. Mixed material that has stood 45 minutes without being used shall be discarded. Rebound materials shall not be reused.

#### **48.12 APPLICATION**

Gunite shall not be placed on a frozen surface nor during freezing weather. Gunite shall not be placed when it is anticipated that the temperature during the following 24 hours will drop below 32 degrees, Fahrenheit.

Sequence of application may be from bottom to top or vice versa if rebound is properly removed. Corners shall be filled first. "Shooting" shall be from an angle as near perpendicular to the surface as practicable, with the nozzle held approximately 3 feet from the work (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.

Guniting shall be suspended if:

1. Air velocity separates the cement from the sand at the nozzle.
2. Temperature approaches freezing and the newly placed gunite cannot be protected.

Gunite shall be applied in one or more layers to such total thickness as required to restore the area as detailed over the original lines of the adjoining surface, unless otherwise specified. All cavities, depressions, washouts and similar failures shall be rebuilt to original lines by use of gunite reinforced with wire mesh. Where the cavity exceeds 4 inches in depth a layer of mesh shall be used for each 3 inches of depth of gunite. In no case shall wire mesh be placed behind existing reinforcement.

The time interval between successive layers in sloping vertical or overhanging work must be sufficient to allow initial but not final set to develop. At the time the initial set is developing, the surface shall be cleaned to remove the thin film of laitance in order to provide a perfect bond with succeeding applications.

### **48.13 CONSTRUCTION JOINTS**

Construction joints or day's work joints shall be sloped off to a thin, clean, regular edge, preferably at a 45-degree slope. Before placing the adjoining work, the slope portion and adjacent gunite shall be thoroughly cleaned as necessary, then moistened and scoured with an air jet.

### **48.14 SURFACE FINISH**

Nozzleman shall bring the gunite to an even plane and to well formed corners by working up to ground wires or other guides, using lower placing velocity than normal.

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 concrete to insure a true, flat surface.

After the concrete surface has been trued, the entire surface shall be given a flashcoat finish except where a special type finish is specified on the drawings.

### **48.15 CURING**

Curing shall be in accordance with either paragraph 3.7.1(d) or paragraph 3.7.5. of ACI 506.2 77 depending upon atmospheric condition.

### **48.16 ADJACENT SURFACE PROTECTION**

During progress of the work, where appearance is important, adjacent areas or grounds which may be permanently discolored, stained, or otherwise damaged by dust and rebound, shall be adequately protected sensitive areas, when contacted, shall be cleaned by early scraping, brushing or washing, as the surroundings permit.

### **48.17 INSPECTION**

Because of the importance of workmanship affecting the quality of the gunite, continual inspection during placing shall be maintained. Any imperfections discovered shall be cut out and replaced with sound material.

### **48.18 EQUIPMENT**

Cement Gun: The mixing and delivering equipment shall be either the vertical double chamber type or rotary type. The upper chamber of the double chamber type shall receive and pressurize the dry mix and deliver it to the lower chamber. The lower chamber shall force the pressurized mix into the delivery hose by means of a feed wheel. The type of feeder utilized should be of sufficient capacity that the lower chamber may continuously furnish all required material to the delivery hose while the upper chamber receives the recharge. The rotary type cement gun shall have an enlarged hopper to feed material into a rotating multiported cylinder. Material shall fall by gravity into a port which shall then be rotated to a position in which the material is expelled by air into a moving stream of air. All equipment must be kept in good repair. The interior of drums, feed gearing and

valves shall be cleaned as often as necessary (at least once every 8 hour shift) to prevent material from caking on critical parts.

Nozzle: Nozzle shall be the premixing type with perforated water feed ring inside the nozzle. The maximum length of material hose for the application of gunite shall be approximately 150 feet although it shall be permissible to use as much as 800 feet of material hose if the supply air pressure measured at the cement gun is increased to maintain proper velocity. The following table gives requirements for compressor size, hose size and air pressure using 150 feet of material hose:

<b>Comp. Cap (cfm)</b>	<b>Max. Hose Dia. (In.)</b>	<b>Max. Size Nozzle (In.)</b>	<b>Min. Air Press. (psi)</b>
365	1 5/8	1 5/8	60
600	2	2	80
750	2 1/2	2 1/2	90

For each 25 feet of material hose used in excess of 150 feet, the required air pressure shall be increased by 5 psi.

Air Compressor: Any standard type of compressor shall be satisfactory if it is of sufficient capacity to provide, without interruption, the pressures and volume of air necessary for the longest hose delivery. The air compressor capacity determinations shall include allowances made for the air consumed in blowing rebound, cleaning, reinforcing and for incidental uses. Compressor equipment shall be of such capacity so as to insure air pressures at the special mixer capable of producing the required material velocities.

Water Supply: The water pressure at the discharge nozzle should be sufficiently greater than the operating air pressure to assure the water is intimately mixed with the other materials. If the line water pressure is inadequate, a water pump or pressurized tank shall be introduced into the line. The water pressure shall be uniformly steady (nonpulsating).

## **49 SANITARY AND STORM MANHOLE LINER RESTORATION**

### **49.1 SCOPE AND INTENT**

It is the intent of this portion of the specification to provide for the structural rehabilitation of manhole walls and bases with solid preformed liners and made-in-place liner systems used in accordance with the manufacturer's recommendations and these specifications. In addition to these specifications, the Contractor shall comply with manufacturer's instructions and recommendations for work. Purpose of work is to eliminate infiltration, provide corrosion protection, repair voids and to restore the structural integrity of the manhole. For any particular system the Contractor will submit manufacturer's technical data and application instructions. All OSHA regulations shall be met.

### **49.2 PAYMENT**

Payment for liners shall be per vertical foot of liner installed from the base to the top of the installed liner. Liners will generally be installed to the top of existing or new corbels. No separate payment will be made for the following items and the cost of such work shall be included in the pay item per linear foot of liner: Bypass pumping; Traffic Control; Debris Disposal; Excavation, including

necessary pavement removal; Shoring and/or dewatering; Structural fill; Backfill and compaction; Grout and mortar; Brick; Resetting of the manhole ring and cover; Pipe extensions and connectors necessary to the installation; Replacement of unpaved roadway and grass or shrubbery plot; Replacement of roadway base and asphalt surface; and Appurtenant work as required for a complete and operable system.

## **49.3 FIBERGLASS LINER PRODUCTS**

### **49.3.1 MATERIALS**

#### **49.3.1.1 LINERS**

Liners shall be fiberglass engineered to meet or exceed AASHTO H 20 loading of 16,000 pound vertical wheel load. Manhole liners are to be of the integral corbel design unless otherwise stipulated. Manhole liners are to be as large in diameter as will fit into the existing manhole. The contractor shall measure the existing manhole immediately prior to ordering materials and is solely responsible for the fitting of the liner. Contractor will be required to submit factory certification for fiberglass liners. The manhole liner shall meet all requirements of ASTM D 3753.

#### **49.3.1.2 MORTAR**

Mortar shall be composed of one part Portland Cement Type I and between two and three parts clean, well graded sand, 100% of which shall pass a No. 8 sieve.

#### **49.3.1.3 GROUTING**

Grouting shall be a concrete slurry of four bags of Portland Cement Type II per cubic yard of clean, well graded sand.

### **49.3.2 INSTALLATION AND EXECUTION**

Excavate an area around the top of the existing manhole sufficiently wide and deep for the removal of the manhole ring and corbel section.

Remove the frame and cover and corbel section without damaging the existing manhole walls. Care is to be taken not to allow brick or soil to fall into the existing manhole.

Remove or reinsert loose brick which protrude more than one inch from the interior wall of the manhole and which could interfere with the insertion of the fiberglass liner.

If the shelf of the manhole invert is not level around the perimeter, form a flat shelf with mortar.

Cut the liner to the proper length. Cutouts in the manhole shall be made to accommodate existing inlet and outlet pipes, drops and cleanouts.

Lower the liner into the existing manhole and set the bottom of the liner into quick setting grout. Obtain a good bottom seal to prevent the loss of grout from the annular space between the outside of the liner and the inside wall of the existing manhole. Set the liner as nearly vertically as possible. Pour six inches of quick setting grout above the initial bottom seal in the annular void to insure an adequate bottom seal.

Bridge the gap from drops, laterals, force mains, cleanouts and all existing piping between the existing manhole wall and the new manhole liner with P.V.C. pipe. Use quick setting mortar to seal the area around the manhole liner and piping.

Fill the annular space between the manhole liner and the existing manhole interior walls with grout. Care must be taken not to deflect the manhole liner due to head pressure.

Set the existing manhole ring and cover using brick to make elevation adjustments as needed.

Observe watertightness and repair any visible leakage.

Backfill around the new liner and compact the backfill. Sod the disturbed area. Match existing sod.

Where manholes fall in paved areas, disturbed base shall be replaced twice the original thickness and compacted in 8" layers. Asphalt shall be replaced with 1 1/2" of Pinellas County Type II surface.

## **49.4 STRONG SEAL MS-2 LINER PRODUCT SYSTEM**

This specification shall govern all work to spray apply a monolithic fiber reinforced cementitious liner to the wall and bench surfaces of brick, concrete or any other construction material; Strong Seal MS 2 product.

Described are procedures for manhole preparation, cleaning, application and testing. The applicator must be approved, trained and certified as having successfully completed factory training. The applicator/contractor shall furnish all labor, equipment and materials for applying the Strong Seal MS 2 product directly to the contour of the manhole to form a structural cementitious liner of a minimum 1/2" thickness using a machine specially designed for the application. All aspects of the installation shall be in accordance with the manufacturer's recommendations and with the following specifications which includes:

1. The elimination of active infiltration prior to making the application.
2. The removal of any loose and unsound material.
3. The spray application of a pre blended cementitious mix to form a monolithic liner in a 2 coat application.

### **49.4.1 MATERIALS**

#### **49.4.1.1 PATCHING MIX**

Strong Seal shall be used as a patching mix according to the manufacturer's recommendations and shall have the following minimum requirements:

- |                                      |                   |                   |
|--------------------------------------|-------------------|-------------------|
| 1. Compressive Strength (ASTM C-109) | 15 min., 200 psi  | 6 hrs., 1,400 psi |
| 2. Shrinkage (ASTM C-596)            | 28 days, 150 psi  |                   |
| 3. Bond (ASTM C-952)                 | 28 days, 150 psi  |                   |
| 4. Cement                            | Sulfate resistant |                   |
| 5. Density, when applied             | 105 +/- 5 pcf     |                   |

## **49.5 INFILTRATION CONTROL**

Strong Plug shall be used to stop minor water infiltration according to the manufacture's recommendations and shall have the following minimum requirements:

1. Compressive strength (ASTM C-109) - 600 psi, 1 hr.; 1000 psi 24 hrs.
2. Bond (ASTM C-952) - 30 psi, 1 hr.; 80 psi, 24 hrs.

## 49.6 GROUTING MIX

Strong-Seal Grout shall be used for stopping very active infiltration and filling voids according to the manufacture's recommendations. The grout shall be volume stable, and have a minimum 28 day compressive strength of 250 psi and a 1 day strength of 50 psi.

## 49.7 LINER MIX

Strong Seal MS 2 shall be used to form the monolithic liner covering all interior manhole surfaces and shall have the following minimum requirements at 28 days:

- |                                      |                |
|--------------------------------------|----------------|
| 1. Compressive strength (ASTM C 109) | 3,000 psi      |
| 2. Tensile strength (ASTM C 496)     | 300 psi        |
| 3. Flexural strength (ASTM C 78)     | 600 psi        |
| 4. Shrinkage (ASTM C 596)            | 0% at 90% R.H. |
| 5. Bond (ASTM C 952)                 | 130 psi        |
| 6. Density, when applied             | 105 + pcf      |

Product must be factory blended requiring only the addition of water at the Job site. Bag weight shall be 50 51 pounds and contents shall have dry bulk density of 54 to 56 pounds per cubic foot. Fiberglass rods which are contained in the product shall be alkaline resistant and shall be 1/2" to 5/8" long with a diameter of 635 to 640 microns. Products shall, in the un mixed state, have a lead content not greater than two percent (2%) by weight.

Strong Seal MS 2C shall be made with Calcium Aluminate Cement and shall be used according to the manufacturer's recommendations in applications where there is evidence of severe sulfide conditions.

Product must be factory blended requiring only the addition of water at job site.

Bag weight shall be 50-51 pounds and contents must have a dry bulk density of 50 56 pounds per cubic foot.

Cement content must be 65%-75% of total weight of bag.

One bag of product when mixed with correct amount of water must have a wet density of 95 108 pounds per cubic foot and must yield a minimum of .67 cubic foot of volume.

Fiberglass rods must be alkaline resistant with rod lengths not less than 1/2" in length nor greater than 5/8" in height.

Product shall not include any basic ingredient that exceeds maximum allowable EPA limit for any heavy metal.

Manufacturer must provide MSDS sheets for product(s) to be used in reconstruction process.

A two coat application of liner material will be required (no exceptions) with the first coat rough troweled to force materials into cracks and crevices to set the bond. The second coat to be spray applied to assure minimum 1/2" thickness after troweling or brush finishing to a relatively smooth finish.

## 49.8 WATER

Shall be clean and potable.

## **49.9 OTHER MATERIALS**

No other material shall be used with the mixes previously described without prior approval or recommendation from the manufacturer.

## **49.10 EQUIPMENT**

A specially designed machine consisting of an optimized progressive cavity pump capable of producing a minimum of 250 psi pumping pressure, contra blend mixer with twin ribbon paddles with discharge, and an air system for spray application of product. Equipment must be complete with water storage and metering system. Mixer and pump is to be hydraulically powered. Equipment is to be mounted to heavy duty construction tandem axle road worthy trailer complete with electric brakes and running lights. Internal combustion engine must be included to power the hydraulic system and air compressor.

## **49.11 INSTALLATION AND EXECUTION**

### **49.11.1 PREPARATION**

1. Place boards over inverts to prevent extraneous material from entering the sewer lines and to prevent up stream line from flooding the manhole.
2. All foreign material shall be removed from the manhole wall and bench using a high pressure water spray (minimum 1,200 psi). Loose and protruding brick, mortar and concrete shall be removed using a mason's hammer and chisel and/or scraper. Fill any large voids with quick setting patching mix.
3. Active leaks shall be stopped using quick setting specially formulated mixes according to the manufacturer's recommendations. Some leaks may require weep holes to localize the infiltration during the application after which the weep holes shall be plugged with the quick setting mix prior to the final liner application. When severe infiltration is present, drilling may be required in order to pressure grout using a cementitious grout. Manufacturer's recommendations shall be followed when pressure grouting is required.
4. Any bench, invert or service line repairs shall be made at this time using the quick setting mix and following the manufacturer's recommendations.
5. After all preparation has been completed, remove all loose material.

### **49.11.2 MIXING**

For each bag of product, use the amount of water specified by the manufacturer and mix using the Spray Mate Model 35C or 35D equipment for 30 seconds to a minute after all materials have been placed in the mixing hopper. Place the mix into the holding hopper and prepare another batch with timing such that the nozzleman can spray in a continuous manner without interruption until each application is complete.

### **49.11.3 SPRAYING**

The surface, prior to spraying, shall be damp without noticeable free water droplets or running water. Materials shall be sprayed, applied to a minimum uniform thickness to insure that all cracks, crevices and voids are filled and a somewhat smooth surface remains after light troweling. The light troweling is performed to compact the material into voids and to set the bond. Not before the

first application has begun to take an initial set (disappearance of surface sheen which could be 15 minutes to 1 hour depending upon ambient conditions) is the second application made to assure a minimum total finished thickness of 1/2 inch. The surface is then troweled to a smooth finish being careful not to over trowel so as to bring additional water to the surface and weaken it. A brush finish may be applied to the finished coat to remove trowel marks. Manufacturer's recommendation shall be followed whenever more than 24 hours have elapsed between applications. The wooden bench covers shall be removed and the bench is sprayed such that a gradual slope is produced from the walls to the invert with the thickness at the edge of the invert being no less than 1/2 inch. The wall bench intersection shall be rounded to a uniform radius, the full circumference of the intersection. The final application shall have a minimum of four (4) hours cure time before being subjected to active flow.

#### **49.11.4 PRODUCT TESTING**

At some point during the application, at least four (4) 2 inch cubes may be prepared each day or from every 50 bags of product used, identified and sent, in accordance with the Owner's or Manufacturer's directions, for compression strength testing as described in ASTM C 109.

#### **49.11.5 CURING**

Ambient manhole conditions are adequate for curing so long as the manhole is covered. It is imperative that the manhole be covered as soon as possible after the application has been completed.

#### **49.11.6 MANHOLE TESTING AND ACCEPTANCE**

Manhole may be vacuum tested from the top of manhole frame to the manhole base. All pipes entering the manhole shall be plugged, taking care to securely place the plug from being drawn into the manhole. The test head shall be placed and the seal inflated in accordance with the manufacturers' recommendations. A vacuum pump of ten (10) inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine (9) inches. The manhole shall pass if the time is greater than sixty (60) seconds for forty eight (48) inch diameter, seventy five (75) seconds for sixty (60) inches, and ninety (90) seconds for seventy two (72) inch diameter manholes. If the manhole fails the initial test, necessary repairs shall be made. Retesting shall proceed until a satisfactory test is obtained. Tests shall be performed by the Contractor under the direction of the Project Engineer.

### **49.12 INNERLINE ENVIRONMENTAL SERVICES LINER PRODUCT SYSTEM**

#### **49.12.1 SCOPE**

Materials and application procedures for manhole rehabilitation for the purpose of restoring structural integrity, providing corrosion resistance, and stopping infiltration by means of:

1. Hydraulic grouting, where required, as a preliminary measure to stop high volume infiltration
2. Hydrophilic grouting (positive side waterproofing), where required, as follows:
  - a. Hydrophilic foam-injected through wall of manhole to fill voids and/or
  - b. Hydrophilic gel-injected through wall of manhole to stop active leaks



3. Cementitious waterproofing with crystallization (negative side waterproofing)
4. Calcium aluminate cement lining, minimum of 1/2 inch
5. Epoxy coating, minimum of 30 dry mils

## **49.12.2 MATERIALS**

### **49.12.2.1 REPAIRING CEMENT**

A quick setting hydraulic cement compound shall be used to plug all visible minor leaks and to instantly stop major leaks, so that further waterproofing processes may proceed unhindered. The repairing cement shall be nonshrinking, nonmetallic, and noncorrosive. The compound shall have the following properties:

Set Time	1-3 minutes
Tensile Strength	1 day 510 psi
ASTM C 307	3 days 745 psi 28 days 855 psi
Compressive Strength	1 day 3,125 psi
ASTM -C 109	7 days 7,808 psi 28 days 9,543 psi
Flexural Strength ASTM C 78	1 day 410 psi 3 days 855 psi 28 days 1,245 psi

### **49.12.2.2 HYDROPHILIC GROUTING**

Based on conditions found in and around the manhole, the applicator shall pressure inject either one or both of the following materials:

1. An expansive foam grout shall be used to stop major intrusion of water and fill cracks in and voids behind the structure's surface. Physical properties are as follows:

Tensile Strength	380 psi	ASTM D 3574-86
Elongation	400%	ASTM D 3574-86
Bonding Strength	250-300 psi	

2. A hydrophilic gel grout shall be used for soil stabilization behind the manhole-to prevent seepage, to provide a damming effect, and to place a hydrostatic barrier around exterior of manhole. Physical properties are as follows:

Density	8.75-9.17 lbs/gal	ASTM D-3574
Tensile Strength	150 psi	ASTM D- 412
Elongation	250%	ASTM D-3574
Shrinkage	Less than 4%	ASTM D-1042
Toxicity	Non Toxic	

### **49.12.2.3 WATERPROOFING**

A waterproofing component based on the crystallization process shall be applied. The system combines cementitious and silicate based materials that are applied to negative side surfaces to seal and stop leakage caused by hydrostatic pressure. A combination of five coats (using three

components-two powders and a special liquid) react with moisture and the constituents of the substrate to form the crystalline structure. It becomes an integral part of the structure and blocks the passage of water. With moisture present, the crystallization process will continue for approximately six months. Upon completion the color will be light grey. Physical properties are as follows:

Slant/Shear bond Strength to Calcium Aluminate Cement ASTM (to be given)	1,200 1,800 psi	
Tensile Strength (7 day cure) ASTM C 190	380 psi (2.62 MPa) 325 psi (2.24 MPa)	at 100% RH at 50% RH
Permeability (3 day cure) CRD 48 55	8.1x10 <sup>-11</sup> cm/sec to 7.6x10 <sup>-11</sup> cm/sec	

#### 49.12.2.4 CEMENT LINING

A self-bonding calcium aluminate cement shall be applied to restore structural integrity and provide corrosion resistance qualities. The cement (before adding fibers) shall have the following properties:

Calcium Aluminate Cement		12 Hrs	24 Hrs	7 Days	28 Days
ASTM C 495	Compressive Strength, PSI	7000	11000	12000	13000
ASTM C 293	Flexural Strength, PSI	1000	1500	1800	2000
ASTM C 596	Shrinkage At 90% Humidity	--	<0.04	<0.06	<0.08
ASTM C 666	Freeze-Thaw Aft 300 Cycle	No Damage			
ASTM C 990	Pull - Out Strength	200 - 230 PSI Tensile			
ASTM C 457	Air Void Content (7 Days)	3%			
ASTM C 497	Porosity/Adsorption Test	4 - 5%			

Modules of Elasticity: 7.10 X 10 PSI after 24 Hrs moist curing at 68 F.

The calcium aluminate cement shall be reinforced with inert fibers which comply with ASTM C 1116 and ASTM C 1018, added at the rate of one pound per cubic yard of concrete. The mixture shall be applied to a thickness of at least one half inch, but no greater than two inches. It will have a dark grey color.

#### 49.12.2.5 EPOXY COATING

A high build, flexible waterproofing epoxy shall be applied to a minimum of 30 dry mils. This epoxy will seal structure from moisture and provide protective qualities to the surface, including excellent resistance to chemical attack and abrasion. The epoxy shall be 100% solids, can be applied to damp surfaces, cures to a tile like finish, is easy to clean, and has no toxic fumes. Its uses include sewage treatment plants and other sewer structures. The epoxy shall have the following properties at 75 degrees F:

Mixing Ratio (Parts A:B), by volume	1:1
Color (other colors available on request)	Light Gray

Pot Life, hrs	1
Tensile Strength, psi, min	2,000
Tensile Elongation, %	10 –20
Water Extractable Substances, mg./sq. in., max	5
Bond Strength to Cement (ASTM 882) psi	1,800

#### **49.12.2.6 CHEMICAL RESISTANCE**

Alcohols, Trichloroethylene, Nitric Acid (3%), Jet Fuels, Water, Sulfuric Acid (3% 10%), MEK, Wine, Butyl Acetate, Beer, Lactic Acid (3%), Gasoline, Corn Oil, Aluminum Sulfate, Paraffin Oil, Vegetable Juice, Sodium Chloride, Motor Oil, Hydrochloric Acid (3%), and many others.

#### **49.12.3 INSTALLATION AND EXECUTION**

##### **49.12.3.1 PROCEDURAL OVERVIEW**

Work shall proceed as follows:

1. Remove rungs (steps), if desired by client.
2. Clean manhole and remove debris.
  - a. Plug lines and/or screen out displaced debris.
  - b. Apply acid wash, if necessary, to clean and degrease.
  - c. Hydroblast and/or sand blast structure.
  - d. Remove debris from work area.
3. Repair minor defects in walls, benches, and inverts, as required, with repairing cement. (Note: Major structural repairs, such as rebuilding of benches, will also be made as required by client.
4. Inject hydrophilic grout through all surfaces, as needed, to eliminate infiltration.
5. Apply cementitious/crystallization waterproofing agents to all surfaces, repeating steps as needed.
6. Spray and/or hand apply calcium aluminate cement lining to all surfaces.
7. Spray apply epoxy coating to all surfaces.

**NOTE:** Steps 1-5 shall be executed consecutively with minimal delays; calcium aluminate (Step 6) shall require a cure time of at least twenty-four hours for needed adhesion of epoxy (Step 7) to cement lining.

##### **49.12.3.2 PREPARATION**

An acid wash shall be used (if needed) to clean and degrease. Then, if the client desires, the rungs shall be removed. Next, the entire structure is thoroughly water and/or sand blasted to remove any loose or deteriorated material. Care shall be taken to prevent any loose material from entering lines and other areas by either plugging the lines ( where feasible) or inserting protective screens.

##### **49.12.3.3 STRUCTURAL REPAIR**

Hand place or spray apply hydraulic cement material as necessary to prepared surface to fill cracks and voids in structure. Allow twenty (20) minutes before applying waterproofing/crystallization.

#### **49.12.3.4 INFILTRATION CONTROL**

Pressure injection of hydrophilic gel and hydrophilic foam.

1. Drill 5/8" holes through active leaking surface.
2. Install all zert fittings, as recommended by manufacturer.
3. Inject material until water flow stops.
4. Remove fittings (if necessary).

#### **49.12.3.5 WATERPROOFING/CRYSTALLIZATION PROCESS**

1. Apply a slurry coat of powder #1 to moist wall using a stiff brush, forming an undercoat.
2. Apply dry powder #2 to slurry coat by hand.
3. Brush or spray on sealing liquid during the application to penetrate and initiate the crystal forming process.
4. Repeat steps 2 and 3, until there are no visible leaks.
5. Apply powder #1 as an overcoat.
6. Allow one (1) hour to cure before applying cement lining.

#### **49.12.3.6 CEMENT LINING**

1. Dampen surface.
2. Mix material in mixer as recommended for spray or hand trowel application.
3. Apply cement until required build-up of at least one half inch (and no more than 2 inches) has been achieved.
4. Trowel to smooth finish, restoring contours of manhole.
5. Texture brush surface to prepare for epoxy finish.
6. Allow for a 24-hour cure time prior to epoxy coating.

NOTE: If conditions of heavy humidity prevail, a dry air blower shall be used to facilitate curing times.

#### **49.12.3.7 EPOXY COATING**

Spray apply epoxy coating using airless spraying equipment until surface is visibly covered and a thickness of at least 30 mils has been achieved. Manhole may be safely entered after six (6) hours, as epoxy will be hardened. Full cure strength will be achieved at forty eight (48) hours.

#### **49.12.3.8 CLEAN UP**

The work crew shall remove all debris and clean work area.

#### **49.12.3.9 MANHOLE TESTING AND ACCEPTANCE**

Manhole may be vacuum tested from the top of manhole frame to the manhole base. All pipes entering the manhole shall be plugged, taking care to securely place the plug from being drawn into the manhole. The test head shall be placed and the seal inflated in accordance with the manufacturers' recommendations. A vacuum pump of ten (10) inches of mercury shall be drawn

and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to nine (9) inches. The manhole shall pass if the time is greater than sixty (60) seconds for forty eight (48) inch diameter, seventy five (75) seconds for sixty (60) inches, and ninety (90) seconds for seventy two (72) inch diameter manholes. If the manhole fails the initial test, necessary repairs shall be made. Retesting shall proceed until a satisfactory test is obtained. Tests shall be performed by the Contractor under the direction of the Project Engineer.

#### **49.12.3.10 WARRANTY**

All materials and workmanship shall be warranted to the Owner for a period of five (5) years, provided that all the above mentioned repair steps are used.

### **50 PROJECT INFORMATION SIGNS**

This article deleted. See SECTION III, ARTICLE 23 – PROJECT INFORMATION SIGNS.

### **51 IN-LINE SKATING SURFACING SYSTEM**

#### **51.1 SCOPE**

1. These specifications pertain to the application of the Plexiflor Color Finish System over recreational areas intended for In-Line Skating activities. The materials specified in the site plans shall be of colors indicated and for application over the Plexipave Acrylic Latex System.
2. The work shall consist of suitable cleaning and preparation of the surface to assure a satisfactory bond of the system to the existing surface.
3. All coverage rates are calculated prior to dilution.
4. Plexiflor In-line Skating Surfacing System
  - 1 Coat of Acrylic Resurfacer
  - 2 Coats of Fortified Plexipave
  - 2 Coats of Plexiflor
  - Plexicolor Line Paint

#### **51.2 SURFACE PREPARATIONS**

##### **51.2.1 ASPHALT**

Allow new asphalt to cure a minimum of 6 months. The surface must be checked for birdbaths, cracks and other irregularities and repaired with Court Patch Binder according to California Specification Section 10.14. (Surfacing prior to six months may make the asphalt subject to indentation).

##### **51.2.2 CONCRETE**

Concrete shall have a wood float or broom finish. **DO NOT PROVIDE STEEL TROWEL FINISH. DO NOT USE CURING AGENTS OR CONCRETE HARDENERS.** Allow the concrete to cure a minimum of 30 days. Acid Etch the entire surface with Concrete Preparer according to California Specification Section 10.13. Check surface for birdbaths, cracks and other irregularities and repair with Court Patch Binder according to California Specification Section 10.14.

### 51.2.3 COURT PATCH BINDER MIX

Court Patch Binder Mix: 100 Lbs. #80-100 Mesh Silica Sand (dry) 3 gallons Couth Patch Binder  
1 to 2 gallons Portland Cement.

### 51.3 APPLICATION OF ACRYLIC FILLER COAT

1. Application of the Acrylic Resurfacer Mix shall be applied to the clean, dry, level surfaces to receive the Plexiflor Surfacing System. The mix shall be applied according to California Specification Section 10.8 using the following mix:

Acrylic Resurfacer	55 gallons
Water (Clean and Potable)	20-40 gallons
Sand (60-80 mesh)	600-900 pounds
Liquid Yield	112-138 gallons

2. Over asphalt surfaces, apply the Acrylic Resurfacer Mix in one or two coats (depending on surface porosity) at a rate of .05 -.07 gallons per square yard per coat.
3. Non-coated concrete surfaces must be neutralized with concrete preparer and primed with California Ti-Coat according to Specification Section 10.17. The Acrylic Resurfacer Mix must be applied within 3 hours of the TiCoat application while the primer is dry but still tacky to the touch. Apply the Acrylic Resurfacer Mix in one or two applications at a rate of .05-.07 gallons per square yard per coat.

### 51.4 APPLICATION OF FORTIFIED PLEXIPAVE

After the filler coat application has dried, apply two coats of Fortified Plexipave at an undiluted rate of .05-.07 gallons per square yard per coat using the following mix:

Plexipave Color Base	30 gallons
Plexichrome	20 gallons
Water	20 gallons

### 51.5 PLEXIFLOR APPLICATION

1. Plexiflor is factory premixed and ready to use from the container. The material may be diluted with one (1 ) part water to six (6) parts Plexiflor to improve flowability and provide uniform application.
2. Apply two coats of Plexiflor at a rate of .04-.05 gallons per square yard per coat.
3. Plexiflor is applied (in a similar manner to Plexipave) in windrows on the surface with sufficient quantity to cover as the squeegee is pulled over the surface. Apply only light pressure to the squeegee. Do not allow ridges to form between passes of the squeegee. Ridges existing after material dries should require corrective action.
4. Plexiflor and its preliminary coatings should be allowed to thoroughly dry prior to application of subsequent coats.

### 51.6 PLAYING LINES

Four hours minimum after completion of the color resurfacing, playing lines shall be accurately located, marked and painted with Plexicolor Line Paint as specified by The National In-Line Hockey Association.

## **51.7 GENERAL**

1. The contractor shall remove all containers, surplus materials and debris upon completion of work leaving the site in a clean, orderly condition that is acceptable to the owner. Gates shall be secured and all containers shall be disposed of in accordance with Local, State and Federal regulations.
2. Materials specified for the Plexiflor System shall be delivered to the site in sealed, properly labeled drums with California Products Corporation labels that are stenciled with the proper batch code numbers. Products packaged or labeled in any other manner will not be accepted. Mixing with clear, fresh water shall only be done at the job site. Coverage rates are based upon material prior to mixing with water as specified.

## **51.8 LIMITATIONS**

1. Do not apply if surface temperature is less than 50°F or more than 140°F.
2. Do not apply when rain or high humidity is imminent.
3. Do not apply when surface is damp or has standing water.
4. Plexiflor will not hide surface imperfections of previous coatings.
5. Keep from freezing. Do not store in the hot sun.
6. Keep containers tightly closed when not in use.
7. Plexiflor will not prevent substrate cracks from occurring.
8. Plexiflor will mark slightly from normal use of some In-line Skates.
9. Coefficient of friction = 0.78
10. Coating Application Drying Time: 30 minutes to 1 hour at 70°F with 60% relative humidity.
11. Keep court clean. Excess dirt or foreign material can cause the surface to be slippery.

**In-Line hockey is a physical sport. Always wear NIHA recommended protective gear.**

## **52 RESIDENT NOTIFICATION OF START OF CONSTRUCTION**

This article deleted. See SECTION III, ARTICLE 22 - RESIDENT NOTIFICATION OF START OF CONSTRUCTION.

## **53 GABIONS AND MATTRESSES**

### **53.1 MATERIAL**

#### **53.1.1 GABION AND RENO MATTRESS MATERIAL**

##### **53.1.1.1 PVC COATED WIRE MESH GABIONS & MATTRESSES**

Gabion & mattress basket units shall be of non-raveling construction and fabricated from a double twist by twisting each pair of wires through three half turns developing the appearance of a triple twist. The galvanized wire core shall have a diameter of 0.1063 inches (approx. US gauge 12). All wire used in the fabrication of the gabion shall comply with or exceed Federal Specifications QQ-

W-461H, possess a maximum tensile strength of 70,000 p.s.i. with a Finish 5, Class 3 zinc coating in accordance with the current ASTM A-641. The weight of zinc coating shall be determined by ASTM A-90. The grade of zinc used for coating shall be High Grade or Special High Grade, as prescribed in ASTM B-6, Table 1. Uniformity of coating shall equal or exceed four 1-minute dips by the Preece test, as determined by ASTM A-239.

The PVC coating shall be extruded and adhere to the wire core prior to weaving. The PVC coated wire shall be woven into a double twisted hexagonal mesh having uniform openings of 3 1/4 inches by 4 1/2 inches. The overall diameter of the mesh wire (galvanized wire core plus PVC coating) shall be 0.146 inches. Selvedge and reinforcing wire shall be of heavily galvanized wire core, 0.1338 inches in diameter (approx. US gauge 10), coated with PVC and having an overall diameter (galvanized wire core plus PVC coating) of 0.173 inches. Lacing and connecting wire shall be of soft tensile strength (75,000 PSI max), heavily galvanized wire core, 0.087 inches in diameter (approx. US gauge 13 1/2), coated with PVC and having an overall diameter (galvanized wire core plus PVC coating) of 0.127 inches. The use of alternate wire fasteners shall be permitted in lieu of tie wire providing the alternate fastener produces a four (4) wire selvedge joint with a strength of 1200 lbs. per linear foot while remaining in a locked and closed condition. Properly formed interlocking fasteners shall be spaced from 4 to 6 inches and have a minimum 3/4 square inch inside area to properly confine the required selvedge wires. Tiger-Tite Interlocking Fasteners are an approved alternate joint material. The Interlocking Wire Fastener shall meet stainless steel material specification ASTM A-313, Type 302, Class 1, or equal.

All of the above wire diameters are subject to tolerance limit of 0.004 inches in accordance with ASTM A-641.

### **53.1.1.2 PVC (POLYVINYL CHLORIDE) COATING**

The coating shall be gray in color and shall have a nominal thickness of 0.0216 inches but not less than 0.015 inches in thickness. The protective PVC plastic shall be suitable to resist deleterious effects from exposure to light, immersion in salt or polluted water and shall not show any material difference in its initial compound properties. The PVC compound is also resistant to attack from acids and resistant to abrasion.

1. Specific Gravity:
  - a. According to ASTM D-2287 and ASTM D- 792; in the range of 1.30 to 1.34.
2. Tensile Strength:
  - a. According to ASTM D-142; not less than 2980 psi.
3. Modulus of Elasticity:
  - a. According to ASTM D-412; not less than 2700 psi at 100% strain.
4. Resistance to Abrasion:
  - a. According to ASTM 1242; weight loss <12% (Method B).
5. Brittleness Temperature:
  - a. According to ASTM D-746, Procedure A; shall be at least 8.3 degrees centigrade below the minimum temperature at which the gabions will be handled or placed but not lower than -9.4 degrees centigrade.
6. Hardness:



- a. According to ASTM D-2240; shall be between 50 and 60 Shore D when tested.
7. Creeping Corrosion:
  - a. Maximum corrosion penetration to the wire core from a square cut end section shall not be more than 25mm when the specimen has been immersed for 2000 hours in a 50% SOLUTION HC1 (hydrochloric acid 12 Be).

### **53.1.1.3 ACCELERATED AGING TESTS**

Variation of the initial properties will be allowed, as specified below, when the specimen is submitted to the following **Accelerated Aging Tests**:

1. Salt Spray Test:
  - a. According to ASTM B-117
  - b. Period of test = 3000 hours.
2. Exposure to ultraviolet rays:
  - a. According to ASTM D-1499 and ASTM G-23 (Apparatus Type E). Period of test = 3000 hours at 63 degrees centigrade.
3. Exposure to high temperature:
  - a. Testing period: 240 hours at 105 degrees centigrade, when tested in accordance with ASTM D- 1203 and ASTM D-2287.

### **53.1.1.4 PROPERTIES AFTER AGING TESTS**

After the above **Accelerated Aging Tests** have been performed, the PVC compound shall exhibit the following properties:

1. Appearance:
  - a. The vinyl coating shall not crack, blister or split and shall not show any remarkable change in color.
2. Specific Gravity:
  - a. Shall not show change higher than 6% of its initial value.
3. Durometer Hardness:
  - a. Shall not show change higher than 10% of its initial value.
4. Tensile Strength:
  - a. Shall not show change higher than 25% of its initial value.
5. Elongation:
  - a. Shall not show change higher than 25% of its initial value.
6. Modulus of Elasticity:
  - a. Shall not show change higher than 25% of its initial value.
7. Resistance to Abrasion:
  - a. Shall not show change higher than 10% of its initial value.

8. Brittleness Temperature:
  - a. Cold Bend Temperature - Shall not be lower than -20 degrees centigrade.
  - b. Cold Flex Temperature - Shall not be higher than +18 degrees centigrade.

### **53.1.2 GABION AND MATTRESS FILLER MATERIAL:**

The filler stone shall be limestone from a source approved by the Engineer before delivery is started. Representative preliminary samples of the stone shall be submitted by the contractor or supplier for examination and testing by the Engineer. The stone shall have a minimum specific gravity of 2.3 and be of a quality and durability sufficient to insure permanency in the structure. The individual stones shall be free of cracks, seams, and other defects that would tend to promote deterioration from natural causes, or which might reduce the stones to sizes that could not be retained in the gabion or mattress baskets.

The stone shall meet the following physical requirements:

- Absorption, maximum 5%
- Los Angeles Abrasion (FM 10T096), maximum loss 45%
- Soundness (Sodium Sulphate), (FM 1-T104), maximum loss 12%
- Flat and elongated pieces, materials with least dimension less than one third of greatest dimension shall not exceed 5% by weight.

All filler material shall be uniformly graded between 4 inch and 8 inch (equivalent spherical diameter) and shall be angular in form. Rounded stones shall not exceed 10% of the stone, by weight and 70% of the stone, by weight, shall exceed the largest dimension of the mesh opening.

### **53.1.3 MATTRESS WIRE**

Mattress wire shall conform to the same specifications as gabions except as follows:

1. The nominal diameter of the wire used in the fabrication of the netting shall be 0.0866 inches minimum, subject to diameter tolerance in accordance with the current ASTM A 641, Table 3.
2. All wire shall be galvanized according to ASTM A 641, Table 1. The minimum weight of the zinc coating shall be 0.70 ozs./sq. ft. for the 0.0866 inch wire used for mesh and lacing and 0.80 ozs./sq. ft. for the 0.106 wire used for selvedge.
3. Adhesion of the zinc coating to the wire shall be capable of being wrapped in a close helix at a rate not exceeding 15 turns per minute around a cylindrical steel mandrel having a diameter 3 times the nominal wire diameter being tested. After the wrap test is completed, the wire shall not exhibit any cracking or flaking of the zinc coating to such an extent that any zinc can be removed by rubbing with bare fingers.

### **53.1.4 GEOTEXTILE FABRIC**

Fabric shall conform to FDOT Standard Index 199, Type D-2, and FDOT Standard Specifications, 1996 edition, Section 985.

## **53.2 PERFORMANCE**

Gabions and Reno Mattresses shall be installed according to the manufacturer's recommendations and as shown on the Drawings. Fabrication of gabion baskets shall be in such a manner that the

sides, ends, lid and diaphragms can be assembled at the construction site into rectangular baskets of the sizes specified and shown on the Drawings. Gabions and mattresses shall be of single unit construction; the base, lid ends and sides shall be either woven into a single unit or one edge of these members connected to the base section of the gabion in such a manner that the strength and flexibility at the connecting point is at least equal to that of the mesh. Where the length of the gabion and mattress exceeds one and one-half its horizontal width, they shall be equally divided by diaphragms of the same mesh and gauge as the mattresses shall be furnished with the necessary diaphragms secured in proper position on the base so that no additional tying is required at this juncture. The wire mesh is to be fabricated so that it will not ravel. This is defined as the ability to resist pulling apart at any of the twists or connections forming the mesh when a single wire strand in a section of mesh is cut.

Each gabion or mattress shall be assembled by tying all untied edges with binding wire. The binding wire shall be tightly looped around every other mesh opening along seams so that single and double loops are alternated.

A line of empty gabions shall be placed into position according to the contract drawings and binding wire shall be used to securely tie each unit to the adjoining one along the vertical reinforced edges and the top selvages. The base of the empty gabions placed on top of a filled line of gabions shall be tightly wire to the latter at front and back.

To achieve better alignment and finish in retaining walls, gabion stretching is recommended.

Connecting wires shall be inserted during the filling operation in the following manner: Gabions shall be filled to one third full and one connecting wire in each direction shall be tightly tied to opposite faces of each cell at one-third height. The gabion shall then be filled to two thirds full and one connecting wire in each direction shall be tightly tied to opposite face of each cell at one two third height. The cell shall then be filled to the top.

Filler stone shall not be dropped more than 12" into the gabions and mattresses.

Geotextile fabric shall be installed at locations shown in the Drawings. The surface to receive the cloth shall be prepared to a relatively smooth condition free of obstructions which may tear or cut the cloth. The panel shall be overlapped a minimum of 30 inches and secured against movement. Cloth damaged or displaced during installation, gabion work, or backfill shall be replaced or repaired to the satisfaction of the Engineer at the contractor's expense. The work shall be scheduled so that the fabric is not exposed to ultraviolet light more than the manufacturer's recommendations or five days, whichever is less.

## **54 LAWN MAINTENANCE SPECIFICATIONS**

### **54.1 SCOPE**

To remove trash and debris from landscape and paved area; maintenance and fertilization of plant beds and landscape materials; maintenance, repair, and operation of irrigation systems; ornamental pest control; palm pruning; maintenance of traffic; and the cleaning of hard surfaces at designated areas. The Contractor is to work with the City in coordinating maintenance activities and reporting irregularities in the work zone.

The Contractor(s) will provide the labor and materials required to maintain the landscaped street medians including:

- Traffic safety and Maintenance of Traffic;

- Trash and debris removal from the job site;
- Removal of weeds in landscaped areas and hard surfaces;
- Proper trimming and pruning of landscape plants and palms;
- Proper fertilization and pest control of landscape and palms (may be subcontracted);
- Irrigation service and repair;
- Mulch replacement;
- Cleaning of hard surfaces; and the
- Reporting of irregularities at the job site.

## **54.2 SCHEDULING OF WORK**

The Contractor(s) shall accomplish all landscape maintenance required under the contract between the hours of 6:30 a.m. and 7:00 p.m. Monday through Saturday, excluding observed holidays. The City may grant, on an individual basis, permission to perform contract maintenance at other hours.

All work shall be completed in a continuous manner, that is the cleanup, weeding, trimming, etc., be completed before leaving the job site.

## **54.3 WORK METHODS**

### **54.3.1 MAINTENANCE SCHEDULING**

The Contractor(s) will adhere to a work schedule provided by the City (see Level of Service). Any variations to that schedule, requested by either party, must be approved, either verbally or in writing by an authorized representative of the other party.

### **54.3.2 DUTIES PER SERVICE VISIT**

The contractor(s) shall provide the following service at each scheduled visit to the designated location:

## **54.4 LITTER**

Remove trash and debris from the area to be maintained. Proper disposal of collected trash and debris is a requirement of the contractor. Extraordinary amounts of debris caused by hurricanes, tornadoes, vandalism, etc., would be the responsibility of the City to clean up. The contractor should report such accumulations of debris when they are encountered. Bids for the extraordinary cleanup from the contractor would be considered.

## **54.5 VISUAL CHECK**

The site should be checked for irregularities, such as irrigation leaks, vehicle damage, dead or damaged plant material, vandalism, etc., which should be reported to the City within 24 hours after providing the service.

## **54.6 PLANT TRIMMING AND PALM PRUNING**

All plant material should be trimmed in a manner that promotes the natural shape and mature size of the particular specie. Trimming should be performed at intervals that will maintain plants in a neat appearance. Trimming should be performed to promote fullness of the plants, while maintaining height restrictions in Clear Sight Zones as established on the landscape plans. Plants shall be kept trimmed to the back of curb. Brown foliage shall be removed from Liriope.

Palm pruning to be performed at least once per year, preferably in late June or July following flower formation, according to the following specifications:

#### **54.7 PHOENIX SPECIES (CANARY DATE, INDIA DATE, PYGMY DATE, ETC.)**

Remove all descending fronds, to the base of the frond; all parallel and ascending fronds are to remain in order to leave a full, rounded head; seed heads may remain, but remove old faded heads that are encountered in the pruning process; remove loose frond boots; remove vegetation; such as strangler figs, Brazilian Pepper, Asparagus fern, etc., growing in the frond boots or on the trunk. Provide the rounded, classic cut on all Medjool palm boots. No climbing spikes allowed on palms.

#### **54.8 DEBRIS REMOVAL**

All debris from pruning process is to be removed from the job site and disposed of by the contractor. Work sites should be left in a clean and neat appearance upon completion.

#### **54.9 TRAFFIC CONTROL**

Proper and safe work zones in vehicular traffic areas are to be set up and maintained by the contractor, according to the attached Maintenance of Traffic specifications.

#### **54.10 PEDESTRIAN SAFETY**

Contractor is responsible for maintaining safe work zones in areas where pedestrian and park users are present. the City reserves the right to limit the hours of operation in certain high pedestrian use areas.

#### **54.11 PLANT FERTILIZATION**

All tree and plant material should be fertilized with the appropriate amount of 20-6-12 sulfur coated, slow release, ornamental fertilizer, three times per year. Applications should be made in mid-February, early June, and mid-September, for the first two years. Fertilizer types and amounts will change with requirements of maturing landscape materials.

#### **54.12 WEED REMOVAL IN LANDSCAPED AREA**

Weeds should be removed on a regular basis in order to keep them from being visibly noticeable. Weed control with the use of appropriate herbicides is allowable, given they are properly applied by a certified applicator. Herbicide damage to landscape material will be remedied by contractor at his/her expense.

#### **54.13 MULCH CONDITION**

Should be maintained at a thickness that will discourage weed growth as well as help retain soil moisture, usually 3 inches.

#### **54.14 IRRIGATION SERVICE AND REPAIR**

Should be performed at each visit to assure the systems proper operation and timing. Drip tubing should be kept covered with mulch. Timer should be checked for proper time of day and operating schedule. Leaks or breaks in the system should be repaired before the next scheduled system running time. All repairs which will be charged at \$20.00 or more must be approved in advance

by the city. Minor repairs, less than \$20.00, should be billed to the City in addition to the monthly maintenance fee.

#### **54.15 LAWN AND ORNAMENTAL PEST CONTROL**

Should be performed by a properly licensed and certified applicator to keep pest populations at a less than damaging level. Landscape materials lost to or extensively damaged by pests will be replaced by the contractor at the contractor's expense. Diazinon products are not to be used on City properties.

#### **54.16 PALM FERTILIZATION**

Apply three pounds of Magnesium sulfate and one pound of Potassium evenly, per tree, across the root zone (typically within the dripline), annually in early February.

#### **54.17 FREEZE PROTECTION**

the City will provide a freeze/frost protection fabric for the Contractor to install over freeze/frost sensitive plants (Lantana and Pentas). The covering material will be stored at a City facility (yet to be determined). Contractor will remove the covering material from storage and install over the sensitive plants, securely fastening edges of the material to the ground per manufacturer's directions. the City will furnish metal pins needed for securing fabric to the ground. the City will notify the Contractor one (1) day or twenty-four (24) hours minimum prior to the need to protect plant material. After uses, the Contractor will prepare the fabric for storage and return it to the designated City facility. Protective covering shall be removed the following afternoon or remain in place as directed by the City. the City shall notify the Contractor by 11:00 a.m. about removing the cover or keeping it in place due to continued freezing temperatures. the City may cancel the freeze protection event at any time prior to the end of the scheduled installation day (5:00 p.m.) The Contractor will be compensated for the number of hours mobilization or on-site work at the contracted rate per man-hour unit price. The Contractor shall provide a unit price for the installation and removal of the covering fabric on a per event basis, as well as an hourly rate per employee required. the City and contractor will coordinate appropriate irrigation operations with weather conditions. Should freeze/frost damage occur, the Contractor shall perform remedial work as per unit basis, as directed by the City.

#### **54.18 LEVEL OF SERVICE**

This location is to be serviced weekly. Repairs to damage or vandalism to be made within 7 working days of reported irregularity. Weekly visits should occur no closer than six and no further than ten calendar days apart.

#### **54.19 COMPLETION OF WORK**

Within 24 hours of completing work the contractor shall notify the supervisor assigned to monitor the contract either in person or by phone of said completion. It is acceptable to leave a phone message. However, to make certain the message is received, it is advisable to call between 6:30 a.m. – 7:30 a.m. or 2:30 p.m. – 3:00 p.m.

#### **54.20 INSPECTION AND APPROVAL**

Upon receiving notification from the Contractor, the City shall inspect the serviced location the following business day. If, upon inspection, the work specified has not been completed, the City

shall contact the Contractor to indicate the necessary corrective measures. The Contractor will be given 48 hours from this notification to make appropriate corrections. If the work has been completed successfully then the City will pay for services billed.

## **54.21 SPECIAL CONDITIONS**

1. This location will be newly installed and under warranty by the installer for a six month period on plants and 12 month warranty on palms. Landscape installer will coordinate irrigation operation with the Maintenance contractor to assure adequate irrigation to the landscape materials. Installer will also be responsible for the untying of palm heads/fronds as he feels appropriate.
2. All listed acreage or square footage figures are estimates.
3. All maintenance shall be performed in a good and workmanlike manner, consistent with trade practices and standards which prevail in the industry.
4. The Contractor shall be responsible for damage to any plant material or site feature caused by the Contractor or his/her employees. The Contractor shall be notified in writing of the specific nature of the damage and cost of repair. the City shall, at its option, invoice the Contractor for the payment, or reduce by the amount of the repairs the next regular payment to the Contractor.
5. Occasionally circumstances (standing water, prolonged inclement weather, parked vehicles, etc.) may make all or portions of a location unserviceable during the regular schedule. The Contractor shall notify the City Supervisor of such occurrences, and shall schedule to perform the required maintenance to the location as soon as the pertaining circumstances are relieved.

## **55 MILLING OPERATIONS**

### **55.1 EQUIPMENT, CONSTRUCTION & MILLED SURFACE**

Unless otherwise noted in the specs, plans or this Article, the milling operation shall be performed in accordance with Section 327 of FDOT's Standard Specifications (latest edition). The Contractor shall notify the Project Inspector a minimum of 24 hours in advance of all milling.

### **55.2 ADDITIONAL MILLING REQUIREMENTS**

1. If the milling machine is equipped with preheating devices, the contractor is responsible to secure any necessary permits, and for complying with all local, state and federal environmental regulations governing operation of this type of equipment.
2. All milled surfaces must be repaved within seven days from the time it was milled, unless otherwise noted in the contract documents.
3. Prior to paving, all milled areas shall be swept with a Municipal type sweeper either of the vacuum or the mechanical type, that picks up and hauls off, dust and dirt. The sweeper must be equipped with its own water supply for pre-wetting to minimize dust. Moreover, the Contractor shall sweep debris off of sidewalks, driveways and curbs in addition to the roadways before leaving the job site.
4. In cases where concrete valley swales are present, the adjoining pavement shall be milled to allow for the new asphalt grade to be flush with the concrete surface.

5. The Contractor shall be responsible for removing any asphalt that remains in the curb line and/or median curbs after the milling operation of a street is complete. The cost of this removal shall be included in the bid item for milling.
6. All radius returns on streets to be milled shall also be milled unless otherwise directed by the Engineer, with payment to be included in the bid item for milling.
7. Any leveling or base replacement required after milling shall be applied to sections of the road as noted on the plans, or directed by the Engineer, per Section 330 of FDOT's 2000 Standard Specifications for S-Type resurfacing projects or Section 330 (latest edition) for superpave resurfacing projects. The cost shall be included in the per ton unit cost for asphalt, unless otherwise noted in the project scope and plans.
8. Any roadway base material exposed as a result of the milling operation shall be primed that same day (unless otherwise directed by the Engineer) per Section 300 of FDOT's Standard Specifications (latest edition). Repairs required to said base that result from a failure to place the prime in a timely manner shall be done to the City's satisfaction, and at the Contractor's expense. No paving of the exposed base can commence until the City approves the repaired base. The cost of said prime shall be included in the bid item for milling.
9. Prior to the placement of asphalt, the face of all curbs and driveways shall be tacked after the milling operation is complete.

### **55.3 SALVAGEABLE MATERIALS**

All surplus existing materials resulting from milling operations shall remain the property of the City. The transporting and stockpiling of salvageable materials shall be performed by the Contractor. The Contractor shall contact the Public Services Division at (727) 562-4950 to schedule delivery of material.

### **55.4 DISPOSABLE MATERIALS**

All surplus materials not claimed by the City shall become the property of the Contractor. The Contractor shall dispose of the material in a timely manner and in accordance with all regulatory requirements in areas provided by the Contractor at no additional expense to the City.

### **55.5 ADJUSTMENT AND LOCATION OF UNDERGROUND UTILITIES**

All utilities and related structures requiring adjustment shall be located and adjusted by their owners at the owner's expense. The Contractor shall arrange his schedule to allow utility owners the time required for such adjustments (minimum 48 hours notice per State Statute). All utility adjustments shall be completed prior to the commencement of milling and resurfacing operations.

### **55.6 ADJUSTMENT OF UTILITY MANHOLES**

The necessary adjustments of sanitary sewer and stormwater utility manholes and appurtenances shall be accomplished by the Contractor in accordance with Section IV, Article 23.7 of the City's Technical Specifications.

### **55.7 TYPES OF MILLING**

There are two types of milling used by the City:



- A. Wedge – This will consist of milling a six foot wide strip along the curb line of the pavement adjacent to the curb so the new asphalt will align with the original curb height and pavement cross section.
- B. Full Width – This will consist of milling the entire roadway (i.e. curb line/edge of pavement to curb line/edge of pavement). All existing horizontal and vertical geometry shall remain unless otherwise indicated or approved by the Engineer.

## **55.8 MILLING OF INTERSECTIONS**

Intersections, as well as other areas (including radius returns) are to be milled and repaved to restore and/or improve the original drainage characteristics. Said work should extend approximately 50 to 100 feet in both directions from the low point of the existing swale.

## **55.9 BASIS OF MEASUREMENT**

The quantity to be paid for will be the area milled, in square yards, completed and accepted.

## **55.10 BASIS OF PAYMENT**

The unit price for milling shall include: all materials, preparation, hauling, transporting and stockpiling of salvageable materials, disposal of all surplus material, any required milling of radius returns and intersections, prime and/or tack coat either required or placed at Engineer's discretion, removal of asphalt from curbs, sweeping, labor, equipment, and all incidentals necessary to complete the milling in accordance with the plans and specifications.

## **56 CLEARING AND GRUBBING**

The work included in this specification includes the removal and disposal of all structures, appurtenances, asphalt, concrete, curbs, walls, trees, roots, vegetation, boulders, conduits, poles, posts, pipes, inlets, brush, stumps, debris and other obstructions resting on or protruding through the ground surface necessary to prepare the area for construction.

Clearing and grubbing shall be performed in accordance with Section 110 of FDOT's Standard Specifications (latest edition). Unless otherwise specified in the contract documents, the Contractor shall take ownership of all removed material and dispose of them off-site in accordance with all Local, State and Federal Requirements.

## **56.1 BASIS OF MEASUREMENT**

The basis of measurement shall be either a lump sum quantity or the number of acres cleared and grubbed as specified on the plans or directed by the Engineer.

## **56.2 BASIS OF PAYMENT**

The pay item for clearing and grubbing shall include: all removal and disposal of materials and structures as well as all materials, hauling, equipment, tools, labor, leveling of terrain, landscape trimming and all incidentals necessary to complete the work.

## **57 RIPRAP**

The work included in this specification includes the construction of either sand-cement or rubble riprap as shown on the plans. The riprap shall be constructed per Section 530 of FDOT's Standard Specifications (latest edition).

### **57.1 BASIS OF MEASUREMENT**

The basis of measurement for riprap shall be the volume of sand used in cubic yards for sand-cement, or the dry weight in tons for rubble.

### **57.2 BASIS OF PAYMENT**

The pay item for sand-cement riprap shall include: all materials, testing, labor, grout, hauling, equipment, excavation, backfill, dressing and shaping for placement of sand-cement and all incidentals necessary to complete the work.

The pay item for rubble riprap shall include: all materials, required bedding stone, dressing and shaping for placement of bedding stone, filter fabric, testing, hauling, excavating, backfill, dressing and shaping for placement of rubble, and all incidentals necessary to complete the work. No payment will be granted if concrete or stone that exists on-site is used as rubble riprap.

## **58 TREATMENT PLANT SAFETY**

This article applies to all City projects located at one of the City's Wastewater Treatment Plants (WWTP) or Potable Water Reservoirs.

### **58.1 HAZARD POTENTIAL**

The Contractor shall be aware that hazardous materials are used at the WWTP's and the water reservoirs. These may include sodium hypochlorite, gaseous chlorine, sulfur dioxide and ammonia. Potential safety hazards associated with these substances include:

- An accidental spill or release can impair respiratory functions and result in severe burns to the skin and eyes. At the pre-construction conference, the contractor will be provided with a copy of the City of Madeira Beach Public Utilities Department Emergency Response Plan, and a copy of the applicable Material Safety Data Sheets. All employees of the contractor and sub-contractor assigned to this job shall be familiar with the content of these documents.

### **58.2 REQUIRED CONTRACTOR TRAINING**

Prior to issuance of a notice to proceed, the contractor must submit documentation regarding employee safety training relating to the items in Section A above. The documentation must include:

- Verification that all employees assigned to this job have received and understood training in the proper work practices necessary to safely perform the job while working around gaseous chlorine and sulfur dioxide gas.
- The date of the training, and
- The means used to verify that the employee understood the training.

## **59 TRAFFIC SIGNAL EQUIPMENT AND MATERIALS**

All traffic signal work shall be performed per the latest edition of FDOT’s Standard Specifications (Sections 603 through 699), unless otherwise specified in the contract documents and plans.

This specification includes, but is not limited to, the following items: all necessary equipment, materials, guaranties, acceptance procedures, signal timings, field tests, grounding, conduit, signal and interconnect cable, span wire assemblies, pull and junction boxes, electrical power service assemblies, poles, signal assemblies, pedestrian assemblies, inductive loop detectors, pedestrian detectors, traffic controller assemblies, controller cabinets and accessories, removal of existing traffic signal equipment, and internally illuminated signs.

All traffic signal installations shall be mast arms and conform to the requirements of FDOT’s Mast Arm Assembly standard, and shall be signed and sealed by a professional engineer registered in the state of Florida. All mast arm calculations, as well as the geotechnical report, shall also be signed and sealed by a professional engineer registered in the state of Florida. All mast arm colors shall be determined and approved by the City prior to ordering from the manufacturer.

All traffic signal indicators for vehicles and pedestrians shall be LED’s and, approved by both the City and FDOT. In addition to this, all pedestrian signal indicators shall utilize countdown features.

Contractor changes to the operation of an existing signal is PROHIBITED unless directed by the City’s Traffic Engineering Division.

### **59.1 BASIS OF MEASUREMENT AND PAYMENT**

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, preparation, materials, testing and incidentals required to complete the work per the plans.

## **60 SIGNING AND MARKING**

All signing and marking work shall be performed per the latest edition of FDOT’s Standard Specifications, unless otherwise specified in the contract documents and plans.

This specification includes the following work: RPM’s (Section 706), painted traffic stripes and markings (Section 710), thermoplastic stripes and markings (Section 711) and tubular delineators/flex posts (Sections 705 and 972).

The Contractor is responsible to ensure that striping is correctly placed. Errors in striping or markings shall be “blacked-out” with paint, unless otherwise directed by the Engineer. No payment will be made for these incorrect or “blacked-out” areas. Omissions in striping or markings shall be corrected to the City’s satisfaction prior to any payment being made.

### **60.1 BASIS OF MEASUREMENT AND PAYMENT**

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, preparation, materials and incidentals required to complete the work per the plans.

## **61 ROADWAY LIGHTING**

All roadway lighting shall be constructed per Sections 715 and 992 of FDOT's Standard Specifications (latest edition), unless otherwise specified in the contract documents and plans.

### **61.1 BASIS OF MEASUREMENT AND PAYMENT**

The basis of measurement and payment shall be specified in the contract documents and/or plans and shall include all equipment, materials, testing and incidentals required to complete the work per the plans.

## **62 TREE PROTECTION**

### **62.1 TREE BARRICADES**

- A. A protective barrier shall be placed around all protected trees and palms prior to land preparation or construction activities within or adjacent to the work zone, including all staging and/or lay down areas. Protective barriers shall be installed as follows:
  - 1. At or greater than the full dripline of all species of Mangroves and Cabbage Palms.
  - 2. At or greater than the full dripline or all protected native pine trees and other conifer species.
  - 3. At or greater than two-thirds of the dripline of all other protected species
  - 4. At or greater than the full dripline of trees within a specimen tree stand.
- B. Protective barriers are to be constructed using no less than two-inch lumber for upright posts. Upright posts are to be at least four feet in length with a minimum of one foot anchored in the ground. Upright posts are to be placed at a maximum distance of eight feet apart. Horizontal rails are to be constructed using no less than one inch by four-inch lumber and shall be securely attached to the top of the upright post. The project City's representative must approve any variation from the above requirements.
- C. Whenever a protective barrier is required, it shall be in place until all construction activity is terminated. The area within the barrier limits shall remain undisturbed by any activity during construction. Native ground cover and understory vegetation existing within the barriers shall remain throughout construction. Exotic plant species may only be removed by manual labor utilizing hand tools or by other means if authorized in writing by the City's representative.
- D. Prior to the erection of any required protective barrier, all surface foreign material, trash or debris shall be removed from the area enclosed by the barrier, and after erection of the barrier no such material or litter shall be permitted to remain within the protected area. No equipment, chemicals, soil deposits or construction materials shall be placed within such protective barriers.
- E. No signs, building permits, wires, or other attachments of any kind shall be attached to any protected tree or palm.
- F. At all times, due care shall be taken to protect the critical root zone of trees protected by this section, and root pruning requirements shall apply to such trees.

## 62.2 ROOT PRUNING

- A. Where proposed construction improvements involve excavation and/or impacts to the critical root zone of protected trees, the Contractor shall be required to have an International Society of Arboriculture (ISA) certified arborist perform, or directly supervise root pruning to reduce the impacts of construction. The critical root zone is equivalent to the tree's dripline. Prior to any clearing, grubbing or excavation activities, the affected roots must be severed by clean pruning cuts at the point where grubbing or excavation impacts the root system. Roots can be pruned utilizing specified root pruning equipment designed for that purpose or by hand digging a trench and pruning roots with a pruning saw, chain saw or other equipment designed for tree pruning. Root pruning by trenching equipment or excavation equipment is strictly prohibited. Roots located in the critical root zone that will be impacted by construction activities shall be pruned to a minimum depth of 18 inches below existing grade or to the depth of the proposed impact if less than 18 inches from existing grade. Tim Kurtz, Senior Landscape Architect is the City's Representative on Engineering Department projects for root Pruning issues and can be reached at (727) 562-4737, or through the construction inspector assigned to the project.
- B. Root pruning shall only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) certified arborist.
- C. Any proposed root pruning trenches shall be identified on site (i.e. staked or painted) inspected and approved by the City's representative prior to actual root pruning.
- D. Root pruning shall be performed as far in advance of other construction activities as is feasible, but at a minimum shall be performed prior to ANY impacts to the soil. Associated tree protection measures should be implemented upon completion of said root pruning.
- E. If there is a likelihood of excessive wind and/or rain exceptional care shall be taken on any root pruning activities.
- F. Root pruning shall be limited to a minimum of ten inches per one inch of the trunk diameter from the tree base. Any exception must be approved by the City's representative prior to said root pruning.
- G. Roots shall be cut cleanly, as far from the trunk of the tree as possible. Root pruning shall be done to a minimum depth of 18" from existing grade, or to the depth of the disturbance if less than 18".
- H. Root pruning shall be performed using a Doscocil Root Cutting Machine or equivalent. Alternate equipment or techniques must be approved by the City's representative, prior to any work adjacent to trees to be preserved.
- I. Root pruning shall be completed, inspected and accepted prior to the commencement of any excavation or other impacts to the critical root zones of trees to be protected.
- J. Excavations in an area where root are present shall not cause the tearing or ripping of tree roots. Roots must first be cleanly severed prior to continuing with the excavation, or tunneled around to prevent damage to the root.
- K. Tree roots shall not be exposed to drying out. Root ends shall be covered with native soil or burlap and kept moist until final backfill or final grade has been established.
- L. When deemed appropriate (e.g., during periods of drought) the City representative may require a temporary irrigation system be utilized in the remaining critical root zones of root pruned trees.

- M. When underground utility lines are to be installed within the critical root zone, the root pruning requirement may be waived if the lines are installed via tunneling or directional boring as opposed to open trenching.

### **62.3 PROPER TREE PRUNING**

- A. All tree pruning and/or root pruning on existing trees to remain shall only be performed by or under the direct supervision of an International Society of Arboriculture (ISA) certified arborist. Furthermore, all tree work shall conform to the American National Standards Institute (ANSI) 2001, American National Standard for tree care operations – Tree, Shrub and other Woody Plant Maintenance – Standard practices (pruning) ANSI A-300.
- B. Proper pruning techniques for all lateral branches of protected trees are required. Flush cuts (pruning cuts that remove the branch collar) and stub cuts (cuts that leave a stub on the tree) are improper techniques. Any protected tree that has been improperly pruned will not be recognized as a tree left on the project in a healthy growing condition, and will require replacement consistent with the current City Codes and Ordinances.
- C. No protected tree shall have more than 30 percent of its foliage removed.
- D. No protected tree shall be topped, hat raked or lion-tailed. Any protected tree that has been improperly pruned will not be recognized as a tree left on the project in a healthy growing condition, and will require replacement consistent with the current City Codes and Ordinances.
- E. Tree Trunks and limbs shall be protected. The use of tree spikes or other devices that damage trunk and bark tissue on protected trees shall be prohibited. Any protected tree that has been damaged in such a manner will not be recognized as a tree left on the project in a healthy growing condition, and will require replacement consistent with the current City Codes and Ordinances.

## **63 PROJECT WEB PAGES**

### **63.1 WEB PAGES DESIGN**

If requested by the City, Engineer shall design the Project Web Site in accordance with the current City Web Site standards and styles. Project Web Site should include general project information as: Project Name & Number, Scope description, Location, Schedule, and Project Contacts.

**Note:** Occasionally City modifies the general design of the City’s Web Site, and the Engineer shall consult the City Webmaster for the current requirements, before designing or updating the Project Web Pages.

### **63.2 WEB ACCESSIBILITY GUIDELINES**

Project Web Pages should conform to the W3C Web Accessibility Guidelines and US Section 508 guidelines whenever possible:

<http://www.w3.org/TR/1999/WAI-WEBCONTENT-19990505/>

<http://www.section508.gov/>

In particular, use of variable-width tables, user-adjustable/relative font sizes, ALT text for images, CSS whenever possible, etc. Accessibility should be a priority over design/aesthetics.

### **63.3 THE SUN AND WAVES LOGO AND ITS USE**

the City’s Sun and Waves logo should be used for everyday business, on all print and electronic material. It should be used on all internal correspondence, brochures, advertising, vehicles, apparel and signage. It should be used only in the manner presented here, in the proportion shown here, with no alterations. It should not be condensed, lengthened, or otherwise distorted to fit a space. The logo is approved for use by city departments, and is not to be used by outside vendors without the permission of the City Manager, Assistant City Manager or Public Communications office. Electronic versions of the logo should be obtained from the Public Communications. This is for internal use only.

### **63.4 MAPS AND GRAPHICS**

Use of maps and graphics is recommended to illustrate the project; only approved graphics should be posted to the Project Web Pages.

### **63.5 INTERACTIVE FORMS**

The site should also include an interactive form or other options to allow Public’s input sent back to the City regarding the Project.

### **63.6 POSTING**

The site should be presented to the City’s Webmaster for review and posting to the City’s Web Server. Posting of the Project Web Pages to a different than City’s Web server, if approved, should be coordinated with the City’s Webmaster for resolving all accessibility and conformity issues.

### **63.7 WEB PAGES UPDATES**

Unless otherwise specified and agreed Engineer is responsible for keeping the posted Web Pages up-to-date, by sending revisions and updates through the City Project Manager to the City’s Webmaster for posting.

## **64 OVERHEAD ELECTRIC LINE CLEARANCE**

### **64.1 CLEARANCE OPTIONS**

When working in the vicinity of overhead power lines the Contractor shall utilize one of the following options:

- Option 1 - Having the power lines de-energized and visibly grounded.
- Option 2 - Maintaining a minimum distance of 20 feet of clearance for voltages up to 350 kV an 50 feet of clearance for voltages more than 350 kV.
- Option 3 - Determine the line voltage and provide clearance in accordance with the table included in Section 64.2.

### **64.2 REQUIRED MINIMUM CLEARANCE DISTANCES**

<b>VOLTAGE</b> <b>(nominal, kV, alternating current)</b>	<b>MINIMUM CLEARANCE DISTANCE</b> <b>(feet)</b>
---	--

Section IV – Technical Specifications

Up to 50	10
Over 50 to 200	15
Over 20 to 350	20
Over 350 to 500	25
Over 500 to 750	35
Over 750 to 1,000	45
Over 1000	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electric power transmission and distribution)

Note: The value that follows “to” is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.



**SECTION IVa  
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**CITY OF MADEIRA BEACH  
14107 E PARSLEY DR DRAINAGE IMPROVEMENTS  
PROJECT No. 2017-192**

**Supplemental Technical Specifications (STS)**

These Supplemental Conditions amend or supplement the General Conditions Section III and the Technical Specifications Section IV of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplemental Conditions will have the meaning indicated in the General Conditions. Additional terms used in these Supplemental Conditions have the meaning indicated below, which are applicable to both the singular and plural thereof.

**STS-01 includes amendments to the referenced conditions found in Section III General Conditions.**

STS-01 REVISIONS TO ARTICLE 6 – CONTRACTORS RESPONSIBILITIES

STS-02 REVISIONS TO ARTICLE 13 – TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

**STS-03 through STS-08 includes amendments to the referenced conditions found in Section IV Technical Specifications.**

STS-03 REVISIONS TO ARTICLE 19 – STORM SEWERS

STS-04 REVISIONS TO ARTICLE 20 – SANITARY SEWERS AND FORCE MAINS

STS-05 REVISIONS TO ARTICLE 33 – STORM MANHOLES, INLETS, CATCH BASINS OR OTHER STORM STRUCTURES

STS-06 REVISIONS TO ARTICLE 37 – AUDIO/VIDEO RECORDING OF WORK AREA

STS-07 REVISIONS TO ARTICLE 38 – EROSIONS AND SILTATION CONTROL

STS-08 REVISIONS to Section IV Article 44 WORK ZONE TRAFFIC CONTROL

**STS-09 includes additional conditions that supplement or supersede conditions found in Section IV General Conditions.**

STS-09 SECTION 01201 – MEASUREMENT AND PAYMENT (ATTACHED)

**STS-10 General Conditions**

## SECTION IVa

### SUPPLEMENTAL TECHNICAL SPECIFICATIONS (STS) - CONSTRUCTION

#### **STS-01 REVISIONS TO SECTION III ARTICLE 6 – CONTRACTORS RESPONSIBILITIES**

- A. The Contractor shall provide shop drawings for all components of the proposed improvements. These include, but are not limited to, the following:
- Storm Structures/Piping & Appurtenances
  - Sanitary Sewer Piping & Appurtenances
  - Asphalt Mix Design
  - Roadway Base Material
  - Concrete Mix Design
  - Erosion Control Material
  - Cure-In-Place Pipe Lining

#### **STS-02 REVISIONS TO SECTION III ARTICLE 13 – TESTS AND INSPECTIONS, CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

- A. Add the following to the end of General Condition 13.1 – Tests and Inspections:

Contractor shall employ and pay for the services of an independent testing laboratory to perform density testing on backfilled material. The cost for density testing shall be included in the unit bid price for road construction quantities such as road subgrade, base, asphalt, curb and storm pipe construction.

#### **STS-03 REVISIONS TO SECTION IV ARTICLE 19 – STORM SEWERS**

- A. Rubber gaskets, in accordance with Section 942 of the current FDOT specifications shall be installed in all pipe joints in addition to wrapping in filter fabric.
- B. All pipe joints shall be wrapped with Mirafi 140N filter fabric or equivalent.
- C. All concrete pipes/culverts shall be reinforced utilizing **steel**.

#### **STS-04 REVISIONS TO SECTION IV ARTICLE 20 – SANITARY SEWERS AND FORCE MAINS**

- A. “Polylining” referenced in this Article shall be Protecto 401 as manufactured by Induron Coatings, Inc.

#### **STS-05 REVISIONS TO SECTION IV ARTICLE 33 – STORM MANHOLES, INLETS, CATCH BASINS OR OTHER STORM STRUCTURES**

- A. The bedding thickness requirement of 5”, as stated in Article 33.2, shall be revised to 8”. Bedding material shall be FDOT No. 57 stone.

**STS-06 REVISIONS TO SECTION IV ARTICLE 37 – AUDIO/VIDEO RECORDING OF WORK AREA**

- A. The contractor is to adhere to all sections in Article 37 and to also include a complete video of all improvements in American Legion Drive. Any adjacent private fences or walls or any pavement settlement is to be documented and brought to the attention of the City Representative.

**STS-07 REVISIONS TO SECTION IV ARTICLE 38 – EROSION AND SILTATION CONTROL**

- B. Synthetic hay bales shall be used. The use of actual hay bales will not be permitted.

**STS-08 REVISIONS TO SECTION IV ARTICLE 44 WORK ZONE TRAFFIC CONTROL**

- A. The MOT Certification Form (as found in Appendix A-4) must be completed and attached to Maintenance of Traffic plans submitted to Deuel and Associates.

**STS-09 SECTION 01201 - MEASUREMENT AND PAYMENT**

**PART 1 – GENERAL**

**1.1 SCOPE**

The Contractor shall receive and accept the compensation as provided in the Bidder’s Proposal and the Contract in full payment for furnishing all materials, labor, tools, equipment, and for performing all operations necessary to complete the work under the contract, and also in full payment for all loss or damages arising from the nature of the work, or in any discrepancy between the actual quantities of work and quantities herein estimated by the Engineer, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the prosecution of the work until the final acceptance by the City.

Work not shown or called out in either the Drawings or the Specifications, but necessary in carrying out the intent of the Project or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described. No additional compensation will be considered for this associated and necessary work.

The prices stated in the Bidder’s Proposal include all costs and expenses for taxes, labor, equipment, materials, commissions, transportation charges and expenses, patent fees and royalties, labor for handling materials during inspection, together with any and all other

costs and expenses for performing and completing the work as shown on the plans and specified herein. The Basis for Payment for an item at the unit price shown in the Bidder's Proposal shall be in accordance with the description of the item in this Section. The Contractor's attention is again called to the fact that the quotations for the various items of work are intended to establish a total price for completing the work in its entirety. Should the Contractor feel that the costs for any item of work has not been established by the Bidder's Proposal or Measurement and Payment, he shall include the costs for that work in some other applicable bid item, so that his proposal for the project does reflect his total price for completing the work in its entirety.

## **1.2 LUMP SUM QUANTITIES**

Contractor shall be solely responsible for determining the quantities of each lump sum pay item necessary to complete the Work as required by the Contract Documents. When lump sum items are broken into components, the sum of the components shall be the total Contract Price for the Work. The lump sum price stated on the Bidder's Proposal shall constitute full compensation for each lump sum pay item completed in accordance with the drawings and specifications. No other payments will be made to the Contractor except as specifically authorized by change order.

## **1.3 UNIT PRICE QUANTITIES**

All estimated quantities stipulated in the Unit Price portion of the Bidder's Proposal or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for unit price work and materials shall be the actual amount of work done and materials furnished. Contractor agrees that he shall make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts thereof.

## **1.4 MEASUREMENT AND PAYMENT**

- A. Payment for all work done in compliance with the Contract Documents, inclusive of furnishing all manpower, equipment, materials and performance of all operations relative to construction of this project, will be made under the pay items listed herein and in accordance with the accepted Bid.
- B. Methods of Measurement:
  - 1. Units of measurement shall be defined in general terms as follows:
    - a. Lump Sum (LS)
    - b. Linear Feet (LF)
    - c. Cubic Yards (CY)
    - d. Square Yards (SY)
    - e. Each (EA)

- f. Square Foot (SF)
- g. Ton (TON)

## **1.5 BASIS OF PAYMENT**

Measurement and payment for each bid item shall include all labor, materials and equipment required to perform the work included for that respective item to provide a complete and operable installation whether specifically described, mentioned or implied. Payment for all sheeting, shoring, bracing, cofferdams, and other items necessary for a safe and workable excavation shall be included in those Items requiring same for a complete and operable installation whether specifically described, mentioned or implied.

## **1.6 ITEMS INCLUDED BUT NOT SPECIFIED**

The unit or lump sum prices designated in the proposal shall include all profit, taxes, labor, overhead, material, equipment, tools, survey staking, utility notification and coordination, resident notification (preparation and distribution of door hangers), towing of vehicles, clearing of right-of-way, protection of existing utilities, rock excavation, shoring, sheeting, removal of pavement, backfill, dewatering, erosion control, surface restoration, extra backfill material as required, stone bedding for storm structures, plugging of existing pipe and structures, excavation materials, replacement of storm piping, concrete encasement, concrete slabs under new backflow devices, record drawing (or "As-Built Survey") preparation and other work incidental thereto and specified in these specifications and on the drawings, all as applicable to the item described unless designated otherwise in the Unit Price Bid Schedule and hereafter specified.

If unsuitable material is found in any location other than within the foundation of any structural feature and/or within the bedding of any pipe/culvert it shall be removed, transported offsite, properly disposed of and replaced (if needed) at no additional cost to the City.

## **1.7 PAY ITEMS**

### **Pay Item No. 1.1 – Mobilization, General Conditions, Demobilization**

The work specified under this Section consists of preparatory work and operation in mobilizing to begin work on the project, including but limited to those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site(s), and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary and other facilities as required by these specifications, special provisions, and state and local laws and regulations. Mobilization costs shall also include the costs of preconstruction videotaping, preparation and submission of a Hurricane Preparation Plan, preparation and submission of an Overall Work Plan, all materials, labor and equipment necessary to implement, maintain and remove (once the project is complete). The contract unit price will be on a lump sum unit price. Partial payments will be allowed as outlined below.

PERCENT OF ORIGINAL CONTRACT AMOUNT EARNED	ALLOWABLE PERCENT OF THE LUMP SUM PRICE FOR MOBILIZATION (*)
5	25
10	50
25	75
100	100

**Pay Item No. 1.2 - Maintenance of Traffic**

This Section consists of the maintaining of traffic within limits of the project for the duration of the construction period, in accordance with the requirements of FDOT Section 102 of the "Standard Specifications", as amended herein.

Access for all businesses and condominium residents will need to be maintained at all times.

**No night time work will be allowed.**

Provisions will be made to provide access to large trucks for pick-up and delivery of materials during the construction period. The Contractor shall furnish, erect, and maintain all necessary traffic control and safety devices, in accordance with the Florida Department of Transportation "ROADWAY AND TRAFFIC DESIGN STANDARDS", applicable edition, and State of Florida's "MANUAL OF TRAFFIC CONTROL AND SAFE PRACTICES FOR STREET AND HIGHWAY CONSTRUCTION MAINTENANCE AND UTILITY OPERATIONS", applicable edition, and shall take all necessary precautions for the protection of the work and the safety of the public for duration of the construction period.

A Maintenance of Traffic (MOT) plan shall be submitted to the City, by the Contractor, and approved prior to beginning construction. This plan shall include all necessary signage and dimensions. Reference the General Notes on the Drawings to view additional Maintenance of Traffic requirements.

The work specified under this Section shall include the furnishing, erection, and maintenance of all temporary traffic barricades of whatever type required, and for such duration as may be required, and shall include all materials and construction necessary for temporary connections and driveway maintenance. The Contract unit price for this item will be a lump sum unit price. Partial payments for maintenance of traffic will be limited to the overall percent of the work completed by the Contractor.

**Pay Item No. 1.3 - Erosion and Sediment Control**

Price shall include payment for all installation, maintenance, removal, and all other incidentals necessary to provide erosion and sediment control (within the project boundaries) as notated on the Drawings, as stated in provided permit documentation and as required by any local, state or Federal code, statute or ordinance. Daily debris removal from right of ways, easements and vehicle use areas, as required by the Drawings, shall be included in this pay item. Payment for this item shall be on a lump sum basis and shall include all necessary equipment, labor and materials to complete this pay item. The Contractor shall receive compensation for this item as stipulated in the below table.

Contractor will be required to install a Turbidity Barrier for the duration of the project.

PERCENT OF ORIGINAL CONTRACT AMOUNT EARNED	ALLOWABLE PERCENT OF THE LUMP SUM PRICE FOR EROSION AND SEDIMENT CONTROL
5	25
10	50
25	75
100	100

**Pay Item No. 2.1 – Roadway Demolition**

Payment for the above pay item will include all clearing, grading, and excavation necessary to prepare the surface for construction of the Work. Payment will be on a lump sum basis and shall include all necessary equipment, labor and materials to complete this pay item. Compensation will be provided on a percent complete basis. Work activities will include required coordination with City officials, the temporary storage and proper disposal of excavated material such as brush, rubble, roots, stumps, concrete, headwalls, trash, retaining walls and all other debris required to be removed as shown in the Drawings, as necessary to complete the Work and all other incidentals necessary to complete this item.

Payment for the above pay item will also include the following items: dewatering (if necessary to access facilities to be removed and/or abandoned), sheeting if needed to protect existing features, removal and disposal of all abandoned (or to be abandoned) storm sewer pipe, pressure pipe and associated fittings and/or appurtenances, and drainage structures ; removal and disposal of existing concrete and flexible pavement (as may be required for below-grade facility installation), asphalt and associated base and subbase material (as may be required for below-grade facility installation), sidewalks, curb, curb and gutter, spillways, fences, gates, planters, signs, and abandoned private utilities; providing all necessary onsite fill, and placing, compacting, and grading the resulting excavation and plugging abandoned drainage facilities.

**Pay Item No. 2.2 - Unsuitable Material Removal & Replacement (Pipe/Culvert & Structure Bedding Only)**

Payment for excavation, removal and replacement of unsuitable material will include excavation and disposal of unsuitable soft material uncovered under the ground surface and as approved by the Engineer. Unsuitable material shall conform to material classifications as specified in the Plans, City of Clearwater Standard Specifications and be approved by the Engineer.

Vertical measurement shall commence at the bottom of conduits (pipes) and structures only or as approved by the Engineer. Payment will be per cubic yard of material removed, disposed and replaced, as measured by each full truckload or other method agreed in advance, and will include the cost of the replacement of the removed material with alternative material (FDOT No. 57 stone) acceptable to the Engineer and all other incidentals necessary to complete this item. Compaction testing of installed replacement material, as required by the Plans and the City of Clearwater's Standard Specifications, shall also be included as part of the pay item (if applicable).

Payment under this item shall only be received if unsuitable material is found within the foundation of any structure and/or within the bedding of any pipe/culvert. Use of this pay item will require approval from the City and/or Engineer. Payment shall be per cubic yard of unsuitable material removed and replaced. For pricing purposes, FDOT No. 57 stone shall be the substitute material.

**Pay Item No. 2.3 – SOD**

Payment is per square foot and is for sod restoration in the City right of way. All other sod is to be paid for under restoration in easement. Sod is to be installed per City of Clearwater specifications for fertilizing and additional watering until sod has established.

**Pay Item No. 3.1 - FDOT TYPE F GRATE INLET**

Payments for above pay each item is for construction of standard FDOT storm structures and will be paid for at the Contract Unit Price bid for each structure installed.

Payment for storm-water structures will be paid for at the Contract Unit Price bid per each structure installed. The price paid shall be payment in full for the structure, dewatering, all excavation, the disposal of excess material, transportation, sheeting, shoring, or any other proprietary trench stabilization system, bedding material, backfill, compaction, testing, structure modifications, connection to proposed piping, bench and sum construction, covers, grouting, incorporation of conflicting utilities, connections of existing piping (including the linear footage of piping needed to make said connection, sealing, formwork, reinforcement, equipment, labor, protection of work, clean up and all other incidentals necessary to complete these items.

Measurement for payment will be the actual number of each type of drainage structure installed and accepted.



No direct payment will be made for the removal of existing structures.

**Pay Item No. 3.2**

Payment for the above storm piping will be paid for at the Contract Unit Price per linear foot for the size pipe installed, based on field measurements. The price paid shall be payment in full for the pipe, gaskets, joint material, external joint wrap, filter fabric, dewatering, all excavation, removal and proper disposal of existing stormwater piping, the disposal of excess material, transportation, sheeting, shoring, or any other proprietary trench stabilization system, protection of the existing building footers and existing seawall on adjacent sides of easement, concrete collars where required for connection, bedding material, the coring of the concrete sheet piling as needed to facilitate connection, backfill, grading, compaction, testing, equipment, labor, materials, protection of work, irrigation repair, trench safety precautions, clean up and all other incidentals necessary to complete each item.

All pipe joints and connections into structures are to be wrapped with mirafi -140 per city standards and specifications.

**Pay Item No. 3.3 – CURE-IN-PLACE - 14107 E PARSLEY DR**

Payment for Storm Sewer restoration shall be made per lineal foot including all preparation, bypass pumping, equipment, labor, materials, operations, restoration, lateral reconnection, etc., to provide a fully completed and operational sewer. Payment shall be measured from end of pipe to end of pipe for storm systems.

CONTRACTOR TO VERIFY THE SIZE OF THE PIPE BEFORE INSTALLATION OF CURE-IN-PLACE.

**Pay Item No. 4.1 – 2.0" FDOT TYPE 9.5 ASPHALT**

Payment above is per square yard is for 2.5" thick FDOT Type S-1 Asphalt. Payment for the reconstruction of roadway shall be made on a per square yard basis and shall include all necessary equipment, materials and labor required to complete this item. The asphalt shall be constructed in 2 lifts with the final lift being a continuous lift.

**Pay Item No. 4.2 – 8" COMPACTED BASE (CRUSHED CONCRETE BASE)**

**Pay Item No. 4.3 – 12" COMPACTED SUB-BASE**

Payment above is per square yard and to be constructed to City Standards and Specifications and as specified on the construction plans. Crushed concrete base shall be a minimum of LBR 140.

Payment is per square yard. All subgrade shall be stabilized and constructed in accordance with Sections 160 and 914 of FDOT's Standard Specifications (latest edition)

unless otherwise noted herein. All subgrade shall have a minimum compacted thickness of twelve (12)-inches.

**Pay Item No. 4.4 – FDOT VALLEY GUTTER CURB**

Payment for curb restoration will be made on a **per linear foot** of curb replaced basis, as measured along the side face of curb, and shall include all necessary equipment, labor and materials required to complete this pay item. Payment for curb shall include, but not be limited to, the following: preparation of base, compaction, forming, pouring of concrete, testing, and all other incidental items required to successfully complete this pay item.

**Pay Item No. 4.5 – BRICK DRIVE REPLACEMENT**

Payment for this item will be based on the unit price per Square Foot of brick paving constructed and accepted, including all labor, materials, tools, and equipment necessary to complete the work as specified, all work within the brick paver limits shall be complete and shall include, but not be limited to, the adjustments of all public and private frames, grates, covers and utility boxes.

**Pay Item No. 4.6 – Address: 37 144th AVE.**

The contract unit price for this item will be lump sum. The price shall include all necessary equipment, labor and materials required to complete this pay item. Payment of demolition of curbs and brick driveway (+/- 150 SF), replace FDOT Type F CURB & Valley Gutter CURB (+/- 120LF) for positive flow in drainage and restore paver brick driveway (REPLACE& REUSE) but not be limited to, the following: preparation of base, compaction, forming, pouring concrete and all other incidental items required to successfully complete this pay item. The contractor should verify the flow line for positive drainage.

**Pay Item No. 5.1 8” DUCTILE IRON SANITARY**

Payment for this item will be based on the unit price per Lineal Foot for each size and type of material specified which shall include the cost of furnishing all pipe, pipe bend sections, jointing material, bedding material and all other associated appurtenances, and of delivering, handling, laying, dewatering, trenching, sheeting and backfilling, testing, restoring of the surface and all material or work necessary to install the pipe complete in place at the depth specified. **Ductile iron pipe to have Protector 401 inner coating and a bitumastic exterior coating.**

**Bid Item No. 6.1, 6.2 and 6.3 MISC. – CURE-IN-PLACE**

Payment for Storm Sewer restoration shall be made per lineal foot including all preparation, bypass pumping, equipment, labor, materials, operations, restoration, lateral

reconnection, etc, to provide a fully completed and operational sewer. Payment shall be measured from end of pipe to end of pipe for storm systems.

**Address:     230 145th Ave.  
                  355 144th Ave  
                  537 Crystal Drive**

CONTRACTOR TO VERIFY THE SIZE OF THE PIPE BEFORE INSTALLATION OF CURE-IN-PLACE.

## **STS-10   GENERAL CONDITIONS**

GC.1 Prior to the Notice to Proceed, the contractor shall complete illicit discharge training. This is a new statewide requirement. At least one person who has received the training must be present at the construction site. There are a few options to receive the training:

1. The Florida Department of Environmental Protection is creating an online illicit discharge training program. If this course has been completed, please provide the certification numbers of the applicable personnel.
  
2. Other municipalities in Florida have the same requirement. Provide evidence that applicable personnel have received training through another municipality or source.

GC.2 The Contractor is responsible for all required groundwater testing which includes preliminary water samples to satisfy FDEP permit criteria. These results will be reviewed by the City prior to the commencement of dewatering activities. Any groundwater treatment required as a result of permit sampling for discharge purposes will be directed by and paid for by the City. The Contractor may or may not be involved with treatment should it become necessary.

GC.3 The Contractor shall provide the City with 24-hour notification prior to adjusting any potable/reclaimed water mains.

GC.4 Reclaimed water adjustments shall be performed during “no-watering” hours which are 10 A.M. to 4 P.M. It is possible that the “no-watering” window will be increased during the summer months.

GC.5 No work will be permitted between the hours of 7 P.M. & 7 A.M.

**SECTION V  
CONTRACT DOCUMENTS**

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**BOND NUMBER:** \_\_\_\_\_

**CONTRACT BOND**

(1)

**STATE OF FLORIDA**

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

**KNOW ALL MEN BY THESE PRESENTS:** That we \_\_\_\_\_ as Contractor and \_\_\_\_\_ (Surety) whose home address is \_\_\_\_\_

**HEREINAFTER CALLED THE "Surety"**, are held and firmly bound into the City of Madeira Beach, Florida (hereinafter called the "Owner") in the penal sum of: \_\_\_\_\_ Dollars ( \$ \_\_\_\_\_ ) for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns for the faithful performance of a certain written contract, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, entered into between the Contractor and the City of Madeira Beach for:

**14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

**PROJECT #2017-192**

a copy of which said contract is incorporated herein by reference and is made a part hereof as if fully copied herein.

**NOW THEREFORE, THE CONDITIONS OF THIS OBLIGATION ARE SUCH**, that if the Contractor shall in all respects comply with the terms and conditions of said Contract, including the one (1) year guarantee of material and labor, and his obligations thereunder, including the Contract Documents (which include the Advertisement for Bids, Form of Proposal, Form of Contract, Form of Surety Bond, Instructions to Bidders, General Conditions and Technical Specifications) and the Plans and Specifications therein referred to and made a part thereof, and such alterations as may be made in said Plans and Specifications as therein provided for, and shall indemnify and save harmless the said Owner against and from all costs, expenses, damages, injury or conduct, want of care or skill, negligence or default, including patent infringements on the part of the said Contractor agents or employees, in the execution or performance of said Contract, including errors in the Plans furnished by the Contractor, and further, if such "Contractor" or "Contractors" shall promptly make payments to all persons supplying him, them, or it, labor, material, and supplies used directly or indirectly by said Contractor, Contractors, Sub-Contractor, or Sub-Contractors, in the prosecution of the work provided for in said Contract, this obligation shall be void, otherwise, the Contractor and Surety jointly and severally agree to pay to the Owner any difference between the sum to which the said Contractor would be entitled on the completion of the Contract, and that which the Owner may be obliged to pay for the completion of said work by contract or otherwise, and any damages, direct or indirect, or consequential, which said Owner may sustain on account of such work, or on account of the failure of the said Contractor to properly and in all things, keep and execute all the provisions of said Contract.

**CONTRACT BOND**

(2)

And the said Contractor and Surety hereby further bind themselves, their successors, executors, administrators, and assigns, jointly and severally, that they will amply and fully protect the said Owner against, and will pay any and all amounts, damages, costs and judgments which may be recovered against or which the Owner may be called upon to pay to any person or corporation by reason of any damages arising from the performance of said work, or of the repair or maintenance thereof, or the manner of doing the same, or the neglect of the said Contractor or his agents, or servants, or the improper performance of the said work by the Contractor or his agents, or servants, or the infringements of any patent rights by reason of the use of any material furnished or work done; as aforesaid, or otherwise.

And the said Contractor and Surety hereby further bind themselves, their successors, heirs, executors, administrators, and assigns, jointly and severally, to repay the Owner any sum which the Owner may be compelled to pay because of any lien for labor material furnished for the work, embraced by said Contract.

And the said Surety, for the value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract or to the work to be performed thereunder, or the Specifications accompanying the same shall in any way affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract, or to the work, or to the Specifications.

**IN TESTIMONY, WHEREOF**, witness the hands and seals of the parties hereto this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
**CONTRACTOR**

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

**ATTEST:**

\_\_\_\_\_

\_\_\_\_\_  
**SURETY**

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

**ATTORNEY-IN-FACT**

**WITNESS:**

\_\_\_\_\_

**COUNTERSIGNED:**

\_\_\_\_\_

\_\_\_\_\_

# CONTRACT

(1)

This **CONTRACT** made and entered into this \_\_\_ day of \_\_\_\_\_, 20\_\_\_ by and between the City of Madeira Beach, Florida, a municipal corporation, hereinafter designated as the "City", and \_\_\_\_\_, of the City of \_\_\_\_\_, County of \_\_\_\_\_, and State of Florida, hereinafter designated as the "Contractor".

## **WITNESSETH:**

That the parties to this Contract each in consideration of the undertakings, promises, and agreements on the part of the other herein contained, do hereby undertake, promise, and agree as follows:

The Contractor, and his or its successors, assigns, executors, or administrators, in consideration of the sums of money as herein after set forth to be paid by the City and to the Contractor, shall and will at **their** own cost and expense perform all labor, furnish all materials, tools, and equipment for the following:

### **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

#### **PROJECT #2017-192**

**in the amount of \$\_\_\_\_\_**

In accordance with such proposal and technical supplemental specifications and such other special provisions and drawings, if any, which will be submitted by the City, together with any advertisement, instructions to bidders, general conditions, proposal and bond, which may be hereto attached, and any drawings if any, which may be herein referred to, are hereby made a part of this contract, and all of said work to be performed and completed by the Contractor and its successors and assigns shall be fully completed in a good and workmanlike manner to the satisfaction of the City.

If the Contractor should fail to comply with any of the terms, conditions, provisions, or stipulations as contained herein within the time specified for completion of the work to be performed by the Contractor, then the City, may at its option, avail itself of any or all remedies provided on its behalf and shall have the right to proceed to complete such work as Contractor is obligated to perform in accordance with the provisions as contained herein.

**THE CONTRACTOR AND HIS OR IT'S SUCCESSORS AND ASSIGNS DOES HEREBY AGREE TO ASSUME THE DEFENSE OF ANY LEGAL ACTION WHICH MAY BE BROUGHT AGAINST THE CITY AS A RESULT OF THE CONTRACTOR'S ACTIVITIES ARISING OUT OF THIS CONTRACT AND FURTHERMORE, IN CONSIDERATION OF THE TERMS, STIPULATIONS, AND CONDITIONS AS CONTAINED HEREIN, AGREES TO HOLD THE CITY FREE AND HARMLESS FROM ANY AND ALL CLAIMS FOR DAMAGES, COSTS OF SUITS, JUDGMENTS, OR DECREES RESULTING FROM ANY CLAIMS MADE UNDER THIS CONTRACT AGAINST THE CITY, OR THE CONTRACTOR, OR THE CONTRACTOR'S SUB-CONTRACTORS, AGENTS, SERVANTS, OR EMPLOYEES RESULTING FROM ACTIVITIES BY THE AFOREMENTIONED CONTRACTOR, SUB-CONTRACTORS, AGENTS, SERVANTS, OR EMPLOYEES.**

## CONTRACT

(2)

In addition to the foregoing provisions, the Contractor agrees to conform to the following requirements:

In connection with the performance of work under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, sex, religion, color, or national origin. The aforesaid provision shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; lay off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees or applicants for employment, notices to be provided by the contracting officer setting forth the provisions of the non discrimination clause.

The Contractor further agrees to insert the foregoing provisions in all contracts hereunder, including contracts or agreements with labor unions and/or worker's representatives, except sub-contractors for standard commercial supplies or raw materials.

It is mutually agreed between the parties hereto that time is of the essence of this contract, and in the event that the work to be performed by the Contractor is not completed within the time stipulated herein, it is then further agreed that the City may deduct from such sums or compensation as may be due to the Contractor the sum of \$1,000.00 per day for each day that the work to be performed by the Contractor remains incomplete beyond the time limit specified herein, which sum of \$1,000.00 per day shall only and solely represent damages which the City has sustained by reason of the failure of the Contractor to complete the work within the time stipulated, it being further agreed that this sum is not to be construed as a penalty but is only to be construed as liquidated damages for failure of the Contractor to complete and perform all work within the time period as specified in this contract.

It is further mutually agreed between the City and the Contractor that if, any time after the execution of this contract and the surety bond which is attached hereto for the faithful performance of the terms and conditions as contained herein by the Contractor, that the City shall at any time deem the surety or sureties upon such performance bond to be unsatisfactory or if, for any reason, the said bond ceases to be adequate in amount to cover the performance of the work the Contractor shall, at his or its own expense, within ten (10) days after receipt of written notice from the City to do so, furnish an additional bond or bonds in such term and amounts and with such surety or sureties as shall be satisfactory to the City. If such an event occurs, no further payment shall be made to the Contractor under the terms and provisions of this contract until such new or additional security bond guaranteeing the faithful performance of the work under the terms hereof shall be completed and furnished to the City in a form satisfactory to it.



## **CONTRACT**

(3)

The successful bidder/contractor will be required to comply with Section 119.0701, Florida Statutes (2013), specifically to:

- (a) Keep and maintain public records that ordinarily and necessarily would be required by the City of Madeira Beach in order to perform the service;
- (b) Provide the public with access to public records on the same terms and conditions that the City of Madeira Beach would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law;
- (c) Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and
- (d) Meet all requirements for retaining public records and transfer, at no cost, to the City of Madeira Beach all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public records disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the City of Madeira Beach.

**CONTRACT**

(3)

**IN WITNESS, WHEREOF**, the parties to the agreement have hereunto set their hands and seals and have executed this Agreement, in duplicate, the day and year first above written.

**CITY OF MADEIRA BEACH  
IN PINELLAS COUNTY, FLORIDA**

By: \_\_\_\_\_  
Jonathan Evans,  
City Manager

(SEAL)

Attest:

Countersigned:

\_\_\_\_\_  
Clara VanBlargan,  
City Clerk

By: \_\_\_\_\_  
Maggie Black,  
Mayor

Approved as to form:

\_\_\_\_\_  
Ralf Brookes,  
City Attorney

(Contractor must indicate whether Corporation, Partnership, Company or Individual.)

\_\_\_\_\_  
\_\_\_\_\_  
(Contractor)

By: \_\_\_\_\_ (SEAL)

(The person signing shall, in his own handwriting, sign the Principal's name, his own name, and his title; where the person is signing for a Corporation, he must, by Affidavit, show his authority to bind the Corporation).

**CONTRACTOR'S AFFIDAVIT FOR FINAL PAYMENT**

(CORPORATION FORM)

**STATE OF FLORIDA**

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

On this day personally appeared before me, the undersigned authority, duly authorized to administer oaths and take acknowledgments, \_\_\_\_\_, who after being duly sworn, deposes and says:

That he is the \_\_\_\_\_ (TITLE) of \_\_\_\_\_, a Florida Corporation, with its principal place of business located at \_\_\_\_\_ (herein, the "Contractor").

That the Contractor was the General Contractor under a contract executed on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ with the **CITY OF MADEIRA BEACH, FLORIDA**, a municipal corporation, as Owner, and that the Contractor was to perform the construction of:

**14107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

**PROJECT #2017-19214107 E PARSLEY DR DRAINAGE IMPROVEMENTS**

That said work has now been completed and the Contractor has paid and discharged all sub-contractors, laborers, and material men in connection with said work and there are no liens outstanding of any nature nor any debts or obligations that might become a lien or encumbrance in connection with said work against the described property.

That he is making this affidavit pursuant to the requirements of Chapter 713, Florida Statutes, and upon consideration of the payment of \_\_\_\_\_ (Final Full Amount of Contract) in full satisfaction and discharge of said contract.

That the Owner is hereby released from any claim which might arise out of said Contract.

The word "liens" as used in this affidavit shall mean any and all arising under the operation of the Florida Mechanic's Lien Law as set forth in Chapter 713, Florida Statutes.

Sworn and subscribed to before me

\_\_\_\_\_  
**AFFIANT**

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

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

\_\_\_\_\_  
**NOTARY PUBLIC**

My Commission Expires:

\_\_\_\_\_  
**PRESIDENT**

**PROPOSAL BOND**

(Not to be filled out if a certified check is submitted)

**KNOWN ALL MEN BY THESE PRESENTS:** That we, the undersigned, \_\_\_\_\_  
\_\_\_\_\_ as Principal, and \_\_\_\_\_  
\_\_\_\_\_ as Surety, who's address is \_\_\_\_\_  
\_\_\_\_\_, are held and firmly bound unto the City  
of Madeira Beach, Florida, in the sum of \_\_\_\_\_ Dollars  
(\$\_\_\_\_\_) (being a minimum of 10% of Contractor's Total Bid Amount) for the payment of  
which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors,  
administrators, successors and assigns.

The condition of the above obligation is such that if the attached Proposal of \_\_\_\_\_  
\_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety,  
for work specified as: \_\_\_\_\_  
\_\_\_\_\_

all as stipulated in said Proposal, by doing all work incidental thereto, in accordance with the plans and  
specifications provided herefor, all within Pinellas County, is accepted and the contract awarded to the  
above named bidder, and the said bidder shall within ten days after notice of said award enter into a  
contract, in writing, and furnish the required Performance Bond with surety or sureties to be approved by  
the City Manager, this obligation shall be void, otherwise the same shall be in full force and virtue by law  
and the full amount of this Proposal Bond will be paid to the City as stipulated or liquidated damages.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(Principal must indicate whether corporation,  
partnership, company or individual)

\_\_\_\_\_  
\_\_\_\_\_  
Principal

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

\_\_\_\_\_  
\_\_\_\_\_  
Surety

(The person signing shall, in his own handwriting,  
sign the Principal's name, his own name, and his title;  
where the person is signing for a Corporation, he  
must, by Affidavit, show his authority to bind the  
Corporation).

**AFFIDAVIT**

(To be filled in and executed if the bidder is a corporation)

**STATE OF FLORIDA**

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

\_\_\_\_\_ being duly sworn, deposes and says that he/she is Secretary of \_\_\_\_\_ a corporation organized and existing under and by virtue of the laws of the State of Florida, and having its principal office at:

\_\_\_\_\_  
(Street & Number) (City) (County) (State)

Affiant further says that he is familiar with the records, minute books and by-laws of

\_\_\_\_\_  
(Name of Corporation)

Affiant further says that \_\_\_\_\_ is \_\_\_\_\_  
(Officer's Name) (Title)

of the corporation, is duly authorized to sign the Proposal for \_\_\_\_\_  
or said corporation by virtue of \_\_\_\_\_

(state whether a provision of by laws or a Resolution of Board of Directors. If by Resolution give date of adoption).

\_\_\_\_\_  
\_\_\_\_\_  
Affiant

Sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
Type / Print / Stamp Name of Notary

\_\_\_\_\_  
Title or Rank, and Serial No., if any

**NON-COLLUSION AFFIDAVIT**

**STATE OF FLORIDA**

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

\_\_\_\_\_ being, first duly sworn, deposes and says that he is  
\_\_\_\_\_ of \_\_\_\_\_,

the party making the foregoing Proposal or Bid; that such Bid is genuine and not collusive or sham: that said bidder is not financially interested in or otherwise affiliated in a business way with any other bidder on the same contract; that said bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidders or person, to put in a sham bid or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price or affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against the City of Madeira Beach, Florida, or any person or persons interested in the proposed contract; and that all statements contained in said proposal or bid are true; and further, that such bidder has not directly or indirectly submitted this bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

\_\_\_\_\_  
Affiant

Sworn to and subscribed before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

## **PROPOSAL**

(1)

**TO THE CITY OF MADEIRA BEACH, FLORIDA, for**

### **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS PROJECT #2017-192**

and doing such other work incidental thereto, all in accordance with the contract documents, marked

### **14107 E PARSLEY DR DRAINAGE IMPROVEMENTS PROJECT #2017-192**

Every bidder must take notice of the fact that even though his proposal be accepted and the documents signed by the bidder to whom an award is made and by those officials authorized to do so on behalf of the City of Madeira Beach, Florida, that no such award or signing shall be considered a binding contract without a certificate from the Finance Director that funds are available to cover the cost of the work to be done, or without the approval of the City Attorney as to the form and legality of the contract and all the pertinent documents relating thereto having been approved by said City Attorney; and such bidder is hereby charged with this notice.

The signer of the Proposal, as bidder, also declares that the only person, persons, company or parties interested in this Proposal, are named in this Proposal, that he has carefully examined the Advertisement, Instructions to Bidders, Contract Specifications, Plans, Supplemental Specifications, General Conditions, Special Provisions, and Contract Bond, that he or his representative has made such investigation as is necessary to determine the character and extent of the work and he proposes and agrees that if the Proposal be accepted, he will contract with the City of Madeira Beach, Florida, in the form of contract; hereto annexed, to provide the necessary labor, materials, machinery, equipment, tools or apparatus, do all the work required to complete the contract within the time mentioned in the General Conditions and according to the requirements of the City of Madeira Beach, Florida, as herein and hereinafter set forth, and furnish the required surety bonds for the following prices to wit:

**PROPOSAL**

(2)

If the foregoing Proposal shall be accepted by the City of Madeira Beach, Florida, and the undersigned shall fail to execute a satisfactory contract as stated in the Advertisement herein attached, then the City may, at its option determine that the undersigned has abandoned the Contract, and thereupon this Proposal shall be null and void, and the certified check or bond accompanying this Proposal, shall be forfeited to become the property of the City of Madeira Beach, Florida, and the full amount of said check shall be retained by the City, or if the Proposal Bond be given, the full amount of such bond shall be paid to the City as stipulated or liquidated damages; otherwise, the bond or certified check accompanying this Proposal, or the amount of said check, shall be returned to the undersigned as specified herein.

Attached hereto is a bond or certified check on \_\_\_\_\_  
\_\_\_\_\_ Bank, for the sum of \_\_\_\_\_  
\_\_\_\_\_ (\$\_\_\_\_\_ )  
(being a minimum of 10% of Contractor's total bid amount).

The full names and residences of all persons and parties interested in the foregoing bid are as follows:

(If corporation, give the names and addresses of the President and Secretary. If firm or partnership, the names and addresses of the members or partners. The Bidder shall list not only his name but also the name of any person with whom bidder has any type of agreement whereby such person's improvements, enrichment, employment, or possible benefit, whether sub-contractor, materialman, agent, supplier, or employer is contingent upon the award of the contract to the bidder).

NAMES:

ADDRESSES:

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

Signature of Bidder: \_\_\_\_\_

(The bidder must indicate whether Corporation, Partnership, Company or Individual).



**PROPOSAL**

(3)

The person signing shall, in his own handwriting, sign the Principal's name, his own name and his title. Where the person signing for a corporation is other than the President or Vice President, he must, by affidavit, show his authority, to bind the corporation.

Principal:

\_\_\_\_\_

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

Business Address of Bidder: \_\_\_\_\_

City and State: \_\_\_\_\_ Zip Code \_\_\_\_\_

Dated at \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, A.D., 20\_\_.

**CITY OF MADEIRA BEACH**  
**ADDENDUM SHEET**

PROJECT: 14107 E PARSLEY DR DRAINAGE IMPROVEMENTS  
PROJECT #**2017-192** (CONTRACT #2017-192)

Acknowledgment is hereby made of the following addenda received since issuance of Plans and Specifications.

Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_  
Addendum No. \_\_\_\_\_ Date: \_\_\_\_\_

\_\_\_\_\_  
(Name of Bidder)

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

\_\_\_\_\_  
(Title of Officer)

\_\_\_\_\_  
(Date)

## BIDDER'S PROPOSAL

PROJECT: 14107 E PARSLEY DR DRAINAGE IMPROVEMENTS

PROJECT #2017-192 (CONTRACT #2017-192)

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

BIDDER'S GRAND TOTAL: \$ \_\_\_\_\_ (NUMBERS)

BIDDER'S GRAND TOTAL: \_\_\_\_\_

\_\_\_\_\_ (WORDS)

<b>BID PROPOSAL</b>					
<b>Project: 14107 E PARSLEY DR DRAINAGE IMPROVEMENTS (PROJECT #2017-192)</b>					
BID ITEM	UNIT	EST QTY	UNIT PRICE (\$)	TOTAL (\$)	
<b>1.0 Mobilization and Site Preparation</b>					
1.1	Mobilization	LS	1		
1.2	Maintenance of Traffic	LS	1		
1.3	Erosion Control- Turbidity Barrier	LS	1		
<b>Subtotal - General (1.1 - 1.3)</b>					
<b>2.0 Earthwork</b>					
2.1	Roadway Demo	LS	1		
2.2	Remove Unsuitable Material	CY	20		
2.3	Sod	SF	200		
<b>Subtotal - Earthwork (2.1 - 2.3)</b>					
<b>3.0 Drainage</b>					
3.1	FDOT Type F Grate Inlet	EA	1		
3.2	15" RCP Class IV	LF	229		
3.3	24" Cure in place 12MM (Finished cured thickness)	LF	101		
<b>Subtotal - Drainage (3.1 - 3.3)</b>					

4.0	<b>Paving and Marking</b>				
4.1	2" Asphalt Type S-1 Asphaltic Concrete	SY	90		
4.2	8" Compacted Base	SY	110		
4.3	12" Compacted Sub-Base	SY	110		
4.4	Valley Gutter Curb (Miami Curb)	LF	75		
4.5	Brick Drive Replacement (remove and reuse where possible)	SF	30		
4.6	37 144 <sup>th</sup> Ave. (See Section IVa TSP for details of work)	LS	1		
<b>Subtotal - Paving and Marking (4.1 - 4.6)</b>					
5.0	<b>Sanitary</b>				
5.1	8" Line Replacement with Ductile Iron Pipe 0-6' depth	LF	40		
<b>Subtotal - Sanitary (5.1 - 5.1)</b>					

6.0	<b>MISC. Cure in Place</b>				
6.1	15" Cure in place 12MM (Finished cured) thickness- 230 145 <sup>th</sup> Ave.	LF	106		
6.2	15" Cure in place 12MM (Finished cured) thickness – 355 144 <sup>th</sup> Ave	LF	106		
6.3	18" Cure in place 12MM (Finished cured) thickness- 537 Crystal Dr.	LF	128		
<b>Subtotal - Misc (6.1 - 6.3)</b>					
<b>SUBTOTAL (1.0, 2.0, 3.0, 4.0, 5.0 and 6.0)</b>					
<b>Total - 10% Contingency</b>					
<b>TOTAL CONSTRUCTION COST (1.0, 2.0, 3.0, 4.0, 5.0 and 6.0)</b>					

**THE BIDDER'S GRAND TOTAL ABOVE IS HIS TOTAL BID BASED ON HIS UNIT PRICES AND LUMP SUM PRICES AND THE ESTIMATED QUANTITIES REQUIRED FOR EACH SECTION. THIS FIGURE IS FOR INFORMATION ONLY AT THE TIME OF OPENING BIDS. THE CITY WILL MAKE THE TABULATION FROM THE UNIT PRICES AND LUMP SUM PRICE BID. IF THERE IS AN ERROR IN THE TOTAL BY THE BIDDER, IT SHALL BE CHANGED AS ONLY THE UNIT PRICES AND LUMP SUM PRICE SHALL GOVERN.**

**SCRUTINIZED COMPANIES AND BUSINESS OPERATIONS WITH  
CUBA AND SYRIA CERTIFICATION FORM**

***PER SECTION III, ITEM 25, IF YOUR BID IS \$1,000,000 OR MORE, THIS FORM MUST BE COMPLETED AND SUBMITTED WITH THE BID PROPOSAL. FAILURE TO SUBMIT THIS FORM AS REQUIRED, MAY DEEM YOUR SUBMITTAL NONRESPONSIVE.***

The affiant, by virtue of the signature below, certifies that:

1. The vendor, company, individual, principal, subsidiary, affiliate, or owner is aware of the requirements of section 287.135, Florida Statutes, regarding companies on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or engaging in business operations in Cuba and Syria; and
2. The vendor, company, individual, principal, subsidiary, affiliate, or owner is eligible to participate in this solicitation and is not listed on either the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engaged in business operations in Cuba and Syria; and
3. Business Operations means, for purposes specifically related to Cuba or Syria, engaging in commerce in any form in Cuba or Syria, including, but not limited to, acquiring, developing, maintaining, owning, selling, possessing, leasing or operating equipment, facilities, personnel, products, services, personal property, real property, military equipment, or any other apparatus of business or commerce; and
4. If awarded the Contract (or Agreement), the vendor, company, individual, principal, subsidiary, affiliate, or owner will immediately notify the City of Madeira Beach in writing, no later than five (5) calendar days after any of its principals are placed on the Scrutinized Companies with Activities in Sudan List, the Scrutinized Companies with Activities in the Iran Petroleum Sector List, or engages in business operations in Cuba and Syria.

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

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Name of Entity / Corporation

**STATE OF** \_\_\_\_\_

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

The foregoing instrument was acknowledged before me on this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_ (name of person whose signature is being notarized) as the \_\_\_\_\_ (title) of \_\_\_\_\_ (name of Corporation/Entity), personally known to me as described herein \_\_\_\_\_, or produced a \_\_\_\_\_ (type of identification) as identification, and who did / did not take an oath.

\_\_\_\_\_  
Notary Public

\_\_\_\_\_  
Printed Name

My Commission Expires: \_\_\_\_\_

NOTARY SEAL ABOVE